The Lausanne Framework and a Final Nuclear Deal with Iran

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The Lausanne Framework Lays the Groundwork for Strong, Effective Comprehensive Nuclear Deal with Iran

On April 2 in Lausanne, Switzerland, Iran and the P5+1 (China, France, Germany, Russia, the United Kingdom, and the United States) reached a breakthrough on the path toward a comprehensive nuclear agreement.

Iran and the P5+1 announced that after 15 months of negotiations, they had reached agreement on a set of parameters that outline the nuclear restrictions, monitoring and verification, and sanctions relief in a final Joint Comprehensive Plan of Action. An April 2 White House fact sheet provides more detail on the Lausanne framework.

Negotiators are now on the verge of concluding a final Comprehensive Joint Plan of Action (CJPoA), based on the April 2 parameters.

Such an agreement would meet the core U.S. and P5+1 policy goals: blocking Iran's potential pathways to nuclear weapons using highly-enriched uranium and plutonium and guarding against a covert nuclear weapons program. The CJPoA would be long-term, balanced, and verifiable agreement.

As U.S. Energy Secretary Ernest Moniz noted in an April 12 Washington Post op-ed, the "agreement is not for 10, 15 or 20 years; it is a phased agreement built for the long term. And if Iran earns the international community's confidence in its peaceful objectives over this extended period, then the constraints will ease in phases, though its obligations under the Nuclear Non-Proliferation Treaty and the Additional Protocol would remain in place indefinitely."

Cutting Back Uranium Enrichment Capacity

The limitations agreed to in Lausanne exceed the Obama administration's commitment to ensure that it would take more than a year for Iran to produce enough highly enriched uranium for one nuclear weapon if Iran's leaders decided to do so. Currently, it would only take Iran two to three months to meet that objective.

The April 2 framework pushes back Iran's breakout time by dramatically reducing the number of centrifuges enriching uranium, removing its installed but not operating machines, and cutting back Iran's stockpile of enriched uranium gas by 97 percent. Uranium enrichment will also take place only at Natanz; Iran's smaller, underground facility at Fordow will be repurposed for non-uranium research activities. These elements together put up a verifiable roadblock to nuclear weapons using highly enriched uranium.

Currently, Iran is using about 10,200 first generation IR-1 centrifuges (696 at Fordow and 9,500 at Natanz) to produce uranium fuel enriched to less than five percent U-235. This enrichment level is suitable for making fuel for nuclear power plants. Weapons-grade uranium is enriched to greater than 90 percent U-235.
Iran has an additional 6,200 IR-1 machines at Natanz and 2,000 at Fordow that are installed, but not enriching uranium. Another 1,008 more advanced IR-2M centrifuges are installed at Natanz but not operational. In total, that adds up to about 19,500 centrifuges.

Under the deal the number of machines installed and enriching will be cut dramatically. Iran will operate 5,060 IR-1 centrifuges enriching uranium to less than 5 percent at Natanz. An additional 1,044 IR-1 centrifuges will be installed, but not enriching uranium. The remaining machines--over 13,000--will be removed from Natanz and Fordow and placed under International Atomic Energy Agency (IAEA) seal. Iran will only be able to access these machines, with IAEA oversight, if spare parts are needed to repair operating centrifuges. Iran's centrifuge manufacturing base will also be frozen, ensuring that Iran will not be stockpiling centrifuges to quickly deploy during the period of limitations.

But reducing the number of centrifuges is only part of the package that will significantly extend Iran's breakout time. Determining the time it will take Iran to produce enough weapons-grade uranium for one bomb (about 25 kg of uranium enriched to over 90 percent U-235) is also a function of Iran's stockpiles of enriched material. If Iran has enough reactor-grade material for a bomb it can accelerate the process of enriching uranium to weapons-grade. Beginning with natural uranium puts more time on the clock if Iran is trying to enrich to weapons-grade levels for a nuclear weapon.

Currently, Iran's stockpile of reactor-grade enriched uranium gas is about 10,000 kilograms--enough material for at least half a dozen bombs if it were to be enriched further.

Under a final comprehensive deal, Iran's remaining stockpile of low-enriched material will be cut to 300 kilograms, far less than what is necessary for a nuclear bomb. Together with the centrifuge reductions, this pushes Iran's breakout time to over 12 months. And given the strength of the monitoring and verification mechanisms, any move to deviate from the deal would be detected quickly.

Critics of deal point out that Iran and the P5+1 have not decided how Iran's existing stockpile low-enriched-uranium material will be neutralized. There are three options for reducing the stockpile from 10,000 kg to 300 kg: 1) Iran could ship the fuel to Russia, where it could be stored or manufactured into fuel plates; 2) Iran could dilute the material back down to natural uranium; 3) Iran could sell the enriched material on the open fuel market.

The method of neutralization is not a critical element of the deal. What is important is that Iran's stockpile is significantly reduced and out of reach for further enrichment. If Iran was simply allowed to convert the excess uranium hexafluoride gas to powder form for fuel plate manufacturing, that would be more problematic because that process is reversible, and Iran would continue to have access to the enriched material. However, Energy Secretary Ernest Moniz has been clear on the point that Iran will not simply be able to convert the excess uranium hexafluoride gas to powder. It must be diluted or shipped out.

Under the November 2013 Joint Plan of Action and the terms of its extension, Iran committed to dilute half of its stockpile of gas enriched to 20 percent and to convert the other half to fuel powder, which is used for fabrication into plates for its Tehran Research Reactor. These interim actions are to be fully completed by June 30, 2015.

While the limitations requiring Iran to operate no more than 5,060 centrifuges will end after 10 years, additional measures will ensure that Iran's breakout time is not dramatically reduced over the succeeding years. Iran has agreed to limit enrichment to reactor-grade (3.67 percent) for 15 years, and not to build any new enrichment facilities for the same timeframe.

**Fordow Repurposed**

Uranium enrichment at Fordow will also be prohibited for 15 years. Fordow's location, deep inside of a mountain, is a key concern for the P5+1 because the facility, originally constructed in secret, would be difficult to target in a military strike. Iran, however, was deeply opposed to shutting down any of its nuclear facilities.
As a compromise, the Fordow facility will be repurposed as a nuclear physics, technology, and research center. Of the 2,710 IR-1 centrifuges currently located there, 1,800 will be removed and stored under seal by the IAEA. The remaining 900 will not be used for uranium enrichment, but rather modified for the production of isotopes for medical research. No fissile material will be permitted in the facility and no research using uranium will be allowed for 15 years.

**Advanced Centrifuge R&D Restrictions**

Defining the parameters of Iran's research and development program on advanced centrifuges posed a significant challenge to negotiators. The P5+1 favored limits on research and development to ensure that Iran could not master more efficient, advanced machines in the early years of a deal that would then allow Tehran to quickly amass enough weapons-grade material for a bomb.

However, Iran's interest in moving beyond the inefficient, crash-prone IR-1 machines is also justifiable, particularly given Tehran's interest in domestically fueling its Bushehr power reactor (currently fueled by Russia). That would require a significant increase in Iran's domestic capacity down the road, which is more easily achievable with advanced machines.

The April 2 parameters will limit Iran's testing of its advanced machines, the IR-2M, IR-4, IR-5, IR-6, IR-6s, and IR-8, models and prohibit the use of any of these machines to produce enriched uranium. Testing will also be limited to single machines, and over time, to small cascades. This will ensure that Iran cannot breakout quickly using its advanced machines once the 10-year limit on enrichment using IR-1s ends.

After 10 years, advanced machines are likely to be phased-in and enrichment increased gradually according to an agreed upon schedule. Continued research and development will proceed according to a plan reached between Iran and the P5+1 and submitted to the IAEA.

Critics of the agreement are concerned that working on the advanced machines could allow Iran to head off a cliff after the 10 years of limitations expire. Israeli Prime Minister Benjamin Netanyahu has repeatedly said that after 10 years Iran's breakout time will be near zero.

However, while Iran will be able to increase its enrichment capacity and phase-in advanced machines over time, additional limits and international obligations will remain in place.

In addition to the monitoring and verification that would detect any dash to a bomb, Iran will be limited to enriching to 3.67 percent, the stockpile will remain capped at 300 kg, and Iran will be prohibited from building new enrichment facilities for an additional five years. Iran's centrifuge manufacturing base will also remain frozen during the deal, thus ensuring that Iran is not stockpiling centrifuges that it could quickly deploy after the uranium-enrichment restrictions taper off. Together, these limits will keep Iran's uranium-enrichment program in check and weapons-grade enrichment out of reach.

**Blocking the Plutonium Pathway**

The April 2 parameters block Iran's pathway to nuclear weapons using separated plutonium indefinitely.

Under the agreed upon terms, Iran -- with internation assistance lead by China -- will modify the heavy-water reactor under construction at Arak and destroy or ship out the original core. Construction of the reactor was halted under the interim deal, but if completed as designed, the core would produce enough weapons-grade plutonium for about two nuclear weapons on an annual basis. The weapons-grade plutonium could then be separated from the spent fuel and used for a bomb.

In addition to redesigning the reactor so that it will not produce weapons-grade plutonium, Iran will ship the spent fuel out of the country.

The heavy-water production plant will continue to operate, but Iran will not accumulate excess heavy
water, which is used to moderate some types of reactors, like the one under construction at the Arak site. Excess heavy water will be sold on the open market.

Iran will also not construct any new heavy-water reactors for at least 15 years. Even after that time frame, however, Iran's plutonium pathway to nuclear weapons will remain blocked. Iran also committed indefinitely to refrain from reprocessing plutonium or conduct any research on reprocessing.

Taken together, these provisions provide a strong guarantee Iran's plutonium pathway to nuclear weapons is verifiably blocked.

Enhanced Monitoring and Verification

One of the most critical elements of an effective nuclear deal with Iran is ensuring that the enhanced monitoring and verification regime is intrusive enough to block a covert path to nuclear weapons and would very quickly be able to detect any deviation from the deal.

Based on Iran's past attempts to covertly build nuclear facilities and pursue weapons-related research, compliance concerns are real. But trust is not required for a good agreement. Enhanced verification, monitoring and transparency will provide the necessary confidence that Iran is abiding by its commitments.

The monitoring regime described in the April 2 parameters is a multilayered approach that subjects every step of Iran's nuclear cycle and supply chains to intensive monitoring and verification.

In addition to regular access to Iran's declared nuclear facilities, such as Natanz, Fordow, Arak, Esfahan, the IAEA will operate continuous surveillance of Iran's uranium mines for 25 years. The centrifuge rotors and bellows production areas will be under continuous surveillance for 20 years. The stored centrifuges removed from Fordow and Natanz will also be under continuous surveillance. Also, any procurement of dual-use items or materials for Iran's nuclear program will move through a designated channel and be subject to monitoring and approval.

Taken together, these measures cover Iran's supply chain. Continually monitoring the inputs and components of Iran's nuclear program will help ensure that Tehran is not covertly pursuing nuclear weapons using a clandestine parallel program.

If there are allegations that Iran has constructed a covert enrichment facility, conversion facility, or centrifuge production facility, or yellowcake uranium production facility anywhere in the country, the IAEA will be able to access the sites to investigate the allegations.

The parameters of the deal also include Iran's immediate implementation of the Additional Protocol. This requirement expands Iran's nuclear declaration to include a larger number of sites that encompass the entirety of Iran's fuel cycle. The Additional Protocol has more extensive accountancy requirements, and the IAEA can conduct short-notice inspections. The Additional Protocol is permanent once ratified.

Skeptics have pushed back about the language regarding the Additional Protocol, noting that the White House fact sheet does not indicate if Iran will ratify the document as part of the deal. However, it is important to note that Iran committed to ratification in a final agreement as part of the November 2013 interim deal.

The IAEA will also receive earlier notification of any new nuclear facilities that Iran intends to build. Iran will implement Modified Code 3.1 of its safeguards agreement. Under Code 3.1, Iran will notify the agency as soon as it decides or approves a new facility. Under the existing safeguards, the agency only receives six months notice before the facility is commissioned. Greater advance notice will give the international community more time to assess the impact of the new facilities and ensure that they are in line with Iran's peaceful nuclear program.

Taken together, these monitoring and verification measures span the entirety of Iran's fuel cycle and
provide assurance that Iran cannot divert material or construct a parallel covert nuclear weapons program.

Some critics argue that the comprehensive nuclear deal must allow for inspections "anywhere, anytime" including at military sites. It is unrealistic to assume that any country, not defeated in wartime, would accept unlimited, no-notice inspections at any and all military sites. And more importantly, it is unnecessary in the Iranian case.

Under the Additional Protocol, the IAEA will have access to military facilities if there are concerns about nuclear weapons-related activities. The two sides will likely agree to an adjudication mechanism designed to also ensure that Iran does not block IAEA access to such sites.

Additionally, the IAEA will not provide the only oversight of Iran's nuclear program. Confidence in Iran's compliance will be bolstered by national intelligence organizations. These organizations played a critical role in detecting Iran's covert facilities in the past and uncovering evidence of Iran's past work related to nuclear weapons. They will continue to keep Iran's nuclear activities under a microscope.

**Past Possible Military Dimensions**

Some critics claim that the April 2 Lausanne framework will not require Iran to cooperate with the IAEA's investigation into Iran's past activities with military dimensions. Iran however, will be required to implement a set of measures to address the IAEA's outstanding questions.

It is well established that Iran conducted activities relevant to weapons development as part of an organized program prior to 2003. The IAEA laid out its allegations regarding those activities in November 2011.

While the IAEA and Iran have made some progress between November 2013 and August 2014 on resolving those issues, the investigation is now stalled. Iran should not, and will not, be let off the hook. It is critical that Iran answers the IAEA's questions and allows access to the individuals and sites necessary to complete the investigation.

The Lausanne framework also makes it clear that the removal of nuclear-related UN Security Council sanctions will not occur until and unless Iran cooperates with the IAEA investigation and the past questions are resolved.

However, a "full confession" by Iran that it engaged in nuclear weapons-related work, as some critics demand, is extremely unlikely given Iran's past statements about the peaceful nature of its nuclear program and that nuclear weapons are un-Islamic. A confession is also an unnecessary precondition that would only delay the conclusion of the investigation even further. What is most important is designing and implementing an enhanced monitoring and verification regime capable of ensuring that there are no ongoing weaponization activities. The April 2 Lausanne framework provides the tools and the incentive to achieve that goal.

**Sanctions Relief**

Phased sanctions relief will serve as an incentive for Iran to follow through on key nuclear restrictions. At the onset of a deal, access to frozen assets, relief from U.S. sanctions in the form of waivers, and the lifting of EU sanctions will provide Iran with significant relief commensurate to the dramatic nuclear concessions that Iran will make early in the Joint Comprehensive Joint Plan of Action. This first tranche of relief will likely come when Iran has taken the steps to push its uranium-enrichment breakout time to over 12 months.

The core architecture of U.S. sanctions will remain in place for years into the agreement, however, facilitating swift re-imposition if Iran violates the deal. The final agreement will have a dispute resolution process to ensure fair findings regarding any alleged violation.

According to the Lausanne framework, [UN Security Council sanctions related to Iran's nuclear](https://www.armscontrol.org)
The Lausanne Framework and a Final Nuclear Deal with Iran
Published on Arms Control Association (https://www.armscontrol.org)

The framework deal reached in Lausanne on April 2 lays the groundwork for a strong, effective, verifiable, multi-phased, comprehensive nuclear deal. If the final deal is consistent with the April 2 framework, it will verifiably block Iran from obtaining nuclear weapons, and that is in the best interest of U.S. and international security.

A number of prominent nonproliferation experts agree that if implemented, this deal will put in place an effective, verifiable, long-term plan to guard against an Iranian nuclear weapon. These experts agree that a framework will:

- significantly reduce Iran's capacity to enrich uranium to the point that it would take at least 12 months to amass enough uranium enriched to weapons grade for one bomb;
- require Iran to modify its Arak heavy water reactor to meaningfully reduce its proliferation potential and bar Iran from developing any capability for separating plutonium from spent fuel for weapons;
- put in place enhanced international inspections and monitoring that would help to deter Iran from attempting to violate the agreement, but if Iran did, increase the international community's ability to detect promptly and, if necessary, disrupt future efforts by Iran to build nuclear weapons, including at potential undeclared sites; and
- require Iran to cooperate with the IAEA to conclude the investigation of Iran's past efforts to develop a nuclear warhead and provide transparency sufficient to help ensure that any such effort remains in abeyance.

There is no better deal on the horizon. Efforts in Washington to block implementation of an effective agreement consistent with the April 2 framework would undermine global support for the existing sanctions architecture, remove the limits on Iran's nuclear capabilities, eliminate the chance for more robust international inspections, and increase the risk of an Iranian nuclear weapon and a military conflict. U.S. and Israeli intelligence analysts assess that a military strike on Iran's nuclear facilities would only set back its nuclear program for a period of two to four years.

The conclusion of the Joint Comprehensive Plan of Action is a long-term, win-win solution for both sides.

--KELSEY DAVENPORT, Nonproliferation Policy Director, with DARYL G. KIMBALL, Executive Director

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