National Security Program

Foreign Policy Project

Evaluating a Nuclear Deal with Iran

Senator Charles S. Robb and General (ret.) Charles F. Wald | July 2014

BIPARTISAN POLICY CENTER

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The Foreign Policy Project (FPP) is committed to developing realistic and robust bipartisan policy recommendations for the principal national security and foreign policy issues confronting the United States. FPP has conducted rigorous analysis of the growing threat of a nuclear Iran since 2007 with a prominent group of bipartisan experts that has included U.S. Senators Dan Coats (R-IN) and Charles Robb (D-VA), General (ret.) Charles Wald, former Assistant Secretary of State Stephen Rademaker, and others. Since its inception, FPP's Iran Initiative has issued five reports, authored multiple white papers and op-eds, and conducted numerous briefings for senior congressional, administration, and military officials.

The project's reports have consistently asserted that a nuclear weapons–capable Iran would be "strategically untenable" for the United States and have offered a robust and bipartisan approach for thwarting Iran's nuclear ambitions: a triple-track strategy combining a simultaneous pursuit of diplomacy, tough sanctions, and credible and visible preparations for a military option of last resort.

ACKNOWLEDGEMENTS

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Charles Robb, now co-chair of the Bipartisan Policy Center's Foreign Policy Project, represented the state of Virginia during his political career. In 1978, he was elected lieutenant governor of Virginia and served until 1982. He served as governor of Virginia from 1982 to 1986. In 1988, he was elected to the U.S. Senate. He was appointed by President George W. Bush as co-chair of the Commission on Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, active from 2004 to 2005. In 2006, he was appointed to serve on the President's Foreign Intelligence Advisory Board. He also served on the Iraq Study Group.

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Executive Summary

"A nuclear weapons–capable Islamic Republic of Iran," the Bipartisan Policy Center's Iran Task Force argued six years ago, "is strategically untenable."[1] With the Middle East gripped by instability and seemingly poised on the brink of regional sectarian conflict, that assessment holds even more truth today. After more than a decade of intermittent and unsuccessful negotiations on the future of Iran's nuclear program, the Joint Plan of Action (JPA)—a six-month-long confidence-building agreement signed by Iran and six world powers in Geneva in November 2013—has provided the best opportunity to date for preventing this untenable scenario peacefully and diplomatically.

"THERE IS VERY LITTLE PUBLICLY AVAILABLE INFORMATION ON WHAT MIGHT SEPARATE A "BAD DEAL" FROM A GOOD ONE."

With the JPA set to expire on July 20, 2014, the world will soon learn what has been made of this opportunity—whether a comprehensive deal has been reached, the JPA extended for another six-month period while negotiations continue, or if, as has happened all too often before, talks collapse. Yet, for such a momentous issue, there is relatively little information available to the public to know how to judge and react to the events that unfold around the critical July 20 deadline. "No deal is better than a bad deal," is a refrain that has been repeated by members of Congress from both sides of the aisle; high-ranking Obama administration officials, including Secretary of State John Kerry and chief nuclear negotiator Wendy Sherman; and numerous experts.[2] But, despite such pronouncements, there is very little publicly available information on what might separate a "bad deal" from a good one.

Part of the problem is the technical nature of the issue. Questions involving how many centrifuges Iran should be allowed to operate or how much enriched uranium it can stockpile are inscrutable for those not steeped in nuclear engineering. Similarly, the intricacies of inspections regimes and sanctions relief do not make for good sound bites. Addressing such complexity requires a longer and more open public discussion than has been had on such a critical national security challenge; and that, too, is part of the problem.

This paper aims to fill in part of this gap by highlighting the major issues that any comprehensive agreement with Iran will have to address and by providing some reference points—the current status of Iran's nuclear program, past administration and congressional proposals for reining in that program, and expert proposals for a "good" deal—by which to judge any deal that might be struck.

"FIRST, THE KEY TO PREVENTING A NUCLEAR IRAN IS CONSTRAINING IRAN'S INTENTIONS."

Issues that will need to be addressed by any comprehensive nuclear deal with Iran include:

- **Iran's Nuclear Capabilities**
  - Fissile Material
    - *Number of Centrifuges Operating*
    - *Type of Centrifuges Operating*
    - *Number of Centrifuges Installed*
    - *Type of Centrifuges Installed*
    - *Centrifuge R&D*
    - *Enrichment Facilities*
    - *Enrichment Level*
    - *Enriched Uranium Stockpiles*
    - *Plutonium Production/Arak Heavy Water Reactor*
  - Nuclear Weapon Design
  - Ballistic Missile Development
- **Verification**
  - Inspections
  - Deal Duration
- **Incentives**
  - Signals of Resolve
  - Sanctions Relief

A review of these topics and the last decade of aborted attempts to address them suggest two key considerations by which to evaluate any comprehensive agreement.

First, the key to preventing a nuclear Iran is constraining Iran's intentions. A negotiated solution should not be understood as taking away Iran's ability to seek a nuclear weapons capability. Rather it is better described as seeking to put in place conditions that affect the logic of Iran's decision-making about whether or not to make use of the capabilities it will still retain.

"WITHOUT A ROBUST INSPECTIONS REGIME, IT WILL BE IMPOSSIBLE TO TELL WHETHER IRAN IS ACTUALLY COMPLYING WITH THE RESTRICTIONS IMPOSED ON ITS NUCLEAR PROGRAM."

To be sure, an Iran deal should include enough mechanisms to allow the United States and others to detect any attempts made by Iran to sprint for a nuclear weapon with sufficient time to act to prevent Iran from producing sufficient fissile material to fabricate a weapon. In this sense, breakout timing—how long it would take Iran to produce enough fissile material for a nuclear weapon—is a

useful proxy for the obstacles a deal might create for an Iranian sprint to the bomb, but it should not be used on its own to judge a deal's merits.

Without a robust inspections regime, it will be impossible to tell whether Iran is actually complying with the restrictions imposed on its nuclear program. And by ensuring that a potential Iranian breakout will be detected early enough to allow international powers to respond decisively, a proper inspections regime will create strong incentives for Iran to abide by the deal. So, too, would a phased approach to sanctions relief that only relaxes restrictions over time, as Iran meets established benchmarks for compliance.

"FOR ANY DEAL TO WORK, THE P5+1 WILL NEED TO TAKE STEPS TO SHOW THE RESOLVE TO MONITOR AND ENFORCE THE TERMS OF THE AGREEMENT FOR YEARS ON END."

Another crucial aspect of constraining Iran's nuclear ambitions will be the continued vigilance and resolve signaled by the United States upon completion of a comprehensive deal. Despite expectations that once any comprehensive deal is signed, the threat of a nuclear weapons–capable Iran will have been mitigated, the reality is that it will only be the beginning of a new period of vigilance. For any deal to work, the P5+1 will need to take steps to show the resolve to monitor and enforce the terms of the agreement for years on end. Should Iran believe that verification of its compliance is flagging or the will to punish any transgressions is waning, it will have little incentive to continue observing the terms of its deal.

Second, for a comprehensive deal to work, transparency will be critical, and not just from Iran. There will no doubt be a sense of urgency in signing and implementing any comprehensive deal, but the American public should be given a chance to understand and digest the terms, not simply be told to trust their adequacy. This is especially important because, ultimately, the fate of a comprehensive agreement rests with Congress.

If it is not convinced that a deal negotiated by the P5+1 is good enough, Congress may well refuse to grant the sanctions relief required by the deal. This would be a significant setback, but the onus for avoiding it rests largely on the White House. The sooner such intra-governmental bipartisan cooperation begins and the sooner a public discussion about the merits of a comprehensive deal with Iran is launched, the smoother the process of implementing that deal will be.

"THE SOONER SUCH INTRA-GOVERNMENTAL BIPARTISAN COOPERATION BEGINS AND THE SOONER A PUBLIC DISCUSSION ABOUT THE MERITS OF A COMPREHENSIVE DEAL WITH IRAN IS LAUNCHED, THE SMOOTHER THE PROCESS OF IMPLEMENTING THAT DEAL WILL BE."

A Brief History of Diplomacy

Negotiations on Iran's nuclear program began in 2003, after the public exposure of covert Iranian nuclear facilities at Natanz and Arak. These early efforts were spearheaded by the EU-3 (France, Germany, and the United Kingdom), which, in the October 2003 Tehran Statement, secured an agreement from Iran to suspend its uranium enrichment activities.[3] In that deal, Iran also agreed to abide by the Additional Protocol, enhanced safeguard measures that would require Iran to provide inspectors from the International Atomic Energy Agency (IAEA) with more information about its nuclear activities and access to its nuclear sites.

In 2005, however, Iran abruptly halted its compliance with terms of the EU-3 deal. It also rejected a comprehensive proposal—broad cooperation on nuclear, scientific, economic, and diplomatic areas in return for constraints on Iran's nuclear program, including a halt to Iran's enrichment and reprocessing activities—put forward by the group.[4] Iranian negotiators refused to sign on to any deal that did not recognize the Islamic Republic's "right" to enrich uranium, a position they maintain to this day.[5]

No longer restricted by negotiated limitations and aided by covert research—specifically into how to prepare uranium for enrichment—illicitly conducted while nominally complying with the EU-3 deal, Iran restarted its nuclear program.[6] One week after pulling out of its agreement with the Europeans, Iran announced that it had resumed producing uranium hexafluoride—the gaseous form of uranium used for enrichment in centrifuges—at its Isfahan facility.[7] In response, the General Assembly of the IAEA voted to find Iran in noncompliance with its Safeguards Agreement—a document every signatory of the Nuclear Non-Proliferation Treaty is legally required to sign and abide by—and demanded that Iran halt all uranium enrichment–related activity, referring the matter to the United Nations Security Council (UNSC).[8]

By April 2006, Iran announced that it had successfully enriched uranium to 3.5 percent at its Natanz Pilot Fuel Enrichment Plant, a critical first step toward the ability to produce weapons-grade uranium for a nuclear device.[9] Shortly thereafter, negotiations with Iran resumed—but with a broader cast of characters. Across the table from Iran now sat all five permanent members of the UNSC—the United States, Russia, China, France, and Great Britain—as well as Germany, a group referred to as the P5+1. These talks were reinforced by UNSC Resolution 1696, which made the IAEA's call for Iran to halt its uranium enrichment legally binding.[10] Iran refused to meet these conditions and, in December 2006, the UNSC responded by enacting economic sanctions against Iran.[11]

Throughout 2007 and 2008, pressure on Iran continued to grow as additional UNSC sanctions were further buttressed by an EU-U.S. sanctions regime. During this period, the IAEA continued a separate track of negotiations with Iran while the P5+1 updated a 2006 proposal, calling for an Iranian suspension of enrichment in exchange for a commitment not to impose any additional sanctions. As before, negotiations stalled over a series of recurring sticking points. Iran continued to demand recognition of its right to enrich and refused to suspend its enrichment activities, insisting that advances in its nuclear program were irreversible, and should be factored into negotiations as a new baseline.

President Obama came to power in 2009, announcing his intention to "extend an open hand" to Iran and focus his attentions primarily on pursuing a diplomatic solution.[12] That year, the United States, backed by the IAEA, proposed a deal based on a system of "fuel swaps," whereby Iran would export the majority of its 3.5 percent enriched uranium and receive in return fuel rods for use in its Tehran Research Reactor.[13] Iran, however, rejected the deal.[14] The following year, Brazil and Turkey attempted to resuscitate it, but the United States and other P5+1 nations rejected their offer on the grounds that Iran had increased its stockpile of 3.5 percent enriched uranium and begun enriching uranium to 20 percent, rendering the original terms inadequate.[15]

Shortly thereafter, the UNSC adopted another resolution increasing sanctions on Iran. The United States and European Union also pivoted to a "dual track strategy" that combined diplomatic outreach with ever-stricter economic sanctions.[16] Despite sanctions legislation passed by the U.S. Congress in both 2010 and 2011, Iran again refused to come to the negotiating table, rejecting both a new Russian proposal and EU calls for new talks.

At the same time, the IAEA was publicly raising new concerns about Iran's nuclear ambitions, particularly what it referred to as the "possible military dimensions" (PMDs) of Iran's nuclear program. In a major and unprecedented November 2011 report, the IAEA listed intelligence it had gathered that led it to conclude that "the Agency has become increasingly concerned about the possible existence in Iran of undeclared nuclear related activities … including activities related to the development of a nuclear payload for a missile."[17] This initiated a redoubled IAEA effort to encourage Iran to come clean about its past nuclear activities, in order to provide a more comprehensive picture about how far it had progressed in acquiring the knowledge and technology to build a nuclear weapon.

Following a major EU decision in January 2012 to ban imports of Iranian oil, Tehran restarted talks with both the P5+1 and IAEA, but with no results.[18] In March 2013, the United States began a parallel track of secret negotiations, with a small team of American diplomats meeting with Iranian officials in Oman.[19] That June, Hassan Rouhani was elected president of Iran and, in September, Presidents Obama and Rouhani spoke on the phone, the first direct contact between Iranian and American presidents since the 1979 revolution.[20] At the same time, the burden of mounting sanctions was taking a toll on Iran's economy, which, according to International Monetary Fund estimates, shrank 1.7 percent in 2013 and whose currency, the rial, lost more than two-thirds of its value between January 2012 and April 2013.[21]

These economic challenges, combined with the changing political situation in Iran and U.S. diplomatic efforts, injected new life into the nuclear negotiations with both the IAEA and P5+1. On November 11, 2013, Iran and the IAEA signed a "Framework for Cooperation" that outlined concrete steps Iran would take to provide the Agency with greater information about Iran's nuclear program, even though these did not include any disclosures about Iran's past PMD activities.[22]

Several days later, on November 24, 2013, Iran and the P5+1 agreed to the JPA interim deal. The White House described the goal of the agreement as to "prevent Iran from using the cover of negotiations to continue advancing its nuclear program as we seek to negotiate a long-term, comprehensive solution that addresses all of the international community's concerns."[23]

Under the JPA, which went into effect for a six-month period on January 20, 2014, Iran agreed to:

- Halt production of its near 20 percent enriched uranium and disconnect the centrifuge cascades used to produce it;
- Begin diluting half of its near 20 percent enriched uranium stockpile and convert the rest to an oxide form not suitable for further enrichment without reconversion;
- Allow access to IAEA inspectors to verify that Iran is:
    - Not enriching uranium in roughly half of installed centrifuges at Natanz and three-quarters of installed centrifuges at Fordow, including all next-generation centrifuges;
    - Limiting its centrifuge production to only those needed to replace damaged centrifuges;
    - Halting activities at Arak, including production and additional testing of fuel for the Arak reactor, installing reactor components, or transferring fuel or heavy water to the reactor site;
    - Not constructing additional enrichment facilities or a facility capable of reprocessing.
- Grant IAEA enhanced access to:
    - Daily access to Natanz and Fordow;
    - Managed access to: centrifuge production facilities, uranium mines and mills, and the Arak heavy water reactor.

In return, the P5+1 committed to:

- Facilitate Iran's access to $4.2 billion in Iranian funds that had been frozen in overseas accounts, to be released at set intervals throughout the six months, linked to Iran's progress in diluting its stockpile of near 20 percent enriched uranium;
- Provide limited sanctions relief for Iran's petrochemical exports, automotive manufacturing sector, civil aviation sector, and the import and export of gold and other precious metals;
- Iran's total financial benefit under the JPA (sanctions relief coupled with the released $4.2 billion of frozen funds), according to the White House, would amount to approximately $7 billion during the six-month duration of the deal.[24] However, the Foundation for the Defense of Democracies warned that sanctions relief from the JPA could be much higher, reaching as much as $20 billion or more.[25]

The JPA also outlined elements of a comprehensive solution, which should:

- Have a specified long-term duration;
- Reflect the rights and obligations of parties to the Nuclear Non Proliferation Treaty and IAEA Safeguards Agreements;
- Comprehensively lift UN Security Council, multilateral and national nuclear-related sanctions, including steps on access in the areas of trade, technology, finance, and energy, on an agreed-upon schedule;
- Include an enrichment program with mutually agreed upon parameters consistent with practical needs, with agreed limits on scope and level of enrichment activities, capacity, location, and stockpiles, for an agreed upon period;
- Resolve concerns related to the reactor at Arak, with no reprocessing or construction of a facility capable of reprocessing;
- Fully implement agreed upon transparency measures and enhanced monitoring, including ratifying and implementing the Additional Protocol;
- Include international civil nuclear cooperation on acquiring modern light water power and research reactors and associated equipments, supply of modern nuclear fuel, and agreed R&D practices, among others.

With the JPA set to expire on July 20, Iran and the P5+1 must agree on the specifics of a final deal; renew the JPA for another, non-renewable period of six months, if they can't come to an agreement; or let it lapse and return to the status quo ante that reigned in November 2013.

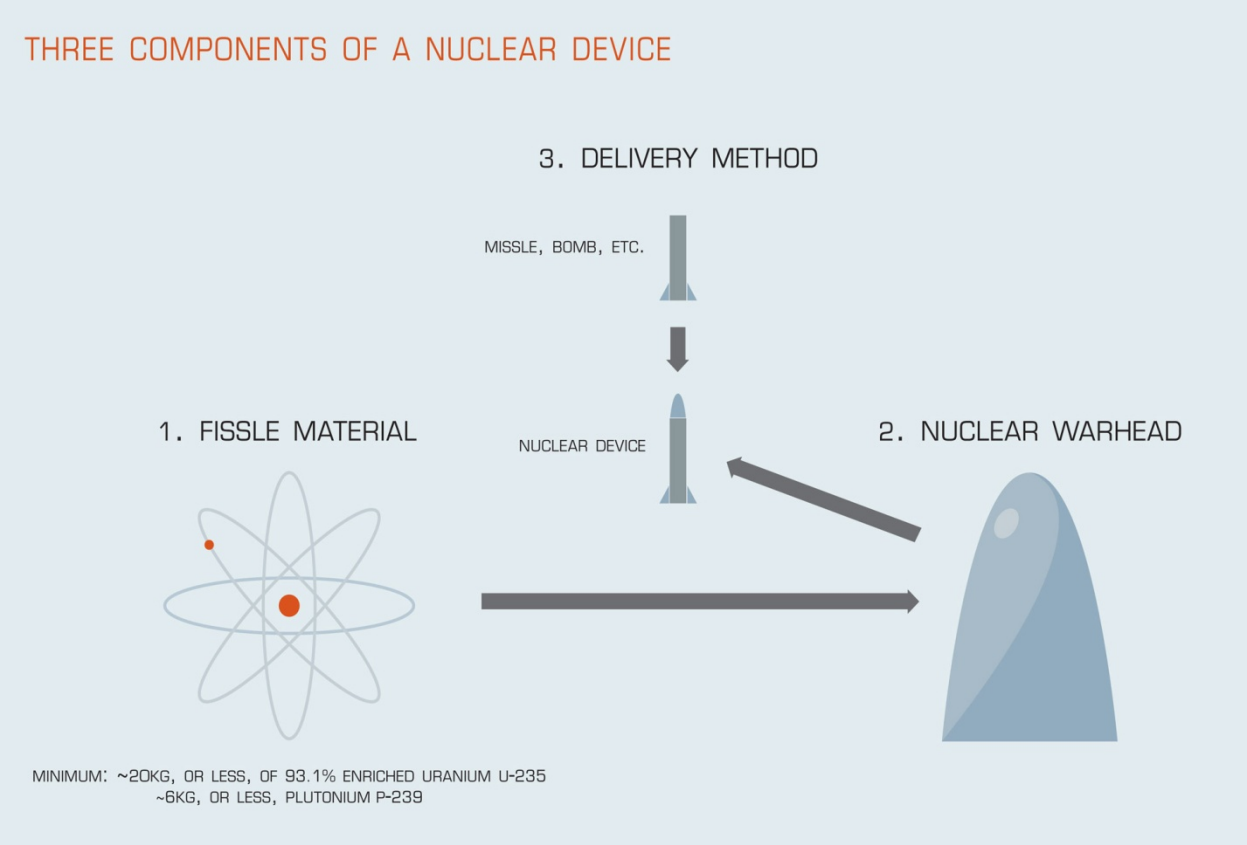
Issues to be Addressed in a Deal

Across multiple administrations from both political parties, the primary objective of U.S. policy toward Iran, as stated by President Obama, "has been absolutely clear: We are determined to prevent Iran from acquiring nuclear weapons."[26] To achieve that objective, any diplomatic agreement with Iran will have to address a range of issues, which can be grouped into three broad categories: (1) Iran's ability to produce a nuclear weapon; (2) mechanisms for verifying Iran's compliance with the deal; and (3) incentives for agreeing and sticking to the deal. In discussing elements of a nuclear deal with Iran, we will be comparing the state of Iran's nuclear program before and during JPA, government proposals from Congress and the P5+1, and expert proposals from Brookings, the International Crisis Group (ICG), and the Jewish Institute for National Security Affairs (JINSA).[i]

Iran's Nuclear Capabilities

The first category is the broadest as it requires limitations sufficient to prevent Iran from attaining the three components of a nuclear weapon: a sufficient quantity of fissile material—either weapons-grade uranium or plutonium—the weapon design needed to create a nuclear reaction using the fissile material, and a delivery vehicle to get the weapon to its target. Evidence presented by the IAEA shows that Iran has pursued all three of these elements: it has been enriching uranium for more than ten years and is currently constructing a heavy water reactor at Arak that would produce plutonium, it has experimented with explosives technology that has little use other than for a nuclear weapon, and it has an ongoing ballistic missile program.

[i] **Pre-JPA:** Status of Iran's nuclear program as of November 2013;
JPA: Status of Iran's nuclear program as required by the Joint Plan of Action;
Congress: Sense of Congress contained in the Nuclear Iran Prevention Act of 2013 (H.R. 850) and the Nuclear Weapon Free Iran Act of 2013 (S. 1881);
P5+1: Based on a confidence building proposal made by P5+1 in March 2013 and the "Elements of a final step of a comprehensive solution contained in the JPA;
Brookings: Based on Einhorn, Robert J. (2014, March 31). "Preventing a nuclear-armed Iran: requirements for a comprehensive nuclear agreement," (Foreign Policy at Brookings, Arms Control and Non-Proliferation Series, Paper 10). Washington, D.C.: Brookings Institution;
ICG: Based on International Crisis Group. (2014, May 9). "Iran and the P5+1: solving the nuclear Rubik's Cube," (Middle East Report No. 152). Brussels, Belgium;
JINSA: Based on JINSA Gemunder Center Iran Task Force. (2014, January 24). "Assessment of the interim deal with Iran," The Jewish Institute for National Security Affairs.



FISSILE MATERIAL PRODUCTION

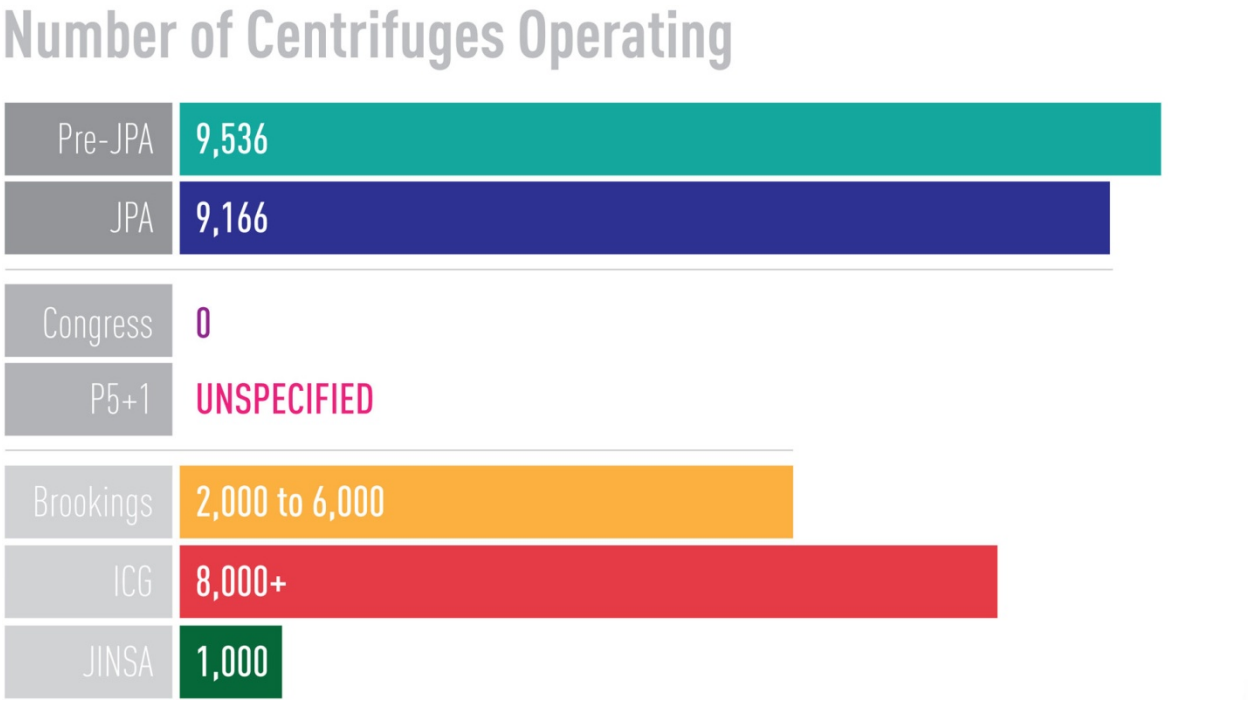
Past P5+1 proposals have sought zero uranium enrichment in Iran, under the mantra of "stop, shut, ship,"—that is, stop enriching uranium, shut down the enrichment plants, and ship its enriched uranium abroad—offering in exchange to provide Iran with all the enriched uranium it might need to fuel its civilian nuclear reactors.[27] The JPA, in the face of an escalating Iranian enrichment program, effectively conceded that Iran would be allowed to continue enrichment under any comprehensive deal. This makes it more difficult to ensure that Iran cannot procure a nuclear weapon, requiring the United States and its partners to seek instead strict limits on the various elements of the enrichment process: the number and type of centrifuges operating; quantity and enrichment level of stockpiled uranium; research and development of new, more advanced centrifuges; and plutonium production.

Number of Centrifuges Operating

Iran has some 10,000 centrifuges currently in operation.[28] Of these, 9,166 are located at Iran's underground Natanz Fuel Enrichment Plant, which has the capacity to hold up to 50,000 centrifuges.[29] Another 328 are located at the aboveground Natanz Pilot Fuel Enrichment Plant, which also houses Iran's centrifuge research and development program, and 696 centrifuges are spinning at the underground, fortified Fordow Fuel Enrichment Plant.[30] Iranian officials have stated their desire to make full use of their Natanz facility by eventually having at least 50,000 centrifuges in operation.[31]

Simply put, the more centrifuges there are enriching uranium, the faster Iran will be able to produce enough weapons-grade uranium for a nuclear device, should it ever decided to do so. And as long as some centrifuges remain spinning, Iran will be able to attempt to produce weapons-grade uranium. The fewer centrifuges it has, however, the longer the time it would need to do that—commonly referred to as Iran's "breakout timing"—will be. Eliminating all centrifuges—thus disallowing enrichment altogether—would create a much more effective barrier to nuclear capability, but even that, on its own, would not be enough to cut off all avenues for pursuing a nuclear capability.

"SIMPLY PUT, THE MORE CENTRIFUGES THERE ARE ENRICHING URANIUM, THE FASTER IRAN WILL BE ABLE TO PRODUCE ENOUGH WEAPONS-GRADE URANIUM FOR A NUCLEAR DEVICE, SHOULD IT EVER DECIDED TO DO SO."



Types of Centrifuges Operating

Just as salient as the raw number of centrifuges operating is the type of centrifuges operating. Iran's entire stockpile of enriched uranium was produced using only IR-1 centrifuges, but Iran has also installed and enriched with other models, including the IR-2m, as part of research and development. While IR-1 performance has hovered around 0.8 separative work units (SWU) per year per centrifuge—the measure centrifuge's enrichment output—the IR-2m is expected to enrich at a rate of 3-4 SWU/year/centrifuge.[32] The IR-3 and IR-4, both of which are still in development, are believed to enrich at or slightly above the rate of the IR-2m.[33] These more advanced centrifuges—which are also projected to

break down less frequently than the IR-1—would allow Iran to enrich uranium much more quickly.

A limitation only on the number of operating centrifuges, therefore, would allow Iran to swap out existing machines for newer models, thereby increasing its enrichment capability and decreasing the amount of time it would need to produce enough fissile material for a nuclear device. Further, Iran has demonstrated during the JPA term that it is capable of improving the efficiency of its existing IR-1 centrifuges.[34] Thus, if a comprehensive deal allows Iran to continue enriching, it will have to include constraints on the types, or enrichment rate, of the centrifuges it uses.

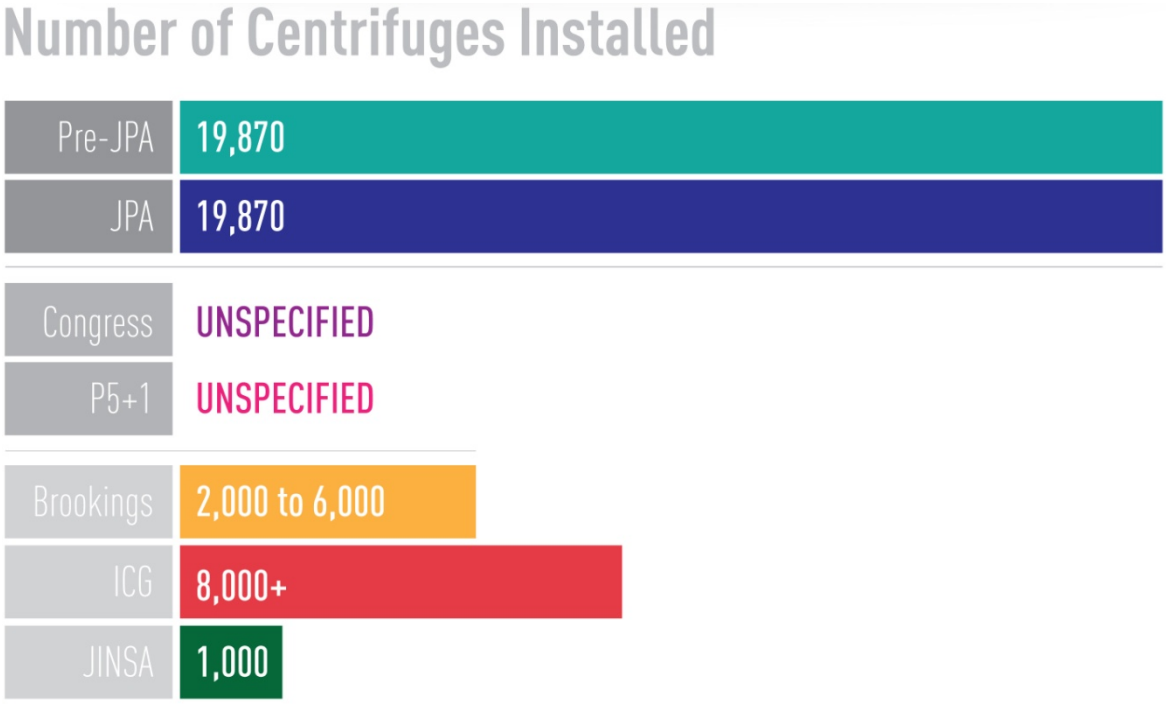
"A LIMITATION ONLY ON THE NUMBER OF OPERATING CENTRIFUGES, THEREFORE, WOULD ALLOW IRAN TO SWAP OUT EXISTING MACHINES FOR NEWER MODELS, THEREBY INCREASING ITS ENRICHMENT CAPABILITY AND DECREASING THE AMOUNT OF TIME IT WOULD NEED TO PRODUCE ENOUGH FISSILE MATERIAL FOR A NUCLEAR DEVICE."

Types of Centrifuges Operating

Number of Centrifuges Installed

Among its three enrichment facilities, Iran has about 19,000 centrifuges installed, though not all of them are operating.[35] The roughly 9,000 installed but not operating centrifuges represent a surge capacity. By flipping the switch on these additional centrifuges, Iran could effectively double its current enriched uranium output and halve its breakout timing.

P5+1 negotiators will have to decide whether they are comfortable leaving Iran with such latent enrichment capability above and beyond whatever number of centrifuges Iran is allowed to operate under a final deal or whether to cap the installed centrifuges at the same level as operating ones.

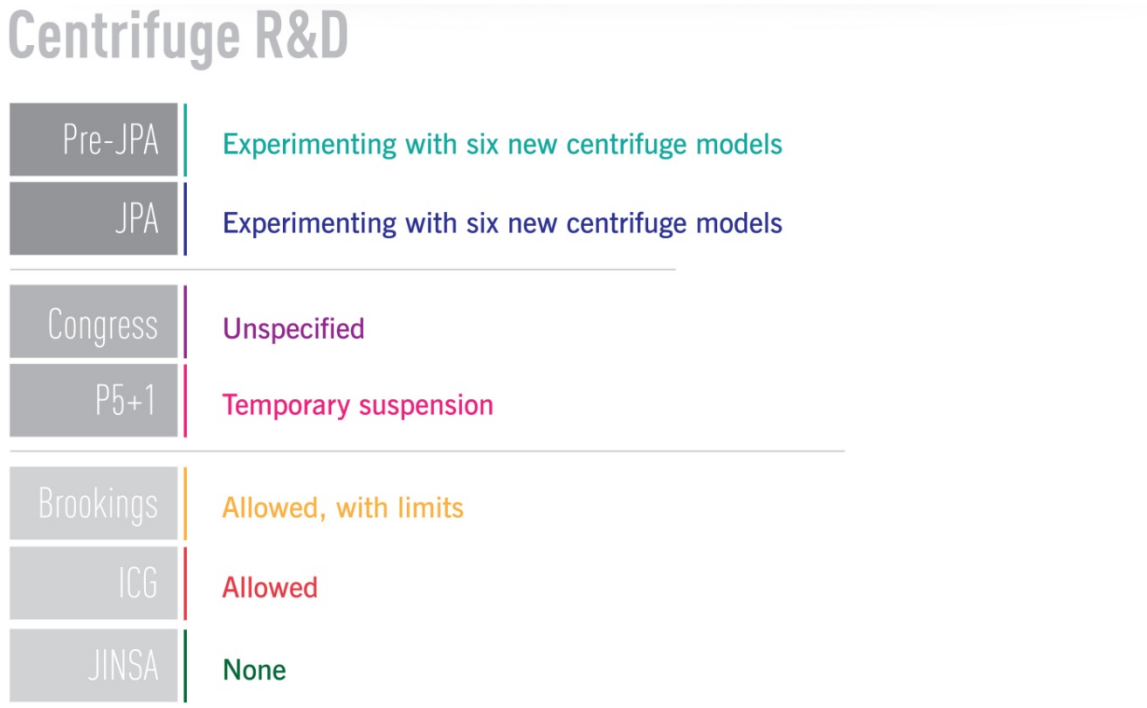


Types of Centrifuges Installed

Of Iran's 19,000 installed centrifuges, 18,000 are IR-1 centrifuges, while the remainder is composed of the more advanced 1,000 IR-2m centrifuges at Natanz. Should a deal allow Iran to have more installed than operating centrifuges, negotiators will have to decide if there will be any limitations on the type of centrifuges that may be installed. The more advanced Iran's reserve of installed centrifuges, the greater its latent capabilities and faster its potential breakout could be.

Centrifuge Research & Development

Iran continues to experiment with building more efficient and durable centrifuge models. It is currently experimenting with at least five such models in its R&D facility. If negotiators seek to limit Iran to the use of IR-1 centrifuges, they will have to decide whether to limit R&D on IR-2m, IR-3, and IR-4 and other possible future centrifuge models as well. Allowing Iran to continue work on faster centrifuges—even if a deal disallows their use—creates the possibility of Iran using such new technology in a small, covert facility to try and produce fissile material outside the purview of international inspectors, as was the original intention of the Fordow plant.



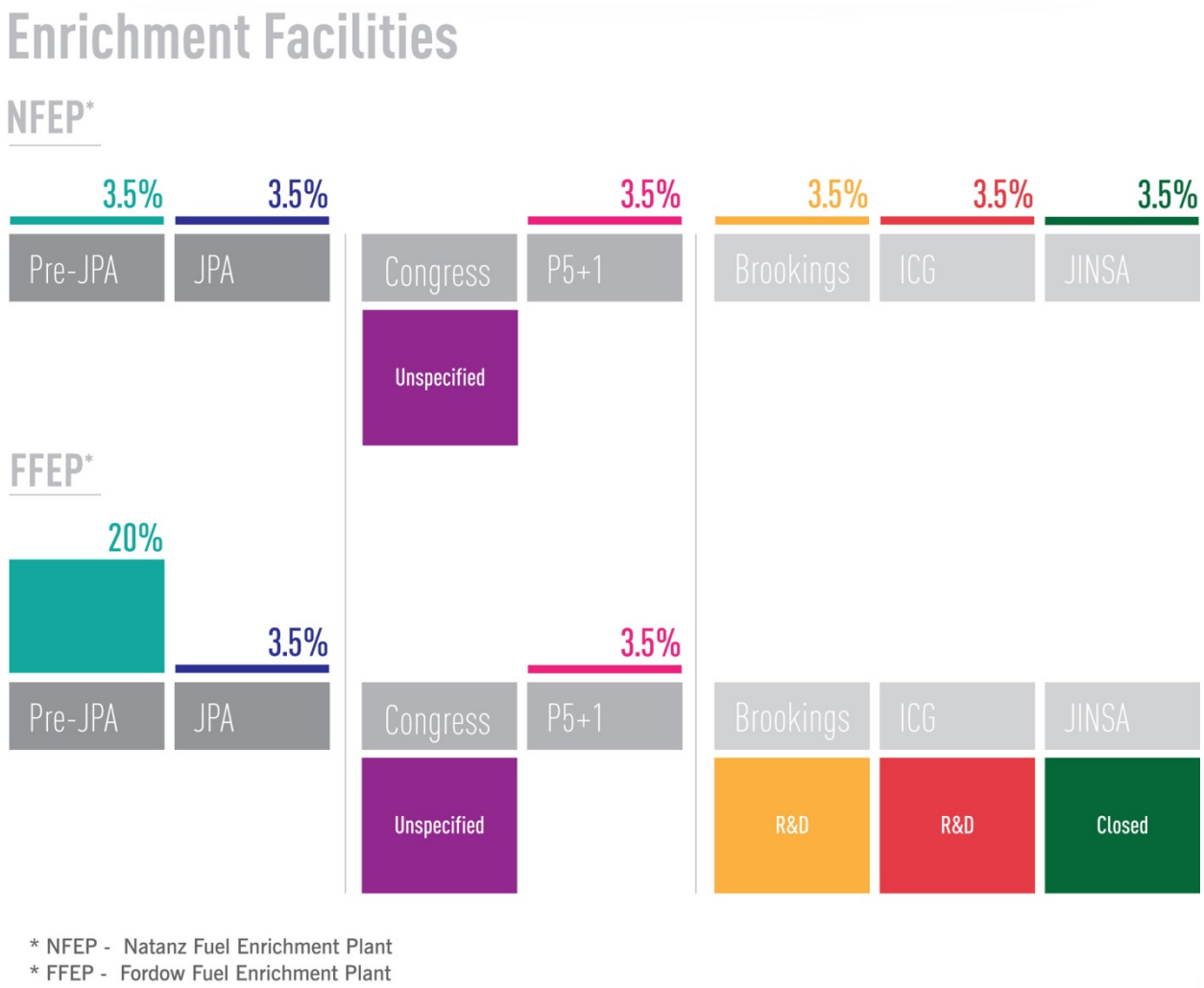
Enrichment Facilities

There are three operating enrichment facilities in Iran that the world knows of. The Natanz Fuel Enrichment Plant has been producing 3.5 percent enriched uranium for the better part of a decade; the Natanz Pilot Enrichment Facility has been the site of Iran's centrifuge R&D and where it first began enriching uranium to 20 percent; and the Fordow Fuel Enrichment Plant is a small, fortified, underground facility where Iran produced the majority of its 20 percent enriched uranium and, more recently, has recorded some of its highest production rates of 3.5 percent enriched uranium. All of these facilities were constructed covertly and designed to operate in a similar manner. Only their discovery through intelligence sources forced Iran to announce their existence and open them to international inspections.

International negotiators will have to decide which, if any, of these facilities they will allow to continue operating under a comprehensive deal. Since Fordow was discovered and

declared in 2009, every major proposal has included at least a temporary freeze, if not outright shuttering, of nuclear-related activities there. The plant's relatively small size—it can only accommodate roughly 3,000 centrifuges—means that it has no justifiable civilian purpose; it could never produce enough fuel to power a civilian nuclear energy program. And its location in a bunker buried deep under a mountain means that it might be impervious to attempts to halt militarily an Iranian breakout occurring there.

In addition to Fordow, as well as the two Natanz plants, a comprehensive deal will have to address Iran's declared intent to open as many as ten new enrichment facilities. Ultimately, the more such plants Iran operates and the larger they are, the trickier it will be to police them.

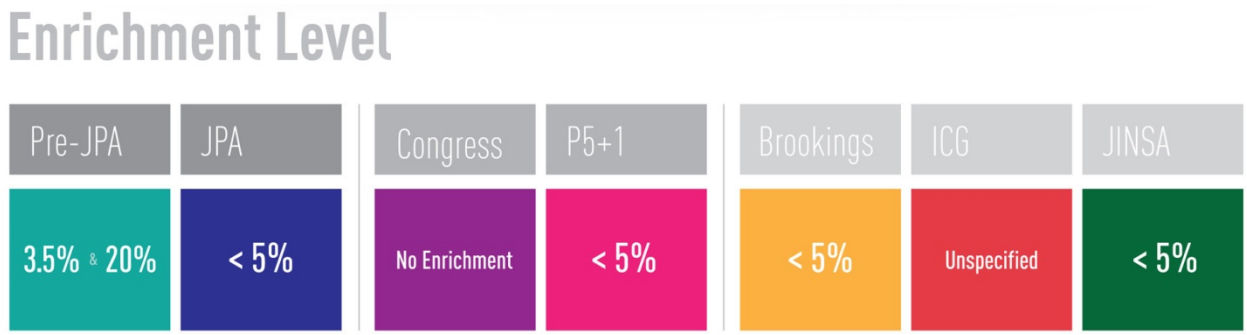


Enrichment Level

Uranium can be enriched to varying levels. Most commonly, uranium enriched to between 3 and 5 percent, also known as low enriched uranium (LEU), is used as fuel to power nuclear

reactors that produce electricity for commercial use. Reactors may also use uranium enriched up to 20 percent for peaceful purposes, such as the production of medical isotopes and other forms of research. Civilian uses for uranium enriched above 20 percent are extremely limited. To be used as fissile material for a nuclear weapon, uranium must be enriched to roughly 90 percent or higher, however, enriching to 20 percent already represents about four-fifths of the work and time required to reach weapons-grade uranium.[36]

Iran initially began producing 3.5 percent enriched uranium, but by 2011, it was also enriching to 20 percent. A comprehensive agreement will have to address whether Iran is allowed to continue enriching and, if so, what levels of enrichment are acceptable. The intent of all previous diplomatic proposals, going back at least to 2003, has been for Iran to cease, at least temporarily, enriching uranium to any degree. Indeed, this is a legally binding demand of the UNSC resolutions and the IAEA. Since 2011, all proposals have focused primarily on stopping Iran's production of 20 percent enriched uranium.



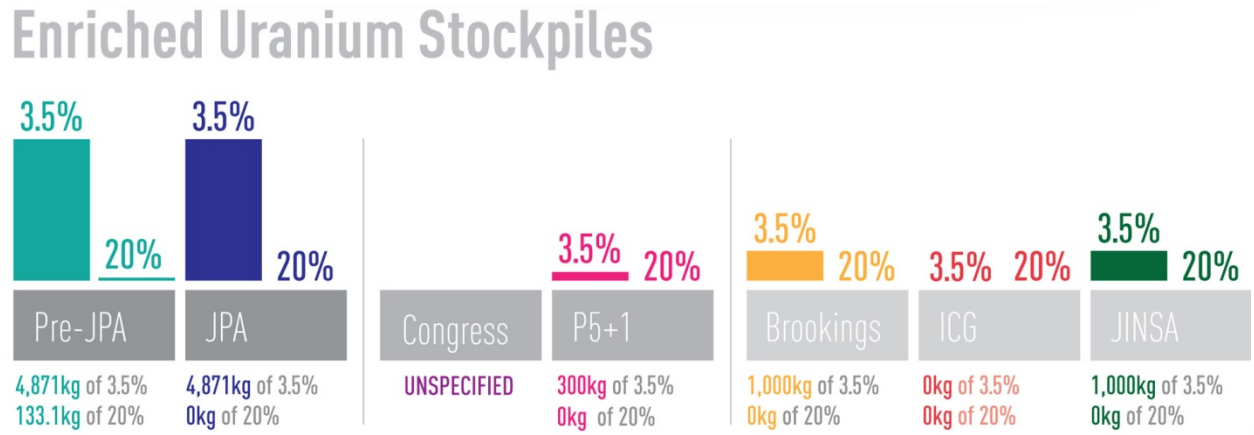
Enriched Uranium Stockpiles

Iran's enriched uranium stockpile was nonexistent as late as 2006, but it has climbed to about 5,974 kilograms of 3.5 percent enriched uranium and 167 kilograms of 20 percent enriched uranium as of November 2013. Under the terms of the JPA, that latter stockpile has been reduced to zero, although Iran's quantity of 3.5 percent enriched uranium has continued to grow. Iran would need at least 20 kilograms of 90 percent enriched uranium to produce a nuclear weapon.[37] That quantity of fissile material can be derived from a minimum of roughly 155 kilograms of 20 percent enriched uranium or 1,800 kilograms of 3.5 percent enriched uranium.

The greater Iran's stockpile of either of these substances, the closer it is to being able to produce a nuclear weapon. With just the centrifuges Iran is currently operating, it could turn 2,700 kilograms of 3.5 percent enriched uranium into enough fissile material for a nuclear weapon in 87 days, and it could do the same with 230 kilograms of 20 percent enriched uranium in just 18 days.

It is for this reason that past proposals have called on Iran to transfer at least part, if not all, of its enriched uranium out of the country. A comprehensive agreement will have to

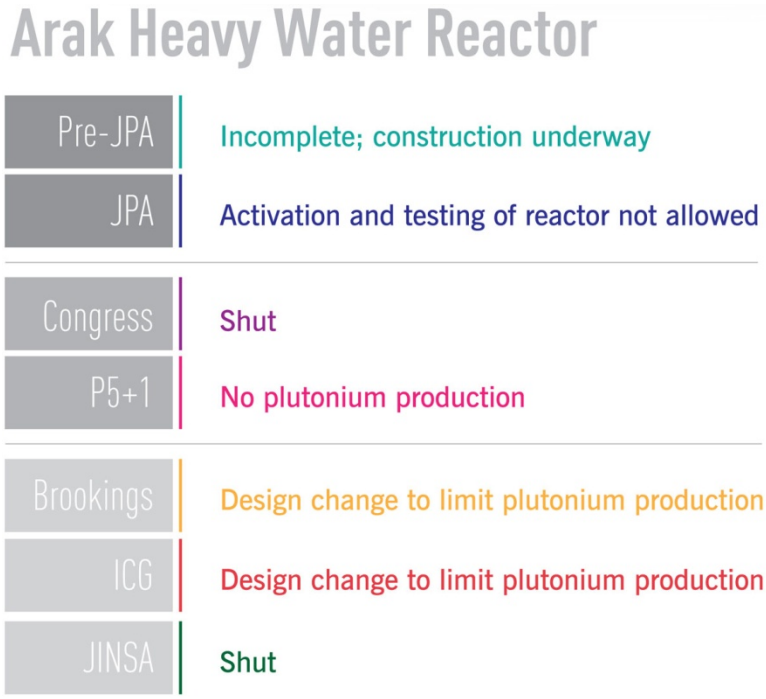
decide just how many kilograms of enriched uranium Iran will be permitted to keep. A further complication is that if, rather than sending its excess stockpiles abroad, Iran simply converts its enriched uranium from hexafluoride (the gas used in enrichment) to oxide (the metallic form used to produce fuel rods for nuclear reactors) as the JPA requires, that conversion process can be reversed. Uranium oxide can be changed back into uranium hexafluoride in a matter of weeks, if not days. This approach, thus, adds obstacles to an Iranian breakout but would also put added burdens on any inspections regime meant to verify Iranian compliance.



Plutonium Production/Arak Heavy Water Reactor

In 2004, Iran announced the construction of the Arak Heavy Water Reactor, which could provide Iran with a plutonium pathway to fissile nuclear material. Plutonium is a by-product of the nuclear reaction found in spent fuel rods and can be extracted through reprocessing.[38] Though also produced in light water reactors, such as Iran's Busher facility, plutonium is found in much greater quantities in the spent fuel produced by heavy water reactors. Were Iran to operate the Arak reactor accordingly to design specifications it has provided the IAEA, it would be able to produce and extract the relatively little amount of plutonium—10 kilograms—needed for a nuclear device much more quickly and stealthily than if it attempted to do the same with Busher's spent fuel. The IAEA has frequently offered countries technical help with light water reactors precisely to incentivize them not to pursue the much more dangerous—from a proliferation perspective—heavy water variety.

A comprehensive agreement with Iran will have to address Arak's future, whether it is allowed to operate and, if so, under what conditions. Modifications can be required in order to lessen its potential plutonium output, but even then, closer scrutiny will have to be applied to ensure Iran does not pursue the plutonium track to a nuclear device.

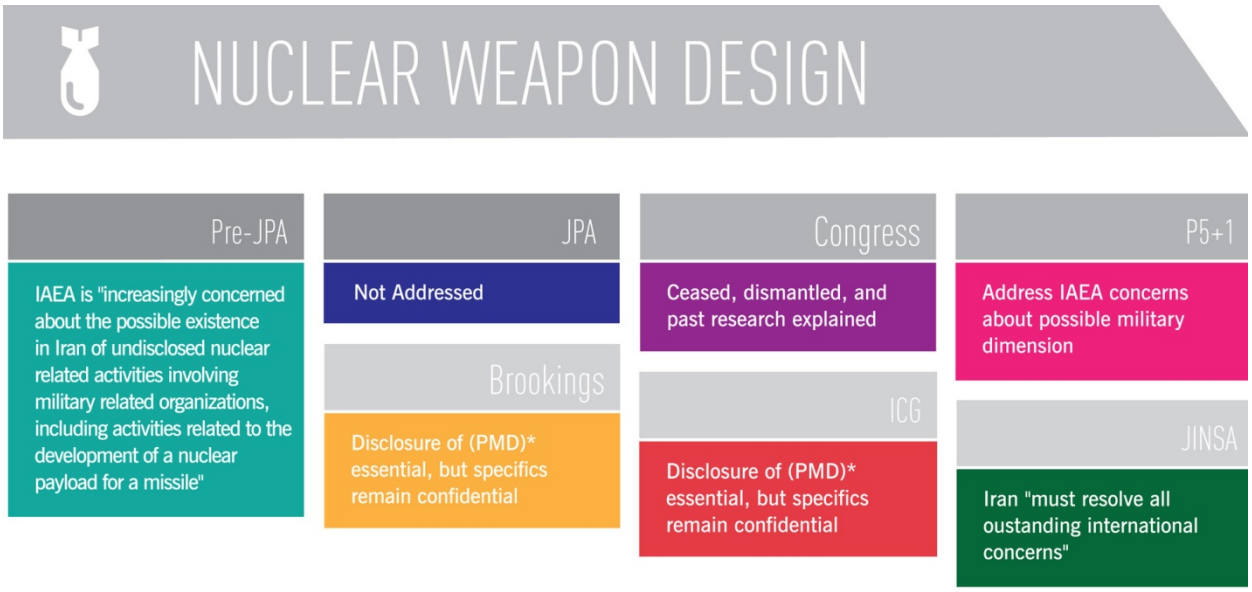


NUCLEAR WEAPONS DESIGN

Beyond enriching uranium, Iran has also pursued the technology to construct a working nuclear device. A 2007 U.S. National Intelligence Estimate famously found "with high confidence that in fall 2003, Tehran halted its nuclear weapons." Since then, however, the IAEA has published information showing that Iranian scientists continued to research this

topic well after that date. Unlike Iran's enrichment program, which is the hardest element of a nuclear weapon to technically master, the IAEA has had no insight into Iran's military research. It is unclear, therefore, if Iran has ever had a viable nuclear weapons design, but if it has, the plans are likely to be similar to or the same as Chinese plans acquired by Pakistan and Libya.

Thus far, greater transparency on this issue has been pursued by the IAEA independently of the P5+1 negotiations. It is an open question, however, whether Iran will have any additional incentive to come clean to the IAEA about the status of its research into nuclear weapons design once it has already negotiated a comprehensive deal, and secured the sanctions relief it seeks, with the P5+1. Additionally, lack of full disclosure about its military nuclear programs would violate the legally binding UNSC resolutions and suggest a lack of sincerity on Iran's part.



Ballistic Missile Development

In its November 2011 report, the IAEA described evidence of an Iranian project that "consisted of a structured and comprehensive programme of engineering studies to examine how to integrate a new spherical payload into the existing payload chamber which would be mounted in the re-entry vehicle of the Shahab 3 missile." It concluded that while these activities "may be relevant to the development of a non-nuclear payload, they are highly relevant to a nuclear weapon programme." The issue was also taken up in UNSC Resolution 1929, which decided "that Iran shall not undertake any activity related to ballistic missiles capable of delivering nuclear weapons, including launches using ballistic missile technology, and that States shall take all necessary measures to prevent the transfer of technology or technical assistance to Iran related to such activities."

Yet, Iran's ballistic missile development has largely been set aside in the current round of negotiations. The question of whether it should be addressed in a comprehensive deal follows the same logic as the inclusion of nuclear weapons design: it might be simpler to leave it off the P5+1's agenda and allow for it to be addressed separately by the IAEA, but this needs to be weighed against the added assurance that would be provided by Iranian divulgement and cessation of its ballistic missile research as well as the added difficulty of extracting such concessions by the IAEA, which does not enjoy the same leverage as the P5+1.

Verification

INSPECTIONS

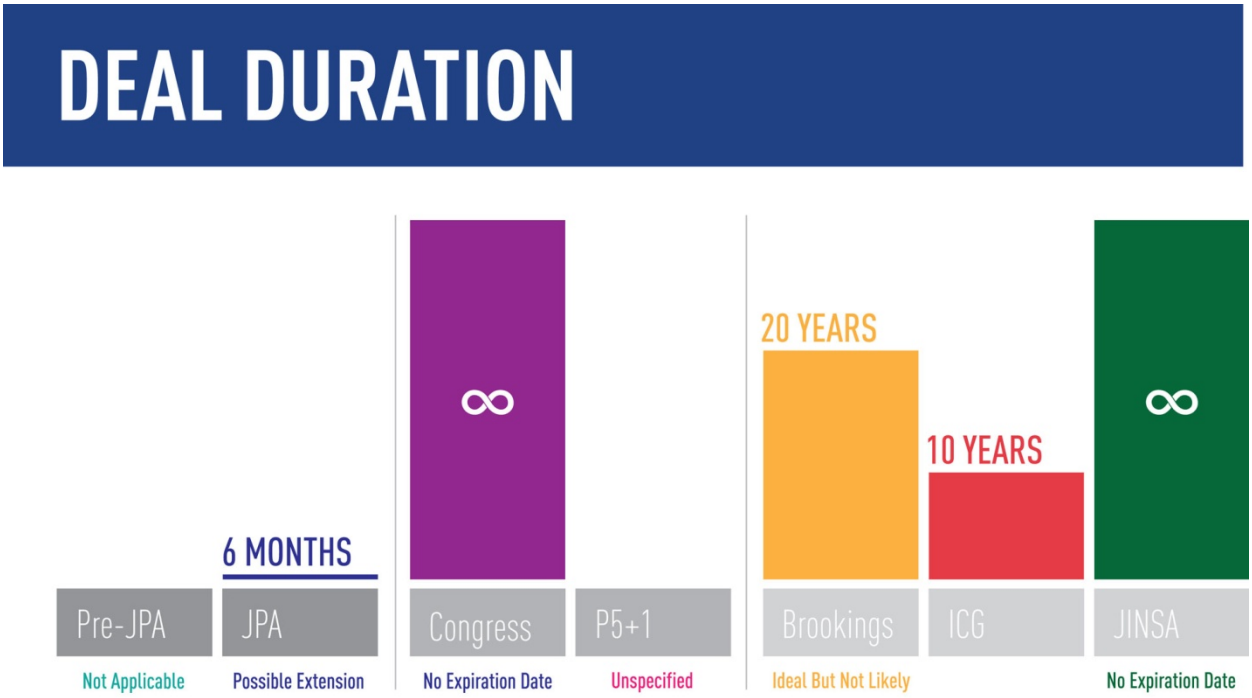
Iran is currently subject to IAEA safeguards that require the accounting of nuclear material and periodic on-site inspections. As part of a comprehensive nuclear deal, the P5+1 and others negotiating with Iran have typically requested that Iran accede to the IAEA Additional Protocol, which requires states to provide additional information about its nuclear sites and more frequent, intensive inspections, including some on short notice.[39] The more frequent the inspections, the greater the assurance that Iran is complying with terms of any deal and the faster any possible breakout might be detected.

Beyond frequency of inspections, however, at issue is also their scope. Currently, IAEA inspectors are only allowed into facilities that Iran agrees for them to inspect. Thus, they have been unable to visit some sites where they believe nuclear research has taken place, such as the Parchin military complex where Iran is believed to have tested high explosives for a nuclear weapons design. Moreover, Iran has a track record of attempting to construct

its nuclear facilities covertly, including those at Natanz and Fordow, which were publicly acknowledged by Iranian officials only after being discovered by Western organizations. The Additional Protocol would enhance confidence that Iran does not return to its old tricks by allowing inspectors to have unfettered access to any Iranian facility they deem to be of interest on short notice. As long as Iran controls inspectors' access, the IAEA will not be able to verify the full scope of its nuclear activities and, by extension, its compliance with any comprehensive agreement.

Deal Duration

The duration of a deal has been a sticking point in negotiations to date. The JPA agreed upon by the P5+1 and Iran in November 2013 only included a renewable six-month timeline that would allow for further negotiations.[40] The final deal is to have "a specified long-term duration to be agreed upon," but the two sides apparently differ on their interpretation of a "long-term duration." The United States is seeking a deal ten to 20 years in length, while Iran has argued for a five-year timeline. Whatever middle ground the parties may arrive at in negotiations toward a comprehensive deal, some explanation will be required of why it will be deemed safe to lift restrictions on Iran's nuclear program, thereby allowing it to resume the full scope of nuclear activities, after that time period.



Incentives

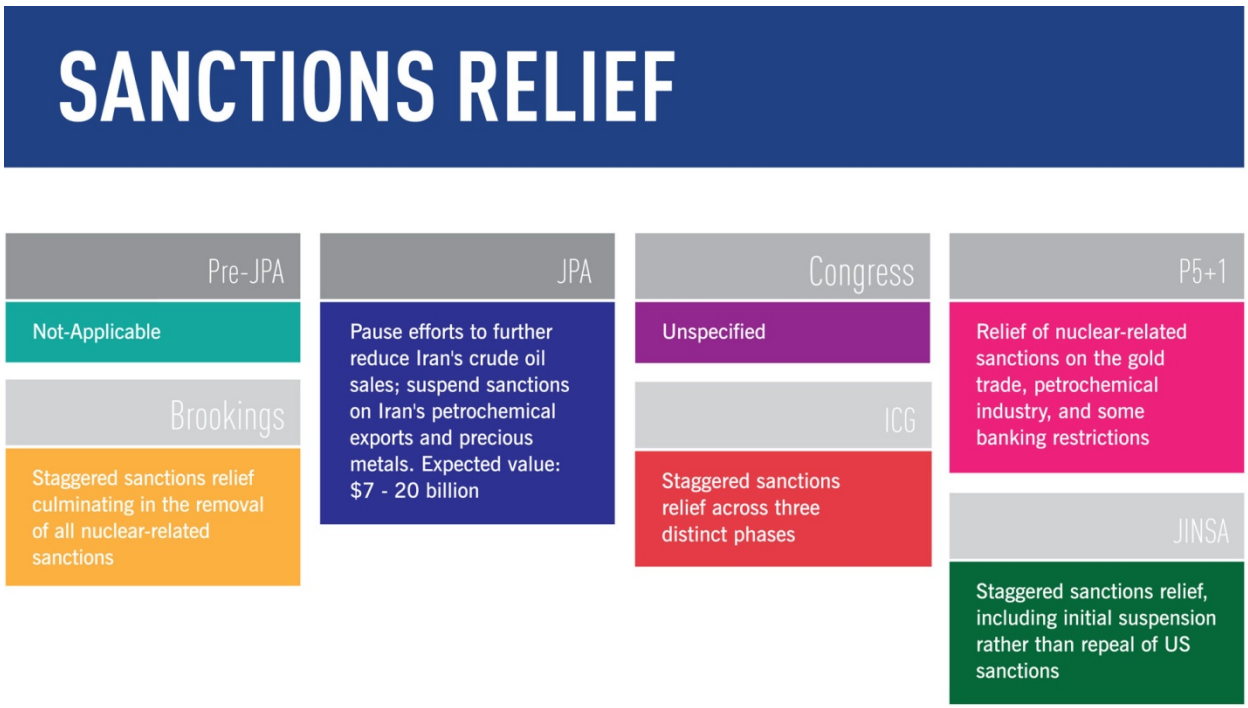
SIGNALING RESOLVE

Despite expectations that once any comprehensive deal is signed, the threat of a nuclear weapons–capable Iran will have been mitigated, the reality is that it will only be the beginning of a new period of vigilance. For any deal to work, the P5+1 will need to take steps to show the resolve to monitor and enforce the terms of the agreement for years on end. Should Iran believe that verification of its compliance is flagging or the will to punish any transgressions is waning, it will have little incentive to continue observing the terms of its deal.

Previous negotiations never got to the point at which such commitments were expressed in any official proposals. Although administration insiders have made suggestions to this end, such as asking Congress to "give the president prior authorization to use military force in the event of clear evidence that Iran has taken steps to abandon the agreement and move toward producing nuclear weapons," no details on any signals of resolve have been gleaned in current P5+1 negotiations with Iran.[41] Congress, however, has had the leeway necessary to make such proclamations. In the fiscal year 2013 National Defense Authorization Act, a "sense of Congress" resolution stated, "The United States should be prepared to take all necessary measures, including military action if required, to prevent Iran from threatening the United States, its allies, or Iran's neighbors with a nuclear weapon."[42] Congress has also made it clear that it is willing to enact new sanctions in the event that Iran reneges on any interim or final deal.[43]

SANCTIONS RELIEF

If Iran is going to accept significant limits on its nuclear program, it will expect to receive something in return—that something is sanctions relief. The stated goal of the negotiating parties is to arrive at a final deal that would "comprehensively lift UN Security Council, multilateral and national nuclear-related sanctions." This would bring the P5+1 to the potentially difficult task of disentangling nuclear-related sanctions from sanctions placed on Iran for other reasons. While some sanctions were levied by executive order, many are codified in legislation and will therefore need to be lifted by Congress.



Takeaways for an Iran Deal

This overview of both the history of nuclear negotiations of Iran and the issues that are on the table as the P5+1 works toward a comprehensive agreement yields several insights that can help with evaluating any deal that might arise.

Intention: the Key to Prevention

A constant phenomenon over the last decade of aborted diplomatic efforts with Iran has been that as Iran's nuclear program has advanced, international demands have continually been revised downward. In 2003, the EU-3 sought to halt Iranian enrichment—a position backed by legally binding UNSC resolutions. By 2009, with Iran producing 3.5 percent enriched uranium for several years, the P5+1 only asked that Iran reduce its stockpile of that material. And once Iran started enriching to 20 percent in 2011, negotiations mostly focused on limiting that activity, largely ignoring its 3.5 percent enriched uranium production and stockpile. In the meantime, Iran's demands have remained the same: recognition of its right to enrich.

This merely demonstrates the difficulty of rolling back technological advancement. Whatever the content of any potential comprehensive deal, no matter how restrictive it might be, Iran will maintain the knowledge and technical abilities it has acquired over the many years it has operated its nuclear program. It will always be able to apply these to pursuing a covert nuclear program or to restarting its facilities once a comprehensive deal lapses, should it decide to do so. Diplomacy alone, therefore, cannot truly prevent a nuclear Iran, but it can constrain its intentions.

A negotiated solution should not be understood as taking away Iran's ability to seek a nuclear weapons capability. Rather it is better described as seeking to put in place conditions that affect the logic of Iran's decision-making about whether or not to make use of the capabilities it will still retain. A comprehensive deal can impact Iran's nuclear intentions both through obstruction (making it more difficult to reach a nuclear capability) and incentivization (providing positive reinforcement for sticking with the deal and credible threats for reneging on it).

"A COMPREHENSIVE DEAL CAN IMPACT IRAN'S NUCLEAR INTENTIONS BOTH THROUGH OBSTRUCTION (MAKING IT MORE DIFFICULT TO REACH A NUCLEAR CAPABILITY) AND INCENTIVIZATION (PROVIDING POSITIVE REINFORCEMENT FOR STICKING WITH THE DEAL AND CREDIBLE THREATS FOR RENEGING ON IT)."

Ultimately, it is this metric—how does the comprehensive deal affect Iranian intentions to pursue a nuclear weapons capability—that is more important than any of the single issues identified above. Some additional corollaries follow from this:

BREAKOUT TIME MATTERS…

An Iran deal should include enough mechanisms to allow the United States and others to detect any attempts made by Iran to achieve breakout with sufficient time to act to prevent Iran from producing sufficient fissile material to fabricate a weapon. One way to affect this equation is to seek to increase the amount of time Iran would require to breakout. This is the metric that most focus on and where much of the debate over what constitutes an acceptable deal has occurred. Some commentators recommend a breakout timeline of six to 12 months, while others suggest that even this is too close for comfort.[44]

There is some utility to focusing on this criterion. Lengthening Iran's breakout timeline requires constraining Iran's access to the facilities, materials, and technology of its nuclear program. The creation of such obstacles is an important part of affecting its calculus. The harder it is to operate or reconstitute its nuclear program, the less likely it is that Iranian leaders will try to do so.

But a preoccupation with breakout timing could also lead other important factors to be overlooked. First, estimates of how long it would take Iran to produce enough fissile material for a nuclear weapon are all based on Iran's existing known facilities. But as Graham Allison and Oren Setter have written, this approach completely overlooks the possibility that Iran might seek to breakout at a covert facility, which might already exist or which it might seek to build in the future.[45] Such an eventuality must also be protected against but cannot be captured in a breakout timing calculation.

Second, the technical complexity of the nuclear fuel cycle makes it extremely difficult to devise a regime of rules that would fully constrain Iran's breakout ability. The amount of time of needed to produce 20 kilograms of weapons-grade uranium is determined by numerous variables, including numbers and types of centrifuges, how those centrifuges are configured and operated, and quantity and enrichment level of uranium stockpiles. If just one of these factors is not addressed in a comprehensive deal, Iran might be able to advance its nuclear program and accelerate its breakout timing without actually violating the terms of the deal. This is precisely what has happened under the JPA. Iran has been able to increase the output of its IR-1 centrifuges—an advance unforeseen, and therefore permitted, in the terms of the deal—and thereby keep its breakout window from slipping as far back as P5+1 negotiators anticipated.

Breakout timing, thus, is a useful proxy for the obstacles a deal might create for an Iranian sprint to the bomb, but should not be used on its own to judge a deal's merits.

…BUT INSPECTIONS ARE INTEGRAL

Indeed, lengthening Iran's breakout timeline is not enough on its own. Detection is an essential element of any Iranian calculus. Without a robust inspections regime, including

broad and frequent access by IAEA inspectors to sites related to Iran's nuclear activities, it will be impossible to tell whether Iran is actually complying with the restrictions imposed on its nuclear program in order to achieve a longer breakout window. Further, extensive and wide-ranging inspections are the best bet for detecting repeated Iranian efforts to build cover nuclear facilities. And by ensuring that a potential Iranian breakout will be detected early enough to allow international powers to respond decisively, a proper inspections regime will create strong incentives for Iran to abide by the deal.

Securing Iran's commitment to the IAEA Additional Protocol has been a goal of nuclear negotiators for decades. However, Robert Einhorn recommends that monitoring in a final deal go beyond what is in the Additional Protocol, identifying several areas where the Additional Protocol and inspections mechanisms contained in the JPA should be supplemented in a final deal—including access to Iran's centrifuge-related facilities, mines and mills for uranium ore and yellowcake, and extensive monitoring of Iran's imports of both nuclear and dual-use goods.[46]

PROVIDING, AND PRESERVING, INCENTIVES

Iran has made clear that it expects relief from the sanctions that have slowed its economy in return for such concessions. To get the most and quickest economic benefit, it will push to have as many sanctions lifted as soon as possible. The faster these measures are removed, however, the less incentive Iran will have to comply with the deal in the future—having already gotten what it wanted most and knowing that it took a decade to build up the previous sanctions regime. A comprehensive deal will, thus, have to strike a balance between giving Iran enough reasons to sign on to a deal now and to stick with it in the long term. A phased approach will be crucial.

The JPA allowed Iran phased access to $4.2 billion of its funds held in escrow, tied to its dilution of its stockpiles of 20 percent enriched uranium. It also granted limited relief of sanctions targeting Iran's gold trade, automotive sector, civil aviation, and petrochemical exports. Iran contends that, practically, sanctions relief under the JPA proved difficult to implement, and less robust than Iran might have hoped, as foreign companies and banks shied away from engaging with Iran on such a short-term basis, with companies concerned that they would not be able to conclude their projects by the expiration of the deal in July.[47] With relief less immediate or as expansive that it might have expected under the JPA, Iran is advocating for more rapid sanctions relief under a final deal.[48]

Others, however, argue that de-escalation of sanctions since Rouhani's election and the implementation of the JPA have led to greater economic stability and modest growth in Iran.[49] Foundation for Defense of Democracies (FDD) has argued that, more than simply the monetary value of sanctions relief under the JPA, sanctions easing has had a psychological impact on businesses, with trade delegations and businessmen flocking to Iran since the JPA. "The global fear of sanctions is receding," FDD argued. "Iran appears to be poised to cash in on the few tactical concessions it ceded in Geneva."[50] Similarly, Ambassador Mark Wallace, of United Against Nuclear Iran, has claimed that "Iran's oil exports have increased

117 percent since October," and called on the Obama administration to revise its estimations of Iran's oil exports and value of sanctions relief under the JPA.[51]

This cumulative effect of sanctions relief—the total benefit to Iran will be greater than the sum of the relief granted by each individual lifted sanction—and the need to continue motivating Iranian compliance well into future both speak to the need for phasing out sanctions over time, as Iran meets established benchmarks for compliance.

There's also a practical benefit to such a phased approach. Under a final deal, Iran is likely to insist on the lifting of all sanctions put in place due to its nuclear activities. But, at least for sanctions put in place by the United States, sorting out which measures are nuclear-related and which are tied to other Iranian transgressions, such as Iran's support for international terrorism and the Iranian government's human rights abuses, will be no simple matter. Many of the sanctions mention multiple reasons for their enactment. Moreover, although some sanctions were created by Executive Orders and can be unilaterally lifted by the president, most will require congressional action. Spacing out sanctions relief for a longer period of time will make it easier to untangle the dense web of Iranian sanctions.

ENFORCEMENT AND VIGILANCE

Even if a final deal is achieved, the issue of Iran's nuclear program will not simply disappear. No matter the contents of a deal, and no matter how long its duration, deterring a nuclear armed Iran will require continued enforcement and vigilance from the United States and its partners. Vigilance will come, in part, from monitoring Iran's compliance, and will require continued support for the IAEA's inspections efforts. It will also be incumbent upon the international community to demonstrate credibly to Iran's leaders that there will be consequences if they attempt renege.

Communicating to Tehran that such a decision would be met with a decisive response and would drastically go against Iran's interests requires strong commitment and continued engagement by world powers.

Transparency is Important, Not Just for Iran

Given the issue's complexity and importance, there has been too little public discussion of what would constitute an acceptable deal with Iran. Many who condemned the Bush administration's lack of transparency prior to the invasion of Iraq today discourage debate and differing opinions about how best to negotiate with Iran or what sort of deal to seek. We must not shirk from this debate or dismiss it as warmongering.

There will no doubt be a sense of urgency in signing and implementing any comprehensive deal, but the American public should be given a chance to understand and digest the terms, not simply be told to trust their adequacy. This is especially important because, ultimately, the fate of a comprehensive agreement rests with Congress. The White House, which is responsible for conducting talks, is unlikely to be able to unilaterally grant Iran all of the relief necessary to make a lasting deal. Members of Congress, on the other hand, who have

expressed concern that a final deal might not do enough to prevent a nuclear Iran, have little ability to guide the direction of negotiations but can determine whether to repeal many sanctions or not.

"IF CONGRESS IS NOT CONVINCED THAT A DEAL NEGOTIATED BY THE P5+1 IS GOOD ENOUGH, THEY MAY WELL REFUSE TO GRANT THE SANCTIONS RELIEF REQUIRED BY THE DEAL."

If Congress is not convinced that a deal negotiated by the P5+1 is good enough, they may well refuse to grant the sanctions relief required by the deal. This would be a significant setback, but the onus for avoiding it rests largely on the White House. Members of Congress from both sides of the aisle have been transparent about their standards for a nuclear deal and preferred method for attaining it; an otherwise gridlocked Congress called for conditional sanctions to further pressure Iran during negotiations with near unanimity. By rejecting this approach, the administration has taken on the burden of proving that it can hammer out a deal and of convincing Congress to accept it. The sooner such intra-governmental bipartisan cooperation begins and the sooner a public discussion about the merits of a comprehensive deal with Iran is launched, the smoother the process of implementing that deal will be.

Appendix

Proposed Deals

Tehran Statement, October 2003: Negotiated by the EU-3 (France, Germany, and the UK), the 2003 accord secured Iran's agreement to sign and implement the IAEA Additional Protocol as a voluntary, confidence-building measure and to voluntarily suspend all uranium enrichment and reprocessing activities. In return, the EU-3 recognized Iran's right to develop nuclear energy for peaceful purposes and agreed to enter into discussions as to how Iran could provide "satisfactory assurances" regarding the intentions of its nuclear program.

Paris Agreement, November 2004: Iran and the EU-3 met to negotiate the continuation of Iran's suspension of nuclear activity, after the IAEA accused Iran in June 2004 for failing to adhere to the Additional Protocol, leading Iran to refuse to suspend enrichment.

August 2005 EU-3 Proposal: The EU-3 comprehensive proposal for a long-term agreement included fuel guarantees for any light water reactors in Iran, a buffer store of nuclear fuel in a third country, and EU-Iran cooperation on political-security issues, in return for a commitment from Iran to not pursue fuel cycle technologies for ten years, to commit itself to not withdraw from the Treaty on the Non-Proliferation of Nuclear Weapons, to adopt the Additional Protocol, and to return its spent nuclear fuel to supplier countries. However, Iran rejected the proposal on the grounds that it failed to recognize Iran's "right" to enrich uranium, and following the revelation that Iran was producing uranium hexafluoride at its facility in Isfahan, the EU-3 suspended negotiations in August 2005.

June 2006 P5+1 Proposal: Negotiations with Iran resumed in 2006, broadened to include the P5+1. In June 2006, the group put forth a comprehensive proposal for a deal with Iran, demanding that Iran suspend enrichment and reprocessing activities and resume its implementation of the Additional Protocol and offering Iran state-of-the-art light water reactors through joint projects, along with nuclear fear guarantees and a five-year buffer stock of fuel, as well as cooperation on areas such as civil aviation and telecommunications.

June 2008 P5+1 Proposal: The P5+1 amended their 2006 proposal to include further areas of cooperation: such as security, Afghanistan, agriculture, infrastructure, and civil aviation, as well as a commitment to support Iran's membership in the World Trade Organization. The proposal also offered consideration for Iranian nuclear energy R&D once confidence had been restored, technological and financial assistance for Iran's nuclear energy program, and a reaffirmation of the U.N. Charter obligation to refrain from the use and threat of use of force. The P5+1 also proposed that talks proceed under a six-week "freeze for freeze"

period, where Iran would agree to halt expansion of its enrichment program while the P5+1 would agree not to pursue additional sanctions.

October 2009 Fuel Swap Proposal: To supply the Tehran Research Reactor, the P5+1 proposed a fuel swap program, where Iran would export 1,200 kilograms of LEU (roughly 80 percent of Iran's LEU stockpile). In return, the P5+1 would provide fuel rods for the Tehran Research Reactor, for delivery approximately a year after the conclusion of the agreement, once Iran's fuel supply for the reactor ran out. The P5+1 also agreed to finance the movement of the LEU and fuel rods, and agreed to have the IAEA hold Iran's LEU in escrow in a third-party country until Iran received the fuel rods for the Tehran reactor.

April 2012 P5+1 Proposal: In renewed negotiations in 2012, the P5+1 proposed that Iran halt all 20 percent enrichment, transfer its stock of 20 percent uranium to a third country under IAEA custody, and shut down its Fordow enrichment facility. In return, the P5+1 proposed to provide fuel assemblies for the Tehran Research Reactor, provide technical cooperation through the IAEA to maintain the Tehran Research Reactor, provide medical isotopes to Iran, cooperate on civil aviation, and cooperate in acquiring a light water research reactor for the purpose of producing medical isotopes.

Security Council Resolutions

Resolution 1696 (July 2006): Calls on Iran to suspend its enrichment program and verify its compliance with IAEA requirements.

Resolution 1737 (December 2006): In response to Iran's failure to comply with Resolution 1696, it repeats demands that Iran suspend enrichment and take confidence-building measures, but also calls on Iran to suspend work on heavy water reactor projects and ratify the additional protocol. Resolution 1737 also imposes sanctions against Iran and Iranian individuals and entities deemed to be supporting Iran's proliferation-related activities.

Resolution 1747 (March 2007): Repeats the provisions of the previous two resolutions and calls on Iran to consider the June 2006 proposals made by the P5+1, expanded sanctions to call on states to freeze assets of certain Iranian individuals and entities, as well as expanding the list of import and export prohibitions and calling on states to "exercise vigilance and restraint" in the supply, sale, or transfer of military weapons systems and related materials to Iran and to not enter into new commitments for grants, financial assistance, or confessional loans with the Iranian government.

Resolution 1803 (March 2008): Calls on Iran to halt its enrichment program and comply with the IAEA, requires states to prevent individuals designated as involved in Iran's nuclear ambitions from entering into or traveling through their territories, and subjects additional individuals to asset freezes. It also broadens sanctions against the Iranian state and calls on states to inspect cargo going to or from Iran.

Resolution 1835: (September 2008): Reaffirms the four preceding resolutions and reaffirms the UNSC's commitment to "an early negotiated solution to the Iranian nuclear issue."

Resolution 1929 (June 2010): Greatly expands sanctions against Iran to include barring Iran from investing in nuclear and missile technology abroad, imposes a complete arms embargo, prohibits Iran from taking any activity related to ballistic missiles, calls on states to prevent ballistic missile technology transfer to Iran, expands the inspection regime to prevent smuggling, and freezes the assets of 55 companies.

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