## Nuclear Weapons 2 - Non-Proliferation, Disarmament and Peaceful Uses

The Nuclear Non-proliferation Treaty (NPT) is the single most important treaty covering nuclear non-proliferation and disarmament. This learning unit introduces the NPT and discusses its political, legal and historical dimensions.

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Nuclear Non-Proliferation Treaty (NPT) Monitor project

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### 1. Introduction and overview

Manuel Herrera: Hi and welcome to this Learning Unit. I'm Dr. Manuel Herrera, researcher of the Multilateralism and Global Governance Programme here at Istituto Affari Internazionali in Rome.

*Ottavia Credi*: And I'm Ottavia Credi. I'm a researcher in the Security and Defence programme at the Istituto Affari Internazionali.

Manuel Herrera: This Learning Unit is dedicated to the Treaty on the Non-proliferation of Nuclear Weapons, also known as the NPT. Through it, we will dive into its main history, functioning, and fundamental principles. As well, we will revise some of the controversies concerning the treaty and its implementation through history.

*Ottavia Credi*: We hope you'll enjoy this Learning Unit and thank you for choosing the EUNPDC elearning courses.

#### Introduction and overview

This learning unit will provide an overview of the nuclear non-proliferation regime, exploring its origins, norms and institutions. This is of the utmost importance as it will enable those who study this Learning Unit to firstly, understand the original sins that make the regime contested and/or criticised; secondly, grasp the main instruments of public international law that regulate the regime, especially the Nuclear Non-Proliferation Treaty (NPT); and finally, have a complete and/or holistic view of the practical development of the regime through bodies such as the International Atomic Energy Agency (IAEA) and other bodies of the United Nations system. This unit is divided into six sections.

In the first section, we will explore the origins of the atomic bomb, the nuclear arms race, the resulting need for nuclear non-proliferation and arms control, and the drafting process and rationale of the Non-Proliferation Treaty (NPT).

In the second section, we will look at the content and basic commitments of the three pillars of the NPT: nuclear non-proliferation, peaceful uses of nuclear energy and nuclear disarmament. In particular, we will address the difficulties in implementing the disarmament pillar and the divergent interests between the nuclear weapon states (NWS) and the non-nuclear weapon states (NWS), as well as the difficulties that state parties to the NPT encounter in using nuclear energy for peaceful uses.

The third section will cover the NPT review cycle and its main successes and failures in implementing the treaty's objectives since 1995.

In the fourth section, we will address the institutional development and implementation of the non-proliferation pillar by analysing the role of the International Atomic Energy Agency (IAEA) and its safeguards system, as well as other international instruments such as the Comprehensive Nuclear-Test-Ban Treaty (CTBT), the proposed Fissile Material Cut-Off Treaty (FMCT) and informal groups of states such as the Nuclear Suppliers Group (NSG).

The fifth section will address the main controversies over the content and implementation of the NPT. In particular, we will look at the issue of nuclear arms sharing (specifically the case of NATO, Russia-Belarus and Pakistan-Saudi Arabia) and how this might contravene Articles I and II of the treaty; the relationship between the NPT and the Treaty on the Prohibition of Nuclear Weapons (TPNW); and, finally, the implications of a decision to withdraw from the NPT, with a special focus on the potential dangers arising from the acquisition of nuclear material and technology.

Finally, this unit will explore the role of the EU in the NPT framework, expanding on its main milestones and challenges.

### 2. History of the nuclear non-proliferation regime: From the bomb to the NPT



Albert Einstein (left) and Leo Slizard (right) LIFE magazine 1946

#### Why history is important

The modern nuclear non-proliferation regime with its established rules, norms and institutions, is easily taken for granted. But its development was not inevitable, and it is important to consider how it came to be.

It is sometimes argued that the nuclear nonproliferation regime was born when the NPT entered into force in 1968, but this is an overly simplistic interpretation. Although the treaty is the legal-political framework that has made it possible to define many of the rules, norms and procedures critical to the regime's functioning, there are other legal instruments, institutions and groupings of states that make it work. Moreover, many instruments and institutions (including the IAEA) were already in place when the NPT entered into force. In our view, the NPT should be seen as a result of the development and evolution of the nuclear non-proliferation regime, not its initiator.

It is therefore important to start with a historical review of the origins and evolution of the nuclear nonproliferation regime, from the first theoretical conceptualisation of nuclear fission in 1933, the Frisch-Peierls Memorandum in 1940, the bombing of Hiroshima and Nagasaki in 1945, initial meetings and draft proposals debated at the United Nations from 1946, up to the adoption of the NPT in 1968. Looking back at the origins of the nuclear non-proliferation regime will not only provide a historical-political context for its evolution, but will also supply the scientific-technical knowledge required to understand the continued development of nuclear technology and science, and their military implications.

#### The beginning of the nuclear era

In 1933, Hungarian physicist Leo Szilard was the first to conceive the notion that uranium atoms could split

and produce a nuclear chain reaction, opening the possibility of developing a nuclear explosive device.

However, the idea that it was possible to manufacture such a weapon was dismissed because of the amount of uranium needed to start the chain reaction. It was not until Otto Frisch and Rudolph Peierls suggested that uranium-235, a fissile isotope of uranium, could be extracted from uranium ore, and that this would be able to sustain the chain reaction, that the notion of such a device was taken seriously.

The Frisch-Peierls Memorandum persuaded the British government to fund a bomb project led by the MAUD committee. The British, however, came to the conclusion that they could not bear the financial cost of the research and development of the atomic bomb, and over the course of 1941, sent most of their research outputs to the US. This led to the creation, in 1942, of the Uranium Committee, set up to study the possibilities of developing such a weapon.[1]



Harold C. Urey, Ernest O.Lawrence, James B. Conant, Lyman J. Briggs, E.V. Murphree and Arthur Compton Lawrence Berkely National Labroratory/Wikimedia, public domain

By the spring of 1945, the work of the Uranium Committee had led to the notorious 'Manhattan Project' and in 1945, scientists and engineers were ready to begin assembling the bomb which, by the end of May 1945, led to a demonstration explosion against Japan being proposed in order to bring about an early end to the war.[2] At the same time, on 16 July 1945, at 5.30 a.m, the first successful test of an atomic bomb took place at Alamogordo, New Mexico.

In the summer 1945, the US, UK and China sent an ultimatum to Japan calling on them to surrender unconditionally or face *'immediate and complete* 

*destruction[3 1*<sup>'</sup>. Japan's failure to respond sealed the fate of Hiroshima and Nagasaki: On 6 August 1945, the first atomic bomb was dropped on Hiroshima and on 9 August, the second atomic bomb was dropped on Nagasaki. Japan surrendered unconditionally on 14 August 1945. The nuclear weapon had entered the battlefield.

(Some) important scientists who contributed to the development of the atomic bomb

#### Leó Szilárd



Leó Szilárd US Department of Energy, CC BY-SA 3.0 Deed; PD-USGov-DOE

Leó Szilárd (Budapest, 11 February 1898 - La Jolla, California, 30 May 1964) was a Hungarian-American Jewish physicist who worked on the Manhattan Project. He is also known as the author of the letter (also signed by Albert Einstein) to US President Franklin D. Roosevelt in August 1939 that led to the development of the atomic bombs dropped on Hiroshima and Nagasaki in 1945.

#### **Otto Robert Frisch**



Otto Robert Frisch Los Alamos National Laboratory, use permitted

Otto Robert Frisch (Vienna, 1 October 1904 – Cambridge, 22 September 1979) was an Austrian-British physicist. In collaboration with Rudolf Peierls, he designed the first atomic bomb detonation mechanism in 1940.

#### **Rudolf Ernst Peierls**



Rudolf Ernst Peierls GFHund/Wikimedia, CC BY 3.0

Rudolf Ernst Peierls was a British physicist born in Germany into a Jewish family. In 1933, while on a

scholarship at Cambridge, he decided to remain in exile in the UK. In February 1940 he was granted British citizenship. Rudolph Peierls, along with Otto Frisch, played an important role in Britain's nuclear programme, collaborating with the Manhattan Project.

#### **Harold Clayton Urey**

Harold Clayton Urey was an American chemist and university professor. A pioneer in isotope work, he received the Nobel Prize in Chemistry in 1934, and subsequently developed the Theory of Paleontological Evolution based on his discoveries in the field of atomic physics. During the Second World War, he headed a research group at Columbia University on methods of separating the uranium isotope U-235 from U-238 and the production of heavy water. He also contributed to the development of the hydrogen bomb. After this research, he was very active in the group of atomic scientists calling for international control of atomic energy.

#### **Ernest O. Lawrence**



Ernest O. Lawrence Nobel Prize Organisation/Wikimedia, public domain

Ernest O. Lawrence (Canton, 8 August 1901-Palo Alto, 27 August 1958) was an American nuclear chemist best known for the invention, use and improvement of the cyclotron, and for his later work on the isotopic

separation of uranium during the Manhattan Project. He founded two nuclear research laboratories: Berkeley and Livermore. During World War II, he developed electromagnetic isotope separation at the UC Berkeley Radiation Laboratory. After the war, he strongly supported Edward Teller's campaign for a second nuclear weapons laboratory, which Lawrence sited at Livermore.

#### J. Robert Oppenheimer



J. Robert Oppenheimer Department of Energy, Office of Public Affairs

J. Robert Oppenheimer (1904–1967) was an American theoretical physicist and scientific director of the Manhattan Project, leading the development of the first atomic bomb during World War II. As head of the Los Alamos Laboratory (1943–1945), he coordinated efforts to design and construct nuclear weapons, playing a key role in the successful Trinity test in July 1945. His leadership and scientific expertise were crucial in bringing together top physicists, including Fermi and Teller. After the war, he opposed nuclear proliferation and was later stripped of his security clearance during the Red Scare. Oppenheimer is often called the "father of the atomic bomb."

#### **Edward Teller**



Edward Teller US Department of Energy, Lawrence Livermore National Laboratory/Wikimedia, public domain

Edward Teller (1908–2003) was a Hungarian-American physicist best known for his pivotal role in the development of nuclear weapons. As a key figure in the Manhattan Project during World War II, he contributed to the theoretical groundwork for the first atomic bomb. Although not directly responsible for the bomb's design, his research on fusion reactions laid the foundation for the hydrogen bomb, which he later championed during the Cold War. Teller played a controversial role in advocating for advanced nuclear weaponry and was instrumental in establishing the Lawrence Livermore National Laboratory to enhance U.S. defense capabilities.

#### Enrico Fermi



Enrico Fermi US National Achives Catalog NAID: 558578, unrestricted use.

Enrico Fermi (1901–1954) was an Italian-American physicist whose groundbreaking work in nuclear physics was crucial to the development of the atomic bomb. As a key figure in the Manhattan Project, he led the first controlled nuclear chain reaction at the University of Chicago in 1942, proving that nuclear fission could be harnessed for energy and weaponry. His expertise in neutron physics and reactor design directly influenced bomb development at Los Alamos. Fermi's contributions helped pave the way for both atomic energy and nuclear weapons, securing his legacy as one of the most influential physicists of the 20th century.

### The first international efforts to ban nuclear weapons

The sheer destruction caused by the new nuclear weapons hit many people hard. It is therefore not surprising that at the first meeting of the UN General Assembly (UNGA) on 24 January 1946, the first resolution adopted was to establish an Atomic Energy Commission, charged among other things with submitting proposals for *'the elimination of atomic weapons from national armaments' 14 J.* The resolution was adopted unanimously by all 51 member states. RESOLUTION

#### ESTABLISHMENT OF A COMMISSION TO DEAL WITH THE PROBLEMS RAISED BY THE DISCOVERY OF ATOMIC ENERGYA/RES/1(I)

Adopted 24 January 1946 UN General Assembly 1st session

This resolution mandated an Atomic Energy Commission, charged among other things with submitting proposals for 'the elimination of atomic weapons from national armaments'

The US government, meanwhile, had anticipated these developments by establishing an advisory commission under the chairmanship of David Lilienthal to consider proposals for the establishment of a United Nations commission to control the international development of atomic energy. Bernard Baruch was appointed to present the proposal to the United Nations.<sup>[5]</sup>



Bernard Baruch US Library of Congress, LC-DIG-npcc-03151/Wikimedia, public domain

On 14 June 1946, Baruch presented the proposal to the UN General Assembly (UNGA). It called for a ban on the manufacture of atomic bombs and for all phases of the development and use of atomic energy to be placed under international authority. Compliance would be ensured through verification processes. However, until a treaty to this effect was approved by the United Nations and entered into force, the United States was to continue to have a monopoly on atomic secrets and would not commit to ending the production of new atomic weapons until there were effective and secure controls, including on-site verification on Soviet territory.

Soviet Foreign Minister Andrei Gromyko rejected the US proposals and on 19 June 1946, presented an alternative proposal that would see all parties commit to not using atomic weapons; prohibit the production or maintenance of such weaponry; and required the destruction of all existing weapons within three months of the treaty's adoption.

However, the Soviet Union offered no means of verification in support of its proposals, making them unacceptable to the United States.[6]



Andrei Gromyko Dutch National Archives and Spaarnestad Photo, CC BY-SA 3.0 NL

The failure of negotiations in June of that year ended the first attempt to eliminate atomic weapons, and by the mid-1950s, US and Soviet leaders had rejected the idea of banning them and instead sought ways to control them, thereby strengthening deterrence with a view to reducing the risk of nuclear war.[7]

#### The Irish resolution

On 17 October 1958, a significant event took place that years later would directly influence the negotiation of the Nuclear Non-Proliferation Treaty: Ireland submitted to the UNGA the first draft resolution highlighting the dangers posed by the increase in the number of states in possession of nuclear weapons. The proposal called for the formation of an ad hoc committee to study these dangers and for all states to suspend nuclear testing, nuclear powers not to supply nuclear weapons to other states, and non-nuclear states to cease any efforts to develop nuclear weapons. However, this initial proposal did not find sufficient support and had to be withdrawn.[8] A year later, in 1959, Ireland sent its proposal back to the Ten Nations Committee on Disarmament, established to address the issue of nuclear disarmament during the Cold War, suggesting that the adoption of an international agreement subject to controls and inspections could be an effective mechanism for controlling nuclear proliferation.[9] On this occasion, the US responded favourably, considering the proposal to be consistent with the objectives of nuclear non-proliferation and nuclear cooperation with other states. However, the Soviet Union rejected it on the grounds that it did not exclude the possibility of installing nuclear weapons outside the territory of the nuclear weapon states themselves. [10]

In 1960, a second text submitted by Ireland went further than the initial proposal of 1958, as it made it clear that the aim of the resolution was the adoption of a permanent non-proliferation agreement and therefore required non-nuclear states to commit not to acquiring nuclear weapons.[11] It also required the nuclear weapon states to cease transferring nuclear technology, as well as information relevant to the manufacture of nuclear weapons to non-nuclear states.

This proposal was approved by the Soviet Union and other Eastern Bloc countries, enabling its final approval by the UNGA on 4 December 1961, with the United States and other NATO allies abstaining. The resolution represented the first step towards the negotiation of a comprehensive Nuclear Non-Proliferation Treaty.

#### The Eighteen Nation Committee and the negotiation of the NPT

The attempt to place all nuclear activities of states under the control of an international organisation was too ambitious and difficult to implement because of opposition from the major nuclear powers, and had to be replaced by negotiations to achieve individual elements of such a strategy. The first element of these negotiations was the adoption of a nuclear nondissemination treaty, based on the proposals contained in the Irish resolution of 1958. Negotiations for the adoption of a Nuclear **Non-Proliferation Treaty** started in spring of 1965 in the Eighteen Nation Committee.

The negotiation process was divided into **two phases**. In the first phase, the two major powers (the US and the Soviet Union) discussed possible ways forward for the NPT negotiations. The second phase involved multilateral discussions aimed at formulating the specific clauses to be contained in the treaty.[12]

Despite the difficulties, a set of proposals and provisions to prohibit the transfer of nuclear weapons to non-nuclear countries were drafted. The final decision was taken during the 20th session of the UN General Assembly with the adoption of **Resolution**  **2028 (XX)**[13]. The Resolution contained five basic principles which would go on to form the basis of a subsequent Nuclear Non-Proliferation Treaty. These principles were:

- 1. To prevent loopholes that could allow nuclear or nonnuclear states to proliferate nuclear weapons, either directly or indirectly, in any form.
- 2. To establish an acceptable balance of mutual responsibilities and obligations between nuclear and non-nuclear states.
- 3. To open the path towards general and complete disarmament.
- 4. To include acceptable and directly applicable provisions to ensure its effectiveness.
- 5. To guarantee the right of any group of states to conclude regional treaties with a view to securing the total absence of nuclear weapons in their respective territories.

After several amendments, the United States and the Soviet Union jointly submitted the draft final text of the NPT to the Eighteen Nation Committee on 14 March 1968. The United Nations General Assembly adopted the treaty by Resolution 2373 on 12 June 1968.



Treaty on the Non-Proliferation of Nuclear Weapons (NPT), updated weekly Data: [United Nations Treaty Collection] (https://treaties.un.org/pages/showDetails.aspx?objid=08000002801d56c5), Natual Earth. Graphic: PRIF Licensed under CC BY 4.0.

#### From Theory to Treaty: The Path to Nuclear Weapons and Non-Proliferation (1933-1968)

1933 · First theoretical conceptualisation of nuclear fission by Leo Szilard

1940 · Frisch-Peierls Memorandum convincing the British Government to fund a bomb project

1942 · Creation of the British Uranium Committee which leads to the British/US 'Manhattan Project'

1945 • July 16: first successful test of an atomic bomb at Alamogordo, New Mexico, USA

1945 · August 6: Nuclear bombing of Hiroshima, Japan

#### 1945 · August 9: Nuclear bombing of Nagasaki, Japan

#### 1945 · August 14: Unconditional surrender of Japan

1946 · First debates within the United Nations, leading to the establishment of the Atomic Energy Commission

1946 • US Baruch plan to establish international control over nuclear energy, rejected by the Soviet Union. Soviet counter-proposal rejected due to insufficient verification

1958 • Irish resolution to UN: calling for preventing the spread of nuclear weapons, laying groundwork for future non-proliferation efforts

1960 · Second Irish proposal

1961 · Second Irish proposal approved by Soviet Union/Eastern Bloc, USA and other NATO allies abstaining. First step towards NPT

1968 · June 12: Adoption of the NPT through UN-Resolution 2373

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### **3. The Nuclear Non-Proliferation Treaty (NPT)**

#### The Non-Proliferation Treaty: An overview

The Non-Proliferation Treaty is the cornerstone of today's nuclear non-proliferation regime.[1] Having analysed the origins, negotiation and adoption of the NPT, several questions arise: What makes this treaty so unique? Why is it so vital to the international community and to the survival of the nuclear non-proliferation regime? The best way to answer these questions is to analyse its content, so that is precisely what we will do in this section.

The analysis can be divided into the so-called three pillars of the NPT (i.e. the three unofficial sections that make up the acquis of the treaty):

- 1. Nuclear non-proliferation (Articles I-III)
- 2. Nuclear disarmament (Articles VI and VII)
- 3. Peaceful uses of nuclear energy (Article IV).



The three pillars of the NPT Grübelfabrik, CC BY NS 4.0

The first pillar, covering Articles I, II and III, focusses on nuclear non-proliferation. These articles define the obligations of the nuclear weapon states (NWS), that is the states that were in possession of nuclear weapons when the treaty came into force, and of those which had no nuclear weapons, i.e. the non-nuclear weapon states (NNWS). We mainly address the nontransfer of nuclear weapons or assistance in the development of nuclear weapons or nuclear explosive devices, as well as the obligations of the NNWS vis-àvis the International Atomic Energy Agency, specifically the adoption of a safeguards agreement with the agency.

The second pillar is formed by Article VI and establishes that all parties should eventually aim to end the nuclear arms race, to achieve nuclear disarmament, and to draft a treaty for general and complete disarmament. We will explore the concept of the so-called Grand Bargain (i.e. as long as NNWS commit never to pursue nuclear weapons, NWS pledge to gradually give up their nuclear arsenal), as well as the different approaches that state parties have taken in order to achieve nuclear disarmament (i.e. step-bystep approach vs comprehensive disarmament). Finally, we will show how, while remaining a long way from achieving complete nuclear disarmament, state parties have been able to establish nuclear-weaponfree zones (NWFZs) – regions characterised by the total absence of nuclear weapons.

The third pillar is formed by Article IV of the treaty and covers the peaceful uses of nuclear energy. Here we will address the tension between the most maximalist and the most restrictive position regarding states rights and obligations relating to the

development and sharing of nuclear technology. Let us now go through the pillars in a little more detail.

### Pillar 1: The NPT and nuclear non-proliferation

The precepts for the implementation of the principles of nuclear non-proliferation enshrined in the preamble to the treaty are elaborated in its first three articles.

In this regard, Article I refers to the commitments made by countries recognised as nuclear weapon states (NWS). These states undertake not to transfer nuclear weapons, nuclear explosive devices or control over them to any recipient, either directly or indirectly. They further agree not to provide any support, encouragement or inducement to non-nuclear weapon states (NNWS) to develop or acquire nuclear weapons or related devices.

In order for nuclear weapon states to adhere to Article I, they must establish comprehensive and effective measures to control the export of nuclearrelated items. In addition, they must **safeguard** sensitive nuclear weapons-related information, facilities and materials.

Article II, on the other hand, concerns NNWS. Under this article, non-nuclear weapon states undertake to refrain from receiving transfers of nuclear weapons, nuclear explosive devices or control over them, either directly or indirectly. They also undertake not to engage in the production or acquisition of nuclear weapons or related explosive devices, and not to seek or accept assistance for the development of nuclear weapons or similar devices.

Taken together, Articles I and II are primarily aimed at preventing the proliferation and spread of nuclear weapons, along with their associated technologies, as well as curbing the expansion of existing nuclear arsenals.

Finally, Article III focuses on NNWS again, outlining their obligations regarding the International Atomic Energy Agency (IAEA). These states commit to submit to the IAEA safeguards to ensure that their nuclear activities are exclusively for peaceful purposes. As part of this commitment, NNWS must agree arrangements with the IAEA to apply safeguards to all nuclear material used in peaceful nuclear activities. These arrangements are to be initiated immediately upon the state's accession to the treaty and are to enter into force within 18 months.

In essence, Article III reinforces the importance of ensuring the peaceful nature of nuclear activities in non-nuclear weapon states through IAEA monitoring and verification.

#### Pillar 2: The NPT and nuclear disarmament

The disarmament pillar of the NPT is elaborated in Article VI, which obligates all parties to pursue negotiations aimed at implementing measures concerning three ambitious goals: ending the nuclear arms race, achieving nuclear disarmament, and drafting a treaty for general and complete disarmament.[2]

Through Article VI, NPT members elaborated the concept of the so-called 'Grand Bargain': in exchange for NNWS giving up any potential ambition to pursue nuclear weapons, NWS commit to pursuing nuclear disarmament. The Grand Bargain could be defined as **the compromise that made the NPT possible**; it is the basis on which the treaty was built.

However, discontent over the **pace of disarmament** has existed throughout the NPT's history. The Cold War made disarmament impractical. Once it ended, frustrations only increased: NNWS felt the disarmament obligation was being disregarded, whilst the NWS maintained they had done much to fulfil their commitment, as the number of US and Russian nuclear weapons had decreased from a peak of over 60,000 in the mid-1980s to approximately 8,000 in 2020.I31 The continued failure to achieve nuclear disarmament is causing tensions among the parties involved in the Grand Bargain.

In 1994, the Secretary-General of the United Nations announced a decision taken by the General Assembly to put the following question to the International Court of Justice (ICJ): *'Is the threat or use of nuclear weapons in any circumstance permitted under international law?'*. Though the ICJ was not able to reach a definitive conclusion as to the legality or illegality of the use of nuclear weapons, it did conclude 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'*.



Grübelfabrik, CC BY SA

#### **Disarmament approaches**

Step-by-step	Comprehensive
<ul> <li>Favoured by NWS, which claim they have done much to comply with Art. VI, as they have reduced the number and types warheads in their nuclear arsenals, as well as stopped nuclear testing.</li> <li>Also favoured by some NNWS.</li> <li>Stability as a prerequisite for disarmament.</li> <li>Series of steps towards complet disarmament (CTBT, FMCT, etc.).</li> </ul>	<ul> <li>Favoured by the majority of NNWS, which argue that nuclear arsenals of NWS are bigger than necessary, that NWS are not putting sufficient effort into conducting good faith negotiations towards disarmament and that they are continuing to conduct other dangerous practices (e.g. modernisation, deployment, targeting) Supports the Treaty on the Prohibition of Nuclear Weapons (TPNW).</li> <li>Disarmament is considered the basis for stability and security.</li> </ul>

In an effort to strengthen nuclear disarmament, starting at a regional level, Article VII of the NPT establishes nuclear-weapon-free zones (NWFZs): regions characterised by the total absence of nuclear weapons, enforced by an international system of verification and control administered by the IAEA (for more details on the issue see LU06 [/lu-06/]).[4]



Nuclear Weapon Free-Zone Grübelfabrik, CC BY SA

Today, there are five NWFZs worldwide:

- Latin America (Treaty of Tlatelolco, 1967)
- South Pacific (Treaty of Rarotonga, 1985)
- Southeast Asia (Treaty of Bangkok, 1995)
- Africa (Treaty of Pelindaba, 1996)
- Central Asia (Treaty of Semipalatinsk, 2006)



Map showing the Nuclear Weapon Free Zones. Own Figure, Data Source: https://www.un.org/nwfz/content/overview-nuclear-weapon free-zones

Two additions should be made to this list. In 1961, the Antarctic Treaty entered into force. Among other things, the treaty prohibits nuclear explosions, radioactive waste disposal and military deployments in the Antarctic Treaty Area (ATA). Moreover, in 1992, Mongolia declared its territory a a nuclear-weapon-free zone. This status was formally recognised with the General Assembly resolution 53/77 D, entitled 'Mongolia's international security and nuclear-weaponfree status'.[5]

Treaties establishing NWFZs can be seen as successful experiments in **regional disarmament**. They include a **legally binding protocol** signed and ratified by the nuclear-armed states, which commit to **respect the status** of these regions and to abide by a defined set of **security assurances**. Today, NWFZs cover most of the world.

Treaty	Protocol	Signed	Ratified
Tlatelolco[6]	I	FR, NL, UK, US	FR, NL, UK, US
	II	CHN, FR, RU, UK, US	CHN, FR, RU, UK, US
Rarotonga[7]	I	FR, UK, US	FR, UK
	II	CHN, FR, RU, UK, US	CHN, FR, RU, UK
	111	CHN, FR, RU, UK, US	CHN, FR, RU, UK
Bangkok[8]	I	١	١
Pelindaba[9 ]	I	CHN, FR, RU, UK, US	CHN, FR, RU, UK
	II	CHN, FR, RU, UK, US	CHN, FR, RU, UK
	Ш	FR	FR
Semipalatinsk[10]	I	CHN, FR, RU, UK, US	CHN, FR, RU, UK

Since the 1970s, there have been discussions about a regional agreement to **eliminate nuclear weapons in the Middle East**. Beginning in 2019, there have been three sessions of the **Conference on the Establishment of a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction**. During the third and latest session, which was held in November 2022, members exchanged views on issues including their core obligations and their membership in other relevant multilateral legal instruments related to weapons of mass destruction. [11]

#### Pillar 3: The NPT and the peaceful uses of nuclear energy

The principle and rules for the peaceful uses of nuclear energy are set out in Article IV of the NPT. This article states that 'Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty'[12].

This first paragraph of Article IV recognises the inherent right of all parties to the treaty to engage in research, production and use of nuclear energy for peaceful purposes. Importantly, this right is conditional on compliance with the principles set out in Articles I, II and III, relating to the proliferation and nonproliferation of nuclear weapons.

The article continues by bestowing on all signatory nations a responsibility to promote and enable a robust exchange of various resources, including equipment, materials and knowledge related to science and technology. This exchange is aimed primarily at the peaceful use of nuclear energy. In essence, these countries commit to facilitating the exchange of tools, substances and information that can be used constructively in nuclear-related efforts.

In particular, countries that have the capacity to do so are encouraged to collaborate in a variety of ways. This collaboration may involve working independently or partnering with other countries or international organisations. The main objective of such collaboration is to foster the development of beneficial applications of nuclear energy. This collaborative effort is especially important in regions where countries have chosen not to possess nuclear weapons and also participate in the treaty. These regions are often characterised by limited access to advanced technologies and resources.

In this collaborative effort, it is crucial that participating nations take into account the unique needs and circumstances of less developed regions around the world. These considerations should guide the way in which resources are shared and initiatives are pursued, with the goal of promoting balanced and equitable progress in the peaceful applications of nuclear energy.

Different interpretations of Article IV have emerged. Some countries claim that it guarantees an unconditional right to develop nuclear energy for peaceful purposes. Others argue that this right is dependent on compliance with non-proliferation requirements. Non-compliance with these requirements could lead to limitations on access to nuclear materials and technology.

These different interpretations extend to the scope of nuclear technology sharing.[13] The term 'the fullest possible', in the second paragraph of Article IV, has generated different perspectives. Some advocate a narrow view, suggesting that nuclear cooperation should have limitations and may not require the sharing of specific materials or technology. In contrast, a broader interpretation posits that the parties to the treaty are obliged to actively engage in nuclear cooperation without strict restrictions other than those set out in Articles I and II.[14]

This variation in interpretation has given rise to conflicting views among the parties to the treaty on the scope and implementation of Article IV. The challenge arises from the objective of safeguarding the right to develop nuclear energy for peaceful purposes, while preventing its misappropriation by states seeking to develop nuclear weapons capabilities. Moreover, there is no consensus on how to assess compliance with Article IV, as there are no standardised criteria for assessing the fulfilment of obligations related to the exchange of equipment, materials and information. OpenElement]

- 2. [https://www.un.org/disarmament/wmd/nuclear/npt/text]
- 3. [https://fas.org/initiative/status-world-nuclear-forces/]
   4. [https://documents-dds-

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- ny.un.org/doc/RESOLUTION/GEN/NR0/001/85/IMG/NR000185.pdf? OpenElement]
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 <sup>[</sup>https://documents-dds-

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### 4. The NPT over time: The NPT Review Cycle

It is customary for important multilateral international treaties to be regularly reviewed by the contracting state parties in order to assess the functioning of the treaty, the obstacles the states encounter in its implementation and their achievements. When this happens regularly, this process is called a 'review cycle', in this case the NPT Review Cycle.

The review process starts with Preparatory Committee, or 'PrepCom', meetings, where state parties select the most pressing issues to be addressed in the Review Conference, or RevCon, which is held every five years. During each conference, three commitees (each representing one of the treaty's pillars) work on the issues, with the aim of adopting a final document.

As of today, ten RevCons have been held, only three of which succeeded in adopting a final document, and the record is mixed regarding their broader achievements. It is important to reflect on the specific circumstances that led to such uneven outcomes.

We will pay special attention to the 1995 RevCon, which marked a defining moment as it negotiated a 'package deal' consisting of a resolution on the Middle East, and three crucial decisions: to strengthen the review process for the NPT; to establish a series of principles and objectives for nuclear non-proliferation and disarmament; and to extend the NPT indefinitely.

Subsequent RevCons achieved several other important results, including the 13 practical steps toward nuclear disarmament drafted in 2000, and the 64-point Plan of Action produced in 2010. A key aspect of the Plan of Action concerned the humanitarian consequences of nuclear weapons – an element on which state parties continued to reflect in the following years, resulting in the so-called Humanitarian Pledge at the 2015 RevCon. However, the same conference in 2015 saw significant disagreement on the Middle East WMD-free zone, and the 2020 conference was overshadowed by Russia's opposition to the conference's proceedings in light of its war on Ukraine.

#### Art. VIII.3 and the PrepCom

Article VIII.3 of the NPT stipulated that five years after the treaty's entry into force, state parties should hold a conference aimed at reviewing its operation.[1] In May 1975, therefore, NPT members held the first **Review Conference (RevCon)**. Since then, every five years, state parties have held a RevCon intended to review the implementation of the NPT over the preceding five years.

Each RevCon is conducted under three **Main Committees**, which respectively reflect Articles VI, I- II-III and IV of the treaty. Main Committee I is on disarmament, Main Committee II is on nonproliferation and Main Committee III is on peaceful uses of nuclear technology. A General Committee coordinates the work of the three Main Committees.

In between RevCons, state parties meet for what are known as **Preparatory Committee (PrepCom)** meetings, aimed at addressing substantive and procedural matters ahead of the Conference. Since 1995, state parties have met for an annual ten-day PrepCom meeting for the three years preceding the RevCon. Normally, a RevCon would be preceded by three PrepCom meetings – with the sole exception of the 1995 Conference, for which state parties met a fourth time, in the same year of the RevCon, in order to resolve outstanding issues.



The UN Headquarter in New York City Kidfly182/Wikimedia, CC BY-SA 4.0

#### The 1995 Review and Extension Conference

The **1995 RevCon**, which took place at the UN Headquarters in New York from 17 April until 12 May 1995, marked a turning point. Despite being unable to adopt a Final Document, state parties negotiated what was referred to as a 'package deal' consisting of three Decisions and one Resolution.

- Decision 1[2]: To strengthen the review process for the treaty. State parties decided a RevCon should be held every five years, and that ten-day PrepCom meetings should occur annually in each of the three years prior to the RevCon. They also confirmed the three Main Committees structure of the Conference.
- **Decision 2**[3]: Principles and objectives for nuclear non-proliferation and disarmament. More specifically, state parties agreed that:

- **universal adherence** to the treaty on the Non-Proliferation of Nuclear Weapons was an urgent priority;
- every effort had to be made to implement the NPT in all its aspects to prevent the proliferation of nuclear weapons;
- the treaty's undertakings with regard to nuclear disarmament were to be fulfilled with determination:
- NPT members should work towards the establishment of internationally recognised nuclear-weapon-free zones;
- an **internationally legally binding instrument** could have prevented the use or threat of use of nuclear weapons;
- the **IAEA** was the competent authority responsible for verifying and assuring compliance with its safeguards agreements with NPT state parties;
- particular attention should have been directed towards the right of all NPT state parties to develop research, production and use of **nuclear** energy for peaceful purposes.
- **Decision 3**[4]: **Indefinite extension** of the NPT. Concern over this decision was expressed by the Non-Aligned Movement (NAM), in particular, as they feared that the indefinite extension of the treaty would enable nuclear-armed states to hold on to their arsenals and abdicate any responsibility for eliminating them. Yet, the majority voted for the NPT extension.[5]

Lastly, through the **Resolution on the Middle East**<sup>[6]</sup>, NPT members commit to the enforcement of the aims and objectives of the Middle East peace process; encourage all the states of that region which are not yet NPT state parties to sign the treaty and place all nuclear facilities under IAEA safeguards; and appeals to Middle Eastern states to take practical steps towards the establishment of an effectively verifiable Middle East zone free of weapons of mass destruction.

#### Achievements over the years

After the **1995 RevCon**, NPT state parties continued to hold a RevCon at the UN Headquarters in New York every five years. While some Conferences were able to reach a consensus over a Final Document, others failed to fulfil this objective.

The **2000 RevCon** ended with the adoption of a Final Document<sup>[7]</sup>, which was mostly made possible by the negotiation of a group of middle powers known as the **New Agenda Coalition (NAC)**<sup>[8]</sup>. The group encompassed foreign ministers of Brazil, Egypt, Ireland, Mexico, New Zealand, Slovenia, South Africa and Sweden (Slovenia and Sweden later withdrew from the NAC). The document listed 13 **practical steps**<sup>[9]</sup> to advance nuclear disarmament:

Utmost effort to achieve the entry into force of the
 Comprehensive Nuclear-Test-Ban Treaty (CTBT)

- Moratorium on nuclear explosions
- Importance of negotiating a Fissile Material Cut-off Treaty (FMCT);
- Role of the **Conference on Disarmament (CD)** and necessity to create a subsidiary body with a mandate on nuclear disarmament
- Unequivocal undertaking from NWS to accomplish complete elimination of their nuclear arsenals
- Entry into force and implementation of START II, conclusion of START III and preservation of the Anti-Ballistic Missile Treaty (ABM Treaty)
- Establishment and implementation of a **Trilateral Initiative** between the US, Russia and the IAEA
- A series of steps for all NWS to adopt in order to accomplish nuclear disarmament:
  - 1. Further unilateral reductions
  - 2. Increased transparency
  - 3. Further reduction of non-strategic nuclear weapons (NSNWs)
  - 4. Agreement over measures to reduce operational status of nuclear weapons (NW)
  - 5. Agreement over reducing the role of NW in security policies
  - 6. Engagement by NWS in the process leading towards the complete elimination of NW
- Agreement of all NWS to place fissile material no longer required for military purposes under the control of the IAEA or other relevant international verification arrangements
- Reaffirmation of the principle of general and complete disarmament
- Agreement to conduct regular reporting on progress in nuclear disarmament
- Further development of verification mechanisms for nuclear disarmament

The 2005 RevCon failed to produce an agreed action plan to achieve nuclear disarmament. State parties demonstrated polarised views on disarmament, and they could not agree on a Final Document. NWS showed a complete lack of willingness to discuss the matter of disarmament, which caused a procedural stalemate during the Conference, leaving insufficient time to reach consensus on relevant matters. An additional source of concern was the fact that the US did not send a high-level delegation to the Conference, which signalled a lack of trust in the process and therefore in the goal of the Conference itself.

While failing to produce a consensus review of the treaty implementation, the **2010 RevCon** was able to agree upon a **64-point Plan of Action**[10]. The Plan built heavily on the 13 practical steps discussed in the context of the 2000 RevCon, and also addressed two more crucial elements:

- 1. A commitment to hold a conference of Middle Eastern states in 2012 to discuss the creation of a **WMD-free zone**
- 2. A reference to the **humanitarian consequences** of nuclear weapons

Indeed, state parties showed deep concern about potential **humanitarian consequences** of any use of NWs. Building on this, between 2013 and 2014, three conferences were organised to discuss the humanitarian impact of nuclear weapons, through a process that became known as the **Humanitarian Initiative** (Norway, March 2013; Mexico, February 2014; Austria, December 2014). The conclusion the state parties reached was that the consequence of the use of NWs would be **catastrophic**, would **transcend national borders**, and would be **beyond the international community's ability** to respond and provide relief.

In 2015, a total of 123 countries endorsed the **Humanitarian Pledge**, namely a commitment to fill the 'legal gap' for the prohibition and elimination of NWs. Such commitment concerned five main steps[11]:

- Present the facts-based discussions, findings and evidence of the meetings held in Norway, Mexico and Austria
- Follow the imperative of human security for all and promote the protection of civilians against the risks stemming from NWs
- Encourage NPT members to renew their commitment to the urgent and full implementation of existing obligations under Article VI
- Appeal to NWS to take concrete interim measures to reduce the risk of nuclear weapon detonations
- Cooperate with all relevant stakeholders, states, international organisations, the International Red Cross and Red Crescent Movements, parliamentarians and civil society[12]



Setsuko Thurlow and former Chancellor Sebastian Kurz Dragan Antia-Tatic, https://www.icanw.org/history of the tpnw

Much like the 2000 RevCon, the **2015 RevCon** failed to reach agreement on the substantive part of the draft Final Document. This was mainly due to diverging views on the Middle East WMD-free zone. The differences in views between the Middle Eastern states themselves increased in the five years leading up to the Conference, and eventually they agreed to fix the date for a Middle East Conference for the following year.[13]

Due to Covid-19 restrictions, the **2020 RevCon** was finally held in **2022**. The members of the NPT failed to achieve consensus over the review of the treaty implementation. Most of the disagreements are attributable to **Russia**'s opposition to the RevCon proceedings in light of its recent invasion of Ukraine.

The next RevCon is scheduled for 2026 with sessions of the Preparatory Committee held in 2023, 2024 and 2025.

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  2.[https://front.un-arm.org/wp-
- content/uploads/assets/WMD/Nuclear/1995-NPT/pdf/NPT\_CONF199532.pdf]
  2 [bttps://front.up.org.upp.
- [https://front.un-arm.org/wpcontent/uploads/assets/WMD/Nuclear/1995-NPT/pdf/NPT\_CONF199501.pdf]
- 4. [https://front.un-arm.org/wpcontent/uploads/assets/WMD/Nuclear/1995-NPT/pdf/NPT\_CONF199503.pdf]
- 5. [https://www.armscontrol.org/act/2020-05/features/npt-1995terms-indefinite-extension]
- 6. [https://unidir.org/sites/default/files/2020-06/1995-05-11\_1995%20NPT%20Review%20and%20Extension%20conference%20adopt s%20the%20Resolution%20on%20the%20Middle%20East.pdf]
- 7. [https://www.unidir.org/sites/default/files/2020-09/2000%20NPT%20RevCon%20Final%20Document\_1.pdf]
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   [bttps://www.biri.gr/qcade/28/1
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### 5. Implementation of non-proliferation

In this section we will address one of the most crucial dimensions of the NPT, what many states see as the raison d'être of the treaty: the implementation of nuclear non-proliferation principles, rules and norms. Unlike other conventions, such as the Chemical Weapons Convention and the Biological Weapons Convention, the NPT does not establish a comprehensive institutional framework for its implementation. Instead, Article III of the treaty places the responsibility for verifying the principle of nuclear non-proliferation on a pre-established body, namely the IAEA. The implementation of the nuclear non-proliferation norm as a whole has always been limited by this absence of institutional control.

How, then, is the principle and norm of nuclear nonproliferation implemented? To answer this question, this section provides a detailed analysis of the body charged by the NPT with verifying compliance with the principle of nuclear non-proliferation: the IAEA.



The IAEA is an autonomous organisation in the United Nations system tasked with promoting peaceful uses of nuclear technology, providing technical assistance and verifying that nuclear materials intended for peaceful uses are indeed used for those purposes.

The IAEA is able to achieve its goals (particularly in regard to verification) through a series of safeguard agreements between state parties and the agency. Covering hundreds of nuclear facilities worldwide, these agreements create a system of accounting, containment, surveillance and regular inspections designed to ensure states are in compliance with their treaty obligations regarding the supply, manufacture and use of nuclear materials.

This system is applied by the IAEA's principal organs: the General Conference, the Board of Governors, and the Secretariat. In cases of noncompliance, the Board of Governors can call upon offending states to remedy the situation, impose penalties and report the non-compliance to the UN Security Council and the UN General Assembly, who may in turn impose sanctions or other remedial measures. As we will show later in this chapter, this system is imperfect and therefore requires continuous development and improvement.

However, the application of the nuclear nonproliferation principle is not limited to the IAEA. There are other legal instruments and informal groups of states that also seek to apply this pillar of the NPT, including the 1996 Comprehensive Nuclear-Test-Ban Treaty, the proposed Fissile Material Cut-off Treaty and the Nuclear Suppliers Group.

#### The International Atomic Energy Agency



IAEA quarter office Rodolfo Quevenco / IAEA | CC BY-SA 2.0

The IAEA is an autonomous international organisation in the United Nations system. The agency's mandate is the promotion of peaceful uses of nuclear energy, technical assistance in this area, and verification that nuclear materials and technology continue to be used for peaceful purposes. This last point gives the agency its non-proliferation role. The IAEA consists of three principal organs: the General Conference, the Board of Governors and the Secretariat.

#### IAEA safeguards system

The IAEA's safeguard system is a system of accounting, containment, surveillance and inspections aimed at verifying that states are in compliance with their treaty obligations concerning the supply, manufacture and use of civil nuclear materials.[1]

IAEA safeguards aim to detect the diversion of a significant quantity of nuclear material in a timely manner. They require that operators of nuclear facilities maintain and declare detailed accounting records of all movements and transactions involving nuclear material. Over 550 facilities and several hundred other locations are subject to regular inspection, and the auditing of their records and the nuclear material.

In case of non-compliance with IAEA safeguards, the IAEA Board of Governors calls upon the state to remedy the situation and reports the non-compliance to the UN Security Council and UN General Assembly. The Board of Governors may also impose specific penalties, such as curtailment or suspension of assistance, return of materials or suspension of privileges and rights. The UNSC may impose sanctions and approve other measures.

#### Item-specific safeguards agreement (ISSA)

The ISSA is the model safeguards agreement approved by the IAEA in February 1965. This type of agreement covers only nuclear material, non-nuclear material, facilities and other specified items. State parties to such agreements undertake not to use nuclear material, facilities or other nuclear items subject to the agreement for nuclear weapons or military purposes. Under these agreements, the IAEA applies safeguards in three states not party to the NPT (*India, Pakistan* and *Israel*).

#### Comprehensive safeguards agreement (CSA)

A CSA is a legally binding agreement between the IAEA and a NNWS party to the NPT. Comprehensive safeguards agreements allow and oblige the IAEA to ensure that all nuclear material and nuclear activities in a state are peaceful and not diverted to nuclear weapons. These are officialised through the signing by an NNWS and the agency of the *INFCIRC/153*. This document created the full-scope safeguards system whereby any NNWS party to the NPT agrees to establish and maintain a system of accounting and control of all nuclear material under its jurisdiction.

#### Voluntary offer safeguards agreements (VOSA)

The five NPT-recognised NWS have concluded safeguards agreements covering some or all of their peaceful nuclear activities. Under these voluntary offer agreements, the nuclear weapon state notifies the IAEA of facilities for which the NWS voluntarily offers to accept the application of safeguards. The IAEA applies safeguards under voluntary offer agreements to nuclear material at selected facilities.

#### IAEA safeguards in practice

Failures of the traditional safeguards system While traditional safeguards easily verified the correctness of formal declarations by suspect states, in the 1990s, attention turned to what might not have been declared. While accepting safeguards at declared facilities, Iraq had set up elaborate equipment elsewhere in an attempt to enrich uranium to weapons-grade, and North Korea attempted to use research reactors and a nuclear reprocessing plant to produce plutonium.

In the case of Iraq, the weakness of the system lay in the fact that no obvious diversion of material was involved. The uranium used as fuel probably came from indigenous sources (i.e. Akashat), and the nuclear facilities were built by the country itself without being declared or placed under safeguards. Iraq, as an NPT party, was obliged to declare all facilities, but did not do so. In the case of North Korea, the activities concerned took place before the conclusion of its NPT safeguards agreement. Review process of the safeguards and adoption of the Additional Protocol

These cases, and particularly the Iraqi one, led to an indepth review process after the 1990 NPT RevCon of the IAEA's safeguards system. As a result of this review, the Additional Protocol was adopted in May 1997 to improve the system.

The Protocol is a legal document granting the IAEA additional inspection authority. The principal aim is to enable the agency's inspectorate to provide assurance about both declared and potential undeclared activities. Under the Protocol, the IAEA is granted expanded rights of access to information and sites, as well as additional authority to use the most advanced technologies during the verification process.

As at 31 March 2023, Additional Protocols are in force with 141 States and EURATOM. A further 13 States have signed an Additional Protocol but have not yet brought it into force. The IAEA is also applying the measures of the Additional Protocol in Taiwan, and under the Joint Comprehensive Plan of Action (JCPOA), Iran has agreed to implement its protocol provisionally.

New developments: The state-level safeguard approach

Safeguards are currently moving towards state-bystate evaluations, taking account of the state's particular situation and the kind of nuclear materials it has. This involves more extensive judgement on the part of IAEA and the development of effective methodologies which reassure NPT states parties.

The state-level safeguards approach for each state is based on a structured and technical method used to analyse plausible pathways by which nuclear material suitable for use in a nuclear weapon or other nuclear explosive device could be acquired.[2]

On this basis, technical objectives associated with the steps along this pathway are established to guide the planning, conduct and evaluation of safeguards activities for that state. To address the technical objectives, specific safeguards measures are identified in accordance with the scope of a state's safeguards agreement.[3]

As of June 2020, state-level safeguards approaches had been developed for 131 states with a comprehensive safeguard agreement in force.[4]

#### Other relevant treaties and regimes

#### The Comprehensive Test-Ban Treaty and the Fissile Material Cut-Off Treaty

The Comprehensive Test-Ban Treaty (CTBT) is often linked to another important aspect of nuclear nonproliferation: a prohibition of the production of fissile material for purposes other than verified peaceful applications. Such a prohibition would set a specific limit on the quantity of nuclear material accessible for military use. This objective is driving efforts within the Conference on Disarmament (CD) to engage in negotiations for a treaty that would prohibit any further production of fissile material intended for military use, known as the Fissile Material Cut-Off Treaty (FMCT). In essence, this treaty is designed to complement the 1996 CTBT (which has not yet entered into force) and formalise the commitments made by the United States, the United Kingdom, France and Russia to halt the production of weapons-grade material, while also imposing a similar prohibition on China. Furthermore, this treaty will increase pressure on Israel, India and Pakistan to agree to international verification.<sup>[5]</sup>

#### The Nuclear Suppliers Group

The Nuclear Suppliers Group (NSG) is a group of nuclear supplier countries that seeks to contribute to the non-proliferation of nuclear weapons through the implementation of two sets of Guidelines for nuclear exports and nuclear-related exports. The Guidelines also incorporate a trigger list. In doing so, the recognise that there is a class of technologies and materials that are particularly sensitive because they can lead directly to the creation of weapons-usable material.<sup>[6]</sup>

The NSG aims to ensure that nuclear exports are subject to appropriate safeguards, physical protection and non-proliferation conditions. It also seeks to restrict the export of sensitive items that can contribute to the proliferation of nuclear weapons.

The NSG regime is a voluntary association, not bound by a treaty, and therefore has no formal mechanism to enforce compliance. Its Guidelines are applied both to members and non-members of the group. As practiced by NSG members, export controls operate on the basic principle of cooperation with restrictions as the exception.

#### The NSG and the NPT

The interaction between the NSG and the NPT framework started in 1978 when the group communicated the aforementioned Guidelines to the IAEA. However, it was not until the 1990s that there would be an explicit recognition under the NPT of export control measures, and thus of the NSG, as a useful tool to curb nuclear proliferation. For instance, at the 1990 NPT Review Conference, the committee reviewing the implementation of Article III of the treaty made a number of recommendations that had a significant impact on the NSG's.[7] These included:

- The need for further improvements in measures to prevent the diversion of nuclear technology for nuclear weapons
- That states engage in consultations to ensure appropriate coordination of their controls on the exports of items, such as tritium, not identified in Article III.2 of the treaty but still relevant to nuclear weapons proliferation and therefore to the NPT as a whole
- That nuclear supplier states require, as a necessary condition for the transfer of relevant nuclear supplies to NNWS, the acceptance of IAEA safeguards on all their current and future nuclear activities

The endorsement at the 1995 NPT Review and Extension Conference of the full-scope safeguards policy already adopted by the NSG in 1992 showed that the international community believed this nuclear supply policy was vital to promote shared nuclear nonproliferation commitments and obligations. Specifically, Paragraph 12 of the decision on 'Principles and Objectives for Nuclear Non-proliferation and Disarmament' at the 1995 RevCon states that fullscope safeguards and international, legally binding commitments not to acquire nuclear weapons or other nuclear explosive devices should be a condition for granting licences for trigger list items under new supply arrangements with NNWS.<sup>[8]</sup>

The final document of the 2000 NPT Review Conference reaffirmed and recognised the value of export restrictions to prevent the further proliferation of nuclear weapons.

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### 6. Controversies

The NPT contains several controversial provisions that have long been debated among state parties. In this section, we will explore the three most pressing.

The first controversy relates to the concept of nuclear sharing. During the Cold War, the US placed thousands of nuclear weapons inside the territory of some of its European NATO allies in order to deter the Soviet Union from attacking. Today, five US allies (Belgium, Germany, Italy, Turkey and the Netherlands) continue to host US tactical nuclear weapons, which represent a so-called 'nuclear umbrella' over their territories. In the event the US decides to enter a nuclear conflict, the control over these warheads – which is normally fully in the hands of the US – would be transferred to its allies, hence violating Articles I and II of the NPT.

The issue of nuclear sharing and the controversies to which it leads also concerns Russia's and Pakistan's intention to deploy nuclear weapons in Belarus and Saudi Arabia, respectively. In both cases, one of the parties involved is a signatory of the NPT, thus the potential deployment of nuclear weapons on their territory would violate Articles I and II of the NPT.

The second controversy relates to the Treaty on the Prohibition of Nuclear Weapons (TPNW). This treaty, which opened for signature in 2017 and entered into force in 2021, mandates the complete elimination of all nuclear weapons, which technically contradicts the NPT's recognition of nuclear-armed states.

The third controversy concerns the withdrawal of a state party from the treaty. We will explore the arbitrariness of the withdrawal provision within the treaty, potential cases of states that could withdraw from the treaty and the implications that this would have for international security, as well as present current proposals for the reform and/or modification of the withdrawal provision.

#### **Nuclear sharing**

During the Cold War, the United States placed several nuclear weapons inside the territory of allied NATO countries as a deterrent against a possible attack by Russia. The weapons were initially deployed in the United Kingdom, and later in Belgium, France, Germany, Greece, Italy, Turkey and the Netherlands. This is referred to as 'nuclear sharing', or the 'nuclear umbrella', and is the basis of NATO's common defence doctrine.

In the 1970s, the number of US weapons located in Europe peaked at approximately 7,000 units, which included mines, artillery, ballistic missiles, cruise missiles and gravity bombs. The number later declined as a consequence of arms control agreements with the Soviet Union.[1]

Today, US nuclear weapons remain in five NATO member countries, Belgium, Germany, Italy, Turkey and the Netherlands (see Learning Unit 11 for more details [/lu-11/]). These countries host approximately 100 NSNWs overall -specifically, B61 gravitational nuclear bombs.[2] The US maintains complete control over the weapons it has deployed in Europe. According to NATO's nuclear sharing arrangements, if (and only if) the US decides to embark on a nuclear conflict, the control of these warheads would be transferred to its allies. Therefore, in time of war, Art. I and II of the NPT would not be observed.



European NATO allies participating in nuclear sharing Max Köhler / EUNPDC eLearning (Public Domain)

Consequently, the concept of nuclear sharing could potentially be considered a violation of Art. I and II. Indeed, while there is an internationally recognised agreement on the US nuclear umbrella, it could be interpreted as a mechanism that goes against a basic obligation imposed by the NPT, namely not to transfer or receive nuclear weapons or other nuclear explosive devices (or control over such weapons or explosive devices).

To understand this possible contradiction, it might be useful to consider two practical examples: Russia-Belarus and Pakistan-Saudi Arabia.

#### Russia-Belarus

In July 2022, approximately one year after Russia invaded Ukraine, Russian president Vladimir Putin announced his intention to deploy **Russian NSNWs in Belarus**.[3] Such an arrangement would grant Moscow full control over any nuclear weapon deployed in Belarus in peace time, and this control would only be transferred to Minsk in the event of war. In any case, this would not change the status of Belarus as a nonnuclear weapon state but, and since Belarus is a signatory of the NPT, this could technically be seen as violating the treaty itself.[4]





Alexander Lukashenko UN Photo/Amanda Voisard/UN7210280\_b72\_

#### Saudi Arabia-Pakistan

There have also been talks of a possible deployment of **Pakistani nuclear weapons to Saudi Arabia.**<sup>[5]</sup> Unlike the Russia-Belarus case, where the former is a recognised nuclear weapon state (NWS), in this case neither of the countries are nuclear states. Moreover, while Saudi Arabia is a signatory of the NPT, Pakistan has never signed nor ratified the treaty. A potential deployment of Pakistani nuclear weapons to Saudi Arabia would therefore create an unprecedented situation: it would be an NPT violation on the part of Saudi Arabia, but not on the part of Pakistan.

### The Treaty on the Prohibition of Nuclear Weapons

Between 2013 and 2016, the UN saw increased discussion on nuclear disarmament. This culminated, in January 2017, in the UN General Assembly's decision to approve **Resolution A/RES/71/258**(6) on 'Taking forward multilateral nuclear disarmament negotiations'. In the First Committee vote of October 2017, a total of 123 states voted in favour, 38 voted against and 16 abstained. This mandated a 'United Nations Conference to Negotiate a Legally Binding Instrument to Prohibit Nuclear Weapons, Leading Towards their Total Elimination', soon to be known as the **'Ban Treaty' conference**, held between February and March 2017, and again between June and July of the same year.

#### RESOLUTION

### Taking forward multilateral nuclear disarmament negotiationsA/RES/71/258

Adopted 23 December 2016 68th plenary meeting

This resolution mandated a 'United Nations Conference to Negotiate a Legally Binding Instrument to Prohibit Nuclear Weapons, Leading Towards their Total Elimination'

The conference on the Treaty on the Prohibition of Nuclear Weapons (TPNW) concluded in July 2017, with

122 votes in favour, 1 against (The Netherlands) and 1 abstention (Singapore). All the NWS, non-NPT states in possession of nuclear weapons and most states under the nuclear umbrella refused to attend the meeting, and made clear they were against it. The treaty opened for signature in September 2017 and entered into force in February 2021, after being ratified by 50 states. As of March 2023, the treaty has **92 signatories and 68 state parties**. None of the NATO allies have signed the TPNW.

The main characteristics of the TPNW are the following:

- **Comprehensive**: it prohibits states from participating in any nuclear weapons activity (developing, testing, producing, acquiring, possessing, stockpiling, using or threatening to use, transferring, assisting, stationing)
- Non-discriminatory: it does not recognise the possession of any nuclear weapons as legitimate
- Wide in scope: it includes clauses for victim assistance and environmental remediation of nuclear use or testing

Those who claim the importance of joining the TPNW, often cite **shortcomings of the NPT**, such as the fact that the latter has effectively legitimised the possession of a nuclear arsenal for five countries, its weakness when it comes to convincing non-NPT countries to join the treaty and its overall vague commitment to disarmament.

However, the TPNW does not have a mechanism for the **elimination of existing NWs** – something that would have to be negotiated separately.

The process leading to the TPNW saw the active involvement of many civil society organisations, especially the **International Campaign to Abolish Nuclear Weapons (ICAN)**. In 2017, the Nobel Committee recognised the role of ICAN with the Nobel Peace Prize 'for its work to draw attention to the catastrophic humanitarian consequences of any use of nuclear weapons and for its ground-breaking efforts to achieve a treaty-based prohibition of such weapons'.[7]



2017 Women's March to Ban the Bomb by Women's International League for Peace and Freedom (WILPF) ICAN | Clare Conboy, https://www.flickr.com/photos/icanw/33355407780/in/album-72157678775327224/

#### Withdrawal from the NPT

#### Article X.1 and the withdrawal procedure

In the context of the NPT, Article X.1 states that each country party to the treaty retains the right to withdraw from the treaty by exercising its own national sovereignty. Such withdrawal is permissible if a country determines that exceptional events, directly related to the subject matter covered by the treaty, have posed a significant threat to that country's most vital interests. Should such a decision be made, the country intending to withdraw is obliged to notify all other states parties to the treaty, as well as the UN Security Council, at least three months prior to the entry into force of the intended withdrawal. This notification must also include a detailed account of the specific extraordinary events that the country considers to have jeopardised its essential national interests.[8] The reason for involving the UNSC is that a withdrawal from the treaty can have significant negative implications for the international system as a whole. This notification process follows a similar model to other instruments of public international law, allowing the UNSC time to assess the legitimacy of the withdrawal and potentially take action under Chapter VII of the UN Charter.[9]



The only country so far to have withdrawn from the NPT: North Korea Max Köhler / EUNPDC eLearning (Public Domain)

In terms of the substantive elements, the provision for withdrawal in the NPT includes the requirement of changed circumstances. This terminology, used in other international treaties, such as the ABM Treaty, the INF Treaty and the TPNW, allows a state to invoke changed circumstances as a justification for withdrawal. Again, the inclusion of this provision in the treaty is justified by the existence of similar provisions in other treaties and its recognition under the 1969 Vienna Convention on the Law of Treaties, specifically Article 62 on change of circumstances and Article 60 on breach. Some legal scholars argue that failure to comply with the requirements outlined in Article X.1 does not invalidate a state's decision to withdraw, as withdrawal remains a sovereign right. Therefore, the conditions listed in Article X.1 can be seen as a

recommended procedure rather than a mandatory requirement for the recognition of withdrawal.[10]

#### Challenges and controversy over withdrawal rights

Article X.1 of the NPT is perceived as arbitrary, as the decision to withdraw is entirely at the discretion of states parties without requiring approval from any international organisation or judicial authority. This subjective nature of the withdrawal procedure has been criticised as a weakness of the treaty, as interpretations of what constitutes an exceptional event may vary. The only limitation on the state's justification of withdrawal is the obligation to show good faith in treaty application, which is not clearly defined.[11]

During the negotiations of the treaty, no specific instructions were provide on the interpretation of Article X.1, thus allowing for flexibility. The negotiators wanted to ensure that withdrawal would be possible in certain situations, such as a non-state party acquiring nuclear weapons or the outbreak of war. The wording of the NPT allows for some creativity in determining the trigger event for withdrawal, as long as it is related to the purpose of the treaty, which is to prevent nuclear proliferation.[12]

Today the main concern is about Iran's possible withdrawal from the NPT.[13] Iran has previously threatened withdrawal, and its justification could be based on factors such as changes in its strategic environment[14], including the US withdrawal from the JCPOA and the imposition of sanctions. As of today, the Iranian Parliament has tabled a bill to proceed with Iran's withdrawal from the NPT as a result of recent military confrontations with Israel and the US bombing of its uranium enrichment plants in June 2025. There are also concerns about South Korea's aim to acquire nuclear weapons in response to threats from North Korea. Some argue that South Korea's withdrawal from the NPT would be legal and justified under Article X.1, given the specific circumstances it faces.[15]

#### **Reforming Article X.1?**

To date, efforts to regulate or reform the withdrawal provision of the NPT have been unsuccessful. Various proposals have been made, but they have not gained traction at the multilateral level. The US, for example, sought to address the deliberate abuse of the treaty without challenging or modifying Article X.1.[16]

The Vienna Group of Ten proposed that technologies acquired for peaceful purposes during a state's participation in the NPT should remain under IAEA safeguards even after that state's withdrawal.[17] However, the 2020/2022 NPT RevCon Draft Final Document[18] stated that it did not seek to limit or undermine the right to withdraw and emphasised that withdrawal does not modify prior obligations of certain states parties.

In any case, the withdrawal provision should be revised but not eliminated. Some reform proposals could include the establishment of a body to evaluate

#### 6. Controversies

the justification presented by the withdrawing state, clear criteria for cases or scenarios justifying withdrawal and avoiding pre-emptive assessments. States in breach of their NPT obligations should not be allowed to withdraw or, if they do withdraw, their safeguards agreement with the IAEA should remain in force. Nuclear technology acquired during the state's NPT membership should remain under international supervision to prevent its misuse for weapons purposes. Additionally, withdrawing states should not be allowed to retain nuclear technology acquired as NPT parties and they should continue to be held fully accountable for violations committed before withdrawal. The UN Security Council could discourage withdrawal by considering it a threat to international peace and security, imposing punitive measures in response.

- 2. [https://uploads.fas.org/2019/11/Brief2019\_EuroNukes\_CACNP\_.p
  df]
- 3. [https://www.reuters.com/world/europe/putin-says-moscow-hasdeal-with-belarus-station-nuclear-weapons-there-tass-2023-03-25/]
- 4. [https://thebulletin.org/2022/07/russia-belarus-nuclearsharing-would-mirror-natos-and-worsen-europe-security/]
- 5. [https://www.washingtonistitute.org/policy-analysis/renewedsaudi-pakistan-contacts-revive-nuclear-fears]
- 6. [https://documents-ddsny.un.org/doc/UNDC/GEN/N16/466/69/PDF/N1646669.pdf? OpenElement]
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- withdrawal-nuclear-nonproliferation-treaty]
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- content/uploads/2014/05/Withdrawal\_COPPEN\_FINAL.pdf]
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- rapidly-acquire-nukes-if-north-korean-threats-increase/]
  16. [https://www.armscontrol.org/act/2013-07/news-briefs/uspursues-penalty-renouncing-npt]
- 17. [https://reachingcriticalwill.org/images/documents/Disarmamen t-fora/npt/revcon2022/documents/WP3.1.pdf]
- 18. [https://reachingcriticalwill.org/images/documents/Disarmamen t-fora/npt/revcon2022/documents/CRP1.pdf]

 <sup>[</sup>https://www.cfr.org/in-brief/nuclear-weapons-europe-mappingus-and-russian-

deployments#:~:text=Current%20U.S.%20nuclear%20stockpiles%20a
re,the%20six%20facilities%20in%20Europe]

# 7. The European Union and the nuclear non-proliferation regime

For the European Union (EU), the NPT holds a central position within the framework of the global nuclear non-proliferation regime. It serves as a fundamental basis for pursuing nuclear disarmament and plays a crucial role in facilitating the peaceful utilisation of nuclear energy. To enhance the effectiveness of the NPT regime, the EU places its support behind both the institutional and normative aspects of the treaty's underlying processes.

The EU's engagement under the NPT is driven by the objective of fostering a more secure world, while simultaneously promoting international stability, peace and security. In line with this objective, the EU has consistently advocated for the universalisation of the NPT. EU member states have repeatedly pledged to mobilise political determination and advance the implementation of NPT objectives through various initiatives, including the Stockholm Initiative.

With the adoption of the 2003 **European Security Strategy**[1], the EU committed to carry out several actions supporting multilateral regimes and institutions involved in countering nuclear proliferation and pursuing nuclear disarmament.[2] For instance, between 2007 and 2013, the EU invested around 110 million euros in the support of the IAEA's effort against the proliferation of weapons of mass destruction and the illegal trafficking of nuclear material.[3] In 2003, the EU also adopted a **Strategy against WMD Proliferation**[4], making nuclear non-proliferation a fundamental objective of the EU's Common Foreign and Security Policy (CFSP). The Strategy states the NPT must be 'preserved in its integrity'.

On the occasion of the **10th Review Conference on the NPT** in 2022, and in light of Russia's aggression against Ukraine and the consequential risks concerning the nuclear security of the region, the EU issued an **official statement**[5] inciting 'all States Parties to the NPT, as well as the EU, to reiterate the unequivocal support for the NPT as the cornerstone of the global nuclear non-proliferation regime, the essential foundation for the pursuit of nuclear disarmament in accordance with Article VI of the NPT and an important element in the development of nuclear energy for peaceful purposes'. The EU further encouraged states that are not yet parties of the NPT to join the treaty and adhere to its terms.



The 2022 NPT Review Conference in NY Official CTBTO Photo, https://www.flickr.com/photos/ctbto/, CC BY 2.0 Deed

According to some experts, the EU has traditionally adopted a rather conservative approach of strengthening existing regimes.<sup>[6]</sup> As a matter of fact, the EU does not envision policies directly addressing nuclear proliferation, but rather limits its scope of action to promoting regional stability in nuclear weapon states. Moreover, the EU has yet to translate its non-proliferation objectives stated in high-level documents into its regional approaches, as in the case of Iran.

The EU has affirmed its primary objective within the nuclear non-proliferation regime as the reinforcement of the regime itself through active support for the success of the NPT Review Conferences (RevCons), which the Union recognises as a significant platform to promote awareness of its non-proliferation policy. Since the 1990s, the EU has consistently endeavoured to coordinate the positions of its member states during the RevCon through joint statements and working papers, in addition to individual member states' contributions.

Assessments of the EU's performance in the context of the NPT review are varied. Some experts commend its consensus-building role and improved coordination of member states' positions, and consider the EU a champion of the NPT.I7 I However, the prevailing perception is that the EU's stance towards the NPT is low profile and passive<sup>[8]</sup>, and that the Union has not achieved major successes within the NPT framework.<sup>[9]</sup>

The complexity of the RevCons is a significant challenge for the EU, given the diverse interests of 190 state parties and the strategic concerns underlying the discussions. The EU lacks the competence to act on behalf of its member states in this forum, and it is not a member of the NPT itself.[10 ] Moreover, the EU comprises both NWS and NNWS, each with their own sovereign nuclear interests, which can be highly divergent, thus further highlighting the heterogeneity of preferences within the EU.[11 ] These factors contribute to the complexities and limitations faced by the EU in its efforts to achieve significant progress within the NPT framework.



Flags of the European Union Unsplash Licencing | Alexandre Lallemand, https://youth.europa.eu/news/lets-

celebrate-europe-day-together\_it

#### Online resources:

**Arms Control Association:** A nonpartisan organization promoting public understanding and support for effective arms control policies. Website: [https://www.armscontrol.org]

**Nuclear Threat Initiative (NTI):** A nonprofit organization focused on reducing the threats from nuclear, biological, and chemical weapons.

Website: [https://www.nti.org]

International Campaign to Abolish Nuclear Weapons (ICAN): A coalition advocating for the elimination of nuclear weapons, awarded the Nobel Peace Prize in 2017.

Website: [https://www.icanw.org]

United Nations Office for Disarmament Affairs (UNODA): A UN office promoting nuclear disarmament and non-proliferation. Website: [https://www.un.org/disarmament]

**Federation of American Scientists (FAS):** Provides analysis and resources on nuclear weapons policy, disarmament, and non-proliferation. Website: [https://fas.org/issues/nuclear-

weapons] Bulletin of the Atomic Scientists: Offers expert analysis on global security issues, including nuclear risk.

Website: [https://thebulletin.org]

Center for Nonproliferation Studies (CNS):

Dedicated to combating the spread of weapons of

mass destruction.

Website: [https://nonproliferation.org]

**Carnegie Endowment for International Peace – Nuclear Policy Program:** Provides insights and policy solutions to address nuclear risks. Website:

[https://carnegieendowment.org/programs/npp]

**Ploughshares Fund:** Supports initiatives to prevent the spread and use of nuclear weapons. Website: [https://ploughshares.org]

Council on Foreign Relations (CFR) -

Nonproliferation, Arms Control, and Disarmament: Offers analysis on global efforts to control and eliminate weapons of mass destruction. Website: [https://cfr.org/nonproliferation-armscontrol-and-disarmament]

Union of Concerned Scientists – Nuclear Weapons & Global Security: Focuses on reducing the risk of nuclear war and promoting policies for a safer world.

Website: [https://ucsusa.org/nuclear-weapons]

**Pugwash Conferences on Science and World Affairs:** An international organization working to reduce armed conflict and seek solutions to global security threats.

Website: [https://pugwash.org]

International Atomic Energy Agency (IAEA): Promotes the peaceful use of nuclear energy and prevents its use for military purposes. Website: [https://www.iaea.org]

**Reaching Critical Will - Women's International League for Peace and Freedom:** Provides information and resources on disarmament initiatives, focusing on nuclear weapons.

Website: [https://reachingcriticalwill.org]

- 1. [https://www.consilium.europa.eu/media/30823/qc7809568enc.pdf
- 2. [https://www.armscontrol.org/act/2008\_05/0liverFeature]
- 3. [https://www.sipri.org/sites/default/files/EUNPC\_no-32.pdf]
- 4. [https://www.eeas.europa.eu/sites/default/files/documents/st\_ 15708\_2003\_init\_en.pdf]
- [https://www.eeas.europa.eu/delegations/un-new-york/eustatement-%E2%80%93-10th-review-conference-treaty-nonproliferation-nuclear\_en?s=63]
- 6. [https://www.files.ethz.ch/isn/28700/prifrep65.pdf]
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- Strategy: Continuity and Change | SpringerLink 10. [https://www.ucm.es/data/cont/media/www/pag-
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