

Fissile Material Cutoff Treaty (FMCT)

A fissile material cutoff treaty would ban the production of fissile material for nuclear weapons purposes. Fissile materials, principally highly enriched uranium (HEU) and plutonium, are the essential ingredients for building nuclear weapons. The effective control and elimination of fissile materials is an essential step toward effective non-proliferation and a precondition for nuclear disarmament.

As of the beginning of 2022, the [global stockpile of HEU](#) is approximately 1,250 tons, which is a decrease of 190 tons from the 1,440-ton stockpile in 2011. This is enough HEU to make approximately 84,000 first-generation implosion bombs of the Nagasaki type. Approximately 88 percent of this HEU is available for or in weapons. Approximately 99.66 percent of the global stockpile of HEU is located in the nine [nuclear weapon states](#), while the remaining .33 percent is located in Norway and Australia for civilian purposes. Russia owns 54.4 percent of global HEU, followed by the United States with 39 percent. HEU is often disposed of through [downblending](#), which involves mixing HEU with natural uranium to produce low enriched uranium (LEU) to then be used for civilian purposes. The global stockpile of separated plutonium is 550 tons, 410 tons being produced outside of weapons programs under obligations not to be used in weapons and 140 tons available for or in weapons. Approximately 91 percent of the global stockpile of separated plutonium is owned by the nuclear weapon states, and the remaining 9 percent is owned by Japan and other non-nuclear weapon states. The United States estimates that as little as 4 kg of plutonium would be enough to make a weapon.

India and Pakistan (and possibly Israel and North Korea) are the only states that continue to produce fissile material for nuclear weapons. The United States, United Kingdom, Russia, and France have officially declared an end to their production for weapons. China has not been transparent about its fissile material production and was generally believed to have halted around 1990, but recent [revelations](#), coupled with China's obstruction of negotiation on a cutoff, have raised doubts.

Background

- A fissile material cutoff was [initially discussed in 1946](#) in the Acheson-Lilienthal Report on the international control of atomic energy and the Baruch Plan. President Dwight Eisenhower officially proposed a cutoff in 1956, a suggestion the Soviets opposed until January 1989, when Mikhail Gorbachev first supported the idea. At the time, President George H.W. Bush [rejected the proposal](#) for fear of undermining U.S. nuclear safety.
- Following reductions in nuclear weapons at the end of the Cold War, in 1993, at the suggestion of President Bill Clinton, the United Nations General Assembly unanimously adopted [Resolution 48/75L](#), which called for a “non-discriminatory, multi-lateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices.”
- In 1995, the United Nations [Conference on Disarmament \(CD\)](#) in Geneva established a committee to discuss the Fissile Material Cutoff Treaty (FMCT).
- In 2000, during the Nuclear Non-Proliferation Treaty Review and Extension Conference, the parties [agreed to begin negotiations](#) in an effort to complete a FMCT within five years. Each year since, any CD discussion of an FMCT has been blocked on procedural grounds by Pakistan, with backing from China. Suggestions that the Treaty be negotiated outside the CD have been rejected.
- In January 2006, the International Panel on Fissile Materials (IPFM) was founded to address the technical challenges of securing and reducing stockpiles of fissile material. The IPFM is composed of non-proliferation experts from both nuclear weapon and non-nuclear weapon states.
- On May 18, 2006, the George W. Bush administration in an effort to break the logjam and regain momentum submitted a draft FMCT at the CD in Geneva that would not contain any verification provisions, would ban new production of plutonium and highly enriched uranium for use in nuclear weapons for 15 years, and would enter into force with participation of the five established nuclear weapon states.



- In April 2009, President Obama declared that “the United States will seek a new treaty that verifiably ends the production of fissile materials intended for use in state nuclear weapons,” but this declaration was not followed by any progress.
- Pakistan declared a renewed opposition to the treaty in January 2011.
- In August 2011, the 5 nuclear weapons states met in Geneva to discuss options for moving beyond the current impasse negotiations for a FMCT.
- In 2016, the United Nations General Assembly adopted [Resolution 71/259](#) to establish a “high level fissile material cut-off treaty (FMCT) expert preparatory group” to recommend the most effective route in establishing an FMCT on the basis of CD/1299.
- In December 2019, the [United Nations Regional Centre for Peace and Disarmament in Asia and the Pacific \(UNRCPD\)](#), [United Nations Office for Peace and Disarmament in Africa \(UNREC\)](#) and the [United Nations Office for Disarmament Affairs \(UNODA\)](#) [organized a regional event](#) to bring scientific experts from the region to support the future of FMCT negotiations.
- [Canada](#) and the European Union have been active in supporting more engagement of more UN members in FMCT progress.
- In 2018 and 2019, the [CD held discussions](#) that failed to reach agreements on subsidiary bodies.
- In August 2022 at the 10th review conference on the [Treaty of Non-Proliferation of Nuclear Weapons](#), [Ambassador Bonnie Jenkins expressed support](#) for negotiations of an FMCT and urged all states to halt production of fissile materials.
- Aside from sparse verbalized support for an FMCT, no other substantive progress has been made in enforcing an FMCT.

Treaty Aims and Challenges

In general, the nuclear weapon states prefer a treaty that bans only the production of new fissile material for weapons purposes and would not address pre-existing civilian fissile materials and weapons materials that have been declared excess for military use. [India](#) and [Pakistan](#) both continue to produce fissile materials for defense purposes. [Doubts remain](#) in Russia, the United States, and other countries about the efficacy, intrusiveness and cost of verification.

Non-Nuclear Weapon States [generally view](#) a FMCT as a step toward the elimination of nuclear weapons. They therefore desire a treaty that would prevent civilian stocks and stocks declared in excess for military use from being diverted for use in weapons.

Data Exchanges

- **Israel** strongly opposes a FMCT because it [does not believe](#) that a FMCT would be an adequate safeguard against Iranian development of nuclear weapons. Israel’s position has been that nuclear disarmament issues [can only be dealt with](#) in the context of a broader strategy for regional peace.
- **China** has [traditionally linked its support](#) for a FMCT to the United States and other parties’ cooperation on a treaty for the prevention of an arms race in outer space (PAROS). This linkage is sometimes seen as disingenuous as there is no legal reason to connect the two, and China is aware that many of the provisions proposed for PAROS would apply only to the United States, effectively making the linkage a poison pill. China also worries about revealing the precise size of its total fissile-material inventory, given its policy to be opaque about aspects of its nuclear program, and believes that a FMCT should not restrict weapons use of existing fissile material. In 2019, [China insisted](#) that FMCT negotiations must be conducted only in the CD to prevent the process from occurring in a forum where Beijing does not have a veto.
- **Russia** officially supports a verifiable ban on the production of fissile material for weapons purposes to which every state with enrichment programs and the capability to produce a nuclear weapon is a signatory. This includes India, Israel, North Korea, and Pakistan, all of whom have strong reservations about the treaty.



- In 2008, **Pakistan** [issued a letter](#) to the President of the CD outlining its position on a FMCT. In light of its view that India supposedly possesses a larger stockpile of fissile material, it wants a verifiable treaty that addresses past, present, and future production of fissile material. Pakistan's opposition has blocked FMCT negotiations for several years. In January 2011, [Pakistan renewed its opposition](#) to a FMCT, citing concerns about India's fissile material stockpile. In August 2019 during a CD session, Pakistan declared they do not support ending or pausing their fissile materials production.
- Though **North Korea** [signed on](#) to the CD agenda to discuss a FMCT, it announced a step-up in plutonium production and threatened to enrich uranium [amid international criticism](#) for its missile tests in May 2009.

Verification

A verifiable treaty is important for numerous reasons. First, verification creates trust and builds confidence that the treaty's requirements are being observed. Second, a verifiable FMCT could serve as a model for verifying the elimination of fissile material in the Nuclear Weapons States.

The IPFM assumes that verification of an FMCT that covers both future production and pre-existing stocks would be overseen by the IAEA Safeguards Division and cover uranium enrichment facilities, reprocessing facilities, material declared in excess for military use, and HEU for use in naval-propulsion reactor fuel. The Safeguards Division would have to expand greatly its operations to perform the intrusive activities necessary for verification. It would also require a larger budget, a cost that countries may be loath to incur.

Although arguments in the earlier stages of the FMCT supported verification be done by the IAEA Safeguards Division, other verification options have since been discussed. Some issues associated with oversight and verification by the IAEA Safeguards Division center around the technical and organizational factors. Existing safeguards would be replaced and strengthened data-collecting methods would be needed for former military fissile material production facilities, all the while still protecting classified information. To mitigate this, [research has been done](#) to explore the idea of establishing a standing verification group that would be part of the IAEA but still function independently from the Safeguards Division in terms of interacting with states parties, inspections, and conclusions, which would be passed to an independent FMCT organization to address compliance issues.

Since the start of FMCT ideas, new technology has advanced that could make other verification options possible. The [IAEA installed the Online Enrichment Monitor \(OLEM\)](#) to ensure that Iran kept enrichment levels no higher than 3.67 percent, which, in theory, could potentially be used as a verification method for the FMCT.

Although there seem to be other verification options since the earlier stages of the FMCT development, plans to use this technology for FMCT verification purposes have yet to come to fruition.