



Joint Comprehensive Plan of Action (JCPOA): Non-Proliferation, Inspections, and Nuclear Constraints

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Congress has a special responsibility to evaluate the Joint Comprehensive Plan of Action (JCPOA), judge its adequacy to protect U.S. national security interests in the short and long term, and ensure its effective implementation. That effort should include a detailed look at the strengths and weaknesses of the agreement. As part of evaluating weaknesses in the deal, it should also seek ways to remediate its weaknesses

Congress should create legislation to codify the agreement and interpretations of critical provisions, ensure its effective implementation, create reporting requirements, and mitigate weaknesses in the agreement. It should also ensure adequate funding for the International Atomic Energy Agency (IAEA), which will be the principal verification entity under the JCPOA and will require dramatically more staffing and resources to effectively carry out its responsibilities.

Legislation

As Senators think about how to evaluate a nuclear deal, their scrutiny should not only lead to an up or down vote of the agreement but also result in legislation that enshrines and elaborates on its provisions and its implementation over time, clarifies key interpretations of its provisions, and creates a framework for effective implementation. While the Iran Nuclear Agreement Review Act of 2015 satisfies some of the following provisions, Congress should ensure that any new legislation includes those provisions as well as additional measures and supporting reporting requirements, such as:

- A detailed description of the motivation, intent, and scope of the agreement;
- Key technical and policy interpretations of major provisions;
- Assessments about the adequacy of the agreement's verification regime;
- Conditions to ensure adequate implementation of the agreement;
- Clear statements of what constitutes violations, both material and incremental;
- Consequences in case of Iranian non-compliance, including in particular those that go beyond or complement the snapback of sanctions; and
- Procedures for addressing Iranian unwillingness to comply with remediation or cease the disputed activity.

It is important to state that the need for this agreement has resulted from Iran's pursuit of nuclear weapons and its building of secret nuclear capabilities, which led to a crisis spanning more than a decade due to non-compliance with its safeguards obligations. Iran remains a suspect country. Therefore, it would be useful that legislation lay out a detailed chronology of Iran's violations of its non-proliferation commitments and describe its history of non-cooperation with the IAEA. Moreover, the U.S. intelligence community should provide an unclassified assessment of Iran's nuclear weapons efforts up to 2004 and any efforts related to nuclear weapons research and development that occurred afterwards.

The legislation should lay out a common understanding of major provisions of the JCPOA. The information, clarifications, and interpretations gathered and recorded during Congressional hearings can also contribute to the implementation legislation. The legislation should also state that the executive branch cannot alter the key interpretations of the agreement without consulting Congress.

The legislation should contain major interpretations of specific provisions and declarations about key goals of the agreement. Obama Administration officials have already stated one interpretation, namely that uranium enrichment (or by implication plutonium separation) is not a right of Iran under the Nuclear Non-Proliferation Treaty. The administration has also stated that it fully intends to prevent Iran from obtaining a nuclear weapon in the long term and that all options remain on the table to achieve this goal.

Another needed interpretation is that any Iranian production of uranium enriched over five percent or separated plutonium, whenever that would occur, would be a significant threat to U.S. and international security and be viewed as inconsistent with the overall intent of the JCPOA. Moreover, an Iranian semi-commercial enrichment program (or any reprocessing program) will be neither economic nor necessary and unlikely to be consistent with international non-proliferation norms, likely furthering nuclear proliferation and instability in the region.

Congress should also endorse the steps that Iran must meet in order to receive sanctions relief on Implementation Day. The JCPOA has a list of conditions Iran must meet in order for key sanctions to be lifted on Implementation Day. The legislation should expressly link Iran fully meeting those conditions to U.S. sanctions relief. One condition is not sufficiently clear. Congress should clarify the relationship between resolving the IAEA's concerns about the possible military dimensions (PMD) of Iran's nuclear programs and Implementation Day. In particular, Congress should condition such relief on a determination that the IAEA's PMD concerns are addressed prior to Implementation Day.

Congress should ensure that the IAEA is adequately funded to carry out its responsibilities under the JCPOA including enforcement of the Additional Protocol. It should also condition funding on U.S. nationals being able to usefully contribute to and be employed by the IAEA in carrying out its Iran safeguard and JCPOA responsibilities, while recognizing that U.S. nationals are barred from participating in inspections in Iran. But that regrettable concession should not prevent U.S. nationals from working on or even leading IAEA Iran verification efforts under the JCPOA.

The legislation should include reporting requirements that require more detailed reports than contained in the Iran Nuclear Agreement Review Act. In order for Congress to have on-going oversight during the implementation of the JCPOA, legislated Reporting Requirements should include periodic assessments such as:

- An annual unclassified compliance report, including review and determination of the on-going adequacy of the agreement's verification and Iran's cooperation with the IAEA;
- Prompt reporting of all violations, non-compliance, and non-cooperation episodes;
- IAEA progress on reaching a broader conclusion under the Additional Protocol in resolving PMD issues;
- Quarterly reports on the precise size of Iran's low enriched uranium (LEU) stocks, both less than 5 percent and between 5 and 20 percent enriched, and natural uranium stocks;
- Precise updates on Iran's breakout timelines;
- Yearly report on the status of Iran's R&D developments, particularly with regards to advanced centrifuges;
- Updates on the progress of modifications to the Arak reactor;
- Regular reporting on Iran's procurements of proliferation-sensitive goods from abroad (especially if illicit);
- Prompt reporting of any Iranian exports of any proliferation-sensitive goods;
- Reports on the spread of sensitive technologies, such as enrichment- or reprocessing-related technologies, to other countries of proliferation concern;
- Status and impact of the lifting of sanctions;
- Yearly non-proliferation assessment which addresses among other issues whether this agreement has increased the risk of the spread of sensitive nuclear technologies and ballistic missiles, and if so what steps the administration is pursuing to reduce the likelihood of further proliferation of sensitive technologies.

The legislation should also require:

- Regular consultations between members of Congress or Congressional staff and appropriate executive branch officials;
- Regular hearings;
- The establishment of a specific Congressional oversight body in the Senate or House, or with members in both;
- The creation of a senior executive branch implementation office in the White House.

In addition, the procurement channel created by the JCPOA requires special Congressional attention. To implement the procurement channel, the United States needs to expand efforts to significantly strengthen export control systems internationally and commit anew to counter-proliferation efforts against Iran's illicit procurements for its missile and military programs and any potential illicit nuclear programs. The success of the procurement channel to deter and thwart Iranian violations will rest fundamentally on the supplier states and their companies. This effort is necessarily international in scope and will require significant U.S. resources to ensure that all nations are implementing the requirements of the procurement channel and trade controls more broadly. As part of that effort, it is important to review and expand U.S. trade control outreach programs. The United States also needs to expand its domestic efforts aimed at the timely detection and disrupting of Iran's illicit procurement attempts. The JCPOA provides only 30 days to reject a proposed export to Iran, which for many states is not much time to review adequately whether particular exports are legitimate. Even the United States may be facing a severe challenge addressing proposals, particularly in determining if the export could contribute to activities inconsistent with the JCPOA within that 30 day window. Pending the development of an adequate review system, the United States should state that it will maintain a presumption of denial if it determines that 30 days are not sufficient to adequately review proposals. Congress should support the deployment of necessary resources to improve the executive branch's capabilities to rapidly review exports to Iran and ensure that they do not contribute

to activities inconsistent with the JCPOA. It should also encourage greater cooperation with allies to improve their timely detection and thwarting of Iran's illicit trade.

The snapback provision has been extensively discussed in the context of major violations of the JCPOA. However, in anticipation of less major violations, a range of options are needed in an escalatory ladder, where the rungs, not in any order, could be reporting a violation to the Joint Commission, re-imposing some sanctions, delaying the provision of some or all civil nuclear energy cooperation, or blocking some or all exports to Iran under the procurement channel mechanism. The top rung would be the snapback of sanctions. Congress should require the executive branch to develop and report on a range of responses to incremental cheating by Iran.

Concerns about the JCPOA

The JCPOA has numerous strengths, which we at my organization and others have identified in numerous publications. In addition, the administration has been a fount of positive information about the deal to Congress and the public. However, the agreement cannot be evaluated without a critical look at its provisions.

I would like to focus my testimony on what our analyses have highlighted as significant concerns in the agreement and the steps we have recommended in order to anticipate or remediate these weaknesses. I will focus on the nuclear provisions and not the sanctions provisions.

Before doing so, I would like to highlight that my organization and I are neutral on whether the JCPOA should be supported. We believe that at this time of intensive, highly charged debate about the merits of the agreement, our analysis is sounder if we avoid taking a position on the agreement. We are also realizing as we dig deeper into the details of this agreement that its effectiveness, and thus whether or not it is sound, depends on the outcome of actions that are difficult to predict at this time. However, it is more likely that their outcome will be positive if additional steps are taken now. As Congress reviews this agreement, it should seek ways to ensure that the agreement is implemented effectively, which renders it more likely to succeed.

Much of my testimony is based on our several-week assessment of the JCPOA. For greater detail about our findings, one can consult the following ISIS reports:

- **The Plutonium Pathway, Arak Heavy Water Reactor and Reprocessing**
http://isis-online.org/uploads/isis-reports/documents/Plutonium_Pathway_Revision1.pdf
- **Possible Military Dimensions**
http://isis-online.org/uploads/isis-reports/documents/Possible_Military_Dimensions_Final.pdf
- **The Joint Comprehensive Plan of Action “Kicks the Can Down the Road”: How to prepare for the day when the can finally lands**
http://isis-online.org/uploads/isis-reports/documents/JCPA_Fundamental_Goal_july_22_2015_final-1.pdf
- **Heavy Water Reactor Restrictions in the JCPOA**
http://isis-online.org/uploads/isis-reports/documents/Heavy_Water_Reactor_Restrictions_Final.pdf

- **Verification of the Joint Comprehensive Plan of Action**
http://isis-online.org/uploads/isis-reports/documents/Verification_of_Iran_JCPOA_Final.pdf
- **Removing Stocks of Near 20 Percent Enriched Uranium**
http://isis-online.org/uploads/isis-reports/documents/Near_20_percent_LEU_Final.pdf
- **When is the 300 Kilogram Cap on Low Enriched Uranium not a Cap?**
http://isis-online.org/uploads/isis-reports/documents/300_kg_LEU_cap_Final.pdf
- **Reconciling the 300 kg Cap with Iran’s Monthly Production of Low Enriched Uranium**
http://isis-online.org/uploads/isis-reports/documents/Reconciling_the_300_kg_Cap_with_Iran%E2%80%99s_Monthly_Production_of_LEU_Final.pdf
- **Civil Nuclear Energy Benefits**
http://isis-online.org/uploads/isis-reports/documents/Civil_Nuclear_Energy_Benefits_Final.pdf

In addition, we are finishing two additional reports:

- **The Highly Enriched Uranium Pathway**
- **The JCPOA’s Procurement Channel**

I will summarize (or in one case re-state) concerns from the abovementioned reports.

Possible Military Dimensions (PMD)

There remain significant doubts that Iran will address the IAEA’s PMD concerns before Implementation Day, and such a failure will impact negatively the success of the agreement. As such, actions should be taken now to clarify that U.S. policy requires that the IAEA’s concerns about possible military dimensions of Iran’s nuclear programs must be addressed before sanctions are lifted on Implementation Day.

The JCPOA appears to require Iran to resolve these PMD concerns. The JCPOA explicitly requires Iran to complete a set of agreed upon steps with the IAEA prior to Adoption Day, which falls in October 2015, and well before Implementation Day. By mid-December, the IAEA will issue a final assessment on the resolution of all past and present, outstanding PMD issues. The public portion of the agreement is not specific regarding what constitutes Iran satisfactorily addressing the IAEA’s PMD concerns. For example, the IAEA could report in December that Iran had a nuclear weapons program, parts of which may have continued, and Iran has so far cooperated adequately with the IAEA’s investigation. This should be sufficient to allow an interpretation that the IAEA has initially addressed its PMD concerns. (A longer IAEA investigation would be required to reach a broader conclusion about the peacefulness of nuclear activities in Iran which could proceed until Transition Day or year 8). But what if the IAEA reports that its concerns remain unaddressed in whole or in part, or Iran denies access to sites sought by the IAEA? Or a more complicated possibility, what if the IAEA provides an ambiguous answer or even accepts Iranian answers that are incomplete or use civilian rationales for nuclear weapons related activities? To date, Iran has denied to the IAEA ever having a nuclear weapons program. As a consequence of this unclear situation, the PMD provisions may be left to an interpretation by the parties that is not yet clear to publics.

The conditions in the agreement allow any member of the E3+3 to not lift sanctions on Implementation Day if Iran has not met its obligations. Whether Iran is addressing the IAEA's concerns should be apparent well before that day. If it does not, and Implementation Day happens nonetheless, this failure could undermine the IAEA's credibility and cast a long shadow on this agreement. The E3+3, and in particular, the United States, should not back down regarding the linkage of these two issues and abandon all leverage of sanctions relief. The administration should make clear in public statements that Implementation Day can occur only after the IAEA's concerns about PMD are adequately addressed.

U.S. lawmakers are rightly skeptical that the U.S. administration will require Iran to address the IAEA's PMD concerns prior to Implementation Day, or ever, in fact. In documents the administration submitted to Congress under legislative requirements, the administration wrote: "An Iranian admission of its past nuclear weapons program is unlikely and is not necessary for purposes of verifying commitments going forward."¹ While stating that Iran conducted nuclear weapons activities in the past, and thus confirming that Iran is deceiving the IAEA, the administration claims it knows enough about Iran's past nuclear weapons work, and has shared relevant information with the IAEA, to "enable inspectors to establish confidence that previously reported Iranian [nuclear weaponization] activities are not ongoing."² But the flaws in this argument include that U.S. knowledge may be incomplete, particularly on the key questions: what continued after Iran halted its structured nuclear weapons program in 2003, how far has Iran gotten in learning to build nuclear weapons, where did it carry out this work, and who conducted these activities? Moreover, the issue is broader than the IAEA certifying that activities previously ongoing are halted. It must also determine that no such activities are on-going, and a lack of Iranian cooperation about its past work on nuclear weapons will make that determination all but impossible to make. Then, there is the issue of the IAEA's credibility, which means that a pass on Iran addressing the IAEA's concerns prior to Implementation Day will signal to Iran, and any other state for that matter, that intransigence on verification issues will ultimately succeed. In essence, the agreement would start off already weakened and provide Iran and other countries a dangerous precedent for future intransigence.

Congress should thus declare and make binding in legislation that the lifting of U.S. sanctions requires a determination that the IAEA's PMD concerns are adequately addressed.

JCPOA's Fundamental Goal

The Joint Comprehensive Plan of Action's fundamental goal is to ensure that Iran's nuclear program is peaceful even after its major nuclear limitations end. Put in alternative formulations, it seeks to ensure that Iran will not build nuclear weapons, or more directly, that Iran will be prevented from building them.

For ten years, this agreement creates the conditions that any serious effort by Iran to build nuclear weapons will be highly time consuming and will be vulnerable to detection. However, whether the deal meets the goal of preventing Iran from building nuclear weapons in the long term is doubtful. This uncertainty poses one of the more fundamental challenges to the agreement.

The JCPOA's preface conditions Iran's nuclear program and its growth on "scientific and economic considerations" and assurances that the programs are for "exclusively peaceful purposes, consistent with

¹ Jay Solomon, "Lawmakers Say Iran Unlikely to Address Suspicions of Secret Weapons Program," *Wall Street Journal*, July 26, 2015. See also: Unclassified Verification Assessment, submitted by Obama administration to Congress under the Iran Nuclear Agreement Review Act of 2015 (INARA). Delivered to Congress on July 19, 2015.

² Ibid.

international non-proliferation norms.” But these conditions are unlikely to be met 10-15 years from now, based on Iran’s nuclear plans.

One may argue that buying ten, perhaps fifteen, years should be a key factor in judging this agreement and that after ten years the United States will have the same leverage as it has today to confront Iran over its nuclear weapons capabilities or any movement toward nuclear weapons. However, at that point, this U.S. leverage may not exist. That the United States may be in a worse position ten to fifteen years from now to influence Iran’s nuclear plans should be a consideration of implementing the JCPOA.

Ten years after the 1994 U.S./North Korean Agreed Framework was signed, North Korea had renounced this framework and was in the process of building nuclear weapons. At the time, the United States and its allies were poorly positioned to stop North Korea, or even judge accurately when it would actually cross the threshold of possessing nuclear weapons. Looking back to ten years after the signing of the Agreed Framework, the United States had lost the valuable leverage it had had in 1994 when it negotiated the agreement.

Given the volatility of the Middle East, firm predictions about substantial, effective U.S. leverage ten years from now should be viewed more as wishful thinking than credible projections. While some voice confidently that Iran will change for the better over the next ten to fifteen years, similar or same voices also said this ten to fifteen years ago. In the last ten years, events in the Middle East have not unfolded as predicted, let alone as expected. Today, Iran can hardly be called more responsible or friendly to U.S. interests than it was ten years ago.

It should also be remembered that the ten year limitation on Iran’s centrifuge program, despite its value, is already a compromise of the initial E3 goal of ten years ago to achieve a ten-year *suspension* in Iran’s centrifuge program. And this compromise took 12 years to negotiate. So, ten-year nuclear limitations are not as lengthy as they seem, given how long the Iranian nuclear debacle has lasted, how little the onerous aspects of the Iranian regime have changed, how unpredictable the Middle East has proven to be, and how U.S. leverage may not be sufficient to stop Iran from building nuclear weapons ten years from now.

Thus, any consideration of the JCPOA should carefully weigh its long-term prospects. As part of that evaluation, the United States supported by Congress needs to take steps today to increase the chance that it can respond successfully to stop Iran moving to build nuclear weapons after the major nuclear limitations end. This policy may help deter Iran from trying later.

After year 10, and particularly after year 15, as limits on its nuclear program end, Iran could reemerge as a major nuclear threat. The agreement does not prohibit Iran from building a large uranium enrichment capability and even a reprocessing, or plutonium separation, capability; the agreement essentially delays the day when Iran reestablishes a nuclear weapons capability and possibly builds nuclear weapons. During the negotiations, according to discussions with negotiators, Iran laid out its plans for expanding its nuclear programs, in particular its gas centrifuge program. Iran’s priority was its centrifuge program, and it stated its intention to deploy advanced centrifuges, such as the IR-2m, IR-4, IR-6, and/or IR-8 centrifuges, after year 10 of the agreement and in particular to greatly ramp up their deployment after year 13.

The United States should view the agreement as by no means approving of Iran’s plans for a large uranium enrichment program or its possible plans to create a reprocessing program. It should oppose these plans on the basis that they are uneconomic and unnecessary, pose a threat to regional and international security, and are inconsistent with the intent of the JCPOA.

After year 13, the breakout timelines are expected to reduce steadily, as Iran deploys centrifuges at an expanded rate. After year 15, this rate could increase significantly. This planned ramp-up after year 13 combined with the removal of limitations on enrichment level after year 15 means that Iran's breakout timelines could shrink to just days. Within a few short years, Iran could emerge with a nuclear arsenal of many nuclear weapons.

Iran might abide by its commitments and value the benefits of international nuclear cooperation, in the process deciding to abandon its plans to expand its centrifuge program or give up any remaining aspirations to build a weapon after the major nuclear limitations end, but it could also choose to build up a large nuclear weapons capability and ultimately seek nuclear weapons after these limits sunset.

Making a political predicate clear for not accepting or approving of any plutonium reprocessing or large growth in uranium enrichment will lay the basis for the United States to be able to deal with issues that could emerge after most of the deal's restrictions end. One part of that effort is the United States and its E3+3 partners not accepting or approving of Iran's nuclear plans after year 10. Ten to fifteen years from now, Iran will still have no reason to produce enriched uranium for civil purposes. The United States should state that an Iranian semi-commercial enrichment program (or any reprocessing program) will be neither economic nor necessary and likely to be inconsistent with international non-proliferation norms.

A set of intrusive verification measures, such as the Additional Protocol, will remain in place after year 15 of the deal, but they are not sufficient to stop Iran from obtaining nuclear weapons. Armed with a large centrifuge program, an Iranian attempt to break out to nuclear weapons would be detected, however probably not in time to take action to prevent it. Even with intrusive verification, the production of the first one or two significant quantities of weapon-grade uranium could well be missed by inspectors until after the fact, since breakout could happen so quickly at that point and Iran could take a few simple steps to delay the inspectors from becoming aware of the breakout. Moreover, small, secret enrichment plants using highly advanced centrifuges could escape detection for months. Finally, Iran may simply choose to walk away from its non-proliferation commitments and build nuclear weapons at a time when the United States and its allies are poorly positioned to stop it.

More broadly, it is incumbent on those states, experts, and individuals concerned about Iran's future nuclear direction to find ways to dissuade it from implementing nuclear plans that will create a great deal of instability and possibly lead to war, given the reduced certainty about its nuclear weapons capabilities as its nuclear programs grow. Easing making the case, these plans, centered on uranium enrichment and possibly plutonium separation, are unnecessary and uneconomic.

Congress should declare that any production of separated plutonium or uranium enriched over five percent, whenever it occurs, is inconsistent with the intent of the JCPOA. It should also make clear that the JCPOA does not endorse or approve of Iran creating a semi-commercial enrichment program and that U.S. policy opposes such a program on the grounds of it being unnecessary, uneconomic, a proliferation risk, and a threat to U.S., regional, and international security.

Verification Issues

Collectively, the verification requirements, if fully implemented, are designed to deter Iranian cheating and provide assurance that violations will be detected promptly, leaving time for a response. Several of the provisions are innovative. All aim to create an intrusive verification environment, backed up by the resources of the E3+3.

The verification provisions have weaknesses, however, and some must be remediated or compensated for if the agreement is to be verifiable. Moreover, without stringent, long-term limits on Iran's sensitive nuclear programs, such as uranium enrichment activities, these verification conditions, some of which are also of limited duration, are unlikely to be sufficient. Thus, as a general finding, the verification provisions, with some remediation of their implementation or compensation for expected issues, are likely to be adequate during the first ten to fifteen years of the agreement, but they will be inadequate afterwards if Iran implements its plan to expand its centrifuge program and possibly start a reprocessing program.

Lack of Prompt Access to Suspect Sites

Because of its controversy, I would like to focus on the access provision in the JCPOA. It is significant that the agreement does not contain a provision requiring anywhere, anytime inspections at suspect sites. Such prompt access has long been viewed as critical to ensure that undeclared activities are not hidden or moved prior to the inspectors' access. Instead, the agreement contains a procedure that will last for 15 years and is designed to ensure IAEA access to Iranian nuclear sites within 24 days of the formal request for access.

Anywhere, anytime inspections, sometimes called "snap" inspections by administration officials, describe prompt inspections of sites suspected of undeclared nuclear or nuclear-related activities or facilities. The Additional Protocol seeks to ensure that its provisions of access approach anytime inspections. It has a condition of gaining access to suspicious sites in as little as 24 hours. This prompt access requirement in the Additional Protocol was the result of intensive negotiations among the IAEA's member states in the mid-1990s and represents a collective judgement of its fundamental importance in ensuring the absence of undeclared activities in a state. Prompt access is of particularly critical consideration in the case of Iran with its long history of conducting undeclared nuclear activities.

IAEA inspectors had prompt access in Iraq in the 1990s and early 2000s. South Africa declared that that its policy was to provide the IAEA anywhere, anytime access "within reason," which was explained only as a request to not ask to go to a site in the middle of the night. In practice, the IAEA could get access to any South African facility soon after the request.

The Additional Protocol recognizes the need for its access provisions to approach anytime inspections by its 24-hour rule. However, it fails to contain a means to impose immediate consequences on a state for allowing prompt access.

The E3+3 negotiators of the JCPOA had to correct this shortcoming of IAEA safeguards agreements. Moreover, this shortcoming was not a theoretical exercise; Iran has frequently denied critical access to the IAEA. In fact, one could argue that the JCPOA was only possible if it contained a mandatory access provision, namely the certainty that an Iranian access refusal would lead to severe consequences.

The JCPOA does deliver on creating an access provision with consequences for noncompliance. Where the JCPOA fails is on ensuring access promptly.

One can ask why does the access provision of the JCPOA allows a delay of 24 days. As far as we could determine, it was a compromise between Iranian demands for three months and reasonable demands for at most a few days, where the latter is more consistent with the Additional Protocol's requirement of access to suspect sites within 24 hours. To any partner who said 24 days were too long, the U.S. answer was that 24 days was what was possible to achieve in the agreement.

The 24-day condition has stimulated a controversial public debate. Twenty four days could be enough time, presumably, for Iran to relocate undeclared activities that are in violation of the JCPOA while it undertakes sanitization activities that would not necessarily leave a trace in environmental sampling.

This possibility poses special challenges because of Iran's long experience in hiding its nuclear activities. In that sense it has extensive practice at defeating IAEA and U.S. detection methods. Iran would be expected to plan ahead in case access is sought for any undeclared activity. This could include the use of specially designed equipment and facilities aimed at defeating the constraints in the JCPOA's verification rules. Iran could anticipate and plan to implement an effective way to defeat IAEA methods in case access was requested to a site conducting undeclared activity. When requested for access, Iran could rapidly try to hide its activities and avoid leaving any evidence for the IAEA.

In past cases of subterfuge, Iran did not have to hide its activities within 24 days, as it would in the future. However, it gained valuable experience useful in sanitizing its activities more rapidly. Three cases are noteworthy and provided Iran with experience that would be valuable in the future, if it decided to build and then hide the evidence of undeclared facilities:

- **Kalaye Electric**, an undeclared centrifuge research and development site. This site secretly produced relatively small amounts of enriched uranium in violation of Iran's safeguards agreement. It is here in 2003 where Iran is thought to have first tried to defeat IAEA's environmental sampling methods. After several months, however, Iran had not sanitized the site adequately, and the IAEA detected enriched uranium as a result of sampling a ventilation duct. Iran had mistakenly not replaced this duct during its clean-up operations;
- The **Lavizan-Shian** facility, a site alleged to have housed in the 1990s the Physics Research Center and its undeclared military nuclear program. Likely out of fear of the IAEA asking to visit this site and take samples, Iran decided in late 2003 to eliminate the entire site. It had many months to destroy the buildings and level the site, including scraping the earth. After the IAEA eventually asked to go the site, it found no evidence of nuclear materials, which was eventually rebuilt as a sports center; and
- The **Parchin** military site, linked to high explosive work related to nuclear weapons. One allegation is that the site was used to test a nuclear weapons neutron initiator made with uranium deuteride. Its sanitization status is unknown, but efforts at sanitization have ostensibly been ongoing, as visible in satellite imagery, for three years since the IAEA's first request for access and are likely aimed at hiding traces of uranium.

These experiences, plus others, mean that Iran has extensive experience hiding its nuclear activities and importantly learning from its mistakes, in essence evolving its sanitization strategies. Kalaye Electric was a huge embarrassment for the Iranians, who were caught cheating on their safeguards agreement because of an oversight in sanitization. The next case chronologically, Lavisan-Shian, involved Iran destroying

everything and carting away the rubble and earth. It subsequently refused an IAEA request to examine and sample the rubble. The Parchin case is more subtle, where the Iranians know that they cannot credibly destroy the key buildings where the tests are alleged to have occurred. Instead, Iran appears to have opted for a strategy of cleaning up and rebuilding the major buildings at the site.³

Although Iran so far has not needed to hide its activities within 24 days, it is experienced enough to be able to do so in the future for certain nuclear and nuclear-related activities. In the past, Iran could delay access with few consequences, and not surprisingly it took time to sanitize its facilities. Moreover, Iran needed this time since it did not anticipate getting caught in these three cases. It had to implement sanitization steps at facilities that were in no way prepared ahead of time for a rapid clean-up. With the JCPOA, it no longer has the option for a lengthy clean-up. But that does not mean Iran cannot adjust its strategies to plan for a rapid evacuation and sanitization of undeclared sites. The IAEA and the E3+3 should certainly anticipate Iran modifying its tactics of deception if it seeks to cheat on the agreement.

What could Iran potentially hide or disguise in a 24-day time period? At ISIS, over the years, we have conducted several assessments on countries such as Iran, North Korea, and Iraq which have all cheated on their safeguards obligations. We have assessed the types and quantities of uranium releases from gas centrifuge plants as part of official safeguards studies and evaluated many cases where environmental sampling was used to uncover undeclared activities or failed to do so. Based on this work, we assess that Iran could likely move and disguise many small scale nuclear and nuclear-weapon related activities. These include:

- High explosive testing related to nuclear weapons;
- Small centrifuge manufacturing plant;
- Small centrifuge plant that uses advanced centrifuges (in this case, we assume a facility of tens of, or at most a few hundred, centrifuges, organized in specially designed facilities suitable for rapid removal and with a containment system).

Activities that would be difficult to hide successfully would include:

- Large-scale uranium conversion;
- Centrifuge plants holding thousands of gas centrifuges;
- A reactor or reprocessing plant;
- High explosive work with natural uranium as a surrogate.

As can be seen, larger scale activities are more vulnerable to detection, as are those that use significant amounts of tell-tale nuclear materials, such as uranium or plutonium. But small-scale activities matter, and this is one of the key reasons why inspectors want prompt, or anytime, anywhere access.

What can be done within the confines of the agreement? The IAEA should use the access provision to ensure that Iran will comply, and the agreement is sound. Soon after Implementation Day, it should request access to sites associated with the PMD issue.

³ Iran's activities at Parchin raise the question of why it has been sanitizing actively during negotiations if it is supposedly prepared to address the PMD issue. The on-going sanitization activities also raise serious doubts about the soundness of the reported proposal for Iran to take its own environmental samples at Parchin, instead of the IAEA doing so, as is the standard procedure.

However, the IAEA cannot depend on prompt or snap access to detect a range of undeclared activities. It will have to weigh carefully whether to ask for access when it has suspicions but lacks conclusive evidence. It will have to consider the risk of Iran successfully sanitizing a site, something that would not be possible with a 24-hour access rule. The JCPOA's access provisions, while being an important enforcement mechanism, could inadvertently weaken the IAEA's ability to detect undeclared activities and materials.

As a result, the E3+3 should view any Iranian delay in allowing access to the IAEA beyond 24 hours as requiring a calibrated response. At that point, and well before the 24 days have passed, the E3+3 should already slow nuclear cooperation and approvals of exports to Iran via the procurement channel. At the very least, Iran should get a message that prompt access is required under the Additional Protocol, despite the language in the JCPOA.

To compensate for the uncertainties of potential sanitization, Western intelligence will likely be critical in exposing any Iranian cheating and defining where the inspectors should request access. The evidence will need to provide high confidence that even if the site is sanitized, complementary evidence and requests for access to other sites can establish that undeclared activities have occurred. However, Western nations are going to have to dedicate considerable resources to discovering reliably and promptly any secret nuclear activities in Iran. This task has gotten harder since Iran has tightened its security and intensified its counter-intelligence efforts in recent years. Overcoming Iran's greater capabilities to hide its most sensitive activities is a central challenge facing this agreement.

Moreover, Western intelligence will have to share information more routinely with the IAEA, and the IAEA will have to be more willing to act using this information and provide any results to the E3+3. It must be a two-way street, with both assigning a high priority to the detection of any suspect Iranian nuclear activities.

In the first few years of the agreement, one would expect all the key countries will work diligently to achieve these goals. But this entire process may become harder for some of the E3+3 countries as vigilance wanes, trade expands, and potentially, relations with Iran improve. The IAEA may also encounter renewed internal resistance from member states which balk at intrusive inspections and information sharing in general.

Stocks of less than 3.67 percent LEU: The Issue of Exceptions

For 15 years, the JCPOA imposes a 300 kilogram (kg) cap on Iran's stock of less than 3.67 percent LEU hexafluoride in order to inhibit Iran's ability to break out. However, the JCPOA creates exceptions to this cap, which Iran may try to exploit by attempting to justify fuel fabrication for power or research reactors. To avoid the risk of significantly reducing the breakout timelines and instead preserving the value of the 300 kg LEU cap during the full 15 years of this limitation, the United States should officially state that an exception to the cap will not be granted except in extraordinary circumstances, and in no cases will an exception be made for Iran to domestically produce LEU slated for fuel in nuclear power reactors. In the case of research reactors, any exception will depend on the technical merits of the fuel and the size of the reactor. The fundamental position is that fresh LEU can be readily converted into uranium hexafluoride (UF₆) and, therefore, the core goal of this 300 kg cap is not compatible with fuel fabrication in Iran. An exception is circumstances such as those involving the Arak reactor which importantly also has limited LEU requirements.

The U.S. government and at least some of its E3+3 allies appear fully prepared to block any Iranian attempt to exercise this option, except in the case of the Arak reactor. A public commitment to that effect should be sought collectively from the E3+3 governments.

Congress should declare in legislation that U.S. policy is to block any exception involving making nuclear fuel in Iran, except for the Arak reactor.

Stocks of 3.67 LEU: Enforcing the Cap

Under the JCPOA, Iran for 15 years must adhere to a cap of 300 kg of LEU hexafluoride. This cap must hold even though Iran is allowed to continue producing LEU. For the first 10 years, Iran can enrich with 5,060 IR-1 centrifuges at the Natanz Fuel Enrichment Plant (FEP); afterwards, it can increase the number of centrifuges enriching. Enforcing this cap could prove challenging and an early test of the adequacy of the JCPOA.

Based on previous performance data, using about 5,000 IR-1 centrifuges, Iran is expected to produce about 100 kg of 3.67 percent LEU in uranium hexafluoride form (LEUF₆) every month. The fact that every month Iran will be producing about one-third of its allowed stockpile means that it will regularly have to take actions to reduce its stock of LEU in order to comply with the cap.

As discussed above, Iran could claim an exception to the cap under the agreement and seek approval to use the excess LEU to make reactor fuel. However, any such exception should be opposed except in a few cases, such as for Arak reactor fuel. In any case, an exception for the Arak reactor is unlikely to be suggested for years, since it is not expected to operate for at least five, if not ten years, and when it does, it will require very little LEU.

Thus, for years, if Iran continues to produce LEU, it will need to take steps almost monthly that reduce its LEU stockpile. It has three steps it can take, two of which are spelled out in the JCPOA. It can re-mix the LEU with the depleted uranium tails to generate natural uranium or it can send the LEU overseas. The more reliable of the two methods will be down blending to natural uranium. Remixing the LEU hexafluoride with depleted uranium hexafluoride is easy to do, and Iran has already done this type of remixing with its near 20 percent LEU under the Joint Plan of Action. It could also regularly sell the LEU abroad. However, finding buyers for such a small stream of LEU, relative to the much larger amounts typically sold in the international commercial market, may be challenging. The third step is to halt the production of LEU, at least temporarily. In fact, it could not produce LEU for many years, resuming LEU production if it needs it for the Arak reactor. A halt is in all fairness the only one of the three steps consistent with its practical needs.

With Iran potentially bumping up against the cap monthly, what about violations? Because Iran can stop producing LEU, even if temporarily, and at any point and can downblend LEU into natural uranium, Iran has the tools to immediately avoid any violation of the cap. As a result, any overage over the cap should be treated as Iran testing the limits of the agreement and a violation that requires a firm response.

In anticipation of violations, the E3+3 should prepare a range of options in an escalatory ladder, where the rungs, not in any order, could be reporting a violation to the Joint Commission, re-imposing some sanctions, delaying the provision of some or all civil nuclear energy cooperation, or blocking some or all exports to Iran under the procurement channel mechanism. The top rung would be the snapback of sanctions.

Whether Iran abides by this cap and how violations of the cap are enforced will be an important indication of the performance of this agreement. But what should not be forgotten is that Iran does not need to produce LEU for several years. To avoid unneeded tension and misunderstandings over the cap, the United States and other members of the E3+3 should initiate discussions with Iran aimed at convincing it to sharply limit or halt LEU production on a voluntary basis. The agreement by no means prohibits this discussion, and Iran can always say no.

Congress should state that incremental violations of the LEU cap are significant and warrant a firm response. It should explore how to re-impose U.S. sanctions in case of violations. In addition, it should declare that Iran has no need to produce LEU for years, if ever, and pending a need, such as the Arak reactor, should halt any further LEU production. It should also require the executive branch to engage Iran in discussions for halting LEU production soon after Implementation Day, unless a practical need is identified.

Stocks of Near 20 Percent LEU

A special concern is Iran's remaining stock of near 20 percent LEU, because it can be used to significantly lower breakout timelines. The JCPOA seems to adequately address the issue of the remaining near 20 percent LEU oxide stock by providing that: "All uranium oxide enriched to between 5% and 20% will be fabricated into fuel plates for the Tehran Research Reactor or transferred, based on a commercial transaction, outside of Iran or diluted to an enrichment level of 3.67% or less."

On balance, it is expected that most of Iran's near 20 percent LEU will leave the country prior to the lifting of sanctions on Implementation Day. Although it is legitimate to assume that Iran would want to recover the relatively large amount of LEU in scrap, it has little incentive or capability to do so by Implementation Day. Nonetheless, to ensure effective implementation of this provision, we recommend that all of the 125 kg (uranium mass) in scrap and waste be deemed unfit for use in TRR fuel and sent out of Iran prior to Implementation Day, since dilution would likely be overly difficult. The 45 kg in powder form is eligible to stay in Iran until Implementation Day since it can clearly be made into TRR fuel. Much of it, however, will probably end up in scrap, waste, or process forms, and this material should also be sent out of Iran prior to Implementation Day.

Congress should require that the vast bulk of near 20 percent LEU leave Iran before sanctions are lifted.

Breakout Issues

A key criteria in the development of the JCPOA is the time Iran needs to produce enough weapon-grade uranium for a nuclear weapon, called breakout. The administration has used a 12-month breakout criteria in designing limits on Iran's gas centrifuge program. However, the agreed limits do not appear to guarantee a 12-month breakout timeline during the first ten years of the agreement, if Iran can relatively quickly re-deploy its already manufactured IR-2m centrifuges. This redeployment issue, and our preliminary assessment, require clarification. In any case, the United States should ensure, via additional negotiations if necessary, that IR-2m centrifuges are dismantled in a manner to make them more difficult, if not impossible, to redeploy.

After 10 years, based on discussions with knowledgeable U.S. and E3 officials, the breakout timeline decreases to about six months at year 13 of the agreement and can rapidly decrease after that year. After year 15, the breakout timeline can reach a few days, as Iran institutes its stated plans to resume production of near 20 percent LEU and installs thousands of its most advanced centrifuges.

Similar Breakout Results as the Administration

For many years we have calculated breakout timelines in collaboration with centrifuge experts at the University of Virginia. Our understanding from U.S. officials is that the U.S. methods and ours are similar in outcome. For example, our breakout results are similar to those of the U.S. administration when considering the centrifuge limits Iran has accepted during the first ten years of the JCPOA. In the case of about 6,000 IR-1 centrifuges, a stock of 300 kilograms of 3.5 percent LEU hexafluoride, and no available near 20 percent LEU hexafluoride, our breakout estimate would have a mean of about 12-14 months, where the minimum breakout time would be 11-12 months.⁴ We have used the mean as the best indicator of breakout time and interpret the minimum time as a worst case. Thus, our estimate of breakout would confirm the United States' assessment that these limitations satisfy a 12-month breakout criterion.

Iran's Stock of Near 20 Percent LEU

We have frequently expressed our concerns that Iran's stock of near 20 percent LEU could unacceptably lower breakout timelines.⁵ Breakout estimates depend critically on Iran's usable stock of near 20 percent LEU. Thus, as discussed above, it is significant that the JCPOA requires Iran to get rid of the bulk of its remaining stock of near 20 percent LEU prior to Implementation Day. If Iran does not do so, Implementation Day should be postponed until it does.

Effect of 3.5 Percent LEU⁶

Another consideration is that Iran may accumulate additional 3.5 percent LEU over the limit of 300 kilograms LEU hexafluoride (equivalent). The accumulation of a few hundred kilograms of 3.5 percent LEU over the limit would lower the breakout times by a few to several months. If it can accumulate more than about 1,200 kilograms, it could lower the breakout time to below six months. As a result, Iran exceeding the cap is a serious potential violation and one that should be deterred.

Effect of Re-Deployed IR-2m Centrifuges

A major gain in the JCPOA is that Iran must dismantle its excess centrifuges and place them in monitored storage. However, reinstallation of these same centrifuges is possible and such an act would lower breakout timelines.

⁴ More recent ISIS calculations that assume a more efficient average arrangement of the cascades shorten our previous estimates somewhat. This reflects a view that Iran may keep under a deal its cascades that are the more efficient ones.

⁵ For additional detail and sources see David Albright and Serena Kelleher-Vergantini, "The U.S. Fact Sheet's Missing Part: Iran's Near 20 Percent LEU (Updated June 5, 2015 with new IAEA data)," ISIS Report, June 5, 2015. http://isis-online.org/uploads/isis-reports/documents/LEU_20_percent_update_June_5_2015_Final.pdf

⁶ For additional detail and sources see: Albright and Kelleher-Vergantini, "Iran's Stock of Less than Five Percent Low Enriched Uranium, June 2015 Update," ISIS Report, June 2, 2015, http://isis-online.org/uploads/isis-reports/documents/Irans_35_stocks_of_LEU_June_2015_Final.pdf

According to the JCPOA, Iran will remove all excess centrifuges, in particular IR-2m centrifuges, its most advanced currently deployed centrifuges. However, Iran is not removing all the associated equipment at the Natanz Fuel Enrichment Plant. At this plant, Iran will remove “UF₆ pipework including sub headers, valves and pressure transducers at cascade level, and frequency inverters, and UF₆ withdrawal equipment from one of the withdrawal stations, which is currently not in service, including its vacuum pumps and chemical traps.” However, the agreement does not appear to require the full dismantlement of all feed and withdrawal equipment used in the cascades at the Fuel Enrichment Plant.⁷ Leaving this equipment in the Natanz plant provides Iran a head start on re-starting enrichment in re-installed cascades.

If Iran were to break out, it would be expected to re-install centrifuges to lower breakout timelines. Secretary of Energy Ernest Moniz stated in Senate testimony before this committee that it would take Iran 2-3 years to reinstall all its dismantled equipment. This corresponds to an average rate of about 2 to over 3 cascades per month. Another estimate, which is used by another member of the E3+3, is that Iran could install no more than two cascades per month.

These estimates depend critically on assumptions about issues that are very difficult to know precisely. How much equipment will remain in the centrifuge plants, and how quickly could Iran re-install the centrifuges and associated equipment? Can Iran start enriching in these newly installed cascades rapidly, or are there additional delays before enrichment could resume in them, which lengthen breakout? Can Iran successfully re-deploy its roughly 1,200 IR-2m centrifuges within about three months of starting a breakout, despite not having operated any of these cascades previously in the Natanz Fuel Enrichment Plant? Can actions still be taken to make reinstallation more difficult?

In our calculations, the key variable is the number and installation rate of the IR-2m centrifuges after breakout starts. For the purposes of this discussion, a reinstallation rate of two cascades per month is used, where Iran first reinstalls IR-2m centrifuge cascades and afterwards re-installs IR-1 centrifuge cascades. We assume that in a breakout Iran would deploy its most advanced machines first. Although it has not operated any of the six installed IR-2m cascades at the Fuel Enrichment Plant, Iran has for several years been operating a single cascade at the Natanz Pilot Fuel Enrichment Plant. Given this prior experience, we judge Iran could re-deploy IR-2m centrifuges first, despite the risks. The reward would be a considerably faster breakout.

Another assumption is that the enrichment output of the IR-2m centrifuge while operating in cascade will be about four separative work units (swu) per year, where the range is 3-5 swu/year. With these assumptions, the breakout timeline drops to approximately six to seven months. If only IR-1 centrifuges were re-installed at a rate of two cascades per month, the breakout timeline would decrease to approximately 9-10 months.

In our evaluations, a decrease in breakout time to 9-10 months, given all the uncertainties, would not be that significant. However, a decrease to 6-7 months is significant and appears to contradict claims that Iran would need 12 months to breakout under limitations stated in the JCPOA. This discrepancy needs further study and clarification.

⁷ In the case of the Fordow centrifuge plant, the dismantlement of the excess centrifuge cascades, which total about half of those at the plant, appears more complete. In the second hall of the Fordow Enrichment Plant, Iran must “remove all excess centrifuges and uranium enrichment related infrastructure from the other wing of the FFEP [Fordow Fuel Enrichment Plant]. This will include removal of **all** centrifuges and UF₆ pipework, including sub headers, valves and pressure gauges and transducers, and frequency inverters and converters, and UF₆ **feed and withdrawal stations (emphasis added).**”

An additional uncertainty is how many IR-2m centrifuges Iran has produced. Some experts have speculated that Iran has made up to 3,000 IR-2m centrifuges by now. Installation of additional IR-2m centrifuges would further reduce breakout timelines. The answer may be clearer once Iran declares its existing inventory of rotor tubes and bellows under the JCPOA. However, if Iran declares it has enough rotor tubes and bellows for only 1,200 IR-2m centrifuges, questions about these numbers may persist.

The JCPOA's verification arrangements on Iran's centrifuge numbers do not appear sufficient to determine if Iran has hidden away a large number of centrifuges. The JCPOA does not contain a provision that ensures that the IAEA can verify the number of centrifuges Iran has manufactured. Under the JCPOA, the IAEA is allowed to verify Iran's declared inventory of existing rotor tubes and bellows by item counting and numbering. These conditions are not sufficient to determine whether the declaration of the number of rotor tubes and bellows is complete (and therefore whether it may secretly possess hidden centrifuges). Iran does not appear obligated to provide to the IAEA additional needed information, such as the amount and type of raw materials and equipment procured historically for its centrifuge program that would allow a verification that Iran has fully declared its inventory of rotors and bellows and is not hiding a significant number of them, or by implication, centrifuges.

In determining a broader inventory of centrifuge rotor tubes and bellows produced in Iran, a value lies in records and evidence from procurement information related to goods Iran obtained from abroad over the years that needed to make those centrifuge parts. In several cases, it procured goods used in those parts only from abroad, such as in the case of high quality materials, such as maraging steel and carbon fiber. If Iran had to declare all its imports of key goods for its centrifuge program, or at least the ones relevant to the manufacture of rotor tubes and bellows, the IAEA can check with the supplier and member state to verify the amounts sent to Iran and can also ask about other possible procurements. In addition, it can compare Iran's declaration of goods to existing member state information about such procurements. Once the IAEA can determine an inventory of key imported goods, it can recreate the Iran's supply chain for centrifuge manufacturing and estimate whether Iran's declaration of centrifuge rotors and bellows (along with other components) is complete. Without obtaining Iran's declaration of key procurements, checking its declaration of centrifuge rotors and bellows will depend on existing member state information, which is almost always incomplete or not of sufficient quality for the IAEA to verify or challenge Iran's declaration of centrifuge rotor tubes and bellows.

Nonetheless, the IAEA should use its authorities under the Additional Protocol to press Iran for procurement information relevant to rotors and bellows. In particular, it can argue that it needs this information to ensure that Iran does not have covert centrifuge plants enriching uranium. The United States, backed by Congress, should insist that the IAEA do so.

Breakout Estimates in Years 10-13 and afterwards

There is little public information about the numbers and types of centrifuges the agreement allows Iran to install from years 10 through 13. According to several negotiators, Iran's centrifuge capability, which will comprise a mix of advanced centrifuges, will build up after year 10 and reach a breakout timeline of about six months by year 13. We are unaware of the uncertainties in this estimate. For example, would it be shorter, if re-installation factors were more fully considered?

After year 13, the centrifuge limitations will unwind relatively rapidly. With the ending of restrictions on near 20 percent LEU in year 15 and Iran's stated intention to resume producing this LEU, Iran can lower breakout timelines significantly. Within a few years and under a variety of scenarios, Iran could deploy

sufficient advanced centrifuges and accumulate enough near 20 percent LEU to lower breakout estimates to a few days. At this point, breakout of enough weapon-grade uranium for one or two nuclear weapons could occur without the IAEA being aware it happened until after the fact. Preventing Iran from reaching this level of capability remains a priority.

Procurement Channel

The JCPOA lays out an entity and a set of procedures for states to make direct- and dual-use nuclear related sales to Iran via a procurement channel. It creates a set of new procedures and an oversight body called the Procurement Working Group under the Joint Commission. The Working Group will oversee direct- and dual-use nuclear related purchases by Iran. The IAEA will have authority to check the end use of direct nuclear-use goods and can use its access provision to check the end use of dual-use goods. Otherwise, the state responsible for dual-use good sales will have authority to check the end use of an important subset of dual-use goods.

A preliminary assessment of the procurement channel provisions overall shows that a large burden will remain on countries to regulate their national nuclear-related trade with Iran. Likewise, the burden will be on suppliers, law enforcement, and intelligence agencies to detect and prevent illicit attempts to procure or sell goods, and to report in some manner to the Working Group on any illicit attempts they see from Iran that would indicate or signify possible non-compliance or covert nuclear activities. The E3+3 will need to take into account that it will need to ensure states seeking to export nuclear wares to Iran understand the new procedures. The E3+3 should understand that its failure to lay out how non-JCPOA states should report on, or moreover, how the Joint Commission should address Iranian lapses relating to nuclear-related imports and exports, may create problems as the deal is implemented. The lack of penalties for minor or incremental violations by Iran regarding illicit procurements (or other non-compliance) is a major weakness in the deal.

Effective planning and remediation steps are necessary now to prepare for problems and strengthen these provisions. Outreach by governments will be needed to explain these provisions to domestic companies and ensure they do not circumvent the proscribed, official channel. In addition, any suppliers seeking to make sales to Iranian entities outside the channel will need to be detected and stopped.

Moreover, the success of the procurement channel will depend on export control systems working throughout the world. The United States will need to expand its outreach to help countries improve their export controls more generally and to implement the procedures of the procurement channel more specifically.

Several countries, including China, Turkey, and possibly Russia, can be expected not to implement the new procedures adequately. The former two countries have not adequately implemented the United Nations Security Council sanctions on Iran; they cannot be expected to implement the new procedures effectively when new business opportunities in Iran begin to multiply. Nonetheless, the United States and its allies will need to press these countries to improve implementation of their domestic export controls and abide by the new procedures of the procurement channel.

However, even fully responsible states can expect challenges, some of which will be difficult to overcome without new resources and commitments. One concern is that the JCPOA provides for only a 30-day window to decide on proposals to transfer sensitive goods to Iran. According to the JCPOA, "Each

participant in the Procurement Working Group will have to communicate to the Coordinator, within 20 working days, whether it approves or rejects the proposal. The timeline for consideration may be extended for an additional period of 10 working days at the request of a participant of the Procurement Working Group.” Although the JCPOA process requires only one state on the Working Group to stop the export, no state is likely to want to disapprove exports without a justification. But 30 days is unlikely to be sufficient time for states, including the United States, to conduct due diligence on the full-range of expected dual-use exports to Iran, including those a state determines “could contribute to activities inconsistent with the JCPOA.” All supplier states will need to devote sufficient resources and develop adequate systems to review export proposals quickly and adequately. Pending the development of such systems, the United States should state that it will maintain a presumption of denial if it determines that 30 days is not sufficient to adequately review proposals. Congress should authorize more resources to improve the executive branch’s capabilities to rapidly review exports to Iran and ensure that they do not contribute to activities inconsistent with the JCPOA.