Arms Control and Proliferation Profile: Pakistan

• Fact Sheets & Briefs

Updated: July 2018

Pakistan developed nuclear weapons outside of the NPT and is believed to possess an arsenal of 140-150 nuclear warheads. Pakistan is expanding its nuclear arsenal faster than any other country and developing new delivery systems, including development of the sea-based leg of a nuclear triad and speculated development of an ICBM. Pakistan’s nuclear program has largely been driven by its regional rivalry with India since India conducted its first nuclear test in 1974. Numerous Pakistani entities and individuals have been sanctioned by the U.S. for nonproliferation violations, though many are still believed to be actively exporting nuclear weapons technologies and know-how. Pakistan’s nuclear arsenal is a source of security concern given its political instability and robust extremist groups in the country, though Pakistani and U.S. officials have repeatedly stated that Pakistan’s nuclear assets are secure.

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Major Multilateral Arms Control Agreements and Treaties

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Convention on the Physical Protection of Nuclear Material (CPPNM)

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2000*

CPPNM 2005 Amendment

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2016

Chemical Weapons Convention

1993

1997

Biological Weapons Convention

1972

1974

International Convention for the Suppression of Acts of Nuclear Terrorism

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*Pakistan stated that it will not be bound by the provisions of Paragraph 2, Article 2, or by the dispute settlement procedures in Paragraph 2, Article 17

Export Control Regimes, Nonproliferation Initiatives, and Safeguards

Group

Status

Australia Group

Not a member

Missile Technology Control Regime

Not a member. Pakistani entities have been sanctioned by the United States for engaging in trade involving missiles and missile technologies controlled by the regime.

Nuclear Suppliers Group

Not a member

Wassenaar Arrangement

Not a member

International Atomic Energy Agency (IAEA) Additional Protocol

No, Pakistan has not negotiated such an agreement.

Global Initiative to Combat Nuclear Terrorism

Participant

Hague Code of Conduct against Ballistic Missile Proliferation

Not a participant

Proliferation Security Initiative

Not a participant

UN Security Council Resolutions 1540 and 1673

Pakistan has filed the requested report on its activities to fulfill the resolution and volunteered to provide assistance to other states.

Nuclear Weapons Programs, Policies, and Practices

The Nuclear Arsenal, an Overview

Pakistan developed nuclear weapons outside of the Nuclear Nonproliferation Treaty. Pakistan’s nuclear program dates back to the 1970s and was spurred on by India’s first nuclear test in 1974. Pakistan is estimated to have a nuclear arsenal of 140-150 warheads. As of 2016, Pakistan is expanding its nuclear arsenal faster than any other country and developing new delivery systems for its warheads. Pakistan is also be working on the sea-based leg of a nuclear triad.
Delivery Systems

Short-Range Ballistic Missile (<1,000 or less km)

- **Hatif-1**: Short-range, solid-fueled ballistic missile with a range of 70-100 km.
- **Abdali** (Hatif-2): *Flight-tested six times*; entered service in 2005. Nuclear role ambiguous; 180-200 km range; single warhead.
- **Ghaznavi** (Hatif-3): 290 km range.
- **Shaheen-1** (Hatif-4): 750 km range.
- **Shaheen-1A** (Hatif-4): Under development, an improved variant of the Shaheen-1. *First tested* in 2012, may see deployment in 2017. Listed by Hans Kristensen and Robert Norris as having a 900 km range, but following its first test it was reported to be a medium-range missile.
- **Nasr** (Hatif-9): Under development; 60 km range. Each NASR launcher, however, contains 4 missile tubes primarily for conventional payloads.

Medium-Range Ballistic Missile (1,000-3,000 km)

- **Shaheen-2** (Hatif-6): 1,500-2,000 km range.
- **Shaheen-3** (Hatif-10): Under development; underwent two successful tests in 2015; may see deployment in 2018. The Pakistani government said the missile was capable of delivering a nuclear or conventional warhead for 2,750 km.
- **Ghauri-1** (Hatif-5): 1,250-1,500 km range.
- **Ghauri-2** (Hatif-5a): Medium-range liquid propellant missile under development with an expected range of at least 1,800 km.
- **Ababeel**: Under development; 2,200km range; reportedly capable of carrying multiple independently targetable re-entry vehicles (MIRVs).

Intercontinental Ballistic Missiles (ICBM)

It is speculated, albeit loosely, that the Taimur missile, with a range of 7,000 km, is an ICBM under development.

Cruise Missiles

- **Babur** (Hatif-7): ground-launched nuclear cruise missiles; 350 km range (Pakistani government claims 700 km).
- **Babur-2**: ground-launched cruise missile; 700 km range; deployment status unknown.
- **Babur-3**: sea-based cruise missile; 450 km range; deployment status unknown.
- **Ra’ad** (Hatif-8): nuclear-capable air-launched cruise missile; status unknown; may be deployed in 2017
- **Ra’ad-2**: nuclear-capable air-launched cruise missile; range of greater than 350 km; revealed in March 2017 and expected to be deployed in 2018.

Submarines, Submarine-Launched Ballistic Missiles (SLBM), and Submarine-Launched Cruise Missiles (SLCM)

Pakistan does not currently possess SLBMs. Following the launch of India’s INS *Arihant* submarine in 2009, the Pakistan Navy announced its intention to build a nuclear submarine of its own, and in 2012 the Navy announced it would start construction. According to the Navy, the submarine is an ambitious project, will be designed and built indigenously, and will take between 5 and 8 years. It not yet clear if Pakistan is attempting to complete the nuclear triad.

According to Hans Kristensen and Robert Norris, there are *indications* that Pakistan is developing a nuclear weapon for deployment on submarines. Pakistan’s announcement that
it would stand up a Naval Strategic Force Command in 2012 also points to an interest in developing sea-based capabilities.

- There was a confirmed test of the nuclear-capable Babur cruise missile from a mobile underwater platform in January 2017. It may be converted for use on submarines.
- In April 2018, Pakistan announced that it had conducted a second successful flight test of its Babur-3 nuclear-capable submarine-launched cruise missile which has a range of 450 km.

**Strategic Bombers**

- Pakistan’s available delivery vehicles include dual-use fighter aircraft, reportedly the U.S.-origin F-16A/B and French-origin Mirage 2000 fighter jets. The planes were not transferred for the purpose of delivering nuclear bombs, but Pakistan is believed to have modified them for that mission. Both were deployed in 1998.
- **F-16A/B:** ~24 nuclear-capable F-16A/Bs; ~24 nuclear bombs; plane has a 1,600 km range.
- **Mirage III/V:** ~12 nuclear-capable Mirage III/Vs; ~12 nuclear bombs or Ra’ad cruise missiles; plane has a 2,100 km range.

**Fissile Material**

- Specific estimates of Pakistan's stockpiles of fissile material are difficult to determine, given uncertainty about Pakistan's uranium enrichment capacity.
- In contravention of Nuclear Suppliers Group (NSG) guidelines, the China National Nuclear Corporation (CNNC) has supplied Pakistan with 4 nuclear power reactors, the Chasnupp-1,-2,-3, and-4. The fourth reactor, the Chasnupp-4, went critical in March 2017. In addition, China has supplied Pakistan with Low Enriched Uranium (LEU) for use in these reactors.

**Highly Enriched Uranium**

- As of the end of 2016, Pakistan is estimated to possess approximately 3.4 ± 0.4 tons of highly enriched uranium (HEU).

**Plutonium**

- As of the end of 2016, Pakistan is estimated to possess 280 kg of weapons-grade plutonium.
- By the end of 2015, Pakistan was operating four reactors that produce plutonium for weapons at Khushab. Khushab-I began operations in 1997/98, Khushab-II in 2009/10, Khushab-III in early 2013, and Kushab-IV in 2015.
- Pakistan separates the plutonium from the spent reactor fuel at the Rawalpindi New Labs facility, which has two reprocessing plants. Another reprocessing facility may be being constructed at Chashma as of 2015.

**Proliferation Record**

- The foundation of Pakistan’s nuclear weapons program was aided by the theft of nuclear technology and know-how from the European company URENCO by scientist Abdul Qadeer Khan, who became a leading figure in Pakistan’s nuclear weapons establishment. Khan is also believed to have received a nuclear weapon design from China. Although U.S. intelligence was aware of Pakistan’s illicit program, the United States continued to provide military assistance and foreign aid to Islamabad up until 1990 when President George H. W. Bush decided that he could no longer certify that Pakistan did not possess a nuclear device. U.S. sanctions related to Pakistan’s nuclear program were dropped after the Sept. 11, 2001 terrorist attacks when the United States decided to pursue closer relations with Pakistan as part of the U.S. declared “war on terror.”
Abdul Qadeer Khan had also developed a black market network of suppliers to procure technology and know-how for Pakistan’s secret nuclear weapons program and then transformed that network into a supply chain for other states. Iran, Libya, and North Korea were all clients and other states might have been as well. After the interception of one of his shipments to Libya in October 2003, Khan appeared on Pakistani television in February 2004 and confessed to running the network, which transferred items ranging from centrifuges to bomb designs.

The Pakistani government denied any complicity in or knowledge of the network and confined Khan to house arrest. Although reportedly serving as an intermediary to foreign governments, the Pakistani government has not made Khan available to direct interviews by other states. General concern exists that remnants of the network might still be functioning.

Pakistan instituted new export control laws following the public exposure of Khan’s network in 2004, including the establishment of the Strategic Export Control Division of the Ministry of Foreign Affairs. Pakistan's control list now includes dual-use materials in an effort to meet the regulatory standards of export control regimes.

Numerous Pakistani entities and—more recently—individuals, including Abdul Qadeer Khan himself, have been placed under U.S. nonproliferation sanctions, many of which are still active.

**Nuclear Doctrine**

Pakistan has pledged no first use against non-nuclear weapon states. Pakistan's policy on first use against states that possess nuclear weapons, particularly India, remains vague. Although Pakistani officials have claimed that nuclear weapons would be used only as a matter of last resort in such a conflict with India, some analysts contend that Islamabad’s development of battlefield nuclear weapons to counter Indian conventional forces raises questions as to how central Pakistani nuclear weapons are in its security doctrine.

In a 2015 statement, Foreign Secretary Aizaz Ahmad Chaudhry said that Pakistan’s nuclear arsenal is one-dimensional, that is it “not for starting a war.” He also said in 2015 that Pakistan is capable of answering aggression from India due to Islamabad’s development of short-range tactical nuclear weapons to counter Indian conventional forces. According to Hans Kristensen, “Pakistan is modifying its nuclear posture with new short-range nuclear-capable weapon systems to counter military threats below the strategic level.”

Pakistan’s nuclear warheads are believed to be stored in a disassembled state, with the fissile core kept separate from the warhead package. This practice greatly increases the time required to deploy the weapons.

Due to severe political instability from extremist groups in Pakistan, there is unease regarding the safety of Pakistan’s nuclear arsenal, materials, and facilities from both insurgent threats and insider collusion. Pakistan has shared critical information about its nuclear activities with the U.S., and both Pakistani and U.S. officials have repeatedly stated that Pakistani nuclear assets are secure from such threats.

**Testing**

Pakistan has conducted two nuclear weapon tests, although one of those involved five simultaneous explosions. The first test occurred May 28, 1998, and the last took place May 30, 1998. In 1990, China is believed to have tested a Pakistani derivative of the nuclear design Beijing allegedly gave to Khan.

**Biological Weapons**

There is no evidence that a Pakistani biological weapons program exists, and the U.S. State Department has found no indication that Pakistan has faltered on its commitment to the BTWC.
Pakistan has increased its regulation of its biological industry. It has issued a set of biosafety rules in 2005 which established a National Biosafety Committee.

Chemical Weapons

- Pakistan has no known chemical weapon stockpiles.
- Pakistan has, in the 1990s, been accused of procuring large quantities of dual-use chemicals and supplying chemical weapons or chemical substances to non-state actors in the 1980s and 1990s.

Other Arms Control and Nonproliferation Activities

Bilateral Talks with India

- Signed the India-Pakistan non-Attack Agreement which entered into force in January 1991.
- In 1992 India, signed the India-Pakistan Agreement on Chemical Weapons for the “complete prohibition of chemical weapons.”
- After their tit-for-tat nuclear tests in 1998, Pakistan and India volunteered to abstain from nuclear testing.
- Established a hotline to reduce the risk of accidental nuclear war and agreed to exchange advance notifications of ballistic missile flight tests.
- In 2007, the fifth round of talks regarding the review of nuclear and ballistic missile-related confidence-building measures took place as part of the Composite Dialogue Process.

Nuclear Security Summits

Pakistan has attended all four Nuclear Security Summits. Pakistan claimed, in its 2016 NSS National Statement, that “As a responsible nuclear state, Pakistan takes nuclear security very seriously and accords it the highest priority in its security construct. Our nuclear security paradigm, evolved over the years, is effective and responsive against the entire range of possible threats. Nuclear security regime in Pakistan is dynamic and regularly reviewed and updated.”

Conference on Disarmament (CD)

Established in 1979 as a multilateral disarmament negotiating forum by the international community, Pakistan has been a regular and active participant in the CD. Pakistan has blocked the start of negotiations on a fissile material cut-off treaty (FMCT) at the 65-member CD. Islamabad has insisted that an FMCT must cover existing stocks of fissile material due to concerns about India's current stockpile, and is preventing the body from reaching consensus on an agenda that would allow negotiations on the treaty to begin. In an interview with Arms Control Today, Pakistani permanent representative to the UN Office at Geneva Zamir Akram indicated that the decision by the Nuclear Suppliers Group to remove the ban on sales of nuclear material to India was a major barrier to Pakistani support for an FMCT. He said that Pakistan would support negotiations if it, too, received a waiver from the NSG.