Arms Control and Proliferation Profile: Iran

Updated: May 2018

Iran is not a nuclear-weapons state and, though it has pursued a program to develop nuclear warheads in the past, has adhered to the terms of the Joint Comprehensive Plan of Action (JCPOA) since adoption in October 2015, as verified by all quarterly IAEA reports. Under the JCPOA, for well over a decade, it will take Iran 12 months to produce enough weapons-grade uranium for one bomb. The deal also bars Iran from selling conventional arms for five years from the start of implementation, though branches of the Islamic Revolutionary Guard Corps continue to allegedly smuggle arms to Iranian proxies in Syria, Lebanon, and elsewhere. Iran’s active ballistic missile program is one of the largest deployed missile forces in the Middle East, with over 1,000 short- and intermediate-range ballistic missiles as well as a space-launch vehicle that could potentially be converted into an ICBM.

**Major Multilateral Arms Control Agreements and Treaties**

<table>
<thead>
<tr>
<th>Signed</th>
<th>Ratified</th>
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<tbody>
<tr>
<td>Nuclear Nonproliferation Treaty</td>
<td>1968</td>
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<tr>
<td>Comprehensive Test Ban Treaty</td>
<td>1996</td>
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<tr>
<td>Convention on the Physical Protection of Nuclear Material (CPPNM)</td>
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<td>CPPNM 2005 Amendment</td>
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<td>Chemical Weapons Convention</td>
<td>1993</td>
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<td>Biological Weapons Convention</td>
<td>1972</td>
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<tr>
<td>International Convention for the Suppression of Acts of Nuclear Terrorism</td>
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**Export Control Regimes, Nonproliferation Initiatives, and Safeguards Group**

<table>
<thead>
<tr>
<th>Group</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia Group</td>
<td>Not a member</td>
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<tr>
<td>Missile Technology Control Regime</td>
<td>Not a member</td>
</tr>
<tr>
<td>Nuclear Suppliers Group</td>
<td>Not a member</td>
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<tr>
<td>Wassenaar Arrangement</td>
<td>Not a member</td>
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International Atomic Energy Agency (IAEA) Additional Protocol

Signed an additional protocol in Dec. 2003 and implemented it voluntarily until February 2006 after the IAEA Board of Governors resolution referring Tehran to the UN Security Council. As part of the July 2015 nuclear deal, Iran will implement its Additional Protocol and seek to ratify it within eight years.

Global Initiative to Combat Nuclear Terrorism

Not a participant

 Hague Code of Conduct against Ballistic Missile Proliferation

Not a participant

Proliferation Security Initiative

Not a participant

UN Security Council Resolutions 1540

Iran has filed the requested reports on its activities to fulfill the resolution.

Nuclear Weapons Programs, Policies, and Practices

The Nuclear Arsenal, an Overview

Iran does not possess nuclear weapons but it conducted activities in the past relevant to developing a nuclear warhead, including uranium enrichment and studies on ballistic missile mating and re-entry. In July 2015, after a decade of intermittent negotiations, Iran along with the “P5+1” (China, France, Germany, Russia, the United Kingdom, and the United States) concluded the Joint Comprehensive Plan of Action (JCPOA), frequently referred to as the Iran nuclear deal. The Iran nuclear deal restricts Iran’s nuclear activities and puts in place monitoring and verification measures in addition to Iran’s safeguards. On May 8, 2018, President Trump announced that the United States would withdraw from the JCPOA and reinstate U.S. nuclear sanctions on the Iranian regime. For more on the deal see the Joint Comprehensive Plan of Action at a Glance.

Delivery Systems

Ballistic Missiles

- Iran’s missile program is largely based on North Korean and Russian designs and has benefitted from Chinese technical assistance.
- With approximately 1,000 short- and medium-range ballistic missiles, the program is one of the largest deployed ballistic missile forces in the Middle East.
- Iran’s current focus is on enhancing the accuracy of medium-range systems - not increasing range.
- Iran’s Supreme Leader Ayatollah Ali Khamenei stated that Iran would refrain from manufacturing ballistic missiles exceeding a range of 2,000km, General Mohammad Ali Jafari, the head of the Revolutionary Guard, told reporters on Oct. 31, 2017. The limitation is not legally binding.
- UN Security Council Resolution 2231, which endorsed the JCPOA in 2015, annulled a 2010 resolution that prohibited Iranian tests of nuclear-capable ballistic missiles and “calls upon” Iran not to test any ballistic missiles that are “designed to be nuclear capable.” Resolution 2231 also kept in place sanctions preventing Iran from transferring materials and technologies relevant to developing ballistic missiles.
- Iran has continued ballistic missile testing in the wake of the nuclear deal. In response, the United States has designated additional entities for contributing to Iran’s ballistic missile program.
- Iran’s short-range and medium-range missiles include:
  - **Fateh-110**: The Fateh-110 is an operational short-range missile with an estimated range of 200-300km.
  - **Shahab-1**: The Shahab-1 is an operational, short-range missile with an estimated...
range of 300km.

- **Qiam-1**: The Qiam is an operational short-range missile with an estimated range of 500-1000km.
- **Shahab-2**: The Shahab-2 is an operational short-range missile with an estimated range of 500km.
- **Fateh-313**: The Fateh-313 is an operational short-range missile with an estimated range of 500km.
- **Zolfaghar**: The Zolfaghar is an operational missile with an estimated range of 700km.
- **Shahab-3**: The Shahab-3 is an operational missile with an estimated range of 800-1,000km. A liquid-fueled missile based on the North Korean No-Dong, it is Iran’s most sophisticated missile.
- **Emad-1**: The Emad-1 is a single-stage medium-range ballistic missile under development with a range of up to 2,000 km. First tested in 2015, Iran claims the Emad-1 is a high-precision missile.
- **Ghadr-1**: The Ghadr-1 is a medium-range missile under development with an estimated range of up to 2,000 km. The missile is a modified version of the Shahab-3.
- **Sejjil-2**: The Sejjil is an intermediate-range missile under development with an estimated range of 1,500-2,500km. First tested in 2007, the Sejjil is a two-stage solid-fueled missile. The Sejjil-2 has not been tested since 2011 and reports indicate Iran has a hard time producing the solid-fueled motors because of sanctions. This technology could help improve the mobility of Iran’s missile force.

### Space-Launched Vehicles (SLV)

- **Safir**: The Safir is a two-stage, liquid-fueled space launch vehicle (SLV) that Iran has used to successfully launch four satellites into space between February 2009 and February 2012. Two Safir launches subsequently failed, once in 2013 and again in 2014. In February 2015, Iran successfully launched a satellite for the fifth time. A 2009 report by the National Air and Space Intelligence Center (NASIC) assessed that the Safir “can serve as a test bed for long-range ballistic missile technologies” and could serve as an ICBM if converted to a ballistic missile.
- **Simorgh**: The Simorgh is a two-stage SLV that Iran has displayed, but not launched. It is larger than the Safir. The first Simorgh launch was announced for 2010.

### Cruise Missiles

- Iran possesses the following cruise missiles:
  - **Kh-55**: An air-launched nuclear-capable cruise missile with a range of up to 3,000 km which was illegally procured from the Ukraine in 2001.
  - **Khalid Farzh**: Iran’s most advanced missile with a range of about 300 km capable of carrying a 1,000 kg warhead.
  - **Nasr-1**: A domestically produced missile which is claimed to be capable of destroying warships and military targets up to 3,000 tons.

### Fissile Material

- During the latter half of 2002, the IAEA began investigating two secret Iranian nuclear facilities: a heavy-water production plant near Arak and a gas centrifuge uranium-enrichment facility near Natanz.
- In September of 2009, the discovery of Fordow, a secret nuclear facility under construction near Qom, deepened international suspicions about Iran’s uranium enrichment activities.
- In 2010, Iran scaled up some of its uranium enrichment from less than 5 percent to 20 percent, the level required for Iran’s research reactor.
- Under the Iran deal, Iran’s enriched uranium is capped at 3.67 percent.
- Much of the uranium-enrichment program is based on equipment and designs acquired
through former Pakistani nuclear official A.Q. Khan’s secret supply network.

- Iran relies on its IR-1 centrifuge, a variant of Pakistan’s P-1 centrifuge, known to be crash-prone and unreliable.
- Under the 2015 nuclear deal, Iran is permitted a strictly limited amount of R&D on advanced centrifuges.

**The Road to the JCPOA**

- In 2006, the Security Council adopted a number of resolutions calling on Iran to suspend uranium enrichment-related activities and cooperate fully with the IAEA.
- When Iran refused to comply, the UNSC introduced four rounds of sanctions targeting Iranian entities and individuals believed to be involved in Iran’s proliferation-related activities.
- In 2009, Russia, France, and the United States negotiated a fuel swap deal with Iran to transfer low-enriched uranium (LEU) out of the country in exchange for fuel for a reactor that produces medical isotopes. The deal fell through when Iran tried to change the terms.
- In 2012, the P5+1 continued diplomatic efforts and met with Iran on four separate occasions. These talks were suspended for the 2013 Iranian elections though they did lay the groundwork for what would become the JCPOA.
- After President Rouhani was elected in June of 2013, Iranian Foreign Minister Javad Zarif and U.S. Secretary of State John Kerry met for a bilateral exchange. A day later, President Obama called President Rouhani, marking the highest level contact between the U.S. and Iran since 1979.
- Negotiations to curb the Iranian nuclear program took place in October and November 2013 and an interim agreement was reached November 24. Implementation of the interim agreement began on January 20, 2014. The interim agreement was extended twice before the comprehensive agreement was finalized. Along the way all parties implemented changes and did not violate the interim agreement. Learn more about the interim agreement here.
- The final agreement is known as the Joint Comprehensive Plan of Action (JCPOA) and was finalized on July 14, 2015. The implementation schedules and enforcement options are governed by UN Security Council Resolution 2231, which was adopted on July 20, 2015. Learn more about the JCPOA.
- According to U.S. government estimates, under the JCPOA, for well over a decade, it will take Iran 12 months to produce enough weapons-grade uranium for one bomb.
- The IAEA reports quarterly on Iran’s adherence to the JCPOA. Two reports in 2016 noted slight excesses in heavy-water. Iran rectified this by selling or shipping abroad part of its stocks. The P5+1 and Iran subsequently clarified the heavy-water limit.
- On May 8, 2018, President Trump announced that the United States would withdraw from the JCPOA and reinstate U.S. nuclear sanctions on the Iranian regime.

**Proliferation Record**

- In 2000, Iran exported rockets and several ballistic missile components to Libya.
- Iran has been accused of violating a Security Council resolution barring arms transfers to Hezbollah.
- Since 2007, the Security Council has barred Iran from selling conventional arms and also prohibits any country from importing arms from Iran without prior UN Security Council approval. Under UN Security Council Resolution 2231 the embargo on Iran’s export of conventional arms will remain in place for five years from JCPOA Adoption Day (October 2015). This embargo may be lifted earlier if the IAEA reaches a “Broader Conclusion” that Iran’s nuclear program remains peaceful.
- According to a 2012 report by a designated panel of experts, Iran has been a major supplier of weapons to the Syrian government. The report describes three illegal transfers, two to Syria and one to the Taliban in Afghanistan.
- Unit 190, a branch of the Islamic Revolutionary Guard Corps, is responsible for smuggling arms to Iranian proxies in Syria, Lebanon, and elsewhere.

**Biological Weapons**
Iran has ratified the Biological Weapons Convention but the United States maintains Iran’s biotechnology infrastructure gives it the ability to produce small quantities of biological weapons agents for offensive purposes.

According to a 2004 CIA report, Iran has previously conducted offensive biological weapons agent research and development and continues to seek dual-use biotechnology.

U.S. officials have accused Iran of “probably” pursuing an offensive biological weapons capability in violation of the Biological Weapons Convention in 2011. Iran denies the allegation.

Chemical Weapons

- Iran has signed and ratified the Chemical Weapons Convention.
- A 2009 unclassified U.S. intelligence report says that “Iran maintains the capability to produce chemical warfare agents” as well as the ability “of weaponizing [chemical weapons] agents in a variety of delivery systems.”
- Having suffered chemical weapon attacks during the eight year Iran-Iraq war, Iranian officials frequently speak about the dangers of chemical weapons.
- The United States has sanctioned companies for providing dual-use chemicals to Iran.

Other Arms Control and Nonproliferation Activities

Middle East Nuclear-Weapon-Free Zone

- Iran was one of the first states to formally call for a nuclear-weapon-free zone in the Middle East, joining with Egypt to propose the goal to the UN General Assembly in 1974. Tehran consistently makes statements at disarmament fora expressing its support for the zone concept.

Conference on Disarmament

- At the 2012 Conference on Disarmament, Iran said it was not opposed to negotiations of a Fissile Material Cutoff Treaty (FMCT) but that it should not infringe on any state’s right to use fissile material for peaceful purposes or naval propulsion.

Treaty for the Prohibition of Nuclear Weapons

- Iran played an active role in the negotiations for a treaty to prohibit nuclear weapons in March and June-July 2017, calling often for a comprehensive and verifiable treaty.

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