Comprehensive Agreement in Works
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Iran and the P5+1 negotiators are convening this week in Vienna to iron out a comprehensive nuclear deal before the "deadline" – 20 July, 2014 – set in the November 2013 Joint Plan of Action (JPA).

It appears that the views of parties are still far apart when it comes to the establishment of "a mutually defined enrichment programme with practical limits and transparency measures to ensure the peaceful nature of the programme" of Iran[1]. In fact, Iran has been raising the bar stating in recent times that it needs to have uranium enrichment capacity enough to fuel Bushehr reactor, which would entail about 130000 IR-1 centrifuges and substantial stockpiles of enriched uranium. An annual reload of a Bushehr-sized type reactor requires about 20 tons of uranium enriched up to 3.5 % U-235. In 2009, when the France, Russia, and the US negotiated with Iran the Tehran Research Reactor deal, the limit for maximum enriched uranium stocks in Iran was set to 1.2 tons UF6; quantity enough for one nuclear explosive, if further enriched.

With regard to the concerns on future plutonium production capabilities, Iran has indicated its willingness to reduce the plutonium production rate of the heavy water reactor under construction in Arak with modifications. However, suggestions made are not irreversible; the reactor can be reconfigured to produce plutonium annually for one nuclear device. In addition, there is no sign that Iran is giving up its heavy water stocks or production plant.

The P5+1 has not made public their detailed proposals, but officials related to the negotiations have stated that they are looking at a breakout time for production of high enriched uranium moved from current two months to 6-12 months[2], which would mean a substantial reduction of Iran's current enrichment capacity; 19000

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[1] Terms as set out in the Communication dated 27 November 2013 received from the EU High Representative concerning the text of the Joint Plan of Action, INFCIRC/855, IAEA, 27 November 2014.

[2] Breakout times of at least 6-12 months are based on an assessment of Iran's current known centrifuge cascade configurations. In terms of centrifuge numbers, a 6-12 month breakout time translates to 2,000-4,000 IR-1 centrifuges or an equivalent number of advanced centrifuges such as IR-2m. This proposal also draws from the technical assessment of David Albright, Olli Heinonen, and Andrea Stricker, Five Compromises to Avoid in a Comprehensive Agreement with Iran, ISIS, 2 June 2014.

IR-1 centrifuges installed, 9000 of them operating, and 1000 IR-2m centrifuges installed. The JPA also includes a provision to dilute half of the 20 % U-235 UF6 stocks to less than 5 % U-235 UF6, and convert the other half of those stocks to 20 % U-235, which requires an additional conversion step, if further enriched to 90 %. Iran also agreed as part of the JPA to keep its 3.5 % U-235 UF6 at the level it had in November 2013, or 7.5 tons UF6, and convert any additional UF6 to oxides. The target date was set to 20 July, but Iran may not be able to meet this commitment due to delayed completion of the conversion plant. P5+1 has not made in public any numbers of acceptable low enriched uranium stocks in Iran, but it is likely envisioning sending most of them abroad for fuel fabrication. P5+1 is likely suggesting the replacement of the heavy water reactor in Arak by a small modern light water type research reactor, and providing at the same time assurances about the fuel delivery.

There are half a dozen UN Security Council resolutions, which request Iran to suspend its uranium enrichment, heavy water reactor, and missile programs. In addition, the resolutions ask Iran to address the long outstanding questions, which the IAEA has with regard to Iran's nuclear program including those related to possible military dimension.

Since the clandestine uranium enrichment program was revealed in August 2002, Iran has built a full front end nuclear fuel cycle. This makes Iran with its current known centrifuges and enriched uranium stocks a nuclear threshold state. As stated by Secretary Kerry, Iran can produce enough high enriched uranium using current centrifuges and enriched uranium stocks in two months' time. This is true with the known facilities in Natanz and Fordow. However, there are a lot of unknowns and uncertainties with regard to our knowledge on Iran's nuclear program and its intentions, which need to be taken into account when the parameters of the "a mutually defined enrichment programme" are agreed.

The IAEA's quarterly reports on the implementation of safeguards in Iran have repeatedly stated that there has been no diversion of declared nuclear material in Iran. What this statement also implies is that the IAEA has not been able to confirm that all nuclear material in Iran has been submitted to the IAEA safeguards, i.e. there is no undeclared nuclear material and activities in Iran. Such a statement on the completeness of Iran's declarations cannot be achieved under the offer of nuclear transparency where an occasional visit is made to Arak heavy water production plant or to some uranium mines or milling facilities of Iran. The question is also not only how many centrifuges are left installed in Natanz and Fordow. To set a baseline for monitoring it is essential to know how many

centrifuges Iran has actually manufactured, and where they are to-day.

Since 2003, the IAEA has raised concerns – from its own independent investigations and information provided by other parties – about possible military dimension on Iran's past and current nuclear program. Resolution of these long outstanding questions is essential for the IAEA to provide assurances that all nuclear material – not just that declared by Iran – is in peaceful use.

The list of the IAEA questions is long, and the Exploding Bridge Wire detonators (EBWs) and access to a high explosive testing chamber in Parchin – often cited in the media - are just sub-items. It should be emphasized that many of the issues related to the military dimension are interconnected, and they cannot be resolved in isolation from each other. Therefore, it is essential that the IAEA is allowed to address the whole spectrum of concerns related to the military dimension.

In my view, meaningful safeguards can only be achieved if uncertainties over Iran's nuclear capability are credibly assessed. To do that, the verification and long term monitoring system needs to be crafted to detect, at an early stage, any signs that Iran may renegade from its undertakings. I have highlighted in my recent Congressional testimony[3] some of the verification elements the comprehensive agreement should have:

- Iran will implement fully its obligations under the IAEA Statutes, Iran's Safeguards Agreement with the IAEA [INFCIRC/214], and adheres to the modified Code 3.1. of the Subsidiary Arrangements[4].
- Iran ratifies and implements expeditiously the Additional Protocol.
- Iran implements fully the verification and clarification requirements of the relevant resolutions of the IAEA Board of Governors and the UN Security Council.
- Iran will provide an expanded declaration on all aspects of its past and current

[3] Olli Heinonen, Testimony on 'Verifying Iran's Nuclear Compliance', House Committee on Foreign Affairs, 10 June 2014.

[4] Code 3.1 is part of the Subsidiary Arrangements to the safeguards agreement, which specifies when an IAEA state must report a new facility to the Agency. In 2003, Iran agreed to implement the modified Code 3.1, which requires the submission of design information to the IAEA as soon as a new facility is planned. Iran unilaterally revoked its implementation of the modified code in February 2006. Iran is the only country with a substantial nuclear program that does not adhere to the modified code.

nuclear program.

- Iran will provide information on the production source material (i.e. uranium ore concentrate, yellow cake), including imports of such material.
- Iran will provide information on imports and domestic production of single and dual-use items listed in the guidelines of the Nuclear Suppliers Group[5] [6].
- Iran will provide the IAEA with unconditional and unrestricted access to any and all areas, facilities, equipment, records, people, materials including source materials, which are deemed necessary by the IAEA to fulfill its requirements under the safeguards agreement, and to verify Iran's declarations made under the items above.

In our dealings with the Iran nuclear issue, it is important to look at it from a strategic rather than a fire brigade putting-out-small-fires short-term approach with regards to Iran's nuclear aspirations. This is a choice of Realpolitik with long-term consequences. A comprehensive deal that will paint a very different picture from the current situation by substantially rolling back Iran's nuclear capabilities, while difficult and not overly optimistic, should be tested. This also means a willingness to walk away if bottom lines are not met. Otherwise, another message going out would be that, at least, hedging for nuclear weapons capability works – with a price – including for countries non-compliant with their non-proliferation undertakings. It will be increasingly difficult to curb the spread of uranium enrichment technologies to countries, which are in compliance with their safeguards undertakings. Such aspirations are already waking up in the Middle and Far East. Hedging and emerging of new nuclear threshold states comes with an unpleasant truth of holding other states hostage to the situation, leaving them with possible choices: build your own nuclear capabilities or learn to live with a situation where a neighbor with its capabilities can press additional concessions. Both are bad and unstable outcomes.

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[5] INFCIRC/254/Rev.12/ Part 1, Communication Received from the Permanent Mission of the Czech Republic to the International Atomic Energy Agency Regarding Certain Member States' Guidelines for the Export of Nuclear Material, Equipment and Technology, IAEA, 13 November 2013.

[6] INFCIRC/254/Rev.9/Part 2, Communication Received from the Permanent Mission of the Czech Republic to the International Atomic Energy Agency Regarding Certain Member States' Guidelines for Transfers of Nuclear-Related Dual-use, Equipment, Material, Software and Related Technology, IAEA, 13 November 2013.