Arms Control and Proliferation Profile: China

Fact Sheets & Briefs

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China, one of the five nuclear weapons states under the NPT, is estimated, as of June 2019, to possess 290 nuclear warheads, an arsenal that has steadily increased in recent years. It has simultaneously sought to modernize and expand its nuclear delivery systems, which include some 143 nuclear-capable land-based missiles and a limited number of submarines, SLBMs, and strategic bombers. China’s self-stated nuclear policy has been to keep its capabilities at the minimum level required to maintain its national security and to deter a potential first strike, and it was the first nation to declare a “No First Use” policy.

Contents

Major Multilateral Arms Control Agreements and Treaties

Export Control Regimes, Nonproliferation Initiatives, and Safeguards

Nuclear Weapons Programs, Policies, and Practices

- The Nuclear Arsenal, an Overview
- Delivery Systems
- Fissile Material
- Proliferation Record
- Nuclear Doctrine

Biological Weapons

Chemical Weapons

Other Arms Control and Nonproliferation Activities

- Conference on Disarmament (CD)
- Nuclear Weapons Free Zones
- Nuclear Security Summits
- Six-Party Talks
- Joint Comprehensive Plan of Action (JCPOA)

Major Multilateral Arms Control Agreements and Treaties

<table>
<thead>
<tr>
<th>Signed</th>
<th>Ratified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear Nonproliferation Treaty</td>
<td>---</td>
</tr>
<tr>
<td>Comprehensive Test Ban Treaty</td>
<td>1996</td>
</tr>
<tr>
<td>Convention on the Physical Protection of Nuclear Material</td>
<td>---</td>
</tr>
</tbody>
</table>
CPPNM 2005 Amendment 2009

Chemical Weapons Convention 1993 1997

Biological Weapons Convention --- 1984


*China stated that it will not be bound by the dispute settlement procedures in Paragraph 2, Article 17.
first strike from a potential aggressor.

**Delivery Systems**

**Nuclear Modernization**

- China’s [nuclear delivery systems are undergoing modernization](https://www.armscontrol.org) programs, keeping with the modernization efforts of its People’s Liberation Army (PLA). Such efforts are viewed by Chinese leaders as essential for achieving great power status and advancing national interests and sovereign claims.
- Hans M. Kristensen & Robert S. Norris report that, “The modernized force is more mobile, responsive, and accurate, and can overwhelm a limited US ballistic missile defense system.”
- According to the U.S. Department of Defense (DOD), China continues to field new and more advanced nuclear delivery systems with improved range and destructive capability.
- China’s decision to switch some of its missiles from liquid to solid fuel has improved their capabilities, in both range and promptness of launch.

**Intercontinental Ballistic Missiles (ICBM)**

- China appears to maintain a minimal force of nuclear-armed ICBMs to ensure Beijing’s ability to execute a second strike.
- Estimates place China as having around 143 nuclear-capable land-based missiles capable of delivering approximately 163 warheads. A 2016 Bulletin of the Atomic Scientists report estimates that around 50-75 of these land-based missiles are ICBMs, whereas the DOD’s annual military power report on China in 2017 figures China’s ICBM arsenal at around 75-100 ICBMs. Only 40-50 of China’s ICBMs are capable of targeting the continental United States.
- China’s ICBM arsenal contains:
  - **DF-4** (CSS-3): 5,500+ km range.
  - **DF-5A** (CSS-4, Mod 2): 13,000+ km range.
  - **DF-5B** (CSS-4, Mod 3): ~12,000 km range. The DF-5B is a variant of the DF-5A upgraded to carry MIRVs.
  - **DF-5C**: on Jan. 31 2017, it was reported that China had flight tested the DF-5C, fixed with 10 warheads—a breakthrough in China’s nuclear weapons development. However, some experts are skeptical of this claim. The DF-5C is reported to be a two-stage, liquid-fueled missile with a range of around 8,000 miles (approximately 13,000 km).
  - **DF-31** (CSS-10, Mod 1): 7,000+ km range.
  - **DF-31A** (CSS-10 Mod 2): 11,000+ km range.
  - **DF-41**: in development; flight-tested in 2016 with two MIRVs. It is a three-stage, solid propellant missile with an estimated range of 12,000-15,000 km and is believed to be able to carry up to ten warheads. The DF-41 is intended to replace the older liquid-fueled DF-5As.

- China is in the process of replacing the older liquid-fueled missiles such as the DF-4 and DF-5A with the solid-fueled ICBMs.
- In January 2017, the DF-41, never publically displayed before, was alleged to have been deployed at the Russian border, although many experts believe it has not completed development.
- China’s land-based missiles, both conventional and nuclear, are under the control of the PLA Rocket Force, a command of 100,000 personnel.

**Submarines and Submarine-Launched Ballistic Missile (SLBM)**

- As of March 2017, China has a fleet of 4 Jin-class (Type 094) nuclear-powered ballistic missile submarines (SSBNs). The Jin-class SSBNs are designed to carry the new JL-2 SLBMs.
- An additional 4 Jin-class SSBNs have been commissioned and at least one is under construction.
China possesses two SLBM types:
- **JL-1** (CSS-NX-3): estimated range of 1,000+ km. JL-1 missiles are being replaced by JL-2s.
- **JL-2** (CSS-NX-14): a modified version of the DF-31 ICBM; estimated range of 7,000+ km but some estimates place the number at 8,000-9,000 km.

Five *Jin*-class submarines may enter service before China begins developing and fielding its next-generation SSBN, the Type 096, over the coming decade. The type 096 submarine is expected to carry both the JL-2 and a new missile, the JL-3, which is to be the JL-2’s anticipated successor.

Despite various claims to the contrary, it is unclear whether or not Chinese submarines have undergone any deterrent patrols. Beginning in early 2015, it was reported that a Chinese SSBN has undergone a 95-day patrol.

**Strategic Bombers**

China has begun to update its outdated nuclear-capable bomber fleet.

According to a DOD report, China continued, in 2015, to develop long-range bombers, including some that Chinese military analysts have described as “capable of performing strategic deterrence.”

The PLA air force was assigned a “strategic deterrence” mission in 2012.

As of December 2016, China’s fleet of nuclear-capable bombers consisted of about 20 *Hong-6* (H-6) bombers based on Soviet designs, with a range of only 3,100+ km.

The H-6 bombers are only capable of delivering an unspecified number of gravity-based bombs but are not believed to be assigned an active nuclear mission.

Media reports suggest that China may develop a new nuclear bomber capability in the future.

The PLA Air Force operates a fully redesigned H-6 variant known as the H-6k that has an extended range and is capable of carrying six land attack cruise missiles.

In March 2017 it was announced that the 5th generation Chengdu J-20 stealth fighter jet had entered into service, putting China one step closer to rivaling U.S. air superiority in East Asia.

**Fissile Material**

Although China has not publicly declared a halt to the production of fissile material for weapons purposes, highly enriched uranium (HEU) and separated plutonium, general speculation is that Beijing has stopped its production. China is reported to have last produced HEU in 1989 and last produced separated plutonium in 1991.

The International Panel on Fissile Material’s 2015 report estimates that China maintains a stockpile of 18 ± 4 metric tons of military HEU and 1.8 ± 0.5 metric tons of weapon-grade plutonium. At the present, the limited size of China’s military stockpile restricts its ability to produce more warheads.

China has not declared a civilian HEU stockpile and, as of 2016, maintains an estimated civilian plutonium stockpile of only 25.6 kg.

**Proliferation Record**

China has a record of assisting states with nuclear and missile programs in the past, but in 2000, China made a public commitment.

China has aided Pakistan’s nuclear and missile programs among other states. Iran, Libya, North Korea, and Saudi Arabia have also been identified as recipients of sensitive technologies and materials from China.

The China Nuclear Energy Industry Corporation (CNEIC)—with government authorization—has exported *Miniature Neutron Source Reactors* (MNSR) to Pakistan, Iran, Syria, Ghana, and Nigeria. These reactors run on highly enriched uranium fuel, albeit a fraction of what is necessary for a nuclear warhead, which has been supplied by China to recipient states.

There have been efforts made by China to work with those states to convert these reactors to
use low enriched uranium fuel, including a 2010 agreement between the U.S. Argonne National Laboratory and the China Institute of Atomic Energy for a new facility in China to produce LEU replacement cores in MNSR's.

- Nuclear Supplier Group (NSG) members, including the United States, saw enough improvement in China’s nuclear export behavior that they extended membership to China in 2004.
  - Nonetheless, China has sold reactors to Pakistan, as was revealed in a 2010 agreement between the two nations. This trade, however, contravenes NSG guidelines.
- China’s bid to join the Missile Technology Control Regime failed in 2004, due to continuing concerns about Chinese missile and missile technology transactions. China, however, maintains that it voluntarily abides by the regime’s guidelines.
- A 2017 State Department Compliance report cited that “in 2016, Chinese entities continued to supply missile programs of proliferation concern.”
- Chinese entities have been regularly sanctioned for nonproliferation violations by the U.S. government. For example, several Chinese entities were sanctioned under the Iran, North Korea, and Syria Nonproliferation Act (INKSNA) sanctions in 2016.
- The United States has also, at various times, imposed sanctions on Chinese entities for missile and chemical weapons related transfers to Pakistan and Iran such as the provision of dual-use chemical weapons precursors and production equipment to Iran beginning in 1997.

**Nuclear Doctrine**

China was the first nuclear-weapon state to declare publicly that it will not be the first to use nuclear weapons. Beijing has emphasized that this vow stands “at any time or under any circumstances.” However, the omission of China’s “No First Use” policy from its 2013 defense white paper caused considerable concern amongst U.S. analysts. Nevertheless, in its 2015 military strategy white paper it reaffirmed its no first use policy and further pledged not to engage in a nuclear arms race. The report also states,

"China has always kept its nuclear capabilities at the minimum level required for maintaining its national security. China will optimize its nuclear force structure, improve strategic early warning, command and control, missile penetration, rapid reaction, and survivability and protection, and deter other countries from using or threatening to use nuclear weapons against China."

Regardless, some theorize that the modernization of China’s nuclear arsenal, its intent on increasing its nuclear warfare capabilities, and its posturing demonstrate a doctrine of counternuclear coercion or limited deterrence.

China has conducted 45 nuclear tests. The first test occurred Oct. 16, 1964, and the last test took place July 29, 1996.

**Biological Weapons**

- China contends it is in compliance with the Biological Weapons Convention (BWC) despite U.S. allegations asserting the contrary. U.S. State Department compliance assessment reports have said that China possessed an offensive biological weapons capability prior to joining the BWC in 1984.
- The 2015 report indicates that China "engaged during the reporting period in biological activities with potential dual-use applications. However, the information did not establish that China is engaged in activities prohibited by the BWC." The 2017 compliance report does not cite any Chinese violations.

**Chemical Weapons**

- China contends it is in compliance with the Chemical Weapons Convention (CWC) despite U.S. allegations asserting the contrary. U.S. State Department compliance assessment reports have said that China possessed an offensive chemical weapons capability prior to joining the CWC in 1993.
- The 2015 report indicates that China "engaged during the reporting period in chemical activities with potential dual-use applications. However, the information did not establish that China is engaged in activities prohibited by the CWC." The 2017 compliance report does not cite any Chinese violations.
China has declared that it has destroyed all chemical weapon agent production facilities and solely conducts defensive chemical warfare research.

Beijing’s official position emphasizes the complete prohibition and destruction of chemical weapons. In the past, the U.S. government has alleged that China may be violating its Chemical Weapons Convention (CWC) commitments by secretly pursuing chemical weapons programs.

The State Department’s 2010 compliance report concluded that “available information does not allow the United States to confirm whether China has fully declared or explained its historical CW [chemical weapon] activities, including CW production, disposition of produced CW agents, and transfer of CW agents to another country.” The State Department’s 2017 CWC report did not list any Chinese compliance issues.

China inherited approximately 700,000 abandoned chemical weapon (ACW) munitions from the Imperial Japanese Army at the end of World War II. Many of these ACWs are not easily located or properly stored; many of them are buried.

Japan, as of 2017, continues to jointly work with China to destroy these ACWs. Destruction began in March 2010. In November 2014, the Chinese Foreign Ministry urged Japan to speed up the destruction process. As of December 2014, 50,800 ACWs had been recovered in China, of which 37,373 were verifiably destroyed.

Other Arms Control and Nonproliferation Activities

Conference on Disarmament (CD)
At the 65-member CD, China expressed support for negotiation of an “effectively verifiable” fissile material cutoff treaty (FMCT) while declaring its top priority to be the prevention of an arms race in outer space (PAROS). Chinese insistence that the conference take some action on the outer space issue in parallel with any negotiations on a cutoff treaty and the U.S. opposition to that approach has, as of 2017, contributed to the stalemate of the conference over the past several years. In 2003, China said it would accept discussions on outer space rather than formal negotiations but that formulation remained unacceptable to the United States. China, however, did not agree to a 2007 compromise formula, including talks on outer space, which the United States said it would not oppose. China refused to participate in Australian and Japanese-led side meetings at the CD in 2011, insisting that the CD was the only proper conduit for FMCT negotiations. The U.S. has stated that the lack of support by China and other key countries resulted in the failure of the side meetings to make progress. China believes that a FMCT should not restrict the use of existing fissile material for weapons purposes.

Nuclear Weapons Free Zones
China has ratified additional protocols to the Latin American and Caribbean, South Pacific, African, and Central Asian nuclear weapons free zone treaties pledging not to use or threaten to use nuclear weapons against the treaty’s member states. However, China maintains a reservation to additional Protocol II of the South Pacific nuclear weapons free zone. It has not ratified the Southeast Asia nuclear weapons free zone treaty.

Nuclear Security Summits
China participated in all four Nuclear Security Summits. China played an active role in these summits and in the 2014 NSS, President Xi Jinping put forward a Chinese approach to nuclear security for the first time.

Six-Party Talks
China played a key role in hosting and helping mediate the so-called six-party talks to achieve North Korea’s nuclear disarmament. Although those talks broke down in 2008 and have yet to resume, China maintains that they remain an effective mechanism for achieving disarmament in North Korea. However, amidst mounting pressure and criticism from U.S. President Donald Trump’s administration for China to take charge of the North Korean threat, Chinese Foreign Ministry spokesman Geng Shuang stated, in February 2017, that “we have said many times already that the crux of the North Korean nuclear issue is the problem between the United States and North Korea,” and that “the Trump White House needs to make the first move and talk to Pyongyang.”
Joint Comprehensive Plan of Action (JCPOA)
China took part in the negotiation of the July 2015 JCPOA, which limits and rolls back Iran’s nuclear program. Despite being a “quiet negotiator” in these talks, Chinese Foreign Minister Wang Yi expressed, at the conclusion of negotiation, that “at some important points when the negotiation met with the difficulties and reached the deadlocks, China had actively explored ideas and approaches to resolve the problems and put forward its own solutions from a perspective taking into consideration of the common interests of all parties.”

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