

II. The Joint Comprehensive Plan of Action on Iran's nuclear programme

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The previously slow unravelling of the 2015 Joint Comprehensive Plan of Action (JCPOA) sped up in 2021, as Iran significantly increased its uranium-enrichment activities and curtailed the ability of the International Atomic Energy Agency (IAEA) to monitor its nuclear programme. In parallel, a new administration in the United States meant that a fresh start could be made on negotiations to revive the agreement.

The JCPOA had been concluded by Iran on one side and, on the other, the European Union (EU) and three European states—France, Germany and the United Kingdom (the E3)—and China, Russia and the USA.¹ The agreement appeared to end the crisis over Iran's nuclear programme that had begun in the early 2000s. The JCPOA—which was endorsed by United Nations Security Council Resolution 2231—was based on a compromise whereby Iran accepted limits on and strict monitoring of its proliferation-sensitive activities in return for the lifting of international sanctions on its nuclear programme. The IAEA was charged with monitoring and verifying the implementation of Iran's commitments under the JCPOA, alongside its normal verification activities under the Comprehensive Safeguards Agreement (CSA) with Iran.

The JCPOA was subsequently weakened by the decision of US President Donald J. Trump to withdraw the USA from the agreement in May 2018. In addition to reimposing the unilateral sanctions that had been lifted as part of the nuclear agreement, the USA added various new sanctions targeting the Iranian economy as well as civil nuclear cooperation under the JCPOA. Most of these US sanctions were secondary sanctions aimed at third parties. As such, they also undermined the ability of other JCPOA participants to fulfil their commitments under the agreement—notably because foreign banks avoid engaging with Iran out of fear of penalties from the US Department of the Treasury.²

¹ Joint Comprehensive Plan of Action (JCPOA), 14 July 2015, reproduced as annex A of UN Security Council Resolution 2231, 20 July 2015. On the agreement and its implementation see Rauf, T., 'Resolving concerns about Iran's nuclear programme', *SIPRI Yearbook 2016*; Rauf, T., 'Implementation of the Joint Comprehensive Plan of Action in Iran', *SIPRI Yearbook 2017*; Erästö, T., 'Implementation of the Joint Comprehensive Plan of Action in Iran', *SIPRI Yearbook 2018*; Erästö, T., 'Implementation of the Joint Comprehensive Plan of Action', *SIPRI Yearbook 2019*; Erästö, T., 'Implementation of the Joint Comprehensive Plan of Action', *SIPRI Yearbook 2020*; and Erästö, T., 'Implementation of the Joint Comprehensive Plan of Action on Iran's nuclear programme', *SIPRI Yearbook 2021*.

² See Erästö, *SIPRI Yearbook 2021* (note 1); and Batmanghelidj, E. et al., *Using 'Technical Guarantees' to Restore and Sustain the Iran Nuclear Deal*, Global Security Policy Brief (European Leadership Network/Bourse & Bazaar Foundation: London, Nov. 2021).

In May 2019 Iran responded by starting to gradually reduce adherence to its commitments under the agreement, and by 5 January 2020 it had ceased to observe all of its key operational limits.³ Despite the stated intent by both the US administration of President Joe Biden and the new Iranian government of President Ebrahim Raisi to restore the JCPOA, the USA and the remaining JCPOA parties failed to reach an agreement in the seven rounds of negotiations that were held in two phases in 2021. At the same time, the US sanctions remained in place and Iran stepped up its nuclear activities, notably by increasing the enrichment of uranium up to 60 per cent of the isotope uranium-235. In addition, in 2021 Iran began restricting for the first time the IAEA inspections authorized under the JCPOA.

This section reviews developments related to the JCPOA. It focuses on Iran's nuclear-related commitments, while recognizing that the lifting of US sanctions forms an equally important part of the JCPOA. In addition, it describes unresolved issues related to Iran's past nuclear activities that the IAEA investigated under the terms of its CSA with Iran.

Key developments in Iran's nuclear programme relevant to the JCPOA

The JCPOA was designed to limit proliferation-sensitive nuclear activities whereby Iran could obtain weapon-grade fissile materials—highly enriched uranium (HEU) and plutonium. Excess stocks of enriched uranium and heavy water, as well as spent nuclear fuel, were to be shipped abroad under the agreement.⁴ Iran ceased to observe these and other operational limits set out in the JCPOA in May 2019.⁵ In 2021 Iran took two further significant steps in contravention to the agreement: it began to restrict the IAEA's additional verification activities under the JCPOA and increased the level of uranium enrichment, first up to 20 per cent in January, just below the threshold for classification as HEU, and then, in April, to 60 per cent—well over the threshold.⁶ For nuclear explosive use, uranium would need to be enriched to 90 per cent.

³ See Erästö, *SIPRI Yearbook 2020* (note 1).

⁴ JCPOA (note 1). Heavy water is used in certain types of nuclear power plant to produce plutonium from natural uranium. Spent nuclear fuel is nuclear fuel that has been used and removed from a power reactor, and which still contains fissile materials that can be 'separated' from waste through reprocessing.

⁵ Erästö, *SIPRI Yearbook 2020* (note 1); and Erästö, *SIPRI Yearbook 2021* (note 1).

⁶ IAEA, Board of Governors, 'Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)', Report by the Director General, GOV/INF/2021/2, 4 Jan 2021; and IAEA, Board of Governors, 'Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)', Report by the Director General, GOV/INF/2021/26, 17 Apr. 2021.

'Continuity of knowledge' without the Additional Protocol

As part of the JCPOA, Iran agreed to provisionally implement its Additional Protocol to its CSA, which allowed the IAEA to conduct inspections in Iran outside the declared nuclear sites.⁷ The JCPOA also permitted the IAEA to request access to non-nuclear sites beyond the normal scope of the Additional Protocol.⁸

In mid February 2021 Iran informed the IAEA that, from 23 February, it would stop the implementation of voluntary transparency measures, including the Additional Protocol.⁹ The decision was based on a law approved by the Iranian Parliament in December 2020 that obliged the government to deny inspections beyond those required by the CSA 'if the other signatories to the JCPOA . . . fail to fully deliver on their commitments toward Iran and banking relations are not normalized and obstacles to exports and Iran's sale of oil products are not fully removed and [foreign exchange] proceeds from sales are not immediately and fully returned to the country'.¹⁰

On 21 February Iran and the IAEA reached a technical understanding that allowed exceptional verification and monitoring activities to continue for three months.¹¹ Specifically, Iran allowed the IAEA monitoring equipment at Iranian nuclear facilities to continue collecting and storing information, as agreed under the JCPOA, but the agency would not be allowed access to the recordings until a diplomatic solution on the restoration of the nuclear agreement was found.¹²

In the absence of a diplomatic breakthrough, in May the technical understanding was extended to 24 June.¹³ After this, the status of the agreement remained uncertain for over two months. As a result, the IAEA voiced concerns about 'continuity of knowledge'. Not only would this continuity be necessary for the future resumption of verification and monitoring under a restored JCPOA, but it also required that the agency be able to service the

⁷ Davenport, K., 'IAEA safeguards agreements at a glance', Arms Control Association, June 2020.

⁸ Davenport, K. and Masterson, J., 'Explainer: Problems for IAEA monitoring in Iran', Iran Primer, United States Institute of Peace, 29 Nov. 2021.

⁹ IAEA, Board of Governors, 'Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)', Report by the Director General, GOV/INF/2021/13, 16 Feb. 2021.

¹⁰ Strategic Action Law for the Lifting of Sanctions and Protection of the Interests of the Iranian People, Iranian law approved 2 Dec. 2020, English translation by National Iranian American Council, 3 Dec. 2020.

¹¹ IAEA, Board of Governors, 'Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)', Report by the Director General, GOV/2021/10, 23 Feb. 2021; and Joint statement by the Vice-President of the Islamic Republic of Iran and Head of the AEOI and the Director General of the IAEA, IAEA, 21 Feb. 2021.

¹² Davenport, K., 'Iran, IAEA reach monitoring agreement', *Arms Control Today*, vol. 51, no. 2 (Mar. 2021).

¹³ IAEA, Board of Governors, 'Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)', Report by the Director General, GOV/INF/2021/32, 25 June 2021.

monitoring and surveillance equipment and replace the data storage media every three months.¹⁴

On 12 September 2021 Iran and the IAEA reached a new agreement permitting IAEA inspectors to service the monitoring and surveillance equipment and to replace the storage media.¹⁵ The agreement was implemented on 20–22 September at all Iranian facilities, except for the TESA Karaj centrifuge component manufacturing workshop near Tehran. Iran had removed four IAEA cameras at the facility after a 23 June attack by an uncrewed aerial vehicle (UAV), which it argued was conducted by Israel with the help of the IAEA cameras—a claim that the IAEA denied.¹⁶ On 15 December Iran and the IAEA finally agreed that new cameras could be installed at Karaj.¹⁷

Despite these temporary agreements, the IAEA concluded in November that its ‘verification and monitoring activities have been seriously undermined’ because of Iran’s 23 February decision.¹⁸ Moreover, while the technical understanding had ‘facilitated the maintenance of continuity of knowledge’, its repeated prolongation was ‘becoming a significant challenge to the Agency’s ability to restore this continuity of knowledge’.¹⁹ Nevertheless, remote monitoring at all Iranian enrichment facilities, as well as normal inspections under Iran’s CSA, continued uninterrupted throughout 2021, ensuring the non-diversion of fissile material from civilian to military use.²⁰

Activities related to enrichment and fuel

The JCPOA imposed a limit of 3.67 per cent on uranium enrichment—a limit that Iran had already breached since 2019 by enriching up to 5 per cent. On 4 January it took a step further by beginning to enrich uranium up to 20 per cent at the Fordow Fuel Enrichment Plant (FFEP), Qom province.²¹ In addition to being a political move prescribed by the law passed in December, enrichment up to 20 per cent was part of a pre-existing Iranian plan

¹⁴ IAEA, Board of Governors, ‘Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)’, Report by the Director General, GOV/2021/39, 7 Sep. 2021.

¹⁵ IAEA, GOV/INF/2021/32 (note 13); and IAEA, Board of Governors, ‘Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)’, Report by the Director General, GOV/INF/2021/42, 12 Sep. 2021.

¹⁶ IAEA, GOV/2021/39 (note 14); IAEA, Board of Governors, ‘Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)’, Report by the Director General, GOV/INF/2021/43, 26 Sep. 2021; IAEA, Board of Governors, ‘Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)’, Report by the Director General, GOV/2021/51, 17 Nov. 2021; and Middle East Monitor, ‘Iran: Attack on Karaj plant “enabled” by hacking of IAEA’s cameras’, 20 Dec. 2021.

¹⁷ IAEA, ‘IAEA and Iran reach agreement on replacing surveillance cameras at Karaj facility’, Press Release no. 82/2021, 15 Dec. 2021.

¹⁸ IAEA, GOV/2021/51 (note 16), para. 52.

¹⁹ IAEA, GOV/2021/51 (note 16), para. 53.

²⁰ Al Jazeera, ‘Rafael Grossi: Does the UN’s nuclear watchdog trust Iran?’, Talk to Al Jazeera, 11 Dec. 2021.

²¹ IAEA, GOV/INF/2021/2 (note 6).

to produce advanced nuclear fuel for the Tehran Research Reactor (TRR), which Iran had informed the IAEA about in January 2019.²² According to the details of the plan that Iran supplied to the IAEA in December 2020, it would produce uranium metal at the Fuel Plate Fabrication Plant (FFFP), Isfahan, as part of a research and development (R&D) process that used uranium hexafluoride (UF₆) to produce uranium silicide (U₃Si₂).²³ In November 2021 the IAEA verified that Iran had produced two fuel plates using uranium silicide containing 20 per cent enriched uranium.²⁴ As some observers argued, the conversion of uranium to silicide reactor fuel reduced the proliferation risks of UF₆ enriched to 20 per cent; in the form of silicide—and especially in the form of uranium silicide plates, which were used by Iran in the conversion process—the material could no longer be enriched further.²⁵ Others, however, warned that Iran could use the equipment and experience gained in such a conversion to produce HEU for use in nuclear explosives in the future.²⁶ Most of Iran's 20 per cent enriched uranium stockpile nevertheless remained in the form of UF₆.²⁷

On 17 April Iran increased the enrichment level of uranium processed at the Pilot Fuel Enrichment Plant (PFEP) at Natanz, Isfahan province, to 60 per cent.²⁸ Unlike the uranium fuel-production R&D activities described above, the decision to enrich uranium to 60 per cent lacked a civilian rationale. Although Iran had previously indicated that it might produce HEU to be used in nuclear-powered submarines, the circumstances suggested that the move mainly served the purpose of political messaging.²⁹ More specifically, Iran described the decision to enrich to 60 per cent as a response to a cyber-attack on the Natanz facility on 11 April.³⁰ Like previous cyberattacks against

²² Strategic Action Law for the Lifting of Sanctions and Protection of the Interests of the Iranian People (note 10); and IAEA, Board of Governors, 'Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)', Report by the Director General, GOV/INF/2021/3, 13 Jan. 2021.

²³ IAEA, GOV/INF/2021/3 (note 22). On 28 June 2021 Iran informed the IAEA about another 4-stage process to produce uranium silicide, which was slightly different from the previously described 3-stage process. IAEA, Board of Governors, 'Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)', Report by the Director General, GOV/INF/2021/36, 6 July 2021.

²⁴ IAEA, GOV/2021/51 (note 16).

²⁵ Kelley, R., 'Iran is actually reducing its weapons-usable uranium inventory', IranSource, Atlantic Council, 28 Jan. 2021.

²⁶ Albright D. and Burkhard, S., 'Iran's recent, irreversible nuclear advances', Institute for Science and International Security, 22 Sep. 2021.

²⁷ IAEA, GOV/2021/51 (note 16), paras 44, 46.

²⁸ IAEA, GOV/INF/2021/26 (note 6).

²⁹ Kelley, R. E., 'Why is Iran producing 60 per cent-enriched uranium?', SIPRI, 29 Apr. 2021; and Islamic Consultative Assembly New Agency, 'Leader: Iran to increase uranium enrichment to 60% if needed', 22 Feb. 2021.

³⁰ 'Iran says key Natanz nuclear facility hit by "sabotage"', BBC News, 12 Apr. 2021; and 'Iran says 60% enrichment meant to show nuclear prowess, is reversible', Reuters, 20 Apr. 2021.

Natanz, this one was reportedly conducted by Israel.³¹ Although the outgoing Iranian president, Hassan Rouhani, said in July that Iran had the technical capacity to enrich even to 90 per cent, in December the head of the Atomic Energy Organization of Iran (AEOI) stressed that the country would not go beyond 60 per cent even if the nuclear talks were to fail.³²

As in 2019 and 2020, throughout 2021 Iran also continued uranium enrichment up to 5 per cent and breached the JCPOA provisions that restricted it to using only IR-1 centrifuges to increase its stock of enriched uranium.³³ For example, Iran used both IR-4 and IR-6 centrifuges for HEU production.³⁴

Centrifuge manufacturing, mechanical testing and component inventory

The JCPOA regulates the manufacturing of uranium enrichment centrifuges by Iran. It notes that in 2025 Iran will start phasing out the old IR-1 centrifuges and begin using more advanced centrifuges. To prepare for that shift, the JCPOA allows limited R&D on certain advanced centrifuge types within certain limits—notably on the condition that such activities would not lead to the accumulation of enriched uranium. Moreover, the agreement allows Iran to commence manufacturing the advanced IR-6 and IR-8 centrifuges in 2023. It was also agreed that Iran would replace any operating IR-1 centrifuges that failed or got damaged by retrieving IR-1 centrifuges from storage, rather than produce new ones. Iran could only produce more IR-1 centrifuges when the number of IR-1 centrifuges in storage decreased to 500.³⁵

In February 2021 the IAEA reported that the centrifuge components declared by Iran had been used for activities that went ‘beyond those specified in the JCPOA’, such as R&D activities on advanced centrifuges that led to the accumulation of enriched uranium.³⁶ Iran was also manufacturing centrifuge rotor tubes ‘using carbon fibre that was not subject to continuous Agency containment and surveillance measures’.³⁷ Carbon fibre is used for advanced centrifuge types that spin at higher speeds than the IR-1 model, the rotor tubes of which are made of aluminium.³⁸

For the remainder of the year, the verification related to centrifuge manufacturing was hampered by Iran’s decision to end voluntary transparency measures. The IAEA reported in May that since 23 February it had had no

³¹ ‘Israel’s alleged Natanz strike “as complex as Stuxnet”, a major blow to Iran’, *Times of Israel*, 10 July 2020.

³² ‘Rouhani: Iran able to produce 90%-enriched uranium’, Fars News Agency, 14 July 2021; and ‘Iran not to enrich uranium above 60% purity level: Nuclear chief’, Tasnim News, 25 Dec. 2021.

³³ JCPOA (note 1); Erästö, *SIPRI Yearbook 2020* (note 1); and Erästö, *SIPRI Yearbook 2021* (note 1).

³⁴ IAEA, GOV/INF/2021/26 (note 6).

³⁵ JCPOA (note 1).

³⁶ IAEA, GOV/2021/10 (note 11), para. 37.

³⁷ IAEA, GOV/2021/10 (note 11), para. 38.

³⁸ Voûte, F. and Lincy, V., *Beyond the IR-1: Iran’s Advanced Centrifuges and Their Lasting Implications*, Iran Watch Report (Wisconsin Project on Nuclear Arms Control: Washington, DC, Nov. 2021).

access to the data and recordings of the surveillance equipment monitoring Iran's mechanical testing of centrifuges.³⁹ Since that date, Iran also 'no longer provided declarations to the Agency of its production and inventory of centrifuge rotor tubes and bellows, nor . . . permitted the Agency to verify the items in the inventory'.⁴⁰ As in other facilities, the IAEA surveillance equipment nevertheless remained in place to continuously monitor Iran's centrifuge manufacturing-related activities. The only exception, as noted above, was a centrifuge component-manufacturing workshop at Karaj that does not handle nuclear materials.⁴¹

Enriched uranium stockpile

After 23 February, the IAEA reported that it was no longer able to verify Iran's total stockpile of enriched uranium—which by that time had exceeded the JCPOA limit of 300 kilogrammes by almost 10 times.⁴² Nonetheless, the IAEA could still measure the enriched uranium product from enrichment cascades, even if it was no longer able to monitor material in process in the cascades, as it had done under JCPOA.⁴³ Together with Iran's declarations, this enabled the agency to provide precise estimates of the stockpile.

Thus, the IAEA estimated that Iran's enriched uranium stockpile first increased to 3241 kg in May, but then decreased to 2441 kg in September and reached 2490 kg in November.⁴⁴ The decrease was due to the consumption of the stockpile of low-enriched uranium as feed material for 20 and 60 per cent enrichment.⁴⁵

Activities related to heavy water and reprocessing

Under the JCPOA, Iran agreed to redesign the heavy water reactor at Arak, Markazi province, in order to minimize the amount of plutonium in the spent nuclear fuel produced there. Iran also agreed to keep its stock of heavy water below 130 tonnes (reduced to 90 tonnes after commissioning of the Arak reactor) and not to reprocess spent fuel from any of its reactors, with an exception for producing medical and industrial radioisotopes.⁴⁶

As in previous years, in 2021 the IAEA reported that Iran had neither pursued the construction of the Arak reactor based on its original design nor carried out reprocessing-related activities.⁴⁷ As on some previous occasions,

³⁹ IAEA, Board of Governors, 'Verification and monitoring in the Islamic Republic of Iran in light of United Nations resolution 2231 (2015)', Report by the Director General, GOV/2021/28, 31 May 2021.

⁴⁰ IAEA, GOV/2021/28 (note 39), para. 34.

⁴¹ IAEA, GOV/INF/2021/43 (note 16).

⁴² IAEA, GOV/2021/10 (note 11).

⁴³ IAEA, GOV/2021/51 (note 16).

⁴⁴ IAEA, GOV/2021/28 (note 39); IAEA, GOV/2021/39 (note 14); and IAEA, GOV/2021/51 (note 16).

⁴⁵ IAEA, GOV/2021/39 (note 14).

⁴⁶ JCPOA (note 1), annex I.

⁴⁷ See e.g. IAEA, GOV/2021/51 (note 16).

a February IAEA report noted that Iran had slightly exceeded the heavy water stock limit, with an inventory of 131 tonnes.⁴⁸ However, following Iran's decision in February to limit transparency measures under the JCPOA, it no longer informed the IAEA about its heavy water inventory or production, nor did it allow the agency to monitor heavy water stocks or the amount of heavy water produced at the Heavy Water Production Plant (HWPP) at Arak. The IAEA's monitoring equipment nevertheless remained operational at the HWPP.⁴⁹

Outstanding issues under Iran's Comprehensive Safeguards Agreement

In February 2019 the IAEA detected natural uranium particles at a site that Iran had not declared to the IAEA—named Location 1 in IAEA reports.⁵⁰ The agency subsequently requested clarification on four Iranian locations that it suspected of having hosted nuclear material and activities prior to 2003.⁵¹ These suspicions are apparently based on evidence presented to the IAEA by Israel, seized in 2018 from what the Israeli prime minister called a 'secret atomic warehouse' in Tehran.⁵² One of the other locations (Location 2) is the suspected place of origin of undeclared 'natural uranium in the form of a metal disc'; another (Location 3) 'may have been used for the processing and conversion of uranium ore including fluorination in 2003'; while the fourth (Location 4) may have been used for 'outdoor, conventional explosive testing . . . in 2003, including in relation to testing of shielding in preparation for the use of neutron detectors'.⁵³ While the issue of so-called possible military dimensions of Iran's past nuclear activities was formally closed with the adoption of the JCPOA, the IAEA has investigated this evidence in the framework of Iran's CSA.⁵⁴

After three meetings of technical experts from the IAEA and Iran in April and May 2021, the agency found Iranian answers to its questions related to these four locations to be insufficient.⁵⁵ According to a May report by the IAEA, Iran had provided no new information on Location 1, no information at all on locations 2 and 3, and no 'substantiating documentation' to back its

⁴⁸ IAEA, GOV/2021/10 (note 11).

⁴⁹ See e.g. IAEA, GOV/2021/39 (note 14).

⁵⁰ Erästö, *SIPRI Yearbook 2020* (note 1).

⁵¹ IAEA, Board of Governors, 'NPT Safeguards Agreement with the Islamic Republic of Iran', Report by the Director General, GOV/2021/15, 23 Feb. 2021.

⁵² Sanger, D. E. and Specia, M., 'Israeli leader claims Iran has "secret atomic warehouse"', *New York Times*, 27 Sep. 2018.

⁵³ IAEA, GOV/2021/15 (note 51), para. 9.

⁵⁴ Erästö, *SIPRI Yearbook 2020* (note 1), p. 422; and Davenport, K., 'IAEA investigations of Iran's nuclear activities', Arms Control Association, Oct. 2021.

⁵⁵ IAEA, Board of Governors, 'NPT Safeguards Agreement with the Islamic Republic of Iran', Report by the Director General, GOV/2021/29, 31 May 2021.

statement on Location 4.⁵⁶ In September the IAEA director general, Rafael Grossi, stated that he was ‘increasingly concerned’ that, after two years, these safeguards issues still remained unresolved.⁵⁷ The Iranian view, in contrast, was that its answers had been sufficient and that the agency should announce that the issue had been resolved.⁵⁸

An additional safeguards issue that emerged in 2021 was Iran’s decision to include modified Code 3.1 of the Subsidiary Arrangements to its CSA among other transparency measures that it decided to end on 23 February.⁵⁹ Modified Code 3.1 obligates countries to inform the IAEA of plans to construct new nuclear facilities at an early stage.⁶⁰ According to the IAEA, Iran was under a legal obligation to implement the modified Code 3.1, which it had agreed to do prior to the JCPOA.⁶¹ However, Iran ‘informed the Agency that it does not have a plan to construct a new nuclear facility in the near future’.⁶²

Diplomatic efforts to restore the JCPOA

The inauguration in January 2021 of Joe Biden as US president led to the recommencement of nuclear talks with Iran, based on Biden’s campaign pledge to bring the USA back to the JCPOA. There was perceived to be a window of opportunity to reach an agreement in the months before the Iranian presidential election in June. However, it took the Biden administration until March to clarify the US position on the issue, which contributed to a delayed start to the talks, further narrowing the window.⁶³ On 6 April the USA and the remaining parties to the JCPOA—Iran, China, Russia, the EU and the E3—began talks in Vienna to restore the agreement, leading to six rounds of negotiations that were held until 20 June.

Iran and the USA negotiated indirectly, with other parties conveying messages between the two sides. By late April, three working groups had been established to address key sticking points: determining which sanctions the USA would need to lift; which measures Iran would need to take with respect to its nuclear programme; and how these steps should be sequenced to enable the parties to return to compliance with the JCPOA.⁶⁴ Despite expressions of hope by the negotiators during this time, the diplomatic process ended in

⁵⁶ IAEA, GOV/2021/29 (note 55), para. 24.

⁵⁷ IAEA, GOV/INF/2021/42 (note 15), para. 3.

⁵⁸ IAEA, Board of Governors, ‘NPT Safeguards Agreement with the Islamic Republic of Iran’, Report by the Director General, GOV/2021/42, 7 Sep. 2021.

⁵⁹ IAEA, GOV/INF/2021/13 (note 9).

⁶⁰ Davenport (note 7).

⁶¹ IAEA, GOV/2021/15 (note 51).

⁶² IAEA, GOV/2021/28 (note 39), para. 42.

⁶³ Costello, R., ‘Why talks with Iran have faltered and what Biden can do to revive them’, *Responsible Statecraft*, 14 Sep. 2021.

⁶⁴ Murphy, F. and Irish, J., ‘Iran deal parties seek nuclear talks momentum, US briefs Gulf states’, *Reuters*, 27 Apr. 2021.

June without results, and was then followed by a five-month hiatus during which the new administration of Ebrahim Raisi, the conservative winner of the Iranian presidential election, took over.

Iran's presidential elections were a complicating factor for the nuclear talks, as the conservative leaders and groups in Iran may have wanted to prevent the outgoing moderate government from gaining a diplomatic victory prior to the elections.⁶⁵ However, there were also major disagreements in the talks on substantive issues, notably the lifting of sanctions. While Iran demanded the lifting of all sanctions imposed as part of the Trump administration's 'maximum pressure' campaign, the US position was that only non-proliferation sanctions could be lifted.⁶⁶ In practice, however, it was difficult to draw the line between non-proliferation and other sanctions; for example, some of the sanctions imposed by the Trump administration on grounds of terrorism support had the same effect on Iran's oil and banking sectors as the sanctions whose lifting had been a key part of the JCPOA. While US officials reportedly acknowledged this problem, domestic politics in the USA made it difficult to amend the relevant legislation, including sanctions against the Iranian Revolutionary Guards Corps.⁶⁷ Iran also demanded guarantees that the USA would not withdraw from the agreement in the future, whereas the USA wanted Iran to agree to follow-on talks on issues such as missiles and regional security, going beyond the restoration of the JCPOA.⁶⁸

The election of Raisi as Iran's president led to speculation that the new Iranian negotiation team would take a harder line in Vienna.⁶⁹ In practice, its main impact seemed to be the five-month delay in resuming the nuclear talks—during which the new administration was reportedly reviewing the country's approach on the nuclear issue.⁷⁰ At the same time, the EU, the E3 and the USA stressed the urgent need for Iran to reverse its nuclear escalation, with the E3 arguing that Iran's uranium enrichment activities had 'permanently and irreversibly' upgraded its nuclear capabilities.⁷¹ Although the new Iranian negotiation team's position was described as 'maximalist' when nuclear talks finally resumed on 29 November, at the end of the sev-

⁶⁵ Rozen, L., "'Unbearably slow": Scant progress at latest Iran Vienna talks', *Diplomatic*, by Laura Rozen, 5 May 2021.

⁶⁶ Psaledakis, D. and Mohammed, A., 'US tiptoes through sanctions minefield toward Iran nuclear deal', *Reuters*, 17 Dec. 2021.

⁶⁷ Psaledakis and Mohammed (note 66).

⁶⁸ Rozen, L., 'US: Still "serious differences" to resolve for Iran deal, talks won't go on indefinitely', *Diplomatic*, by Laura Rozen, 25 June 2021.

⁶⁹ E.g. Schwartz, M. S., 'What the election of a new hard-line president in Iran means for the nuclear deal', *NPR*, 21 June 2021.

⁷⁰ Amwaj.media, 'Iranians debate whether nuclear talks delay may cost or help', 27 Sep. 2021.

⁷¹ E3 statement to the IAEA on the Joint Comprehensive Plan of Action, 24 Nov. 2021.

enth round of talks the parties characterized the situation as being similar to where it had been in June.⁷²

As the eighth round of talks started on 27 December, negotiators expressed cautious optimism that a solution might finally be within reach.⁷³ However, the E3 and the USA warned that ‘time [was] running out’ for the nuclear talks, with ‘only “weeks” left’ to reach an agreement.⁷⁴ At the end of the year, reports also referred to discussions on an ‘interim deal’ whereby Iran would freeze certain nuclear activities in return for some sanctions relief, although these were not confirmed by the negotiation parties.⁷⁵

Prospects for the JCPOA

Uncertainty over the fate of the JCPOA persisted throughout 2021, with changes in both US and Iranian administrations creating delays and raising questions about each side’s commitment to their stated goal of restoring the JCPOA. Questions over Iran’s past nuclear activities and sabotage operations against its nuclear facilities further complicated matters. While Iran’s fuel cycle activities led to heightened concerns about proliferation, reversing these advances based on JCPOA limits appeared easier than the lifting of US sanctions, for which the nuclear agreement did not provide a clear formula.

The situation in late 2021 seemingly pointed to three alternative futures. First, a successful conclusion of the Vienna talks in 2022 could restore the agreement, alleviating both international proliferation concerns and Iran’s economic hardship, ideally also including mechanisms to hedge against unilateral withdrawals by any party in the future. Second, a failure of diplomatic efforts could lead to a continuation of the slow-motion crisis whereby the JCPOA, while formally in place and constituting an area of consensus in principle, would be hollowed out further by its lack of implementation by Iran and the USA. Third, the JCPOA parties and the USA might ultimately abandon the JCPOA as a viable framework for addressing their respective concerns.⁷⁶

⁷² Motamedi, M., ‘Iran nuclear talks to resume “soon” after modest gains in Vienna’, Al Jazeera, 17 Dec. 2021; and US Department of State, ‘Senior State Department official on the JCPOA talks in Vienna’, Special briefing, 17 Dec. 2021.

⁷³ Motamedi, M., ‘Delegates at new round of Iran nuclear talks strike hopeful note’, Al Jazeera, 27 Dec. 2021.

⁷⁴ Tirone, J. and Motevalli, G., ‘West warns time’s running out for the fraught nuclear talks’, Bloomberg, 14 Dec. 2021; and Esfandiari, G., ‘Will 2022 bring a revived Iran nuclear deal—or a hard-line plan B?’, Radio Free Europe/Radio Liberty, 31 Dec. 2021.

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⁷⁶ Tirone and Motevalli (note 74).