

Nuclear Weapons: Frequently Asked Questions



British American Security
Information Council
www.basicint.org

A briefing by BASIC

September 2015

What are nuclear weapons?

Nuclear weapons use a nuclear reaction - fission or fusion - to create an explosion, giving them greater capacity for harm than conventional weapons. The first fission nuclear bombs were built by the United States during World War II when the US were racing against the Nazis to obtain a nuclear weapon capability. To this day, the two nuclear bombs dropped by the US on Japan, are the only nuclear weapons used in a war. There have been over 2000 nuclear detonations for testing purposes.

Which states have them?

Nine states have obtained nuclear weapon capability. Five of them are recognized as Nuclear Weapon States under the Non-Proliferation Treaty (NPT) while the other four are not parties to the NPT. The five recognized Nuclear Weapon States are China, France, Russia, the UK, and the US. The four nuclear states outside the NPT are India, Israel, North Korea, and Pakistan. Israel has never publicly confirmed that it has nuclear weapons, but it is widely accepted.

What international treaties and regimes exist to stop the proliferation of nuclear weapons?

The treaty controlling the proliferation of nuclear weapons is the **Treaty on the Non-Proliferation of Nuclear Weapons (NPT)**. The NPT entered into force in 1970. When the NPT was written, five states had developed a nuclear weapon capability and the treaty recognized these states as nuclear weapon states. The treaty contains three main pillars: non-proliferation, disarmament, and the right to peaceful use of nuclear energy. This is often interpreted as the core bargain of the regime, and an implicit recognition that non-proliferation depends upon the commitment to disarmament and the availability of technology for civil nuclear power.

Under the pillar of non-proliferation, non-nuclear weapon states (NNWS) agree not to acquire nuclear weapons and nuclear weapon states (NWS) pledge not to transfer nuclear weapons to anyone, or assist NNWS in their development. The treaty asks member states "to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control". The NPT recognizes the rights of all states to develop nuclear energy for peaceful purposes. States officially meet every five years for a Review Conference (RevCon) to monitor and discuss treaty implementation. The most recent RevCon was in April/ May 2015.

How many nuclear weapons exist in the world?

N. Korea	<10
Israel	80
India	90-110
Pakistan	110-120
UK	215
China	250
France	300
US	7,200
Russia	7,500

Total: 15,765

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	Estimated Nuclear Weapon Stockpile	First test of nuclear weapons	Treaty membership	
			NPT	CTBT
China	250	16 October 1964	S + R	S
France	300	13 February 1960	S + R	S + R
India	90 - 110	18 May 1974	-	-
Israel	80	unknown (+/- 1979)	-	S
North Korea	<10	9 October 2006	-	-
Pakistan	100 - 120	28 May 1998	-	-
Russia	7,500	29 August 1949	S + R	S + R
UK	215	3 October 1952	S + R	S + R
US	7,200	16 July 1945	S + R	S
Total: 15,765			- = Not signed S = Signed R = Ratified	

NB: North Korea ratified the NPT in 1985 but withdrew in 2003.

Regional Nuclear Weapon Free Zones (NWFZ) exist in Latin America and the Caribbean, the South Pacific, Central Asia, Southeast Asia, and Africa. These nuclear weapon free zones call on the states within them not to develop, acquire, test, or possess nuclear weapons and also calls upon the nuclear weapon states to recognize and respect the nuclear-free status of these zones. The existing NWFZ cover the entire span of the southern hemisphere.

The 1995 **Non-Proliferation Treaty Review Conference Middle East Resolution** called for a weapons of mass destruction free zone in the Middle East that would commit participants not to possess, acquire, test, manufacture, deploy or use any biological, chemical and nuclear weapons as well as their associated delivery vehicles. After the 2010 NPT Review Conference, co-sponsors of the initiative - the United States, United Kingdom, and Russia - designated a facilitator, Finnish Undersecretary of State Jaakko Laajava, to convene a conference on the establishment of a WMD-free zone in the Middle East by 2012. However, near the end of 2012, the conference was postponed indefinitely, with the US government citing "present conditions in the Middle East". Israel was unwilling to take part unless its broader regional security concerns were addressed directly.

The NWFZ cover the entire span of the southern hemisphere.

The Comprehensive Test Ban Treaty (CTBT) is a treaty designed to cap further development of nuclear weapons by prohibiting all nuclear detonations. The CTBT opened for signature in 1969 but has not yet entered into force. For this to happen the CTBT needs to be ratified by 44 countries set out in Article XIV of the Treaty. Of these 44 states, only 35 have ratified the Treaty. The CTBT is monitored by the CTBT Organization (CTBTO), which maintains an extensive verification and monitoring regime.

Are nuclear states working to disarm?

Yes, but not quickly enough to satisfy many states without nuclear weapons. The US and Russia have worked bilaterally to do so, most recently under New START (Strategic Arms Reduction Treaty) which entered into force in 2011 and limits both countries to 1,550 nuclear warheads deployed on 700 strategic delivery systems. This is a significant reduction from Cold War heights of the US' 31,700 and the Soviet Union's 40,723 nuclear warheads. China, France, and the UK have similar sized arsenals, between 225-300 each, significantly smaller stockpiles than the US and Russian arsenals. Reductions in the arsenals of France and the UK have been modest (they claim to be at a minimum), and China's is slowly expanding.

Types of nuclear delivery systems

	Land <i>(ballistic missiles)</i>	Air <i>(free-fall bombs)</i>	Sea <i>(submarine)</i>
China	Yes	Yes	Yes
France	No	Yes	Yes
India	Yes	?	?
Israel	?	?	?
North Korea	No	No	No
Pakistan	Yes	Yes	No
Russia	Yes	Yes	Yes
UK	No	No	Yes
US	Yes	Yes	Yes

? = believed to be working on this system or already have it



*Titan II Ballistic Missile in its silo
(Photo CC: Steve Jurvetson)*



Trident Nuclear Submarine (Photo CC: Steven Jones)

In the United Kingdom, Defence Secretary Michael Fallon announced in early 2015 that the number of warheads deployed on each of the Vanguard class submarines had been reduced from 48 to 40, and the number of missiles carried by each submarine has been reduced to “no more than eight operational missiles.” This is in line with the government's commitment in the 2010 SDSR to reduce the operational warheads from 160 to 120.

Despite reductions in stockpile numbers, nuclear armed states are simultaneously modernizing their arsenals. Nuclear weapons systems have limited life expectancies and these updates give states the opportunity to improve safety, reliability and capabilities. The UK is likely to go ahead with a decision in 2016 to replace its four submarines that carry the Trident nuclear weapon system. The current estimate for US nuclear modernization over the next decade is \$355 billion.

China, France, and Russia are all working on modernization as well. The modernization projects happening in all Nuclear Weapon States leads to questions about the commitment to disarmament.

Has any state ever given up nuclear weapons?

South Africa developed its nuclear weapon capability in the 1970s and deployed a small arsenal in the 1980s. Intense diplomatic pressure along with domestic political change and the end of the Cold War led to a decision to dismantle the nuclear program, invite the IAEA in to verify this and to accede to the NPT as a non nuclear weapon state.

The Soviet Union had nuclear weapons spread across much of its territory. When the Soviet Union disintegrated, three countries other than Russia held stockpiles of nuclear weapons in their territory: Belarus, Kazakhstan and Ukraine, though strategic control remained with Russia and none of these countries had the domestic capability to maintain separate arsenals for an extended period of time. There were serious security concerns in the new states about possible sale or theft of nuclear weapons, and concern that the creation of new nuclear armed states would trigger further proliferation. All three had sent the nuclear weapons stationed on their soil to Russia by 1996.

Profiles of the Nuclear-armed Countries

China

- Nuclear weapons were sought as a deterrent against US “nuclear blackmail” after the US had used nuclear threats to deter China from getting involved in the Korean war.
- China maintains a no first use policy and has made assurances that it will not use nuclear weapons against any non-nuclear weapon state or Nuclear Weapon Free Zone.

France

- French policy states that “an attack on France's vital interests would bring about a nuclear response in the form of unacceptable damage”.
- Formerly a triad power, now has nuclear weapons on submarines and aircraft.

India

- Started its program as a nuclear energy program that gave India the capability of creating a nuclear weapon.
- India exists in strategic competition with nuclear-armed China and Pakistan.
- India maintains a no first use policy but reserves the option of using nuclear weapons in response to a biological or chemical weapon attack.
- India opposes the NPT for creating a world of “haves” and “have nots” in the breakdown of Nuclear Weapon States and Non-Nuclear Weapon States.

Israel

- Israel believes it is surrounded by hostile Arab states and developed its nuclear arsenal in the 1960s during conflict and war with them.
- Because Israel refuses to confirm or deny its nuclear capability, there is no official policy on nuclear weapon use from the Israeli government.

North Korea

- North Korea's nuclear weapons were developed to deter military attacks from the United States, as a sign of strength of the regime and as a bargaining chip.
- Was a party to the NPT but withdrew in 2003 before declaring its nuclear weapon capability in 2005.
- Detonated its first device in 2006.
- North Korea's tests were widely deemed unsuccessful until its 2013 test which was acknowledge as a successful test by US intelligence officials.

Pakistan

- Started nuclear weapons program to balance India and as a national symbol of power.
- Has not made an official policy on use of nuclear weapons, but former President Musharraf said that Pakistan's nuclear weapons are aimed only at India and would only be used if “the very existence of Pakistan” was at stake.

Russia

- Developed nuclear weapons as a counter to the US nuclear capability developed during WWII.
- Had a no-first-use policy but it was ended in 1993. Today nuclear weapons are seen as important because Russia's military capability is inferior to NATO's, though most investment is going into improving the conventional systems.

UK

- Participated in the US Manhattan Project but was then excluded after WWII. It developed its own nuclear weapons for prestige and as an independent deterrent against the USSR during the Cold War.
- UK policy states it will not use a nuclear weapon against any non-nuclear weapon state complying with the NPT and it will only use a nuclear weapon in “extreme circumstances of self defence” including the defense of NATO allies.

US

- First to develop nuclear weapons.
- The US policy on using nuclear weapons states, “will only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its allies and partners”.
- Has a policy started under President Obama not to use nuclear weapons against any non-nuclear weapon state complying with the NPT.