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**International Atomic Energy Agency (IAEA)**

Simulation of a Meeting of the Board of Governors

**“Challenges in Nuclear Verification: Implementing a  
Comprehensive Agreement on the Iranian Nuclear Program”**

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## The Committee

The International Atomic Energy Agency (IAEA) seeks to promote peaceful use of nuclear energy and to inhibit its use for any military purpose. The IAEA belongs to the category of "Specialized agencies" and as such is an autonomous international organization that was established on 29 July 1957 on foundation of its own international treaty the IAEA Statute<sup>1</sup>. Though having been established as an independent institution, the IAEA still reports to the United Nations.

The creation of the IAEA was proposed by the American President Dwight D. Eisenhower. <sup>2</sup> In his famous „Atoms for Peace“-speech, President Eisenhower addressed the international community by calling out for an organization which would support the peaceful use of nuclear technology. He wanted the creation of such an institution in response to the deep fears and great expectations resulting from the discovery of nuclear energy since 1945. When the negotiations were held on October 23rd 1956, President Eisenhower's vision of solving the "nuclear dilemma" became a reality. Diplomats and lawyers, advised by scientists, and drawing on the precedents set by other organizations, developed the main ideas of the organization into a charter of an international agency. The IAEA Statute was approved unanimously by 81 nations on that date. The IAEA Statute entered into force, thus officially creating the IAEA, on July 29th 1957 and in October of the same year, delegates from 59 states convened in Vienna, Austria for the first General Conference which lasted three weeks. Since that initial meeting, IAEA membership has expanded to 162 member states and the agency's mission has evolved alongside advancements in nuclear science. The Statute lays down the three primary goals of the agency as:

- Promoting Science and Technology,
- Developing nuclear safety standards to protect human health and the environment against any form of nuclear threat (radiations, nuclear waste, etc.)
- The safeguard and application of the "three pillars" expressed in the Treaty on the Non-proliferation of nuclear weapons (Non-proliferation, disarmament and the right to peacefully use nuclear technology)

As an independent international organization related to the United Nations system, the IAEA's relationship with the UN is regulated by special agreement. For example, the General Conference's annual reports are submitted to the UN General Assembly Plenary and, if related to issues of international security, to the Security Council. The IAEA's work is closely linked to the Security Council (SC), which can request the Agency to take actions on issues concerning peace and security. As stated previously, today you would consider the IAEA as a specialized agency, which means it works within the machinery of the UN. Normally those agencies work within the framework of the Economic and Social Council, but as explained above the IAEA does most of its work and report to the General Assembly and the Security Council.

The IAEA consists of three policy making bodies: the General Conference, the Board of Governors and the Member States. The General Conference is the highest policymaking body of the IAEA. It is composed of representatives of all member states of the Agency. The General Conference meets annually to consider and approve the Agency's program and budget. The Board of Governors, to which 35 members of the IAEA are elected, is the main executive organ of the IAEA. The Board generally consists of experts and meets five times a year.

### Relationship with the UN

From the beginning, the IAEA has stressed its mission to be under the umbrella of the UN and in line with the principles of the Charter of the UN. Still, the IAEA is somewhat unique within the UN system as it is the only agency focusing on issues specifically related to nuclear technology.

The General Conference's annual reports are submitted to the UN General Assembly Plenary and, if related to issues of international security, to the Security Council. The IAEA's work is closely linked to the Security Council (SC), which can request the Agency to take actions on issues concerning peace and security. SC Resolutions regarding safeguards and the proliferation of nuclear weapons such as SC Resolutions 1373 and 1540 are examples of this cooperation and have become integral parts of the Agency's legal framework. Both Resolutions call for close cooperation with the IAEA to counter nuclear terrorism and the possession of nuclear material by non-state actors. The IAEA has established programs to support Member States in taking effective measures of that concern.

## Introduction

Iran's controversial nuclear program has dominated the international stage for more than a decade. The United States and like-minded allies have relentlessly strived to coerce and compel Tehran to curb its nuclear activities. Its uranium enrichment program and efforts to obtain full nuclear fuel-cycle capabilities have been of particular concern. Attaining such capabilities would mean that Iran could fuel both nuclear power plants and atomic bombs. But negotiations, punishing economic and political sanctions, covert sabotage, and military threats have at best delayed Iran's nuclear progress.

In February 2013, the International Atomic Energy Agency (IAEA) estimated that Iran's stockpile of net fissile material had grown to nearly 7 tons of uranium enriched to 5 percent and 167 kilograms of uranium enriched to 20 percent. The latter development is particularly worrisome as the stockpiling of 20 percent enriched uranium significantly reduces (by more than 90 percent) the time required to obtain weapons-grade fissile material from natural uranium. The material Iran has currently accumulated, if further enriched, could be sufficient for at least five nuclear weapons. Of further concern is the fact that Iran has started to install more advanced centrifuges at its Natanz enrichment facility, which would further upgrade its enrichment capacity.

While the Nuclear Non-Proliferation Treaty (NPT) entitles Iran to civilian and peaceful nuclear energy, at issue is whether Tehran is in compliance with Article II of the treaty, which prohibits nations from weapons-related activity. The same technology that produces low-enriched uranium for nuclear reactors can be employed to produce highly enriched uranium for a nuclear weapon.

The United States and Israel have described the prospect of a nuclear-armed Iran as "unacceptable" and an "existential threat." Meanwhile, the Iranian government has exhaustively portrayed its nuclear program—which it insists is peaceful—as the nation's "inalienable right" and a symbol of modernity and technological advancement on par with landing on the moon. Surveys, notwithstanding the inherent limitations of polls conducted over the phone in closed societies, often show a majority of Iranians in favor of the country's continued development of a civilian nuclear energy program. Even the country's opposition leaders, labeled "seditionists" by the Iranian government, have asserted that Iran's nuclear rights should be preserved.

The Iranian government prohibits open media coverage of the nuclear issue, which has helped stifle a much-needed internal debate on the cost-benefit rationale behind the country's nuclear agenda. Crucial questions have not been asked in the public domain, let alone answered. For instance, what is the scale of Iran's nuclear expenditure in financial terms? Why does Iran need to invest in front-end technologies, such as uranium mining, conversion, enrichment, and fuel fabrication plants? Does nuclear power guarantee Iran's long-term energy self-sufficiency? Also unclear is how Iran's nuclear program compares with those of other countries, the environmental burden of nuclear energy, and the safety and security of Iran's nuclear plants and facilities.

But these questions need answers. And a good place to start is with an estimation of the price tag on Iran's half-century-long pursuit of nuclear technology. While most nuclear programs are financially opaque, years of clandestine activities render objective assessments of Tehran's nuclear expenditure especially challenging. Additionally, the nuclear program has imposed indirect costs on the country's economy in the form of colossal financial, technological, and energy sanctions. By examining publicly available data and interviewing key individuals, the broad contours of direct and indirect costs of the program materialize. The economic merits of investment in front-end technology and insistence on domestic uranium enrichment deserve to be evaluated, based on Iran's self-reported uranium resources and uranium refinement and fuel fabrication capabilities.

The Iranian government uses a range of arguments to justify its pursuit of indigenous uranium enrichment. One that is often made by Iranian officials is that nuclear energy would allow them to consume less petroleum and gas domestically, and instead export it for greater economic benefit. But the environmental and technological gains of nuclear power have come at the expense of Iran's existing hydrocarbon sector and renewable-energy potential.

Although Iran is the first Middle Eastern country to harness nuclear energy for electricity production, its neighbors, including the United Arab Emirates, Saudi Arabia, Bahrain, Kuwait, Oman, Qatar, Egypt, and even Yemen, have vowed, perhaps perfunctorily, to follow suit. A comparative analysis, from technological and economic vantage points, reveals that Iran's nuclear power plants could soon appear outdated and overpriced in comparison with the nuclear reactors of regional countries.

In the aftermath of the natural-cum-nuclear disaster at Japan's Fukushima nuclear power plant, long-held fears about the safety and security of Iran's nuclear installations were rekindled. Given Iran's earthquake-prone topography, a growing number of Iranian opinionmakers are questioning their government's nuclear policies. The preparedness of the country to face nuclear emergencies is another issue that requires thorough examination.

An in-depth look at these crucial issues could offer the international community a potent tool for grassroots public diplomacy. The Iranian people have been largely absent from the nuclear discussion. A better-informed Iranian public will be better placed to judge the wisdom of a nuclear program that, up until now, has had enormous costs—above all for Iranians—and uncertain benefits. Likewise, less controversial subjects, such as nuclear safety and security or alternative energy sources, could broaden the diplomatic discussions in an effort to untie the Gordian knot of Iran's nuclear crisis.

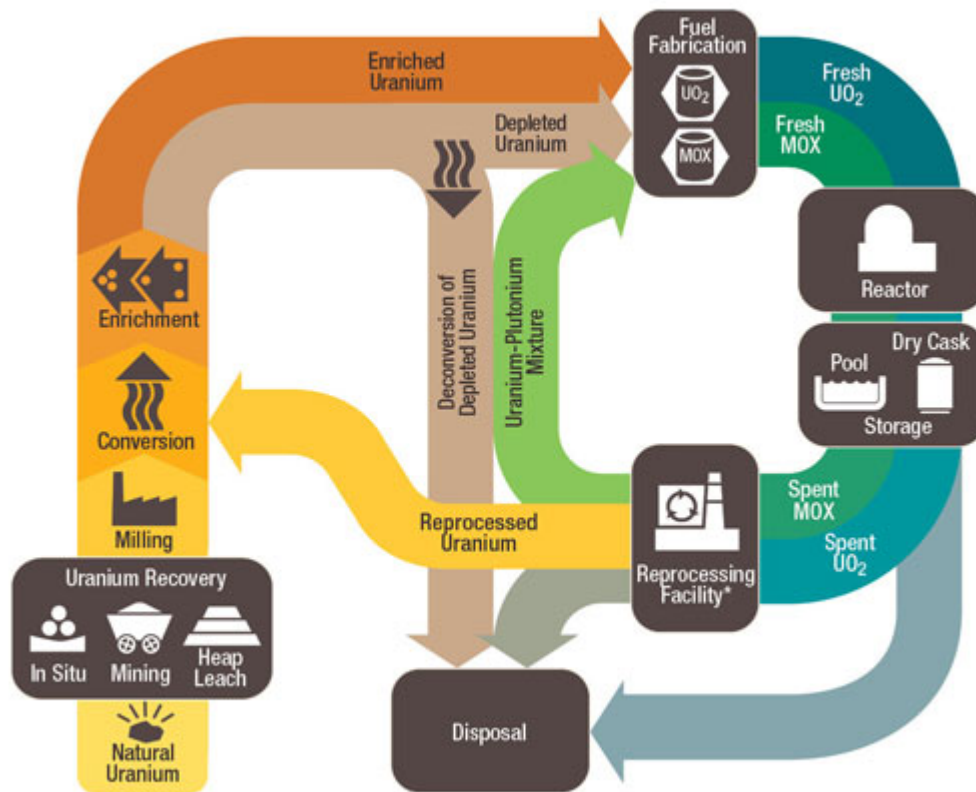
### **General Knowledge: Nuclear Fuel Cycle, Resolution 1540 and the Non-Proliferation Treaty** **Stages of the Nuclear Fuel Cycle**

The nuclear fuel cycle, also called nuclear fuel chain, is the progression of nuclear fuel through a series of differing stages. It consists of steps in the front end, which are the preparation of the fuel, steps in the service period in which the fuel is used during reactor operation, and steps in the back end, which are necessary to safely manage, contain, and either reprocess or dispose of spent nuclear fuel. If spent fuel is not reprocessed, the fuel cycle is referred to as an open fuel cycle (or a once-through fuel cycle); if the spent fuel is reprocessed, it is referred to as a closed fuel cycle.

The nuclear fuel cycle uses uranium in different chemical and physical forms. As illustrated below, this cycle typically includes the following stages:

- Uranium recovery to extract (or mine) uranium ore, and concentrate (or mill) the ore to produce "yellowcake"
- Conversion of yellowcake into uranium hexafluoride (UF<sub>6</sub>)
- Enrichment to increase the concentration of uranium-235 (U<sup>235</sup>) in UF<sub>6</sub>
- Deconversion to reduce the hazards associated with the depleted uranium hexafluoride (DUF<sub>6</sub>), or "tailings," produced in earlier stages of the fuel cycle
- Fuel fabrication to convert enriched UF<sub>6</sub> into fuel for nuclear reactors
- Use of the fuel in reactors (nuclear power, research, or naval propulsion)
- Interim storage of spent nuclear fuel
- Reprocessing (or recycling) of high-level waste (currently not done in the U.S.)
- Final disposition (disposal) of high-level waste

# The Nuclear Fuel Cycle



\* Reprocessing of spent nuclear fuel including MOX is not practiced in the U.S.  
 Note: The NRC has no regulatory role in mining uranium.

## The Treaty on the Non-Proliferation of Nuclear Weapons

The Treaty on the Non-Proliferation of Nuclear Weapons, commonly known as the Non-Proliferation Treaty or NPT, is an international treaty whose objective is to prevent the spread of nuclear weapons and weapons technology, to promote cooperation in the peaceful uses of nuclear energy, and to further the goal of achieving nuclear disarmament and general and complete disarmament.

Opened for signature in 1968, the Treaty entered into force in 1970. On 11 May 1995, the Treaty was extended indefinitely. More countries have adhered to the NPT than any other arms limitation and disarmament agreement, a testament to the Treaty's significance. A total of 191 states have joined the Treaty, though North Korea, which acceded to the NPT in 1985 but never came into compliance, announced its withdrawal in 2003. Four UN member states have never joined the NPT: India, Israel, Pakistan and South Sudan.

The treaty recognizes five states as nuclear-weapon states: the United States, Russia, the United Kingdom, France, and China (also the five permanent members of the United Nations Security Council). Four other states are known or believed to possess nuclear weapons: India, Pakistan and North Korea have openly tested and declared that they possess nuclear weapons, while Israel has had a policy of opacity regarding its nuclear weapons program.

The NPT consists of a preamble and eleven articles. Although the concept of "pillars" is not expressed anywhere in the NPT, the treaty is nevertheless sometimes interpreted as a three-pillar system, with an implicit balance among them:

- non-proliferation,
- disarmament, and
- the right to peacefully use nuclear technology

## Resolution 1540

United Nations Security Council resolution 1540 was adopted unanimously on 28 April 2004 regarding the non-proliferation of weapons of mass destruction. The resolution establishes the obligations under Chapter VII of the United Nations Charter for all Member States to develop and enforce appropriate legal and regulatory measures against the proliferation of chemical, biological, radiological, and nuclear weapons and their means of delivery, in particular, to prevent the spread of weapons of mass destruction to non-state actors.

It is notable in that it recognizes non-state proliferation as a threat to the peace under the terms of Chapter VII of the United Nations Charter, and creates an obligation for states to modify their internal legislation. Furthermore, the resolution requires every state to criminalize various forms of non-state actor involvement in weapons of mass destruction and its related activities in its domestic legislation and, once in place, to enforce such legislation. By virtue of its universal scope and mandatory nature, resolution 1540 marks a departure from previous nonproliferation arrangements and adds a novel layer to the nonproliferation regime. Before the resolution was adopted, the non-proliferation regime was based on many partly overlapping arrangements, none of which established universal mandatory obligations

### **Short History on the Nuclear Crisis in Iran**

**2004 June** - Iran is rebuked by the IAEA for failing to fully cooperate with an inquiry into its nuclear activities.

**2004 November** - Iran agrees to suspend most of its uranium enrichment under a deal with the EU.

**2005 August-September** - Tehran says it has resumed uranium conversion at its Isfahan plant and insists the programme is for peaceful purposes. IAEA finds Iran in violation of the nuclear Non-Proliferation Treaty.

**2006 January** - Iran breaks IAEA seals at its Natanz nuclear research facility.

**2006 February** - IAEA votes to report Iran to the UN Security Council over its nuclear activities. Iran resumes uranium enrichment at Natanz.

**2006 April** - Iran says it has succeeded in enriching uranium at its Natanz facility.

**2006 31 August** - UN Security Council deadline for Iran to halt its work on nuclear fuel passes. IAEA says Tehran has failed to suspend the programme.

**2006** UN Security Council votes to impose sanctions on Iran's trade in sensitive nuclear materials and technology. Iran condemns the resolution and vows to speed up uranium enrichment work.

**2007 February** - IAEA says Iran failed to meet a deadline to suspend uranium enrichment, exposing Tehran to possible new sanctions.

**2007 March** - Diplomatic stand-off with Britain after Iran detains 15 British sailors and marines patrolling the mouth of the Shatt al-Arab waterway separating Iran and Iraq.

**2007 April** - President Ahmadinejad says Iran can produce nuclear fuel on an industrial scale. IAEA says Iran has begun making nuclear fuel in its underground uranium enrichment plant. It also says that Iran has started up more than 1,300 centrifuge machines.

**2007 May** - IAEA says Iran could develop a nuclear weapon in three to eight years if it so chooses.

**2007 June** - Protests erupt after government imposes petrol rationing amid fears of possible UN sanctions.

**2007 July** - Iran announces plans to stop making cars that only run on petrol and switch to dual-fuel vehicles, which also run on gas. Iran agrees to allow inspectors to visit the Arak nuclear plant following talks with the IAEA.

**2007 October** - US announces sweeping new sanctions against Iran, the toughest since it first imposed sanctions almost 30 years ago.

**2007 December** - A new US intelligence report plays down the perceived nuclear threat posed by Iran.

**2008 February** - Iran launches a research rocket to inaugurate a newly built space centre. Washington describes the launch as "unfortunate".

**2008 May** - IAEA says Iran is still withholding information on its nuclear programme.

**2008 June** - EU foreign policy chief Javier Solana presents an offer of trade benefits, which Tehran says it will look at, but will reject if it demands suspension of uranium enrichment.

**2008 July** - Iran test-fires a new version of the Shahab-3, a long-range missile it says is capable of hitting targets in Israel.

**2008 August** - Informal deadline set by Western officials for Iran to respond to package of incentives in return for halt in nuclear activities passes without reply. Iran says it has successfully launched a test rocket capable of carrying a satellite into space.

**2008 September** - UN Security Council passes unanimously a new resolution reaffirming demands that Iran stop enriching uranium, but imposes no new sanctions. The text was agreed after Russia said it would not support further sanctions.

**2009 September** - Iran admits that it is building a uranium enrichment plant near Qom, but insists it is for peaceful purposes. The country test-fires a series of medium- and longer-range missiles that put Israel and US bases in the Gulf within potential striking range.

**2009 October** - Five permanent UN Security Council members plus Germany offer Iran proposal to enrich its uranium abroad.

**2009 November** - Iran refuses to accept the international proposal to end the dispute over its nuclear programme. UN nuclear watchdog IAEA passes a resolution condemning Iran for developing a second uranium enrichment site in secret. Iran denounces the move as "political" and announces plans to create 10 more uranium enrichment sites in secret. Iran denounces the move as "political" and announces plans to create 10 more uranium enrichment facilities.

**2010 February** - Iran says it is ready to send enriched uranium abroad for further enrichment under a deal agreed with the West. The US calls on Tehran to match its words with actions.

**2010 May** - Iran reaches a deal to send uranium abroad for enrichment after mediation talks with Turkey and Brazil; Western states respond with scepticism, saying the agreement will not stop Iran from continuing to enrich uranium

**2010 June** - UN Security Council imposes fourth round of sanctions against Iran over its nuclear programme, including tighter financial curbs and an expanded arms embargo.

**2010 August** - In what Tehran describes as a milestone in its drive to produce nuclear energy, engineers begin loading fuel into the Bushehr nuclear power plant.

**2010 September** - Stuxnet - a computer worm which affects industrial systems and which may have been created by a nation-state - is reportedly detected in staff computers at the Bushehr nuclear plant.

**2010 December** - Main achievement of talks in Geneva between Iran and key world powers on Iran's nuclear programme is to agree to hold another round of talks in Istanbul in January.

**2011 January** - Nuclear chief Ali Akbar Salehi says Iran now possesses technology needed to make fuel plates and rods for nuclear reactors.

**2011 May** - Iran's Atomic Energy Organisation says the generating unit at the Bushehr nuclear power plant has begun operating at a low level.

**2011 September** - Iran announces that the Bushehr nuclear power station has been connected to the national grid.

**2011 November** - A report by the IAEA says Iran is carrying out research that can only be used to develop a nuclear bomb trigger. Iran rejects the findings as politically motivated.



**2012 January** - US imposes sanctions on Iran's central bank, the main clearing-house for its oil export profits. Iranian threatens to block the transport of oil through the Strait of Hormuz. Iran begins enriching uranium at its underground Fordow plant, in what the US terms a "further escalation" in the nuclear row. The European Union imposes an oil embargo on Iran over its nuclear programme.

**2012 February** - International Atomic Energy Agency (IAEA) inspectors leave Iran after being denied access to the Parchin site, south of Tehran.

**2012 May** - UN nuclear inspectors find traces of uranium enriched at 27% at Iran's Fordo nuclear site, a day after Iran and world powers hold inconclusive talks on Iran's nuclear programme in Baghdad.

**2012 September** - International Atomic Energy Agency (IAEA) quarterly report says Iran doubles production capacity at Fordow nuclear site and "significantly hampered" IAEA ability to inspect Parchin military site.

**2012 November** - Leaked IAEA report says Iran is ready to double output at the Fordo underground uranium enrichment facility.

**2013 January** - Iran tells IAEA it plans to upgrade uranium enrichment centrifuges at its Natanz plant, allowing it to refine uranium at a faster rate.

**2013 April** - Iran says it has begun operations at two uranium mines and a uranium ore-processing plant, furthering its capacity to produce nuclear material.

**2013 June** - Reformist-backed cleric Hassan Rouhani wins presidential election, gaining just over 50% of the vote.

**2013 September** - President Rouhani tells US broadcaster NBC that Iran will never build nuclear weapons, and repeats offer of "time-bound and results-oriented" talks on the nuclear question in his address to the UN General Assembly.

**2013 November** - Iran agrees to curb uranium enrichment above 5% and give UN inspectors better access in return for about \$7bn in sanctions relief at talks with the P5+1 group - US, Britain, Russia, China, France and Germany - in Geneva.

**2014 January** - World powers and Iran begin implementing a deal on Iran's nuclear programme following intense talks in Geneva.

**2014 April** - The International Atomic Energy Agency says Iran has neutralised half of its higher-enriched uranium stockpile, as per a deal agreed earlier in the year.

**2014 July** - The sixth and final round of nuclear negotiations between Iran and the P5+1 group begin in Vienna.

**2014 August** - Iran says it has shot down an Israeli drone near the Natanz uranium enrichment site.

**2014 November** - Russia agrees to build up to eight nuclear reactors in Iran, in move that might ease Iranian demands to have own uranium enrichment. Vienna negotiations on Iran's nuclear programme fail to finalise preliminary deal signed in Geneva in November 2013. The two sides express confidence that remaining sticking points can be resolved, and agree a seven-month extension to the talks.

**2015 July** - After years of negotiations, world powers reach deal with Iran on limiting Iranian nuclear activity in return for lifting of international economic sanctions. The deal reportedly gives UN nuclear inspectors extensive but not automatic access to Iranian sites. Key Nuclear Sites

## **Key Nuclear Sites**

### Arak - Heavy water reactor and production plant

The existence of a heavy-water facility near the town of Arak first emerged with the publication of satellite images by the US-based Institute for Science and International Security in December 2002. Spent fuel from a heavy-water reactor contains plutonium suitable for a nuclear bomb. In August 2011, the IAEA visited the IR-40 heavy-water reactor site at Arak. Iran told the IAEA the operation of the reactor was planned to start by early 2014. World powers had originally wanted Arak dismantled because of the proliferation risk. As part of the interim nuclear deal signed in November 2013, Iran agreed not to commission or fuel the reactor. Under

the Joint Comprehensive Plan of Action (JCPOA) agreed on in July 2015, Iran will redesign the reactor so it cannot produce any weapons-grade plutonium and presents less of a proliferation threat. All spent fuel will be sent out of the country as long as the reactor exists. Iran will also not be permitted to build additional heavy-water reactors or accumulate heavy water for 15 years.

### Bushehr - Nuclear power station

Iran's nuclear programme began in 1974 with plans to build two commercial nuclear reactors at Bushehr with German assistance. The project was abandoned because of the Islamic revolution five years later, but revived in the 1990s when Tehran signed an agreement with Russia to resume work at the site. Moscow delayed completion of the project while the UN Security Council debated and then passed resolutions aimed at stopping uranium enrichment in Iran. While enriched uranium is used as fuel for nuclear reactors, it can also be used to make nuclear bombs. In December 2007, Moscow started delivering the canisters of enriched uranium the plant needed and it was officially linked up to Iran's national power grid in September 2011, generating 700MW of electricity. In August 2013, an IAEA inspection of the plant indicated that the reactor was operating at 100% of its nominal power. The reactor has raised safety concerns due to the merging of a German and Russian design. It is also close to a major fault line and the region frequently experiences earthquakes. In April 2013, there was a 6.3-magnitude earthquake in the area.

### Gachin - Uranium mine

In December 2010, Iran said it had delivered its first domestically produced uranium ore concentrate, or yellowcake, to a plant that could make it ready for enrichment. The IAEA says evidence suggests the Gachin mine, near the Gulf port of Bandar Abbas, was originally intended as a source of uranium for a military nuclear programme. It does not produce enough yellowcake to refuel an electric power reactor - but a nuclear weapons programme uses far less. Iran was believed to be running low on its stock of yellowcake, originally imported from South Africa in the 1970s. But since Gachin, it has opened two further uranium mines at Saghand in central Iran and a yellowcake production factory at Ardakan. In January 2014, IAEA inspectors were allowed to visit the Gachin mine for the first time since 2005.

### Isfahan - Uranium conversion plant

In 2006, Iran began operating a uranium conversion facility (UCF) at its nuclear research facility in Isfahan to convert yellowcake into three forms:

- Hexafluoride gas - used for enrichment processes
- Uranium oxide - used to fuel reactors
- Metal - used in some types of fuel elements, as well as the cores of nuclear bombs

IAEA inspectors were allowed to visit the site in November 2013.

### Natanz - Uranium enrichment plant

The Natanz fuel enrichment plant (FEP) is Iran's largest gas centrifuge uranium enrichment facility. It began operating since February 2007, in contravention of UN Security Council resolutions demanding Iran halt uranium enrichment. The facility consists of three large underground buildings, capable of holding up to 50,000 centrifuges. Uranium hexafluoride gas is fed into centrifuges, which separate out the most fissile uranium isotope U-235. The FEP produces low-enriched uranium, which has a 3%-4% concentration of U-235. That can be used to produce fuel for nuclear power plants, but also be enriched to the much higher level of 90% needed to produce nuclear weapons. Under the July 2015 JCPOA, Iran has agreed to install no more than 5,060 of its oldest and least efficient centrifuges at Natanz for 10 years. Uranium enrichment research and development activities will take place only at Natanz and be limited for eight years.

### Parchin - Military site

The complex at Parchin, south of Tehran, is dedicated to the research, development and production of ammunition, rockets and explosives. Concerns about its possible role in Iran's nuclear programme emerged in 2004, when reports surfaced that a large explosives containment vessel had been built there to conduct hydrodynamic experiments. The IAEA has warned that hydrodynamic experiments, which involve high explosives in conjunction with nuclear material or nuclear material surrogates, are "strong indicators of possible weapon development". In 2005, IAEA inspectors were twice given access to parts of Parchin and were able to take several environmental samples. A report issued in 2006 noted that they "did not observe any unusual activities in the buildings visited, and the results of the analysis of environmental samples did not indicate the presence of nuclear material". But suspicions about Parchin persisted and the IAEA repeatedly sought to visit the facility again. After requesting access in late 2011, the IAEA observed

extensive landscaping, demolition and new construction at the site. In February 2012, inspectors were turned away. The IAEA subsequently complained it had been unable to "provide credible assurance about the absence of undeclared nuclear material and activities in Iran" and that it continued to have "serious concerns regarding possible military dimensions to Iran's nuclear programme". Under the July 2015 JCPOA, IAEA inspectors will also be able to request visits to military sites. However, access is not guaranteed and could be delayed. The IAEA's director general, Yukiya Amano, has signed a "roadmap" with Iran calling on the agency to resolve any outstanding concerns by the end of 2015.

#### Qom/Fordow - Uranium enrichment plant

In January 2012, Iran said it had begun uranium enrichment at the heavily-fortified underground Fordow facility, near the holy city of Qom. It began building the site in secret, but was later forced to acknowledge its existence after being confronted with satellite imagery evidence in September 2009. In June 2011, Iran told the IAEA that it was planning to produce medium-enriched uranium, which has a 20% concentration of U-235, at Fordow. Iran said the enriched uranium would be used as fuel the Tehran Research Reactor. But uranium with a concentration of 20% can also be further enriched to 90%, or "weapons-grade". Under the November 2013 interim nuclear deal, production of medium-enriched uranium ceased at Fordow, and Iran turned its stockpile into forms that were less of a proliferation risk.

The July 2015 JCPOA states that no enrichment will be permitted at Fordow for 15 years. The facility will instead be converted into a nuclear, physics and technology centre. The 1,044 centrifuges allowed to be installed at the site will produce radioisotopes for use in medicine, agriculture, industry and science.

### **The Joint Comprehensive Plan of Action (Original Text)**

#### PREFACE

The E3/EU+3 (China, France, Germany, the Russian Federation, the United Kingdom and the United States, with the High Representative of the European Union for Foreign Affairs and Security Policy) and the Islamic Republic of Iran welcome this historic Joint Comprehensive Plan of Action (JCPOA), which will ensure that Iran's nuclear programme will be exclusively peaceful, and mark a fundamental shift in their approach to this issue. They anticipate that full implementation of this JCPOA will positively contribute to regional and international peace and security. Iran reaffirms that under no circumstances will Iran ever seek, develop or acquire any nuclear weapons. Iran envisions that this JCPOA will allow it to move forward with an exclusively peaceful, indigenous nuclear programme, in line with scientific and economic considerations, in accordance with the JCPOA, and with a view to building confidence and encouraging international cooperation. In this context, the initial mutually determined limitations described in this JCPOA will be followed by a gradual evolution, at a reasonable pace, of Iran's peaceful nuclear programme, including its enrichment activities, to a commercial programme for exclusively peaceful purposes, consistent with international non-proliferation norms.

The E3/EU+3 envision that the implementation of this JCPOA will progressively allow them to gain confidence in the exclusively peaceful nature of Iran's programme. The JCPOA reflects mutually determined parameters, consistent with practical needs, with agreed limits on the scope of Iran's nuclear programme, including enrichment activities and R&D. The JCPOA addresses the E3/EU+3's concerns, including through comprehensive measures providing for transparency and verification.

The JCPOA will produce the comprehensive lifting of all UN Security Council sanctions as well as multilateral and national sanctions related to Iran's nuclear programme, including steps on access in areas of trade, technology, finance, and energy.

#### PREAMBLE AND GENERAL PROVISIONS

i. The Islamic Republic of Iran and the E3/EU+3 (China, France, Germany, the Russian Federation, the United Kingdom and the United States, with the High Representative of the European Union for Foreign Affairs and Security Policy) have decided upon this long-term Joint Comprehensive Plan of Action (JCPOA). This JCPOA, reflecting a step-by-step approach, includes the reciprocal commitments as laid down in this document and the annexes hereto and is to be endorsed by the United Nations (UN) Security Council.

ii. The full implementation of this JCPOA will ensure the exclusively peaceful nature of Iran's nuclear programme.

- iii. Iran reaffirms that under no circumstances will Iran ever seek, develop or acquire any nuclear weapons.
- iv. Successful implementation of this JCPOA will enable Iran to fully enjoy its right to nuclear energy for peaceful purposes under the relevant articles of the nuclear Non-Proliferation Treaty (NPT) in line with its obligations therein, and the Iranian nuclear programme will be treated in the same manner as that of any other non-nuclear-weapon state party to the NPT.
- v. This JCPOA will produce the comprehensive lifting of all UN Security Council sanctions as well as multilateral and national sanctions related to Iran's nuclear programme, including steps on access in areas of trade, technology, finance and energy.
- vi. The E3/EU+3 and Iran reaffirm their commitment to the purposes and principles of the United Nations as set out in the UN Charter.
- vii. The E3/EU+3 and Iran acknowledge that the NPT remains the cornerstone of the nuclear non-proliferation regime and the essential foundation for the pursuit of nuclear disarmament and for the peaceful uses of nuclear energy.
- viii. The E3/EU+3 and Iran commit to implement this JCPOA in good faith and in a constructive atmosphere, based on mutual respect, and to refrain from any action inconsistent with the letter, spirit and intent of this JCPOA that would undermine its successful implementation. The E3/EU+3 will refrain from imposing discriminatory regulatory and procedural requirements in lieu of the sanctions and restrictive measures covered by this JCPOA. This JCPOA builds on the implementation of the Joint Plan of Action (JPOA) agreed in Geneva on 24 November 2013.
- ix. A Joint Commission consisting of the E3/EU+3 and Iran will be established to monitor the implementation of this JCPOA and will carry out the functions provided for in this JCPOA. This Joint Commission will address issues arising from the implementation of this JCPOA and will operate in accordance with the provisions as detailed in the relevant annex.
- x. The International Atomic Energy Agency (IAEA) will be requested to monitor and verify the voluntary nuclear-related measures as detailed in this JCPOA. The IAEA will be requested to provide regular updates to the Board of Governors, and as provided for in this JCPOA, to the UN Security Council. All relevant rules and regulations of the IAEA with regard to the protection of information will be fully observed by all parties involved.
- xi. All provisions and measures contained in this JCPOA are only for the purpose of its implementation between E3/EU+3 and Iran and should not be considered as setting precedents for any other state or for fundamental principles of international law and the rights and obligations under the NPT and other relevant instruments, as well as for internationally recognised principles and practices.
- xii. Technical details of the implementation of this JCPOA are dealt with in the annexes to this document.
- xiii. The EU and E3+3 countries and Iran, in the framework of the JCPOA, will cooperate, as appropriate, in the field of peaceful uses of nuclear energy and engage in mutually determined civil nuclear cooperation projects as detailed in Annex III, including through IAEA involvement.
- xiv. The E3+3 will submit a draft resolution to the UN Security Council endorsing this JCPOA affirming that conclusion of this JCPOA marks a fundamental shift in its consideration of this issue and expressing its desire to build a new relationship with Iran. This UN Security Council resolution will also provide for the termination on Implementation Day of provisions imposed under previous resolutions; establishment of specific restrictions; and conclusion of consideration of the Iran nuclear issue by the UN Security Council 10 years after the Adoption Day.
- xv. The provisions stipulated in this JCPOA will be implemented for their respective durations as set forth below and detailed in the annexes.
- xvi. The E3/EU+3 and Iran will meet at the ministerial level every 2 years, or earlier if needed, in order to review and assess progress and to adopt appropriate decisions by consensus.

## Points to Address in the Resolution

- The transformation of the Arak, Natanz and Fordow plants – how can the promised transformation of the facilities be ensured?
- Access of the IAEA to the enrichment facilities
- Measures to ensure Iran will not seek to build a nuclear bomb
- Further Implementation of Nuclear Safeguards
- Questions of Nuclear Safety and Security in the Facilities – how can accidents be prevented?

## Links

<http://www.iaea.org>

<https://www.iaea.org/newscenter/focus/iran>

<http://carnegieendowment.org/specialprojects/IranDeal>

[http://www.eeas.europa.eu/statements/docs/2013/131124\\_03\\_en.pdf](http://www.eeas.europa.eu/statements/docs/2013/131124_03_en.pdf)

<http://theiranproject.com/wp-content/uploads/2015/07/iran-deal-text.pdf>

<http://carnegieendowment.org/2013/04/02/iran-s-nuclear-odyssey-costs-and-risks/fvui#>

<http://www.un.org/en/sc/1540/>

<http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Introduction/Nuclear-Fuel-Cycle-Overview/>