

# ANNEX 3 – NUCLEAR REACTORS IN THE WORLD “UNDER CONSTRUCTION”

Table 14 – Nuclear Reactors in the World “Under Construction” (as of 1 July 2022)

Country	Units	Capacity MW net	Model	Construction Start (dd/mm/yyyy)	Expected Grid Connection	Delayed
<b>Argentina</b>	<b>1</b>	<b>25</b>				
Carem25		25	CAREM (PWR)	08/02/2014	2027 <sup>1</sup>	yes
<b>Bangladesh</b>	<b>2</b>	<b>2 160</b>				
Rooppur-1		1 080	VVER-1200	30/11/2017	2023 <sup>2</sup> (commercial operation)	
Rooppur-2		1 080	VVER-1200	14/07/2018	2024 <sup>3</sup> (commercial operation)	
<b>Belarus</b>	<b>1</b>	<b>1 110</b>				
Belarusian-2		1 110	VVER V-491	03/06/2014	2022 <sup>4</sup>	yes
<b>China</b>	<b>21</b>	<b>20 932</b>				
Changjiang SMR-1		125	ACP-100	13/07/2021 <sup>5</sup>	2026 <sup>6</sup>	
Changjiang-3		1 000	HPR-1000 <sup>7</sup>	31/03/2021	2026 <sup>8</sup>	
Changjiang-4		1 000	HPR-1000	28/12/2021 <sup>9</sup>	2026 <sup>10</sup>	
Fangchenggang-3		1 000	HPR-1000	24/12/2015	2022 <sup>11</sup>	yes
Fangchenggang-4		1 000	HPR-1000	23/12/2016	2024 <sup>12</sup>	yes
Sanaocun-1		1 117	HPR-1000	31/12/2020	2026 <sup>13</sup>	
Sanaocun-2		1 117	HPR-1000	30/12/2021	2027 <sup>14</sup>	
Sanmen-3		1 163	CAP-1000	28/06/2022 <sup>15</sup>	2027 <sup>16</sup>	
Shidao Bay 1-2 <sup>17</sup>		100	HTR-PM	01/12/2012	2022 <sup>18</sup>	yes
Shidao-Bay 2-1 <sup>19</sup>		1 400	CAP1400	04/2019 <sup>20</sup>	2024 <sup>21</sup>	
Shidao-Bay 2-2		1 400	CAP1400	11/2019 <sup>22</sup>	2024 <sup>23</sup>	
Taipingling-1 <sup>24</sup>		1 116	HPR-1000	26/12/2019	2025 <sup>25</sup>	
Taipingling-2		1 116	HPR-1000	15/10/2020	2026 <sup>26</sup>	
Tianwan-7		1 171	VVER V-491	19/05/2021	2026 <sup>27</sup>	
Tianwan-8		1 171	VVER V-491	15/02/2022	2027 <sup>28</sup>	
Xiapu-1		642	CFR-600	29/12/2017	2023 <sup>29</sup> (commercial operation)	
Xiapu-2		642	CFR-600	27/12/2020 <sup>30</sup>	2026 <sup>31</sup>	
Xudabu-3 <sup>32</sup>		1 200	VVER V-491	19/05/2021	2027 <sup>33</sup>	
Xudabu-4		1 200	VVER V-491	19/05/2022	2028 <sup>34</sup>	
Zhangzhou-1		1 126	HPR-1000	16/10/2019	2024 <sup>35</sup>	
Zhangzhou-2		1 126	HPR-1000	04/09/2020	2025 <sup>36</sup>	

Country	Units	Capacity MW net	Model	Construction Start (dd/mm/yyyy)	Expected Grid Connection	Delayed
<b>France</b>	<b>1</b>	<b>1 630</b>				
Flamanville-3		1 630	EPR	03/12/2007	2023 <sup>37</sup>	yes
<b>India</b>	<b>8</b>	<b>6 028</b>				
Kakrapar-4		630	PHWR-700	22/11/2010	2024 <sup>38</sup>	yes
Kudankulam-3		917	VVER V-412	29/06/2017	2024 <sup>39</sup>	yes
Kudankulam-4		917	VVER V-412	23/10/2017	2025 <sup>40</sup>	yes
Kudankulam-5		917	VVER V-412	29/06/2021	2026/2027 <sup>41</sup>	likely <sup>42</sup>
Kudankulam-6		917	VVER V-412	20/12/2021	2027 <sup>43</sup>	likely <sup>44</sup>
PFBR		470	FBR	23/10/2004	9/2024 <sup>45</sup>	yes
Rajasthan-7		630	PHWR	18/07/2011	06/2023 <sup>46</sup>	yes
Rajasthan-8		630	PHWR	30/09/2011	12/2023 <sup>47</sup> (commissioning)	yes
<b>Iran</b>	<b>1</b>	<b>974</b>				
Bushehr-2		974	VVER V-446	02/1976 <sup>48</sup>	2024 <sup>49</sup>	yes
<b>Japan</b>	<b>1</b>	<b>1 325</b>				
Shimane-3		1 325	ABWR	12/10/2007	2025 <sup>50</sup>	yes
<b>Russia</b>	<b>3</b>	<b>2 650</b>				
BREST-OD-300		300	FBR	08/06/2021	2026 <sup>51</sup>	
Kursk 2-1		1 175	VVER V-510	29/04/2018	2023 <sup>52</sup> (commissioning)	
Kursk 2-2		1 175	VVER V-510	15/04/2019	2024 <sup>53</sup> (commissioning)	
<b>Slovakia</b>	<b>2</b>	<b>880</b>				
Mochovce-3		440	VVER V-213	01/01/1985	2022 <sup>54</sup>	yes
Mochovce-4		440	VVER V-213	01/01/1985	2023 <sup>55</sup>	yes
<b>South Korea</b>	<b>3</b>	<b>4 020</b>				
Shin-Hanul-2		1 340	APR-1400	19/06/2013	7/2023 <sup>56</sup> (commercial operation)	yes
Shin-Kori-5		1 340	APR-1400	03/04/2017	03/2024 <sup>57</sup> (commercial operation)	yes
Shin-Kori-6		1 340	APR-1400	20/09/2018	03/2025 <sup>58</sup> (commercial operation)	yes
<b>Turkey</b>	<b>3</b>	<b>3 342</b>				
Akkuyu-1		1 114	VVER V-509	03/04/2018	2024 <sup>59</sup>	yes
Akkuyu-2		1 114	VVER V-509	08/4/2020	2025 <sup>60</sup>	
Akkuyu-3		1 114	VVER V-509	10/03/2021	2026 <sup>61</sup>	
<b>UAE</b>	<b>2</b>	<b>2 690</b>				
Barakah-3		1 345	APR-1400	24/09/2014	2023 <sup>62</sup>	yes
Barakah-4		1 345	APR-1400	30/07/2015	2023 <sup>63</sup>	yes

Country	Units	Capacity MW net	Model	Construction Start (dd/mm/yyyy)	Expected Grid Connection	Delayed
<b>U.K.</b>	<b>2</b>	<b>3 260</b>				
Hinkley Point C-1	1	1 630	EPR-1750	11/12/2018 <sup>64</sup>	2027 <sup>65</sup>	yes
Hinkley Point C-2	1	1 630	EPR-1750	12/12/2019 <sup>66</sup>	2028 <sup>67</sup>	yes
<b>U.S.</b>	<b>2</b>	<b>2 234</b>				
Vogtle-3		1 117	AP-1000	12/03/2013	2023 <sup>68</sup>	yes
Vogtle-4		1 117	AP-1000	19/11/2013	2023 <sup>69</sup>	yes
<b>World</b>	<b>53</b>	<b>53 260</b>		<b>1976–2022</b>	<b>2022–2028</b>	<b>26</b>

1 - Further delayed. The construction of CAREM, suspended in 2019 “due to breaches by contractor companies”, was expected to restart in May 2020, with no indication about the impact this would have on the project’s timeline.

See *NEI Magazine*, “Work resumes on nuclear projects in Argentina”, 23 April 2020, see <https://www.neimagazine.com/news/newswork-resumes-on-nuclear-projects-in-argentina-7887154>, accessed 30 July 2020.

In July 2021, CNEA announced that NA-SA had been contracted to complete the reactor, and that “this new contract establishes a duration of 36 months to complete the reactor building”.

See CNEA, “CNEA y la empresa NA-SA firman un contrato para completar la construcción del CAREM”, Press Release (in Spanish), 5 July 2021, see <https://www.argentina.gob.ar/noticias/cnea-y-la-empresa-na-sa-firman-un-contrato-para-completar-la-construccion-del-carem>, accessed 8 July 2021.

According to CAREM’s project manager, concreting restarted in January 2022, and startup is expected in 2027.

See Matías Alonso, “Sol Pedre: ‘El CAREM es un salto cualitativo para el sector nuclear argentino’”, *Agencia TSS* (in Spanish), 2 June 2022, see <https://www.unsam.edu.ar/tss/sol-pedre-el-carem-es-un-salto-cualitativo-para-el-sector-nuclear-argentino/>, accessed 18 June 2022.

2 - Expected startup at construction start.

See Rosatom, “First concrete poured at the constructed Rooppur NPP site (Bangladesh)”, Press Release, 30 November 2017, see <http://www.rusatom-overseas.com/media/news/first-concrete-poured-at-the-site-constructed-npp-rooppur-bangladesh.html>, accessed 17 August 2020.

There is concern about the implications of the financial sanctions on Russia, although Rosatom says “it does not see disruption in any of the commitments and work schedules in the project.”

See Masum Billah, “Western sanctions cast a cloud over Russia-backed Bangladesh nuclear power plant”, *bdnews24.com*, 1 March 2022, see <https://bdnews24.com/bangladesh/2022/03/02/western-sanctions-cast-a-cloud-over-russia-backed-bangladesh-nuclear-power-plant>, accessed 5 April 2022.

3 - Expected startup at construction start.

See Rosatom, “Main construction of the 2nd Unit of Rooppur NPP begins with the ‘First Concrete’ ceremony”, Press Release, 14 July 2018, see <http://rosatom.ru/en/press-centre/news/main-construction-of-the-2nd-unit-of-rooppur-npp-begins-with-the-first-concrete-ceremony/>, accessed 15 July 2018. See previous note.

4 - Delayed. Originally expected in 2020, startup of Belarusian-2 is now expected in 2022; fuel loading took place in December 2021.

See Rosatom, “Fuel loading has started at Belarus NPP Unit 2”, Press Release, 22 December 2021, see <https://www.rosatom-europe.com/press-centre/news/fuel-loading-has-started-at-belarus-npp-unit-2/>, accessed 8 August 2022.

5 - CNNC, “World’s first commercial Linglong One onshore small reactor starts construction”, Press Release, 14 July 2021,

see [https://en.cnncc.com.cn/2021-07/14/c\\_642603.htm](https://en.cnncc.com.cn/2021-07/14/c_642603.htm), accessed 31 August 2021.

6 - No official startup date as of construction start. According to *World Nuclear News (WNN)*, “Construction time is expected to be 58 months”.

See *WNN*, “China starts construction of demonstration SMR”, 13 July 2021, see <https://www.world-nuclear-news.org/Articles/China-starts-construction-of-demonstration-SMR>, accessed 16 July 2021.

7 - The HPR-1000 also goes by the name Hualong One.

8 - Construction period is expected to be 60 months. See *NEI Magazine*, “First concrete poured for China’s Changjiang 3”, 1 April 2021, see <https://www.neimagazine.com/news/newsfirst-concrete-poured-for-chinas-changjiang-3-8644649>, accessed 2 April 2021.

9 - China Huaneng Group Co., “华能海南昌江核电二期工程4号机组开工” [“Unit 4 of Huaneng Hainan Changjiang Nuclear Power Phase II Project started construction”], 29 December 2021 (in Chinese), see [https://www.chng.com.cn/detail\\_jtyw/-/article/ccgb60va5Gwc/v/988775.html](https://www.chng.com.cn/detail_jtyw/-/article/ccgb60va5Gwc/v/988775.html), accessed 22 August 2022.

10 - *WNN*, “Construction begins at second Changjiang Hualong One”, 29 December 2021,

see <https://world-nuclear-news.org/Articles/Construction-begins-at-second-Changjiang-Hualong-O>, accessed 30 December 2021.

11 - Delayed. In January 2022, CGN adjusted the expected date of commencement of operation of Fangchenggang Unit 3 to the second half of 2022, a delay of a few months compared to original announcements.

See CGN Power, “Inside Information Construction Progress of Fangchenggang Units 3 and 4”, 26 January 2022,

see <http://en.cgnp.com.cn/encgnp/c211222/2022-01/26/4197b03727be4723a8240db19375c3fc/files/cdo2fo4566144542ab87ed85fa32f35d.pdf>, accessed 31 January 2022.

Although CGN's Annual Reports referred to 2022 as "Expected Date of Commencement of Operation", based on information from sources in China, WNISR had used 2021 as expected startup date.

12 - Delayed. In January 2022, CGN adjusted the expected date of commencement of operation of Fangchenggang Unit 4 to the first half of 2024 (previously 2022).

See CGN Power, "Inside Information Construction Progress of Fangchenggang Units 3 and 4", 26 January 2022, op. cit.

13 - Commencement of operation of Sanaocun-1 (also known as San'ao or Cangnan-1) is expected in 2026.

See CGN Power, "Annual Report 2020", April 2021, see <http://en.cgnp.com.cn/encgnp/c100882/2021-04/08/c95f2296e95a4aab8a1d7b749996bb43/files/72fd1f144fa44cefba5496fb45eaab6.pdf>, accessed 1 June 2021.

14 - Construction of Sanaocun-2 (also known as San'ao or Cangnan-2) started in December 2021 with expected commencement of operation in 2027. See CGN Power, "2021 Annual Report", 2022, see <http://en.cgnp.com.cn/encgnp/c100882/2022-04/07/c458fe3cfd6e4e93950b586f499ce402/files/8787336618b24d2090doea5e9e1554d6.pdf>, accessed 7 April 2022.

15 - CNNC, "CNNC Sanmen nuclear power plant starts construction on second phase project", China National Nuclear Corporation, Press Release, 29 June 2022, see [https://en.cnncc.com.cn/2022-06/29/c\\_785202.htm](https://en.cnncc.com.cn/2022-06/29/c_785202.htm), accessed 30 June 2022.

16 - No official information on expected startup date at construction start. World Nuclear Association (WNA) uses 2027.

See WNA, "Plans for New Nuclear Reactors Worldwide", Updated July 2022, see <https://world-nuclear.org/information-library/current-and-future-generation/plans-for-new-reactors-worldwide.aspx>, accessed 8 August 2022.

17 - IAEA-PRIS reports the twin High Temperature Reactors (HTR-PM) at the Shidao Bay site plant as consisting of one 200-MW unit. Accordingly, in previous WNISR editions, Shidao Bay-1 has been accounted for as one unit. However, Shidao Bay-1 (also called Shidaowan-1) actually consists of two 100-MW reactors, and consequently, as of WNISR2020, they are considered as two units (Shidao Bay 1-1 and 1-2).

See CNEA, "Key components of second HTR-PM reactor connected", n.d., see <http://en.china-nea.cn/site/content/176.html>, accessed 10 May 2020.

18 - Repeatedly delayed. Grid connection of the first unit of the twin reactors (see previous note) officially took place on 20 December 2021. See WNN, "Demonstration HTR-PM connected to grid", 21 December 2021, see <https://www.world-nuclear-news.org/Articles/Demonstration-HTR-PM-connected-to-grid>, accessed 22 August 2022. There is no information on connection of the second unit. WNISR2022 considers it as under construction.

19 - Provisional names for the two CAP1400 at Rongcheng/Shidaowan. Construction of those reactors was introduced in WNISR statistics in 2020 following *Nuclear Intelligence Weekly* (NIW) articles (in particular 10 July 2019) and confirmation from sources in China. In July 2019, NIW classified them as "under construction" on the basis of the Chinese National Nuclear Safety Administration (NNSA) map as of June 2019.

See NIW, "Chinese Power Reactor Project Wrapped in Secrecy", 12 July 2019.

20 - According to sources in China, first basemat concrete for the first CAP1400 reactor was poured on 8 April 2019.

See also C.F. Yu, "CGN's Taipingling Project Moves Ahead", NIW, 20 December 2019. See previous note.

21 - No official startup dates at this point. According to sources in China, the expected construction duration of CAP1400 from Zheng Mingguang is about 56 months. WNISR2022 uses 2024 as expected grid connection.

22 - According to sources in China, first basemat concrete for the second CAP1400 reactor was poured in November 2019. See previous notes.

23 - No official startup dates at this point. WNISR2022 uses 2024 for grid connection date. See previous notes.

24 - Also known as Huizhou.

25 - CGN Power, "Annual Report 2019", April 2020, see <http://en.cgnp.com.cn/encgnp/c100882/202004/f3c2053b65c4cf3a41583190c02057c/files/a5bc0c2ac79c425398a2296b2b054005.pdf>, accessed 2 April 2020.

26 - CGN Power, "Annual Report 2021", 2022, op. cit. (Changed from 2025 in WNISR2020).

27 - According to sources in China, the contract between China and Russia stipulated a construction duration of 65 months. Rosatom stated about the Tianwan-7 and -8 project "the units are scheduled to be commissioned in 2026-2027".

Rosatom, "Start of new unit construction at China's Tianwan and Xudapu nuclear power plants", Press Release, 19 May 2021, see <https://rosatom-overseas.com/media/news/start-of-new-unit-construction-at-china-s-tianwan-and-xudapu-nuclear-power-plants.html>, 19 August 2022.

28 - See Rosatom State Corporation Engineering Division, "The First Concrete has been Laid at Tianwan NPP Power Unit 8 in China", ASE Rosatom, 28 February 2022, see <https://ase-ec.ru/en/for-journalists/news/2022/feb/the-first-concrete-has-been-laid-at-tianwan-npp-power-unit-8-in-china/>, accessed 28 February 2022.

29 - WNN, "China begins building pilot fast reactor", 29 December 2017, see <http://www.world-nuclear-news.org/NN-China-begins-building-pilot-fast-reactor-2912174.html>, accessed 30 December 2017.

30 - Not listed in IAEA-PRIS. NEI, "China begins construction of second CFR-600 fast reactor", 4 January 2021, see <https://www.neimagazine.com/news/newschina-begins-construction-of-second-cfr-600-fast-reactor-8435608>, accessed 5 January 2021.

31 - No official information about construction start/expected grid connection. WNISR2022 uses 2026 (same duration as Xiapu-1).

32 - Also known as Xudapu or Xudabao.

33 - According to sources in China, the expected construction duration of VVER-1200/V491 is 69 months. At construction start, Rosatom stated about the Xudabao Project, "the units are expected to be commissioned in 2027-2028".

See Rosatom, "Start of new unit construction at China's Tianwan and Xudapu nuclear power plants", Press Release, 19 May 2021, <https://rosatom.ru/en/press-centre/news/start-of-new-unit-construction-at-china-s-tianwan-and-xudapu-nuclear-power-plants/>, accessed 14 June 2021 and <https://rosatom-overseas.com/media/news/start-of-new-unit-construction-at-china-s-tianwan-and-xudapu-nuclear-power-plants.html>, accessed 19 August 2022.

- 34 - According to Rosatom at construction start of Unit 4, commissioning of Xudabu-3 and -4 is scheduled for 2027–2028. See ASE-Rosatom, “First Concrete laid at Xudapu NPP Power Unit 4 in China”, Press Release, 19 May 2022, see <https://ase-ec.ru/en/for-journalists/news/2009/may/first-concrete-laid-at-xudapu-npp-power-unit-4-in-china/>, accessed 19 May 2022.
- 35 - No official startup date at construction start. See CNNC, “CNNC’s Zhangzhou nuclear plant goes into construction”, China National Nuclear Corporation, 23 December 2019, see [http://en.cnncc.com.cn/2019-12/23/c\\_435889.htm](http://en.cnncc.com.cn/2019-12/23/c_435889.htm), accessed 17 January 2020. Construction duration of Hualong One design given as 60 months.
- 36 - No official startup date at construction start. See WNN, “Zhangzhou unit 2 construction starts”, 4 September 2020, see <https://www.world-nuclear-news.org/Articles/Construction-starts-of-second-Zhangzhou-unit>, accessed 4 September 2020. Construction duration of Hualong One design given as 60 months.
- 37 - Further delayed. Delayed many times from its original planned startup date of 2012. In January 2022, EDF announced a new provisional date for fuel loading: by the second quarter of 2023 (compared to end of 2022 in WNISR2021). Startup of the reactors is still expected in 2023. See EDF, “Update on the Flamanville EPR”, Press Release, 12 January 2022, see <https://www.edf.fr/en/the-edf-group/dedicated-sections/journalists/all-press-releases/update-on-the-flamanville-epr>, accessed 12 January 2022.
- 38 - Further delayed (over a year compared to WNISR2021). According to an internal memo from the Ministry of Energy, seen by Reuters, NPCIL considers that Kakrapar-4 “would reach completion by March, 2024”. See Sudarshan Varadhan and Reuters, “Operation of Fourth Nuclear Power Unit in Gujarat’s Kakrapar Delayed”, *The Wire*, 1 June 2022, see <https://thewire.in/energy/operation-of-fourth-nuclear-power-unit-in-gujarats-kakrapar-delayed>, accessed 2 June 2022.
- 39 - Delayed. In 2021, *Nuclear Intelligence Weekly* (NIW) reported that “Units 3 and 4 ... will now be completed in September 2024 and March 2025, respectively, according to a government document.” See Rakesh Sharma, “Kudankulam-5 Construction Start Marks New Milestone”, *Nuclear Intelligence Weekly*, 2 July 2021. See also note on Kudankulam-5. NPCIL keeps March 2023 as Expected date of Commercial Operation.
- 40 - Delayed. See previous note. NPCIL keeps November 2023 as Expected date of Commercial Operation.
- 41 - The expected construction duration of Kudankulam-5 is 66 months. See Lok Sabha, “Unstarred Question No.2756: Kudankulam Nuclear Power Plant”, Department of Atomic Energy, Answered by Jitendra Singh, Minister of State for Personnel, Public Grievances & Pensions and Prime Minister’s Office, Government of India, 10 March 2021, see <https://dae.gov.in/writereaddata/lsusq%202756.pdf>, accessed 30 June 2021.
- 42 - In March 2022, the Indian government announced that the “project completion schedule” for the four reactors under construction at Kudankulam are “likely to be impacted” because “components and equipments to be imported from Ukraine and Russia may be delayed due to the logistical and ocean freight problems” arising from the war on Ukraine. See Shri Abir Ranjan Biswas, “Unstarred Question No. 3286: Status of Work at Kudankulam Power Plant”, Rajya Sabha, Department of Atomic Energy, Government of India, Answered by Jitendra Singh, Minister of State for Personnel, Public Grievances & Pensions, and Prime Minister’s Office, see <http://dae.gov.in/writereaddata/rsusq3286.pdf>, accessed 7 April 2022.
- 43 - The expected construction duration of Kudankulam-6 is 75 months. See Lok Sabha, “Unstarred Question No.2756: Kudankulam Nuclear Power Plant”, Department of Atomic Energy, Answered by Jitendra Singh, Minister of State for Personnel, Public Grievances & Pensions and Prime Minister’s Office, Government of India, 10 March 2021.
- 44 - See note on Kudankulam-5. See Rajya Sabha, “Unstarred Question No. 3286: Status of Work at Kudankulam Power Plant”, Government of India, March 2022, op. cit.
- 45 - Further delayed. Expected operation pushed back from October 2022 to September 2024. MoSPI, “440th Flash Report on Central Sector Projects (Rs.150 crore and above) - July 2022”, Ministry of Statistics and Programme Implementation, 2022, see [http://www.cspm.gov.in/english/flr/FR\\_July\\_2022.pdf](http://www.cspm.gov.in/english/flr/FR_July_2022.pdf), accessed 27 August 2022.
- 46 - Further delayed (over a year compared to WNISR2021). As of July 2022, the “Expected Date of Commercial Operation” is “under review” on NPCIL’s dedicated webpage, while the Central Electricity Regulatory Commission approved a petition from NPCIL that anticipates Rajasthan-7 being synchronized with the grid only by June 2023. See Shri P.K.Pujari et al., “Petition No. 112/MP/2022”, Central Electricity Regulator Commission, April 2022, see <https://cercind.gov.in/2022/orders/112-MP-2022.pdf>, accessed 24 May 2022.
- 47 - Further delayed (at least 9 months since WNISR2021). According to Ministry of Statistics and Programme Implementation (MoSPI) commissioning is now expected in December 2023 (compared to March 2023 one year earlier). See MoSPI, “435th Flash Report on Central Sector Projects (Rs.150 crore and above) - February 2022”, February 2022, see [http://www.cspm.gov.in/english/images/FR\\_Feb\\_2022.pdf](http://www.cspm.gov.in/english/images/FR_Feb_2022.pdf), accessed 6 April 2022.
- 48 - Original construction of Bushehr-2 had started in February 1976 before it was halted in 1978. The reactor remained listed as “under construction” in PRIS-IAEA, “Nuclear Power Reactors in the World”, until the 1994 edition. Currently, PRIS indicates September 2019 as construction start, when construction work resumed, and a new concrete slab was poured. See WNISR, “Iran: Construction Restart of Busheer-2”, 14 November 2019, see <https://www.worldnuclearreport.org/Iran-Construction-Restart-of-Busheer-2.html>.
- 49 - 2024 is the date announced when construction resumed. However, as of June 2022, NEI mentions a 28-month delay on the Bushehr-2 and -3, without precisions if this only applies to Unit 3, where no concrete pouring has taken place yet. See *NEI Magazine*, “Iran begins concrete pouring for wall at Bushehr 2”, Nuclear Engineering International, 28 June 2022, see <https://www.neimagazine.com/news/newsiran-begins-concrete-pouring-for-wall-at-bushehr-2-9806133>, accessed 7 July 2022.
- 50 - Construction status unclear. 2025 used for WNISR projections.
- 51 - Rosatom, “ROSATOM starts construction of unique power unit with BREST-OD-300 fast neutron reactor”, 8 June 2021, see <https://rosatom-europe.com/press-centre/news/rosatom-starts-construction-of-unique-power-unit-with-brest-od-300-fast-neutron-reactor/>, accessed 19 August 2022.

- 52 - WNISR previously used 2022, also quoted in numerous documents.  
See Rosatom, “Rosatom Newsletter #202—Kursk II Passed Construction Milestone”, December 2017, see <https://rosatomnewsletter.com/2017/12/28/kursk-ii-passed-construction-milestone/>, accessed 13 April 2022.
- 53 - See previous note.
- 54 - Further delayed since WNISR2021. According to the latest update by Škoda, “The start-up of Unit 3 is currently scheduled to take place at the end of 2022, while the start-up of Unit 4 is planned in 2024.”  
See ŠKODA JS, “Units 3 and 4 at Mochovce NPP, Slovakia”, n.d. see <https://www.skoda-js.cz/reference/nuclear-powerplant-mochovce/>, accessed 17 August 2022.
- 55 - Further delayed. See previous note.
- 56 - Further delayed. As of July 2022, Commercial operation is expected in July 2023 (compared to March 2023 in WNISR2021).  
See KHNP, “Nuclear Power Construction—Shin-Hanul #1,2”, Various Dates, see <https://cms.khnp.co.kr/eng/contents.do?key=524>, last accessed 9 August 2022.
- 57 - Further delayed. Construction officially started in April 2017, suspended in July to resume October of the same year. Commercial operation at construction start was October 2021; after numerous delays, it is now expected in March 2024 (as anticipated in WNISR2021). See KHNP, “Nuclear Power Construction – Shin-Kori #5,6”, various dates, see <https://cms.khnp.co.kr/eng/contents.do?key=525>, last accessed 9 August 2022.
- 58 - Further delayed. As anticipated in WNISR2021, commercial operation has been pushed back to March 2025.  
See KHNP, “Nuclear Power Construction—Shin-Kori #5,6”, various dates, see <https://cms.khnp.co.kr/eng/contents.do?key=525>, last accessed 9 August 2022.
- 59 - Delayed. The Akkuyu reactors are officially to be completed one per year starting in 2023.  
See WNN, “Akkuyu construction to be completed by 2026, says project CEO : New Nuclear”, 10 February 2021, see <https://www.world-nuclear-news.org/Articles/Akkuyu-fully-operational-by-2026,-says-project?feed=feed>, accessed 10 April 2021.  
In March 2019, the project management announced that it had finished the concreting of the basemat for the nuclear island and that it was now expected that Akkuyu-1 would be physically completed in 2023, with generation coming at a later date.  
See Phil Chaffee, “New Build, Revised 2023 Milestone for Akkuyu”, *Nuclear Intelligence Weekly*, 29 March 2019.
- 60 - Official startup date is often quoted as 2024, but WNISR2021 uses a 5-year construction period.  
See *Daily Sabah*, “Construction starts on 2nd unit of Turkey’s 1st nuclear power plant Akkuyu”, 28 June 2020, see <https://www.dailysabah.com/business/energy/construction-starts-on-2nd-unit-of-turkeys-1st-nuclear-power-plant-akkuyu>, accessed 28 June 2020.
- 61 - The Akkuyu reactors are officially to be completed one per year starting in 2023.  
See WNN, “Akkuyu construction to be completed by 2026, says project CEO : New Nuclear”, 10 February 2021, see <https://www.world-nuclear-news.org/Articles/Akkuyu-fully-operational-by-2026,-says-project>, accessed 10 April 2021.  
However, WNISR2021 keeps a 5-year construction time, and a one-per-year startup frequency, beginning with Akkuyu-1 in 2024.
- 62 - Further delayed. In November 2021, ENEC announced the “construction completion” of Barakah-3, with electricity production scheduled in 2023. Operating license was granted in June 2022, followed by fuel loading.  
See ENEC, “Fuel Assemblies loading started at Unit 3 of the Barakah Plant after Received Operating License from FANR”, Press Release, 19 June 2022, see <https://www.enec.gov.ae/news/latest-news/fuel-assemblies-loading-started-at-unit-3-of-barakah-plant-after-receiving-operating-license/>, accessed 19 June 2022.
- 63 - Delayed. Although startup of Barakah-3 is now expected in 2023, there is no indication of a new delay for Barakah-4.
- 64 - WNISR, “The Oddly Discreet Construction Start of Hinkley Point C”, 29 December 2018, see <https://www.worldnuclearreport.org/The-Oddly-Discreet-Construction-Start-of-Hinkley-Point-C.html>, accessed 24 August 2019.
- 65 - Further delayed. According to EDF, in May 2022, “the risk of further delay of the two units is assessed at 15 months, assuming the absence of a new pandemic wave and no additional effects of the war in Ukraine”.  
See EDF, “Hinkley Point C Update”, Press Release, 19 May 2022, see <https://www.edf.fr/sites/groupe/files/epresspack/3081/c6b6205433272bb0cbfac560cea3b537.pdf>, accessed 19 May 2022.
- 66 - See WNISR, “Strangely Belated Announcement of Hinkley Point C-2 Construction Start”, 18 March 2020, see <https://www.worldnuclearreport.org/Strangely-Belated-Announcement-of-Hinkley-Point-C-2-Construction-Start.html>.
- 67 - Further delayed. According to EDF, in May 2022, “the risk of further delay of the two units is assessed at 15 months, assuming the absence of a new pandemic wave and no additional effects of the war in Ukraine”. However, no precise date was provided at construction start, nor new provisional date.  
See EDF, “Hinkley Point C Update”, Press Release, 19 May 2022, op. cit.
- 68 - Further delayed. As of July 2022, Vogtle Unit 3 is expected to be in service by the end of the first quarter of 2023, compared to second quarter of 2022 in WNISR2021.  
See Scott DiSavino, “Southern delays startup of new Georgia nuclear reactors, boosts costs”, *Reuters*, 17 February 2022, see <https://www.reuters.com/business/energy/southern-delays-startup-new-georgia-nuclear-reactors-boosts-costs-2022-02-17/>, accessed 19 February 2022.
- 69 - Further delayed. As of July 2022, Vogtle unit 4 is expected to be in service by the end of the fourth quarter of 2023, compared to first quarter of 2023 in WNISR2021.  
See Scott DiSavino, “Southern delays startup of new Georgia nuclear reactors, boosts costs”, *Reuters*, 17 February 2022, op. cit.