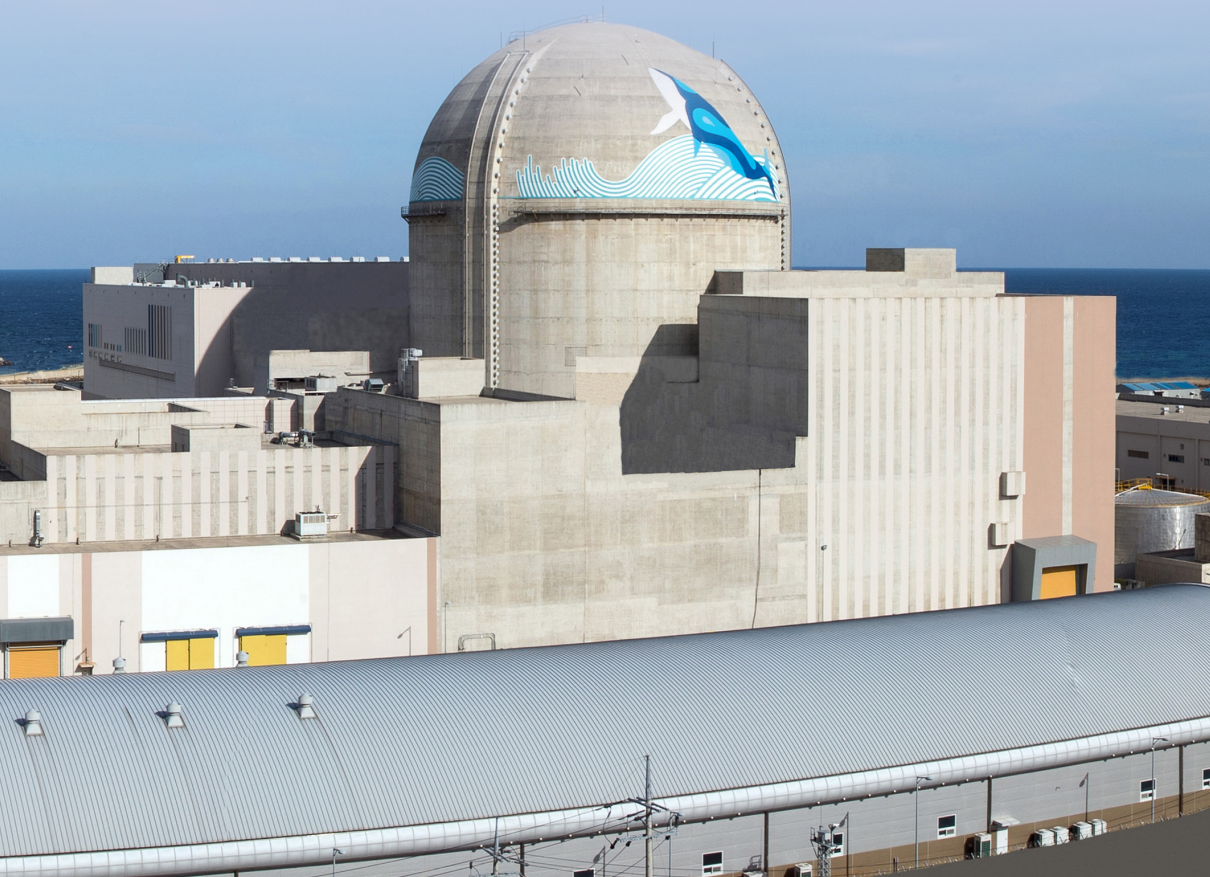


REFERENCE DATA SERIES No. 2  
2023 Edition

# Nuclear Power Reactors in the World



**IAEA**  
International Atomic Energy Agency

**NUCLEAR POWER REACTORS  
IN THE WORLD**



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IN THE WORLD**

2023 Edition

INTERNATIONAL ATOMIC ENERGY AGENCY  
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*The total electricity production does not include Ukrainian reactor units as operational data were not submitted for the year 2022 by the time of publication*

*The EAF and UCF calculated for Ukrainian reactor units are from 2012-2021 as operational data were not submitted for the year 2022 by the time of publication.*

*Nuclear power operating statistics do not include outage data from Ukrainian reactor units as information for these units was not available by the time of publication.*

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## INTRODUCTION

Nuclear Power Reactors in the World is an annual publication that presents the most recent data pertaining to nuclear power reactor units in IAEA Member States.

This forty-third edition of Reference Data Series No. 2 (RDS-2) provides a detailed comparison of various statistics up to and including 31 December 2022. The tables and figures contain the following information:

- General statistics on nuclear reactors in IAEA Member States;
- Technical data on specific reactors that are either planned, under construction or operational, or that have been shut down or decommissioned;
- Performance data on reactors operating in IAEA Member States, as reported to the IAEA.

The data compiled in this publication are a product of the IAEA's Power Reactor Information System (PRIS). The PRIS database is a comprehensive source of data on all nuclear power reactors in the world. It includes specification and performance history data on operational reactors as well as reactors under construction or in the decommissioning process. Data are collected by the IAEA via officially nominated national liaison officers and data providers in Member States. The IAEA appreciates the valuable assistance of the national authorities, official correspondents and various utilities in gathering the information for this report.

As of 31 December 2022, over 393.8 GW(e) of operational nuclear power capacity was available through 438 reactors across 32 countries. Overall, nuclear power capacity growth has been steady over the past decade, with a 20.3 GW(e) increase between 2012 and 2022. As reported by Member States<sup>1</sup>, the nuclear power fleet generated about 2486.8 TWh of low-emission, dispatchable electricity throughout 2022.

Over 7.4 GW(e) of new capacity was connected to the grid in 2022, including 5.8 GW(e) of additional operational capacity in Asia and 1.6 GW(e) in Europe. In China, two reactors began supplying electricity to the grid in 2022: Fuqing-6 (1075

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<sup>1</sup> The total electricity production does not include Ukrainian reactor units as operational data were not submitted for the year 2022 by the time of publication.



megawatts (electrical) (MW(e))) — the second of two demonstration Hualong One (HPR1000) reactors at the site — was connected to the grid in January, and Hongyanhe-6 in Liaoning province — a third-generation ACPR-1000 pressurized water reactor (PWR) with a total net capacity of 1061 MW(e) — was connected to the grid in May. In the Republic of Korea, a 1340 MW(e) PWR (APR-1400) at the Hanul nuclear power plant (NPP) was connected to the grid in June. An ACP1000 reactor, KANUPP-3 (1014 MW(e)), supplied by China, was connected to the grid in March at Karachi NPP in the Sindh province of southern Pakistan. Unit 3 at Barakah NPP in the United Arab Emirates started operations in October, adding 1345 MW(e) of nuclear capacity. The Olkiluoto-3 1600 MW(e) EPR reactor in Finland was connected to the grid in March.

During 2022, 3.3 GW(e) (5 reactors) of nuclear capacity were permanently shut down. After more than 50 years of operation, the Palisades nuclear power plant (805 MW(e)) in the United States shut down permanently in May. In the United Kingdom, two nuclear power reactors (totaling 965 MW(e)) at the Hinkley Point B plant were shut down after 46 years of operation, and Hunterston B-2 (495 MW(e)) ceased operations after 45 years. Belgium shut down its first nuclear power plant, Doel-3 (1006 MW(e)), after 40 years of operation.

Information and data received by the IAEA through 31 May 2023 are included in this publication. Any modifications received at a later date, although not included in this publication, are available in the PRIS database.

PRIS statistics are available in the IAEA's annual publications such as "Operating Experience with Nuclear Power Stations in Member States" and "Country Nuclear Power Profiles", as well as on the PRIS web page (<http://www.iaea.org/pris>). Detailed nuclear power reactor data and reports are accessible to registered users through PRIS Statistics on-line application. Enquiries should be addressed to:

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1400 Vienna, Austria  
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## DEFINITIONS

### Performance factors

$$\text{EAF (\%)} = \frac{(\text{REG} - \text{PEL} - \text{UEL} - \text{XEL})}{\text{REG}} \times 100$$

$$\text{UCF (\%)} = \frac{(\text{REG} - \text{PEL} - \text{UEL})}{\text{REG}} \times 100$$

$$\text{UCL (\%)} = \frac{\text{UEL}}{\text{REG}} \times 100$$

$$\text{PCL (\%)} = \frac{\text{PEL}}{\text{REG}} \times 100$$

$$\text{LF (\%)} = \frac{\text{EG}}{\text{REG}} \times 100$$

$$\text{OF (\%)} = \frac{\text{On-line hours}}{\text{Total hours}} \times 100$$

where

EAF is the energy availability factor, expressed in per cent;

UCF is the unit capability factor, expressed in per cent;

UCL is the unplanned capability loss factor, expressed in per cent;

PCL is the planned capability loss factor, expressed in per cent;

LF is the load factor, expressed in per cent; and

OF is the operating factor, expressed in per cent.

REG Reference energy generation: The net electrical energy (MW·h), supplied by a unit continuously operated at the reference unit power for the duration of the entire reference period.

- PEL      Planned energy loss: The energy (MW·h) that was not supplied during the period because of planned shutdowns or load reductions due to causes under plant management control. Energy losses are considered to be planned if they are scheduled at least four weeks in advance.
- UEL      Unplanned energy loss: The energy (MW·h) that was not supplied during the period because of unplanned shutdowns, outage extensions or load reductions due to causes under plant management control. Energy losses are considered to be unplanned if they are not scheduled at least four weeks in advance.
- XEL      External energy loss: The energy (MW·h) that was not supplied owing to constraints beyond plant management control that reduced plant availability.
- EG      Electrical energy: The net electrical energy supplied during the reference period as measured at the unit outlet terminals after deducting the electrical energy taken by unit auxiliaries and the losses in transformers that are considered to be integral parts of the unit.

### **Planned reactors**

The IAEA considers a reactor as planned from the date when a construction licence application has been submitted to the relevant national regulatory authorities to the construction start date.

### **Construction start**

The date when the first major placing of concrete, usually for the base mat of the reactor building, is carried out.

### **First criticality**

The date when the reactor is made critical for the first time.

### **Grid connection**

The date when the plant is first connected to the electrical grid for the supply of power. After this date, the plant is considered as operational.

**Commercial operation**

The date when the plant is handed over by the contractors to the owner and declared officially in commercial operation.

**Long term shutdown (suspended operation)**

A unit is considered to be in long term shutdown if it has been shut down for an extended period (usually several years) initially without any firm recovery schedule, but with the intention to restart the unit eventually. Suspended operation is a new term for this status.

**Permanent shutdown**

The date when the plant is officially declared to be shut down by the owner and taken out of operation permanently.

**NSSS supplier**

The supplier of a power reactor unit's nuclear steam supply system.

**Units and energy conversion**

1 terawatt-hour (TW·h) =  $10^6$  megawatt-hours (MW·h)

For an average power plant:

1 TW·h	=	0.39 megatonnes of coal equivalent (input);
	=	0.23 megatonnes of oil equivalent (input).

**TABLE 1. OVERVIEW OF POWER REACTORS AND NUCLEAR SHARE, 31 DEC. 2022**

Country	Reactors in Operation		Reactors in Suspended Operation		Reactors Under Construction		Nuclear Electricity Supplied	
	Number of units	Net Capacity MW(e)	Number of units	Net Capacity MW(e)	Number of units	Net Capacity MW(e)	TWh	% of Total
ARGENTINA	3	1641			1	25	7.5	5.4
ARMENIA	1	416					2.6	31.0
BANGLADESH					2	2160		
BELARUS	1	1110			1	1110	4.4	11.9
BELGIUM	6	4936					41.7	46.4
BRAZIL	2	1884			1	1340	13.7	2.5
BULGARIA	2	2006			1		15.8	32.5
CANADA	19	13624					81.7	12.9
CHINA	54	52181			20	20284	395.4	5.0
CZECH REP.	6	3934			2	2200	29.3	36.7
EGYPT								
FINLAND	5	4394					24.2	35.0
FRANCE	56	61370			1	1630	282.1	62.6
GERMANY	3	4055					31.9	5.8
HUNGARY	4	1916					15.0	47.0
INDIA	19	6290	4	639	8	6028	42.0	3.1
IRAN,ISL.REP	1	915			1	974	6.0	1.7
JAPAN	10	9486	23	22193	2	2653	51.9	6.1
KOREA,REP.OF	25	24489			3	4020	167.5	30.4
MEXICO	2	1552					10.5	4.5
NETHERLANDS	1	482					3.9	3.3
PAKISTAN	6	3262					22.2	16.2
ROMANIA	2	1300					10.2	19.3
RUSSIA	37	27727			3	2700	209.5	19.6
SLOVAKIA	4	1868			2	880	14.8	59.2
SLOVENIA	1	668					5.3	42.8

**TABLE 1. OVERVIEW OF POWER REACTORS AND NUCLEAR SHARE, 31 DEC. 2022 — continued**

Country	Reactors in Operation		Reactors in Suspended Operation		Reactors Under Construction		Nuclear Electricity Supplied	
	Number of units	Net Capacity MW(e)	Number of units	Net Capacity MW(e)	Number of units	Net Capacity MW(e)	TW.h	% of Total
SOUTH AFRICA	2	1854					10.1	4.9
SPAIN	7	7123					56.2	20.3
SWEDEN	6	6937					50.0	29.5
SWITZERLAND	4	2973					23.2	36.4
TURKIYE					4	4456		
UAE	3	4011			1	1310	19.3	12.3
UK	9	5883			2	3260	43.6	14.2
UKRAINE	15	13107			2	2070		
USA	92	94718			2	2234	772.2	18.2
<b>TOTAL</b>	<b>411</b>	<b>370981</b>	<b>27</b>	<b>22832</b>	<b>58</b>	<b>59334</b>	<b>2486.6</b>	

**Notes:**

The total includes the following data from Taiwan, China:

- 3 units, 2859 MW(e) in operation;
- 22.9 TW.h of nuclear electricity generation, representing 9.1% of the total electricity generated there.

The total electricity production does not include Ukrainian reactor units as operational data were not submitted for the year 2022 by the time of publication.

**TABLE 2. TYPE AND NET ELECTRICAL POWER OF OPERATIONAL REACTORS, 31 DEC. 2022**

Country	PWR		BWR		GCR		HTGR		PHWR		LWGR		FBR		Totals	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
ARGENTINA									3	1641					3	1641
ARMENIA	1	416													1	416
BELARUS	1	1110													1	1110
BELGIUM	6	4936													6	4936
BRAZIL	2	1884													2	1884
BULGARIA	2	2006													2	2006
CANADA									19	13624					19	13624
CHINA	51	50627			1	200			2	1354					54	52181
CZECH REP.	6	3934													6	3934
FINLAND	3	2614	2	1780											5	4394
FRANCE	56	61370													56	61370
GERMANY	3	4055													3	4055
HUNGARY	4	1916													4	1916
INDIA	2	1864							17	4426					19	6290
IRAN,ISL.REP	1	915													1	915
JAPAN	10	9486													10	9486
KOREA,REP.OF	22	22741							3	1748					25	24489
MEXICO			2	1552											2	1552
NETHERLANDS	1	482													1	482
PAKISTAN	6	3262													6	3262
ROMANIA									2	1300					2	1300
RUSSIA	24	18914									11	7433			37	27727
SLOVAKIA	4	1868													4	1868
SLOVENIA	1	688													1	688
SOUTH AFRICA	2	1854													2	1854
SPAIN	6	6059	1	1064											7	7123



**TABLE 2. TYPE AND NET ELECTRICAL POWER OF OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	PWR		BWR		GCR		HTGR		PHWR		LWGR		FBR		Totals	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
SWEDEN	2	2204	4	4733											6	6937
SWITZERLAND	3	1740	1	1233											4	2973
UAE	3	4011													3	4011
UK	1	1198			8	4685									9	5883
UKRAINE	15	13107													15	13107
USA	61	62009	31	32709											92	94718
<b>TOTAL</b>	<b>301</b>	<b>289144</b>	<b>42</b>	<b>44056</b>	<b>8</b>	<b>4685</b>	<b>1</b>	<b>200</b>	<b>46</b>	<b>24093</b>	<b>11</b>	<b>7433</b>	<b>2</b>	<b>1380</b>	<b>411</b>	<b>370991</b>

Notes:

1. The totals include 3 units, 2859 MW(e) in Taiwan, China.
2. During 2022, 6 reactors, 7400 MW(e) were newly connected to the grid.

**TABLE 3. TYPE AND NET ELECTRICAL POWER OF REACTORS UNDER CONSTRUCTION, 31 DEC. 2022**

Country	PWR No.	PWR MW(e)	BWR No.	BWR MW(e)	PHWR No.	PHWR MW(e)	LWGR No.	LWGR MW(e)	FBR No.	FBR MW(e)	HTGR No.	HTGR MW(e)	Totals No.	Totals MW(e)
ARGENTINA	1	25											1	25
BANGLADESH	2	2160											2	2160
BELARUS	1	1110											1	1110
BRAZIL	1	1340											1	1340
CHINA	18	19000							2	1284			20	20284
EGYPT	2	2200											2	2200
FRANCE	1	1630											1	1630
INDIA	4	3688			3	1890			1	470			8	6028
IRAN,ISL.REP	1	974											1	974
JAPAN			2	2653									2	2653
KOREA,REP.OF	3	4020							1	300			3	4020
RUSSIA	2	2400											3	2700
SLOVAKIA	2	880											2	880
TÜRKIYE	4	4456											4	4456
UAE	1	1310											1	1310
UK	2	3260											2	3260
UKRAINE	2	2070											2	2070
USA	2	2234											2	2234
<b>TOTAL</b>	<b>49</b>	<b>52737</b>	<b>2</b>	<b>2653</b>	<b>3</b>	<b>1890</b>			<b>4</b>	<b>2054</b>			<b>58</b>	<b>58334</b>

**TABLE 4. REACTOR YEARS OF EXPERIENCE, UP TO 31 DEC. 2022**

Country	In Operation		Suspended Operation		Permanently Shutdown		All Operating and Shutdown Reactors		Operating Experience	
	Number	Net Capacity MW(e)	Number	Net Capacity MW(e)	Number	Net Capacity MW(e)	Number	Net Capacity MW(e)	Years	Months
ARGENTINA	3	1641					3	1641	97	2
ARMENIA	1	416			1	376	2	792	55	3
BELARUS	1	1110					1	1110	2	2
BELGIUM	6	4936			2	1016	8	5952	324	4
BRAZIL	2	1884					2	1884	63	3
BULGARIA	2	2006			4	1632	6	3638	173	3
CANADA	19	13624			6	2143	25	15767	903	0
CHINA	54	52181					54	52181	513	2
CZECH REP.	6	3934					6	3934	188	10
FINLAND	5	4394					5	4394	176	2
FRANCE	56	61370			14	5549	70	66919	2449	0
GERMANY	3	4055			30	22180	33	26235	834	8
HUNGARY	4	1916					4	1916	150	2
INDIA	19	6290	4	639			23	6929	594	11
IRAN,ISL.REP	1	915					1	915	11	4
ITALY			23	22193			4	1423	80	8
JAPAN	10	9486			27	17119	60	48798	2020	6
KAZAKHSTAN					1	52	1	52	25	10
KOREA,REP.OF	25	24489			2	1237	27	25726	644	9
LITHUANIA					2	2370	2	2370	43	6
MEXICO	2	1552					2	1552	61	11
NETHERLANDS	1	482			1	55	2	537	78	0
PAKISTAN	6	3262			1	90	7	3352	98	9
ROMANIA	2	1300					2	1300	41	11
RUSSIA	37	27727			10	3957	47	31684	1447	7
SLOVAKIA	4	1868			3	909	7	2777	184	7

**TABLE 4. REACTOR YEARS OF EXPERIENCE, UP TO 31 DEC. 2022 — continued**

Country	In Operation		Suspended Operation		Permanently Shutdown		All Operating and Shutdown Reactors		Operating Experience	
	Number	Net Capacity MW(e)	Number	Net Capacity MW(e)	Number	Net Capacity MW(e)	Number	Net Capacity MW(e)	Years	Months
SLOVENIA	1	688					1	688	41	3
SOUTH AFRICA	2	1854					2	1854	76	3
SPAIN	7	7123			3	1067	10	8190	368	2
SWEDEN	6	6937			7	4054	13	10991	486	0
SWITZERLAND	4	2973			2	379	6	3352	236	11
UAE	3	4011					3	4011	4	0
UK	9	5883			36	7755	45	13638	1658	9
UKRAINE	15	13107			4	3515	19	16622	563	6
USA	92	94718			41	19976	133	114694	4825	9
<b>TOTAL</b>	<b>411</b>	<b>370991</b>	<b>27</b>	<b>22832</b>	<b>204</b>	<b>98047</b>	<b>642</b>	<b>492870</b>	<b>19764</b>	<b>11</b>

Notes:

1. The total includes the following data from Taiwan, China:  
— operational reactors, 3 units, 2859 MW(e); permanently shutdown reactors, 3 units, 2193 MW(e); 239 years, 8 months.
2. Operating experience is counted from the grid connection excluding any long term shutdown period.

**TABLE 5. OPERATIONAL REACTORS AND NET ELECTRICAL POWER (1995-2022)**

Country	Number of Units and Net Capacity [MW(e)] Connected to the Grid (Latest in each year)															
	1995		2000		2005		2010		2015		2020		2021		2022	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
ARGENTINA	2	935	2	978	2	935	2	935	3	935	3	1632	3	1641	3	1641
ARMENIA	1	376	1	376	1	376	1	376	1	375	1	375	1	415	1	448
BELARUS														1110	1	1110
BELGIUM	7	5631	7	5712	7	5801	7	5801	7	5926	7	5913	7	5942	7	5942
BRAZIL	1	626	2	1976	2	1901	2	1901	2	1884	2	1884	2	1884	2	1884
BULGARIA	6	3538	6	3760	4	2722	2	1906	2	1906	2	1926	2	2006	2	2006
CANADA	21	14902	14	9998	18	12584	18	12604	19	12604	19	13524	19	13624	19	13624
CHINA	3	2188	3	2188	9	6587	13	10065	30	10065	49	26754	49	47508	52	50014
CZECH REP.	4	1782	5	2611	6	3373	6	3675	6	3675	6	3980	6	3934	6	3934
FINLAND	4	2310	4	2656	4	2676	4	2716	4	2716	4	2752	4	2794	4	2794
FRANCE	56	58573	59	63080	59	63260	58	63130	58	63130	56	63130	56	61370	56	61370
GERMANY	19	20972	19	21283	17	20339	17	20490	8	10799	6	8113	6	8113	3	4055
HUNGARY	4	1729	4	1729	4	1755	4	1889	4	1889	4	1889	4	1902	4	1916
INDIA	10	1746	14	2508	14	2903	18	4099	20	4099	18	5218	18	5660	19	6290
IRAN,ISL.REP														915	1	915
JAPAN	50	39625	52	43245	55	47593	50	42564	20	18097	10	18097	10	9486	10	9486
KAZAKHSTAN	1	50														
KOREA,REP.OF	11	9115	16	12990	20	16810	21	18698	24	18698	24	21733	24	23150	24	23091
LITHUANIA	2	2370	2	2370	1	1185										
MEXICO	2	1256	2	1290	2	1360	2	1360	2	1300	2	1440	2	1552	2	1552
NETHERLANDS	2	510	1	449	1	450	1	482	1	482	1	482	1	482	1	482
PAKISTAN	1	125	2	425	2	425	2	425	3	690	5	1318	5	1318	5	2242
ROMANIA			1	655	1	655	2	1300	2	1300	2	1300	2	1300	2	1300
RUSSIA	30	19848	30	19848	31	21743	32	22693	35	25413	38	28578	37	27727	37	27727
SLOVAKIA	4	1632	6	2440	6	2442	4	1816	4	1816	4	1814	4	1837	4	1868

**TABLE 5. OPERATIONAL REACTORS AND NET ELECTRICAL POWER (1995-2022) — continued**

Country	Number of Units and Net Capacity [MW(e)] Connected to the Grid (Latest in each year)															
	1995		2000		2005		2010		2015		2020		2021		2022	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
SLOVENIA	1	620	1	676	1	656	1	666	1	688	1	688	1	688	1	688
SOUTH AFRICA	2	1840	2	1840	2	1800	2	1800	2	1860	2	1860	2	1854	2	1854
SPAIN	9	7097	9	7468	9	7591	8	7514	7	7121	7	7121	7	7121	7	7123
SWEDEN	12	10028	11	9397	10	8905	10	9303	10	9648	6	6882	6	6882	6	6937
SWITZERLAND	5	3056	5	3170	5	3220	5	3238	5	3333	4	2960	4	2960	4	2973
UAE																
UK	35	12910	33	12490	23	11852	19	10137	15	8918	15	8923	12	7343	3	4011
UKRAINE	15	13045	13	11195	15	13107	15	13107	15	13107	15	13107	15	13107	15	13107
USA	108	98068	103	96297	103	98145	104	101211	99	99167	94	96553	93	95523	92	94718
<b>TOTAL</b>	<b>434</b>	<b>341387</b>	<b>435</b>	<b>349984</b>	<b>440</b>	<b>368035</b>	<b>436</b>	<b>370930</b>	<b>416</b>	<b>360504</b>	<b>414</b>	<b>369804</b>	<b>410</b>	<b>366790</b>	<b>411</b>	<b>370991</b>

Notes:

The total includes the following data from Taiwan, China:

— 1995: 6 units, 4884 MW(e); 2000: 6 units, 4884 MW(e); 2005: 6 units, 4884 MW(e); 2010: 6 units, 4982 MW(e); 2015: 6 units, 5052 MW(e); 2020: 4 units, 3844 MW(e); 2021: 3 units, 2859 MW(e); 2022: 3 units, 2859 MW(e).

**TABLE 6. NUCLEAR ELECTRICITY PRODUCTION AND SHARE (1995-2022)**

Country	Nuclear Production [TWh] of Reactors Connected to the Grid (Latest in each year)															
	1995		2000		2005		2010		2015		2020		2021		2022	
	TW.h	% of Total	TW.h	% of Total	TW.h	% of Total	TW.h	% of Total	TW.h	% of Total	TW.h	% of Total	TW.h	% of Total	TW.h	% of Total
ARGENTINA	6.57	11.8	5.74	7.3	6.37	6.9	6.89	5.9	6.52	4.8	10.01	7.5	10.17	7.2	7.47	5.4
ARMENIA	0.00	NA	1.84	33.0	2.50	42.7	2.29	39.4	2.57	34.5	2.55	34.5	1.85	25.3	2.63	31.0
BELARUS	0.00	NA	0.00	NA	0.00	NA	0.00	NA	0.00	NA	0.34	1.0	5.42	14.1	4.41	11.9
BELGIUM	39.30	55.5	45.81	56.8	45.34	55.6	45.73	50.0	24.83	37.5	32.79	39.1	47.96	50.8	41.74	46.4
BRAZIL	2.33	1.0	5.59	1.9	9.20	2.5	13.77	3.1	13.89	2.8	13.24	2.5	13.86	2.4	13.74	2.5
BULGARIA	16.22	46.4	16.79	45.0	17.38	44.1	14.24	33.1	14.70	31.3	15.94	40.8	15.80	34.6	15.78	32.6
CANADA	93.98	17.3	69.12	11.8	86.83	14.5	85.50	15.1	95.64	16.6	92.17	14.6	86.78	13.9	81.72	12.9
CHINA	12.13	1.2	16.02	1.2	50.33	2.0	70.96	1.8	161.20	3.0	344.75	4.9	383.21	5.0	395.35	5.0
CZECH REP.	12.23	20.0	12.71	18.7	23.25	30.5	26.44	33.3	25.34	32.5	28.37	37.3	29.04	36.6	29.31	36.7
FINLAND	18.13	29.9	21.58	32.2	22.36	32.9	21.89	28.4	22.33	33.7	22.35	33.9	22.65	32.8	24.24	35.0
FRANCE	358.71	76.1	395.39	76.4	431.18	76.5	410.09	74.1	419.04	76.3	338.74	70.6	363.39	69.0	282.09	62.6
GERMANY	146.13	29.6	160.66	30.6	154.61	26.6	133.01	22.6	86.81	14.1	60.92	11.3	65.44	11.9	31.89	5.8
HUNGARY	13.20	42.3	13.35	40.6	13.02	37.2	14.66	42.1	14.96	52.7	15.18	48.0	15.12	46.8	14.95	47.0
INDIA	6.99	1.9	14.23	3.1	15.73	2.8	20.48	2.8	34.64	3.5	40.37	3.3	39.76	3.2	41.97	3.1
IRAN,ISL.REP	0.00	NA	0.00	NA	0.00	NA	0.00	NA	3.20	1.3	5.79	1.7	3.24	0.9	6.01	1.7
JAPAN	275.51	33.4	306.24	33.8	280.50	29.3	280.25	29.2	4.35	0.5	43.10	5.1	61.30	7.2	51.91	6.1
KAZAKHSTAN	0.08	0.1	0.00	0.0	0.00	NA	0.00	0.0	0.00	0.0	0.00	NA	0.00	NA	0.00	NA
KOREA,REP.OF	60.21	36.1	103.54	40.7	137.59	44.7	141.89	32.2	157.20	31.7	182.58	29.6	150.46	28.0	167.51	30.4
LITHUANIA	10.64	86.1	7.42	73.9	9.54	70.3	0.00	0.0	0.00	0.0	0.00	NA	0.00	NA	0.00	NA
MEXICO	7.53	6.0	7.92	3.9	10.32	5.0	5.59	3.6	11.18	6.8	10.86	4.9	11.61	5.3	10.54	4.5
NETHERLANDS	3.78	4.9	3.70	4.3	3.77	3.9	3.75	3.4	3.86	3.7	3.89	3.2	3.61	3.1	3.93	3.3
PAKISTAN	0.46	0.9	0.90	1.6	2.41	2.8	2.56	2.6	4.33	4.4	9.64	7.1	15.83	11.5	22.22	16.2
ROMANIA	0.00	NA	5.05	10.9	5.11	8.6	10.70	19.5	10.71	17.3	10.58	19.9	10.40	18.5	10.22	19.4
RUSSIA	91.59	11.8	120.10	15.0	137.64	15.8	159.41	17.1	182.81	18.6	201.82	20.6	208.44	20.0	209.52	19.6
SLOVAKIA	11.35	44.1	15.17	53.4	16.34	56.1	13.54	51.8	14.08	55.9	14.36	53.1	14.65	52.3	14.83	59.2
SLOVENIA	4.57	39.5	4.55	37.4	5.61	42.4	5.38	37.3	5.37	38.0	6.04	37.8	5.42	36.0	5.31	42.8

**TABLE 6. NUCLEAR ELECTRICITY PRODUCTION AND SHARE (1995-2022) — continued**

Country	Nuclear Production [TWh] of Reactors Connected to the Grid (Latest in each year)															
	1995	2000	2005	2010	2015	2020	2021	2022	1995	2000	2005	2010	2015	2020	2021	2022
	TW.h	TW.h	TW.h	TW.h	TW.h	TW.h	TW.h	TW.h	% of Total	% of Total	% of Total	% of Total	% of Total	% of Total	% of Total	% of Total
SOUTH AFRICA	11.29	13.00	12.24	12.90	10.97	11.62	12.20	10.12	6.5	6.6	5.5	5.2	4.7	5.9	6.0	4.9
SPAIN	53.49	59.49	54.99	59.26	54.76	55.80	54.22	56.15	34.1	27.6	19.6	20.1	20.3	22.2	20.8	20.3
SWEDEN	67.17	54.81	69.58	55.73	54.46	47.36	51.43	50.02	46.6	39.0	44.9	38.1	34.3	29.4	30.8	29.4
SWITZERLAND	23.58	39.9	22.11	25.34	22.16	23.05	18.59	23.18	39.9	38.2	38.0	38.0	33.5	32.9	28.8	36.4
UAE	0.00	NA	0.00	0.00	0.00	NA	10.13	19.30	0.00	NA	0.00	NA	NA	1.1	6.8	6.8
UK	70.64	25.4	72.99	56.85	63.89	45.67	41.79	43.60	25.4	20.0	20.0	15.6	18.9	14.5	14.8	14.2
UKRAINE	65.78	37.8	72.56	83.95	82.41	71.55	81.13	NA	37.8	47.3	48.5	48.1	56.5	51.2	55.0	NA
USA	673.52	22.5	755.55	807.08	798.01	789.92	771.64	772.22	22.5	19.8	19.3	19.6	19.5	19.7	19.6	18.2
<b>TOTAL</b>	<b>2190.94</b>	<b>2443.85</b>	<b>2626.34</b>	<b>2629.82</b>	<b>2441.34</b>	<b>2553.24</b>	<b>2653.34</b>	<b>2486.83</b>								

Note: The world total includes the following data from Taiwan, China

33.80	28.8	37.00	21.2	38.40	17.9	39.89	19.3	35.14	16.3	30.34	12.7	26.82	10.8	22.92	9.1
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The total electricity production does not include Ukrainian reactor units as operational data were not submitted for the year 2022 by the time of publication.



**TABLE 7. ANNUAL CONSTRUCTION STARTS AND CONNECTIONS TO THE GRID (1954-2022)**

Year	Construction Starts		Connections to the Grid		Reactors in Operation	
	Units	MW(e)	Units	MW(e)	Units	MW(e)
1954	1	60	1	5	1	5
1955	8	260			1	5
1956	5	577	1	35	2	65
1957	13	1836	3	119	5	209
1958	5	461	1	35	6	269
1959	7	976	5	176	11	548
1960	11	1010	4	438	15	1087
1961	7	1529			15	1088
1962	8	1379	9	955	24	2207
1963	5	1722	9	500	32	2661
1964	9	2792	8	1022	39	3670
1965	8	3268	8	1879	47	5894
1966	14	6952	8	1528	54	7523
1967	25	16287	11	2165	63	9579
1968	37	26819	7	1029	68	10632
1969	13	9398	9	3647	76	14080
1970	37	25552	6	3410	82	17615
1971	18	12659	16	7711	98	24304
1972	28	21163	16	8880	112	32781
1973	30	24842	19	12544	130	43645
1974	38	35230	26	17933	153	61005
1975	38	36434	15	10289	168	70398
1976	43	41845	19	14232	185	83977
1977	23	21849	18	13199	198	96187
1978	23	21781	20	15782	217	111725
1979	27	23055	8	6909	224	117799

**TABLE 7. ANNUAL CONSTRUCTION STARTS AND CONNECTIONS TO THE GRID (1954-2022) — continued**

Year	Construction Starts		Connections to the Grid		Reactors in Operation	
	Units	MW(e)	Units	MW(e)	Units	MW(e)
1980	20	19195	21	15088	244	138022
1981	17	16029	23	20352	266	153820
1982	18	19165	19	15511	283	168302
1983	15	11936	23	19211	305	187744
1984	13	11332	33	31079	335	218437
1985	19	15337	33	31276	363	245779
1986	8	7286	27	27134	389	272074
1987	13	11434	22	22191	407	295812
1988	7	7722	14	13574	416	305212
1989	6	4018	12	10536	420	311942
1990	5	3267	10	10543	416	318253
1991	2	2246	4	3719	415	321924
1992	3	3094	6	4809	418	325261
1993	4	3562	9	9012	427	333914
1994	2	1334	5	4302	429	336904
1995	0		5	3536	434	341387
1996	1	610	6	7080	438	347281
1997	5	4453	3	3557	434	347880
1998	3	2150	4	3020	430	344900
1999	4	4540	4	2729	432	347353
2000	6	5336	6	3178	435	349984
2001	1	1304	3	2696	438	352715
2002	6	3440	6	5209	439	357481
2003	1	202	2	1627	437	359827
2004	2	1336	5	4785	437	364539
2005	3	2907	4	3823	440	368035
2006	5	4769	2	1492	434	369491

**TABLE 7. ANNUAL CONSTRUCTION STARTS AND CONNECTIONS TO THE GRID (1954-2022) — continued**

Year	Construction Starts		Connections to the Grid		Reactors in Operation	
	Units	MW(e)	Units	MW(e)	Units	MW(e)
2007	7	5315	3	1842	436	369483
2008	10	10588			434	368266
2009	12	13626	2	1068	433	367406
2010	16	15968	5	3776	436	370930
2011	4	1888	6	3993	414	350655
2012	7	7019	3	2963	412	350942
2013	10	11309	4	4060	409	349472
2014	2	2420	5	4660	413	353959
2015	9	8624	10	9450	416	360504
2016	3	3014	10	9531	422	368188
2017	5	4896	4	3373	423	369418
2018	5	6364	9	10323	424	374110
2019	5	6046	6	5174	417	369590
2020	5	5115	5	5561	414	369804
2021	10	8536	6	5218	410	366790
2022	8	9125	6	7400	411	370991

**TABLE 8. NUMBER OF NEW REACTORS CONNECTED TO THE GRID AND MEDIAN CONSTRUCTION TIME IN MONTHS**

Country	1991 to 1995		1996 to 2000		2001 to 2005		2006 to 2010		2011 to 2015		2016 to 2020		2021 to 2022	
	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months
ARGENTINA														
BELARUS														
BRAZIL			1	295							1	85		
BULGARIA	1	113												
CANADA	2	97												
CHINA	3	73			6	59	4	68	17	67	19	68	3	76
CZECH REP.			1	167	1	191								
FINLAND														
FRANCE	3	93	4	124										
INDIA	3	120	4	122	1	64	4	81	2	123	1	170	1	123
IRAN,ISL.REP														
JAPAN	10	46	3	42	4	47	1	53	1	222				
KOREA,REP.OF	2	61	5	56	4	54	1	51	3	56	2	103		
MEXICO	1	210												
PAKISTAN			1	83										
ROMANIA			1	161			1	290	1	64	2	67	1	68
RUSSIA	1	109			2	233	1	323	3	108	7	119		
SLOVAKIA			2	187										
UAE														
UK	1	80												
UKRAINE	1	113			2	227								
USA	1	221	1	272										
<b>WORLDWIDE</b>	<b>29</b>	<b>82</b>	<b>23</b>	<b>121</b>	<b>20</b>	<b>59</b>	<b>12</b>	<b>77</b>	<b>28</b>	<b>68</b>	<b>34</b>	<b>91</b>	<b>6</b>	<b>89</b>

Note: Construction time is measured from the first pouring of concrete to the connection of the unit to the grid.

**TABLE 9. CONSTRUCTION STARTS DURING 2022**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation
					Thermal	Gross					
CHINA	CN -74	HAIYANG-3	PWR	CAP1000	3400	1253	1161	SDNPC	2022-7		
	CN -76	LUFENG-5	PWR	HPR1000	3180	1200	1116	LFNPC	2022-9		
	CN -72	SANMEN-3	PWR	CAP1000	3400	1251	1163	SMNPC	2022-6		
	CN -68	TIANWAN-8	PWR	VVER-1200/V491	3200	1265	1171	JNPC	2022-2		
	CN -71	XUDABU-4	PWR	VVER-1200/V491	3200	1274	1200	LNPC	2022-5		
EGYPT	EG -2	ELDABAA-2	PWR	VVER-1200	3200	1200	1100	NPPA	2022-11		
	EG -1	ELDABAA-1	PWR	VVER-1200	3200	1200	1100	NPPA	2022-7		
TÜRKIYE	TR -4	AKKUYU-4	PWR	VVER V-509	3200	1200	1114	ANC	2022-7		

Note: During 2022, construction started on 8 reactors (9125 MW(e)).

**TABLE 10. CONNECTIONS TO THE GRID DURING 2022**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Construction Start	First Critically	Grid Connection
					Thermal	Gross					
CHINA	CN -52	FUQING-6	PWR	HPR1000	3060	1150	FQNP	NPIC	2015-12	2021-12	2022-1
	CN -50	HONGYANHE-6	PWR	ACPR-1000	2905	1119	LHNPC	DEC	2015-7	2022-4	2022-5
FINLAND	FI-5	OLKILUOTO-3	PWR	EPR	4300	1720	TVO	ORANO	2005-8	2021-12	2022-3
KOREA, REP. OF	KR -27	SHIN-HANUL-1	PWR	APR-1400	3983	1455	KHNP	DHICKOPC	2012-7	2022-5	2022-6
PAKISTAN	PK -7	KANUPP-3	PWR	ACP-1000	3060	1100	PAEC	CZEC	2016-5	2022-2	2022-3
UAE	AE -03	BARAKAH-3	PWR	APR-1400	3983	1417	NAWAH	KEPCO	2014-9	2022-9	2022-10

Note: During 2022, 6 reactors (7400 MW(e)) were newly connected to the grid.

**TABLE 11. SCHEDULED CONNECTIONS TO THE GRID DURING 2023**

Country	Code	Reactor Name	Type	Model	Capacity [MW]			Operator	NSSS Supplier	Construction Start	First Critically	Grid Date
					Thermal	Gross	Net					
BELARUS	BY -2	BELARUSIAN-2	PWR	VVER V-491	3200	1194	1110	BelNPP	JSC ASE	2014-4	2023-3	2023-5
CHINA	CN -55	FANGCHENGANG-3	PWR	HPR1000	3150	1180	1000	GFNPC	CFHI	2015-12	2022-12	2023-1
SLOVAKIA	SK -10	MOCHOVCE-3	PWR	VVER V-213	1375	471	440	SE	ŠKODA	1987-1	2022-10	2023-1
USA	US -5025	VOGTLE-3	PWR	AP-1000	3400	1250	1117	SOUTHERN	WH	2013-3	2023-3	2023-3

Note: During 2022, 4 reactors (3667 MW(e)) are expected to achieve connection to grid.

**TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2022**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Expected Construction Start
					Thermal	Gross			
CHINA	CN -900	BAMAOSHAN	PWR	CPR-1000	2905	1080	900		
	CN -904	FANGCHENGANG-5	PWR				1000		
	CN -905	FANGCHENGANG-6	PWR				1000		
	CN -75	HAIYANG-4	PWR	CAP1000	3400	1253	1161	SDNPC	2023-4
	CN -910	HONGSHIDING-1	PWR				0		
	CN -911	HONGSHIDING-2	PWR	ACPR1000			0	HSDNPC	
	CN -912	JIYANG-1	PWR				1000		
	CN -913	JIYANG-2	PWR				1000		
	CN -914	JIYANG-3	PWR				1000		
	CN -915	JIYANG-4	PWR				1000		
	CN -934	LIANJIANG-1	PWR	CAP1000		1250	1160	SDNPC	
	CN -935	LIANJIANG-2	PWR	CAP1000		1250	1160	SDNPC	
	CN -916	LUFENG-1	PWR	CPR-1000			1000	LFNPC	
	CN -917	LUFENG-2	PWR	CPR-1000			1000	LFNPC	
	CN -77	LUFENG-6	PWR	HPR1000		3180	1116	LFNPC	
	CN -918	PENGZE-1	PWR				1250		
	CN -919	PENGZE-2	PWR				1250		
	CN -920	PENGZE-3	PWR				1250		
	CN -921	PENGZE-4	PWR				1250		
	CN -73	SANMIEN-4	PWR	CAP1000		3400	1163	SMNPC	2023-3
	CN -924	SANMING-1	FBR	BN-800		2100	860	FSNPC	
	CN -925	SANMING-2	FBR	BN-800		2100	860	FSNPC	
	CN -59	SN-1	PWR	CAP1400			1534	SNPDP	
	CN -80	SN-2	PWR	CAP1400			1534	SNPDP	
	CN -926	TAOHUANJIANG-1	PWR				0		
	CN -927	TAOHUANJIANG-2	PWR				0		
	CN -928	XIANNING-1	PWR				0		



**TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]			Operator	NSSS Supplier	Expected Construction Start
					Thermal	Gross	Net			
CHINA	CN -929	XIANNING-2	PWR				0			
	CN -930	XUDABU-1	PWR	CPR-1000	2905	1080	1000	LNPC	DEC	
	CN -981	XUDABU-2	PWR	CPR-1000	2905	1080	1000	LNPC	DEC	
	CN -932	ZHANGZHOU-3	PWR	HPR1000		1212	1126	ZGZEC		
	CN -933	ZHANGZHOU-4	PWR	HPR1000		1212	1126	ZGZEC		
EGYPT	EG -3	ELDABAA-3	PWR	VVER-1200	3200	1200	1100	NPPA	JSC ASE	2023-5
	FI -6	HANHIKIVI-1	PWR	VVER V-522	3200		1200	FV	AEM	
FINLAND	FI -5	PAKS-5	PWR	VVER V-527	3200	1265	1185	PAKS II	AEM	
	HU -6	PAKS-6	PWR	VVER V-527	3200	1265	1185	PAKS II	AEM	
INDIA	IN -33	GORAKHPUR-1	PHWR	PHWR-700		700	630	NPCIL		
	IN -34	GORAKHPUR-2	PHWR	PHWR-700		700	630	NPCIL		
	IN -17	KAIGA-5	PHWR		2166	700	630	NPCIL	NPCIL	
IRAN/ISL.REP	IN -18	KAIGA-6	PHWR		2166	700	630	NPCIL	NPCIL	
	IR -5	BUSHEHR-3	PWR	VVER V-528	3000	1000	915	NPPDCO	JSC ASE	
JAPAN	IR -9	DARKHOVAIN	PWR	IR-360	1113	360	330	NPPDCO		
	JP -76	HAMAOKA-6	BWR	ABWR	3926	1400	1350	CHUBU		
	JP -69	HIGASHI DORI-1 (TEPCO)	BWR	ABWR	3926	1385	1343	TEPCO	H/G	
	JP -74	HIGASHI DORI-2 (TEPCO)	BWR	ABWR	3926	1385	1343	TEPCO		
	JP -72	HIGASHI DORI-2 (TOHOKU)	BWR	ABWR	3926	1385	1067	TOHOKU		
	JP -62	KAMINOSEKI-1	BWR	ABWR	3926	1373	1325	CHUGOKU		
RUSSIA	JP -63	KAMINOSEKI-2	BWR	ABWR	3926	1373	1325	CHUGOKU		
	JP -75	SENDAI-3	PWR	APWR	4466	1590	1590	KYUSHU		
	JP -67	TSURUGA-3	PWR	APWR	4466	1538	1475	JAPCO	MHI	
	JP -68	TSURUGA-4	PWR	APWR	4466	1538	1475	JAPCO	MHI	
	RU -171	BALTIC-2	PWR	VVER V-491	3200	1194	1109	REA	AEM	
	RU -202	BASHKIR-1	PWR	VVER V-510	3300	1255	1115	REA	AEM	
	RU -203	BASHKIR-2	PWR	VVER V-510	3300	1255	1115	REA	AEM	

**TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]			Operator	NSSS Supplier	Expected Construction Start
					Thermal	Gross	Net			
RUSSIA	RU -207	BELOYARSK-5	FBR	BN-1200	3000	1220	0	REA	AEM	
	RU -177	CENTRAL-1	PWR	WVER V-510	3300	1255	0	REA	AEM	
	RU -178	CENTRAL-2	PWR	WVER V-510	3300	1255	0	REA	AEM	
	RU -175	KOLA 2-1	PWR	-	3200	1200	0	REA	AEM	
	RU -176	KOLA 2-2	PWR	-	3200	1200	1100	REA	AEM	
	RU -190	KURSK 2-3	PWR	WVER V-510	3300	1255	1200	REA	AEM	
	RU -191	KURSK 2-4	PWR	WVER V-510	3300	1255	1200	REA	AEM	
	RU -165	LENINGRAD 2-3	PWR	WVER V-491	3200	1199	1150	REA	AEM	2025-2
	RU -167	LENINGRAD 2-4	PWR	WVER V-491	3200	1199	1150	REA	AEM	2023-10
	RU -181	NIZHEGORODSK-1	PWR		3300	1255	1175	REA	AEM	2023-10
	RU -182	NIZHEGORODSK-2	PWR		3300	1255	1175	REA	AEM	
	RU -187	SEVERSK-1	PWR	WVER V-510	3300	1255	0	REA	AEM	
	RU -188	SEVERSK-2	PWR	WVER V-510	3300	1255	0	REA	AEM	
	RU -204	SOUTH URALS-1	FBR	BN-1200	3000	1220	0	REA	AEM	
	RU -205	SOUTH URALS-2	FBR	BN-1200	3000	1220	0	REA	AEM	

Note: Status as of 31 December 2022, 69 reactors (60797 MW(e)) were known as planned.

**TABLE 13. REACTORS UNDER CONSTRUCTION, 31 DEC. 2022**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation
					Thermal	Gross						
ARGENTINA	AR-4	CAREM25	PWR	CAREM Prototype	100	29	25 CNEA	CNEA	2015-8			
	BD-1	ROOPPUR-1	PWR	VVER V-523	3200	1200	1080 NPCBL	AEM	2017-11			
BANGLADESH	BD-2	ROOPPUR-2	PWR	VVER V-523	3200	1200	1080 NPCBL	AEM	2018-7			
	BY-2	BELARUSIAN-2	PWR	VVER V-491	3200	1194	1110 BelNPP	JSC ASE	2014-4	2023-3	2023-5	
BRAZIL	BR-3	ANGRA-3	PWR	PRE KONVOI	3900	1405	1340 ELETRONU	KWU	2010-5	2028-3	2028-3	2028-7
	CN-65	CHANGJIANG-3	PWR	HRP1000	3190	1197	1000 CHG	CFHI	2021-3			
CHINA	CN-66	CHANGJIANG-4	PWR	HRP1000	3190	1200	1000 CHG	CFHI	2021-12			
	CN-55	FANGCHENGANG-3	PWR	HRP1000	3150	1180	1000 GFNPC	CFHI	2015-12	2022-12	2023-1	2023-3
	CN-56	FANGCHENGANG-4	PWR	HRP1000	3150	1180	1000 GFNPC	CFHI	2016-12			
	CN-74	HAIYANG-3	PWR	CAP1000	3400	1253	1161 SDNPC	SNERDI	2022-7			
	CN-69	LINGLONG-1	PWR	ACP100	385	125	100 HNPC	CFHI	2021-7			
	CN-76	LUFENG-5	PWR	HRP1000	3180	1200	1116 LFNPC	CFHI	2022-9			
	CN-63	SANAOCUN-1	PWR	HRP1000	3180	1210	1117 CGGNP	CFHI	2020-12			
	CN-64	SANAOCUN-2	PWR	HRP1000	3180	1210	1117 CGGNP	CFHI	2021-12			
	CN-72	SANMEN-3	PWR	CAP1000	3400	1251	1163 SMNPC	Shanghai	2022-6			
	CN-61	TAIPINGLING-1	PWR	HRP1000	3190	1200	1116 HZNP	DEC	2019-12			
	CN-62	TAIPINGLING-2	PWR	HRP1000	3190	1202	1116 HZNP	CFHI	2020-10			
	CN-67	TIANWAN-7	PWR	VVER-1200/V491	3200	1265	1171 JNPC	Atomsmash	2021-5			
	CN-68	TIANWAN-8	PWR	VVER-1200/V491	3200	1265	1171 JNPC	Atomsmash	2022-2			
	CN-00	XIAPU-1	FBR	CFR600	1882	682	642 CNNC	CIAE(Chi)	2017-12			
	CN-78	XIAPU-2	FBR	CFR600	1882	682	642 CNNC	CIAE(Chi)	2020-12			
CN-70	XUDABU-3	PWR	VVER-1200/V491	3200	1274	1200 LNPC	Russian	2021-7				
CN-71	XUDABU-4	PWR	VVER-1200/V491	3200	1274	1200 LNPC	Atomsmash	2022-5				
CN-57	ZHANGZHOU-1	PWR	HRP1000	3180	1212	1126 ZGZEC	CFHI	2019-10				
CN-58	ZHANGZHOU-2	PWR	HRP-1000	3190	1212	1126 ZGZEC	CFHI	2020-9				
EGYPT	EG-2	EL DABAA-2	PWR	VVER-1200	3200	1200	1100 NPPA	JSC ASE	2022-11			
	EG-1	ELDABAA-1	PWR	VVER-1200	3200	1200	1100 NPPA	JSC ASE	2022-7			

**TABLE 13. REACTORS UNDER CONSTRUCTION, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]			Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation
					Thermal	Gross	Net						
FRANCE	FR-74	FLAMANVILLE-3	PWR	EPR	4300	1650	1630	EDF	ORANO	2007-12			
	IN-31	KAKRAPAR-4	PHWR	PHWR-700	2166	700	630	NPCIL	NPCIL	2010-11			
	IN-35	KUDANKULAM-3	PWR	VVER V-412	3000	1000	917	NPCIL	JSC ASE	2017-6			
INDIA	IN-36	KUDANKULAM-4	PWR	VVER V-412	3000	1000	917	NPCIL	JSC ASE	2017-10			
	IN-37	KUDANKULAM-5	PWR	VVERV412	3000	1000	917	NPCIL	JSC ASE	2021-6			
	IN-38	KUDANKULAM-6	PWR	VVERV412	3000	1000	917	NPCIL	JSC ASE	2021-12			
	IN-29	PFBR	FBR	Prototype	1253	500	470	BHAVINI		2004-10			
	IN-21	RAJASTHAN-7	PHWR	Horizontal Pre	2177	700	630	NPCIL	NPCIL	2011-7			
	IN-22	RAJASTHAN-8	PHWR	Horizontal Pre	2177	700	630	NPCIL	NPCIL	2011-9			
IRAN,ISL.REP	IR-2	BUSHEHR-2	PWR	V-528 VVER-100	3012	1057	974	NPPDCO	JSC ASE	2019-9			
JAPAN	JP-66	OHMA	BWR	ABWR	3926	1383	1328	EPDC	H/G	2010-5			
	JP-65	SHIMANE-3	BWR	ABWR	3926	1373	1325	CHUGOKU	HITACHI	2006-10			
KOREA,REP.OF	KR-29	SAEUL-3	PWR	APR-1400	3983	1400	1340	KHNP	DHICKOPC	2017-4			
	KR-30	SAEUL-4	PWR	APR-1400	3983	1400	1340	KHNP	DHICKOPC	2018-9			
RUSSIA	KR-28	SHIN-HANUL-2	PWR	APR-1400	3983	1400	1340	KHNP	DHICKOPC	2013-6			
	RU-208	BREST-OD-300	FBR	BREST-OD-300	700	320	300	SKnK	NA	2021-6			
	RU-166	KURSK 2-1	PWR	VVER V-510	3300	1255	1200	REA	AEM	2018-4	2024-11	2025-3	2025-12
SLOVAKIA	RU-189	KURSK 2-2	PWR	VVER V-510	3300	1255	1200	REA	AEM	2019-5	2026-12	2027-3	2027-12
	SK-10	MOCHOVCE-3	PWR	VVER V-213	1375	471	440	SE	SKODA	1987-1	2022-10	2023-1	
TÜRKIYE	SK-11	MOCHOVCE-4	PWR	VVER V-213	1375	471	440	SE	SKODA	1987-1	2024-7	2024-8	2024-10
	TR-1	AKKUYU-1	PWR	VVER V-509	3200	1200	1114	ANJSC	AEM	2018-4			
	TR-2	AKKUYU-2	PWR	VVER V-509	3200	1200	1114	ANC	AEM	2020-4			
	TR-3	AKKUYU-3	PWR	VVER V-509	3200	1200	1114	ANC	AEM	2021-3			
UAE	TR-4	AKKUYU-4	PWR	VVER V-509	3200	1200	1114	ANC	AEM	2022-7			
	AE-04	BARAKAH-4	PWR	APR-1400	3983	1417	1310	NAWAH	KEPCO	2015-7			
UK	GB-25A	HINKLEY POINT C-1	PWR	EPR-1750	4524	1720	1630	EDF-CGN	ORANO	2018-12			
	GB-25B	HINKLEY POINT C-2	PWR	EPR-1750	4524	1720	1630	EDF-CGN	ORANO	2019-12			

**TABLE 13. REACTORS UNDER CONSTRUCTION, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation
					Thermal	Gross						
UKRAINE	UA -51	KHIMELNITSKI-3	PWR	VVER	3132	1089	1035 NNEG	JSC ASE	1986-3			
	UA -52	KHIMELNITSKI-4	PWR	VVER	3132	1089	1035 NNEG	JSC ASE	1987-2			
USA	US -5025	VOGTLE-3	PWR	AP-1000	3400	1250	1117 SOUTHERN	WH	2013-3	2023-3	2023-3	2023-7
	US -5026	VOGTLE-4	PWR	AP-1000	3400	1250	1117 SOUTHERN	WH	2013-11			

Note: Status as of 31 December 2022, 58 reactors (59334 MW(e)) were under construction.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA	
					Thermal	Gross									Net
ARGENTINA	AR -1	ATUCHA-1	PHWR	PHWR KWU	1179	362	340 NASA	SIEMENS	1968-6	1974-3	1974-6	74.4	75.4	-	
	AR -2	EMBALSE	PHWR	CANDU 6	2064	656	608 NASA	AECL	1974-4	1983-4	1984-1	78.7	79	-	
	AR -3	ATUCHA-2	PHWR	PHWR KWU	2160	745	693 NASA	SIEMENS	1981-7	2014-6	2016-5	48.9	48.9	-	
ARMENIA	AM -19	ARMENIAN-2	PWR	VVER V-270	1375	448	416 ANPPCJSC	FAEA	1975-7	1980-1	1980-5	65.1	67.3	-	
BELARUS	BY -1	BELARUSIAN-1	PWR	VVER V-491	3200	1194	1110 BeINPP	JSC ASE	2013-11	2020-11	2021-6	50.3	50.3	-	
BELGIUM	BE -2	DOEL-1	PWR	WH 2LP	1311	454	445 EBL+EDF	ACECOWE	1969-7	1974-8	1975-2	83.7	84.5	-	
	BE -3	TIHANGE-1	PWR	Framatome 3 lo	2873	1009	962 EBL	ACLIF	1970-6	1975-3	1975-10	79.7	81.7	-	
	BE -4	DOEL-2	PWR	WH 2LP	1311	454	445 EBL+EDF	ACECOWE	1971-9	1975-8	1975-12	81.3	82.1	-	
	BE -6	TIHANGE-2	PWR	WH 3LP	3064	1055	1008 EBL	FRAMACEC	1976-4	1982-10	1983-6	80	80.9	-	
	BE -7	DOEL-4	PWR	WH 3LP	2988	1090	1038 EBL+EDF	ACECOWE	1978-12	1985-4	1985-7	83.9	84.5	-	
	BE -8	TIHANGE-3	PWR	WH 3LP	3000	1089	1038 EBL	ACECOWE	1978-11	1985-6	1985-9	86.2	87.5	-	
	BRAZIL	BR -1	ANGRA-1	PWR	WH 2LP	1882	640	609 ELETROBR	WH	1971-5	1982-4	1985-1	64.2	68.9	-
		BR -2	ANGRA-2	PWR	PRE KONVOI	3764	1350	1275 ELETRONU	KWU	1976-1	2000-7	2001-2	86.4	87.5	-
BULGARIA	BG -5	KOZLODUY-5	PWR	VVER V-320	3120	1040	1003 KNPP	AEE	1980-7	1987-11	1988-12	73.8	75.8	DH	
	BG -6	KOZLODUY-6	PWR	VVER V-320	3120	1040	1003 K N N P	AEE	1982-4	1991-8	1993-12	79.3	81	DH	
CANADA	CA -10	BRUCE-3	PHWR	CANDU 750A	2550	865	770 BRUCEPOW	OH/AECL	1972-7	1977-12	1978-2	74.4	74.9	-	
	CA -11	BRUCE-4	PHWR	CANDU 750A	2550	868	769 BRUCEPOW	OH/AECL	1972-9	1978-12	1979-1	74.5	75.1	-	
	CA -13	PICKERING-5	PHWR	CANDU 500B	1744	540	516 OFG	OH/AECL	1974-11	1982-12	1983-5	74	74.7	-	
	CA -14	PICKERING-6	PHWR	CANDU 500B	1744	540	516 OFG	OH/AECL	1975-10	1983-11	1984-2	78.9	79.6	-	
	CA -15	PICKERING-7	PHWR	CANDU 500B	1744	540	516 OFG	OH/AECL	1976-3	1984-11	1985-1	78.3	78.8	-	
CA -16	PICKERING-8	PHWR	CANDU 500B	1744	540	516 OFG	OH/AECL	1976-9	1986-1	1986-2	75.9	76.5	-		
CA -17	POINT LEPREAU	PHWR	CANDU 6	2180	705	660 NBEPC	AECL	1975-5	1982-9	1983-2	72.1	72.8	-		
CA -18	BRUCE-5	PHWR	CANDU 750B	2832	872	817 BRUCEPOW	OH/AECL	1978-5	1984-12	1985-2	85.4	85.9	-		

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Net	Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA	
					Thermal	Gross										
CANADA	CA -19	BRUCE-6	PHWR	CANDU 750B	2690	891	817	BRUCEPOW	OH/AECL	1978-1	1984-6	1984-9	77	77.6	-	
	CA -20	BRUCE-7	PHWR	CANDU 750B	2832	872	817	BRUCEPOW	OH/AECL	1979-5	1986-2	1986-4	85.9	86.6	-	
	CA -21	BRUCE-8	PHWR	CANDU 750B	2690	872	817	BRUCEPOW	OH/AECL	1979-7	1987-3	1987-5	84.4	85.2	-	
	CA -22	DARLINGTON-1	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1982-4	1990-12	1992-11	82.7	83.6	-	
	CA -23	DARLINGTON-2	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1981-9	1990-1	1990-10	71.4	72.3	-	
	CA -24	DARLINGTON-3	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1984-9	1992-12	1993-2	79.6	80.4	-	
	CA -25	DARLINGTON-4	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1985-7	1993-4	1993-6	85.8	86.5	-	
	CA -4	PICKERING-1	PHWR	CANDU 500A	1744	542	515	OPG	OH/AECL	1966-6	1971-4	1971-7	67.9	68.2	-	
	CA -7	PICKERING-4	PHWR	CANDU 500A	1744	542	515	OPG	OH/AECL	1968-5	1973-5	1973-6	68.6	69	-	
	CA -8	BRUCE-1	PHWR	CANDU 791	2620	868	774	BRUCEPOW	OH/AECL	1971-6	1977-1	1977-9	73.1	73.5	-	
	CA -9	BRUCE-2	PHWR	CANDU 791	2620	836	777	BRUCEPOW	OH/AECL	1970-12	1976-9	1977-9	70.4	70.9	-	
	CHINA	CN -1	QINSHAN-1	PWR	CNP-300	966	330	326	CNNO	CNNC	1985-3	1991-12	1994-4	82.7	83.6	-
		CN -10	TIANWAN-1	PWR	VVER V-428	3000	1060	1000	JNPC	IZ	1999-10	2006-5	2007-5	87.7	87.8	-
		CN -11	TIANWAN-2	PWR	VVER V-428	3000	1060	1000	JNPC	IZ	2000-9	2007-5	2007-8	89.5	89.7	-
		CN -12	LING AO-3	PWR	CPR-1000	2905	1086	1007	DNMC	DEC	2005-12	2010-7	2010-9	87.8	88.1	-
		CN -13	LING AO-4	PWR	CPR-1000	2905	1086	1007	DNMC	DEC	2006-6	2011-5	2011-8	90.3	90.8	-
		CN -14	QINSHAN 2-3	PWR	CNP-600	1930	660	619	NPQJVC	CNNC	2006-4	2010-8	2010-10	91.4	91.5	-
		CN -15	QINSHAN 2-4	PWR	CNP-600	1930	660	619	NPQJVC	CNNC	2007-1	2011-11	2011-12	90.9	91.1	-
		CN -16	HONGYANHE-1	PWR	CPR-1000	2905	1119	1061	LHNPC	DEC	2007-8	2013-2	2013-6	89.1	90.2	-
		CN -17	HONGYANHE-2	PWR	CPR-1000	2905	1119	1061	LHNPC	DEC	2008-3	2013-11	2014-5	87.4	88.7	-
		CN -18	NINGDE-1	PWR	CPR-1000	2905	1089	1018	NDNP	DEC	2008-2	2012-12	2013-4	89.1	89.2	-
	CN -19	NINGDE-2	PWR	CPR-1000	2905	1089	1018	NDNP	SHE	2008-11	2014-1	2014-5	91.7	91.8	-	
	CN -2	DAYA BAY-1	PWR	M310	2905	984	944	DNMC	FRAM	1987-8	1993-8	1994-2	86.7	89	-	

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA	
					Thermal	Gross									Net
CHINA	CN -20	FUQING-1	PWR	CNP-1000	2905	1089	1000	FQNP	NPIC	2008-11	2014-8	2014-11	90	90.3	-
	CN -21	FUQING-2	PWR	CNP-1000	2905	1089	1000	FQNP	NPIC	2009-6	2015-8	2015-10	90.2	90.6	-
	CN -22	YANGJIANG-1	PWR	CPR-1000	2905	1086	1000	YJNPC	CFHI	2008-12	2013-12	2014-3	90.8	90.9	-
	CN -23	YANGJIANG-2	PWR	CPR-1000	2905	1086	1000	YJNPC	CFHI	2009-6	2015-3	2015-6	91.5	91.6	-
	CN -24	FANGJIASHAN-1	PWR	CPR-1000	2905	1089	1012	QNPC	NPIC	2008-12	2014-11	2014-12	91.9	92.3	-
	CN -25	FANGJIASHAN-2	PWR	CPR-1000	2905	1089	1012	QNPC	NPIC	2009-7	2015-1	2015-2	91.4	92	-
	CN -26	HONGYANHE-3	PWR	CPR-1000	2905	1119	1061	LHNPC	DEC	2009-3	2015-3	2015-8	89.3	90.9	-
	CN -27	HONGYANHE-4	PWR	CPR-1000	2905	1119	1061	LHNPC	DEC	2009-8	2016-4	2016-6	89.5	91	-
	CN -28	SANMEN-1	PWR	AP-1000	3400	1251	1157	SMNPC	WHMHI	2009-4	2016-6	2018-9	90.5	91.4	-
	CN -29	SANMEN-2	PWR	AP-1000	3400	1251	1157	SMNPC	WHMHI	2009-12	2018-8	2018-11	72.5	73.6	-
	CN -3	DAYA BAY-2	PWR	M310	2905	984	944	DNMC	FRAM	1988-4	1994-2	1994-5	86.8	87.9	-
	CN -30	HAIYANG-1	PWR	AP-1000	3415	1250	1170	SDNPC	WH	2009-9	2018-8	2018-10	92.2	93.3	-
	CN -31	HAIYANG-2	PWR	AP-1000	3415	1250	1170	SDNPC	WH	2010-6	2018-10	2019-1	94.3	95.1	-
	CN -32	TAISHAN-1	PWR	EPR-1750	4590	1750	1660	TNPJVC	ORANO	2009-11	2018-6	2018-12	61.7	62.3	-
	CN -33	TAISHAN-2	PWR	EPR-1750	4590	1750	1660	TNPJVC	ORANO	2010-4	2019-6	2019-9	79.5	80.3	-
	CN -34	NINGDE-3	PWR	CPR-1000	2905	1089	1018	NDNP	CFHI	2010-1	2015-3	2015-6	92	92	-
	CN -35	NINGDE-4	PWR	CPR-1000	2905	1089	1018	NDNP	CFHI	2010-9	2016-3	2016-7	93	93	-
	CN -36	CHANGJIANG-1	PWR	CNP-600	1930	650	601	HNPC	DEC	2010-4	2015-11	2015-12	90.4	90.4	-
	CN -37	CHANGJIANG-2	PWR	CNP-600	1930	650	601	HNPC	DEC	2010-11	2016-6	2016-8	89.2	89.2	-
	CN -38	FANGCHENGANG-1	PWR	CPR-1000	2905	1086	1000	GFNPC	DEC	2010-7	2015-10	2016-1	92.8	92.9	-
	CN -39	FANGCHENGANG-2	PWR	CPR-1000	2905	1086	1000	GFNPC	DEC	2010-12	2016-7	2016-10	93.2	93.2	-
	CN -4	QINSHAN 2-1	PWR	CNP-600	1930	650	623	NPQJVC	CNNC	1996-6	2002-2	2002-4	84.6	84.7	-
	CN -40	YANGJIANG-3	PWR	CPR-1000	2905	1086	1000	YJNPC	CFHI	2010-11	2015-10	2016-1	92.6	92.8	-

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.



**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA	
					Thermal	Gross									Net
CHINA	CN -41	YANGJIANG-4	PWR	CPR-1000	2905	1086	1000	YJNPC	CFHI	2012-11	2017-1	2017-3	90.9	91	-
	CN -42	FUQING-3	PWR	CNP-1000	2905	1089	1000	FQNP	NPIC	2010-12	2016-9	2016-10	91	91.4	-
	CN -43	FUQING-4	PWR	CNP-1000	2905	1089	1000	FQNP	NPIC	2012-11	2017-7	2017-9	90.4	90.8	-
	CN -44	SHIDAO BAY-1	HTGR	HTR-PM	500	211	200	HSNPC	TSINGHUA	2012-12	2021-12		0	0	-
	CN -45	TIANWAN-3	PWR	VVER V-428M	3000	1126	1060	JNPC	IZ	2012-12	2017-12	2018-2	90.8	91.5	-
	CN -46	TIANWAN-4	PWR	VVER V-428M	3000	1126	1060	JNPC	IZ	2013-9	2018-10	2018-12	92.2	92.3	-
	CN -47	YANGJIANG-5	PWR	ACPR-1000	2905	1086	1000	YJNPC	CFHI	2013-9	2018-5	2018-7	91.9	92.1	-
	CN -48	YANGJIANG-6	PWR	ACPR-1000	2905	1086	1000	YJNPC	CFHI	2013-12	2019-6	2019-7	92.8	92.8	-
	CN -49	HONGYANHE-5	PWR	ACPR-1000	2905	1119	1061	LHNPC	DEC	2015-3	2021-6	2021-7	90.4	91.5	-
	CN -5	QINSHAN 2-2	PWR	CNP-600	1930	650	610	NPQJVC	CNNC	1997-4	2004-3	2004-5	89.1	89.2	-
	CN -50	HONGYANHE-6	PWR	ACPR-1000	2905	1119	1061	LHNPC	DEC	2015-7	2022-5	2022-6	97.8	99.8	-
	CN -51	FUQING-5	PWR	HPR1000	3060	1150	1075	FQNP	NPIC	2015-5	2020-11	2021-1	82.8	83.7	-
	CN -52	FUQING-6	PWR	HPR1000	3060	1150	1075	FQNP	NPIC	2015-12	2022-1	2022-3	95.2	96.8	-
	CN -53	TIANWAN-5	PWR	CNP-1000	2905	1118	1060	JNPC	SHE	2015-12	2020-8	2020-9	91.6	92.8	-
	CN -54	TIANWAN-6	PWR	CNP-1000	2905	1118	1060	JNPC	CFHI	2016-9	2021-5	2021-6	91.3	91.7	-
	CN -6	LING AO-1	PWR	M310	2905	990	950	DNMC	FRAM	1997-5	2002-2	2002-5	89.5	89.8	-
	CN -7	LING AO-2	PWR	M310	2905	990	950	DNMC	FRAM	1997-11	2002-9	2003-1	90.5	90.9	-
	CN -8	QINSHAN 3-1	PHWR	CANDU 6	2064	728	677	TONPC	AECL	1998-6	2002-11	2002-12	90.2	90.7	-
	CN -9	QINSHAN 3-2	PHWR	CANDU 6	2064	728	677	TONPC	AECL	1998-9	2003-6	2003-7	91.1	91.5	-
	CZECH REP.	CZ -23	TEMELIN-1	PWR	VVER V-320	3120	1082	1027	CEZ	ŠKODA	1987-2	2000-12	2002-6	76.2	76.5
CZ -24		TEMELIN-2	PWR	VVER V-320	3120	1082	1029	CEZ	ŠKODA	1987-2	2002-12	2003-4	78.2	78.4	DH
CZ -4		DUKOVANY-1	PWR	VVER V-213	1444	500	468	CEZ	ŠKODA	1979-1	1985-2	1985-5	83.2	84.1	-
CZ -5		DUKOVANY-2	PWR	VVER V-213	1444	500	471	CEZ	ŠKODA	1979-1	1986-1	1986-3	81.7	82.7	-

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross								
CZECH REP.	CZ -8	DUKOVANY-3	PWR	VVER V-213	1444	500	468 CEZ	ŠKODA	1979-3	1986-11	1986-12	81.3	82.8	-
	CZ -9	DUKOVANY-4	PWR	VVER V-213	1444	500	471 CEZ	ŠKODA	1979-3	1987-6	1987-7	83.6	84.4	-
	FI -1	LOVIISA-1	PWR	VVER V-213	1500	531	507 FORTUMPH	AEE	1971-5	1977-2	1977-5	88.1	88.7	-
	FI -2	LOVIISA-2	PWR	VVER V-213	1500	531	507 FORTUMPH	AEE	1972-8	1980-11	1981-1	89.5	90.3	-
	FI -3	OLKILUOTO-1	BWR	AA-III, BWR-25	2500	920	890 TVO	ASEASTAL	1974-2	1978-9	1979-10	92.7	93.1	-
FINLAND	FI -4	OLKILUOTO-2	BWR	AA-III, BWR-25	2500	920	890 TVO	ASEASTAL	1975-11	1980-2	1982-7	93.1	93.7	-
	FI -5	OLKILUOTO-3	PWR	EPR	4300	1720	1600 TVO	ORANO	2005-8	2022-3		0	0	-
	FR -13	BUGEY-2	PWR	CP0	2785	945	910 EDF	FRAM	1972-11	1978-5	1979-3	71.8	74	-
	FR -14	BUGEY-3	PWR	CP0	2785	945	910 EDF	FRAM	1973-9	1978-9	1979-3	70.6	73.1	-
	FR -15	BUGEY-4	PWR	CP0	2785	917	880 EDF	FRAM	1974-6	1979-3	1979-7	73.5	75.6	-
FRANCE	FR -16	BUGEY-5	PWR	CP0	2785	917	880 EDF	FRAM	1974-7	1979-7	1980-1	72	74.4	-
	FR -17	ST. LAURENT B-1	PWR	CP2	2785	956	915 EDF	FRAM	1976-5	1981-1	1983-8	75.5	77.7	-
	FR -18	TRICASTIN-1	PWR	CP1	2785	955	915 EDF	FRAM	1974-11	1980-5	1980-12	75.3	78.2	-
	FR -19	TRICASTIN-2	PWR	CP1	2785	955	915 EDF	FRAM	1974-12	1980-8	1980-12	75.2	78.6	-
	FR -20	GRAVELINES-1	PWR	CP1	2785	951	910 EDF	FRAM	1975-2	1980-3	1980-11	73.9	75.8	-
	FR -21	GRAVELINES-2	PWR	CP1	2785	951	910 EDF	FRAM	1975-3	1980-8	1980-12	76.8	78.9	-
	FR -22	DAMPIERRE-1	PWR	CP1	2785	937	890 EDF	FRAM	1975-2	1980-3	1980-9	74.7	77.8	-
	FR -23	ST. LAURENT B-2	PWR	CP2	2785	956	915 EDF	FRAM	1976-7	1981-6	1983-8	73.9	77.7	-
	FR -25	TRICASTIN-3	PWR	CP1	2785	955	915 EDF	FRAM	1975-4	1981-2	1981-5	75.7	79.3	-
	FR -26	TRICASTIN-4	PWR	CP1	2785	955	915 EDF	FRAM	1975-5	1981-6	1981-11	78.6	81.4	-
	FR -27	GRAVELINES-3	PWR	CP1	2785	951	910 EDF	FRAM	1975-12	1980-12	1981-6	76	77.6	-
	FR -28	GRAVELINES-4	PWR	CP1	2785	951	910 EDF	FRAM	1976-4	1981-6	1981-10	77.9	79.4	-
	FR -29	DAMPIERRE-2	PWR	CP1	2785	937	890 EDF	FRAM	1975-4	1980-12	1981-2	75.8	77.5	-

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross								
FRANCE	FR -30	DAMPIERRE-3	PWR	CP1	2785	937	890 EDF	FRAM	1975-9	1981-1	1981-5	77.7	79.5	-
	FR -31	DAMPIERRE-4	PWR	CP1	2785	937	890 EDF	FRAM	1975-12	1981-8	1981-11	75.5	77.8	-
	FR -32	BLAYAIS-1	PWR	CP1	2785	951	910 EDF	FRAM	1977-1	1981-6	1981-12	76.2	79	-
	FR -33	BLAYAIS-2	PWR	CP1	2785	951	910 EDF	FRAM	1977-1	1982-7	1983-2	80.2	82.1	-
	FR -34	BLAYAIS-3	PWR	CP1	2785	951	910 EDF	FRAM	1978-4	1983-8	1983-11	78.4	80.3	-
	FR -35	BLAYAIS-4	PWR	CP1	2785	951	910 EDF	FRAM	1978-4	1983-5	1983-10	78.6	81.4	-
	FR -36	PALUEL-1	PWR	P4-REP 1300	3817	1382	1330 EDF	FRAM	1977-8	1984-6	1985-12	76	78.6	-
	FR -37	PALUEL-2	PWR	P4-REP 1300	3817	1382	1330 EDF	FRAM	1978-1	1984-9	1985-12	66.5	69.1	-
	FR -38	PALUEL-3	PWR	P4-REP 1300	3817	1382	1330 EDF	FRAM	1979-2	1985-9	1986-2	72.3	74.8	-
	FR -39	PALUEL-4	PWR	P4-REP 1300	3817	1382	1330 EDF	FRAM	1980-2	1986-4	1986-6	75.9	78	-
	FR -40	CHINON B-1	PWR	CP2	2785	954	905 EDF	FRAM	1977-3	1982-11	1984-2	76.5	78.6	-
	FR -41	CHINON B-2	PWR	CP2	2785	954	905 EDF	FRAM	1977-3	1983-11	1984-8	76.2	78.3	-
	FR -42	CRUAS-1	PWR	CP2	2785	956	915 EDF	FRAM	1978-8	1983-4	1984-4	76.4	78.9	-
	FR -43	CRUAS-2	PWR	CP2	2785	956	915 EDF	FRAM	1978-11	1984-9	1985-4	76.8	80.3	-
	FR -44	CRUAS-3	PWR	CP2	2785	956	915 EDF	FRAM	1979-4	1984-5	1984-9	76.5	80.2	-
	FR -45	CRUAS-4	PWR	CP2	2785	956	915 EDF	FRAM	1979-10	1984-10	1985-2	74.9	78	-
	FR -46	FLAMANVILLE-1	PWR	P4-REP 1300	3817	1382	1330 EDF	FRAM	1979-12	1985-12	1986-12	68	71.2	-
	FR -47	FLAMANVILLE-2	PWR	P4-REP 1300	3817	1382	1330 EDF	FRAM	1980-5	1986-7	1987-3	72.1	74	-
	FR -48	ST-ALBAN-1	PWR	P4-REP 1300	3817	1381	1335 EDF	FRAM	1979-1	1985-8	1986-5	75.5	77.9	-
	FR -49	ST-ALBAN-2	PWR	P4-REP 1300	3817	1381	1335 EDF	FRAM	1979-7	1986-7	1987-3	74.9	77.8	-
	FR -50	CATTENOM-1	PWR	P4-REP 1300	3817	1382	1300 EDF	FRAM	1979-10	1986-11	1987-4	72.3	74.3	-
	FR -51	GRAVELINES-5	PWR	CP1	2785	951	910 EDF	FRAM	1979-10	1984-8	1985-1	75.8	77.5	-
	FR -52	GRAVELINES-6	PWR	CP1	2785	951	910 EDF	FRAM	1979-10	1985-8	1985-10	78.1	79.7	-

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross								
FRANCE	FR -53	CATTENOM-2	PWR	P4 REP 1300	3817	1362	1300 EDF	FRAM	1980-7	1987-9	1988-2	77.2	79.5	-
	FR -54	BELLEVILLE-1	PWR	P4 REP 1300	3817	1363	1310 EDF	FRAM	1980-5	1987-10	1988-6	75.8	77.5	-
	FR -55	BELLEVILLE-2	PWR	P4 REP 1300	3817	1363	1310 EDF	FRAM	1980-8	1988-7	1989-1	76.8	78.7	-
	FR -56	CHINON B-3	PWR	CP2	2785	954	905 EDF	FRAM	1980-10	1986-10	1987-3	76.2	77.8	-
	FR -57	CHINON B-4	PWR	CP2	2785	954	905 EDF	FRAM	1981-2	1987-11	1988-4	78.5	80.6	-
	FR -58	NOGENT-1	PWR	P4 REP 1300	3817	1363	1310 EDF	FRAM	1981-5	1987-10	1988-2	77.5	79.6	-
	FR -59	NOGENT-2	PWR	P4 REP 1300	3817	1363	1310 EDF	FRAM	1982-1	1988-12	1989-5	80.3	82.6	-
	FR -60	CATTENOM-3	PWR	P4 REP 1300	3817	1362	1300 EDF	FRAM	1982-6	1990-7	1991-2	76.1	78.2	-
	FR -61	GOLFECH-1	PWR	P4 REP 1300	3817	1363	1310 EDF	FRAM	1982-11	1990-6	1991-2	80.7	83.6	-
	FR -62	CHOOZ B-1	PWR	N4 REP 1450	4270	1560	1500 EDF	FRAM	1984-1	1996-8	2000-5	74.2	77.5	-
	FR -63	PENLY-1	PWR	P4 REP 1300	3817	1382	1330 EDF	FRAM	1982-9	1990-5	1990-12	77.9	79.2	-
	FR -64	PENLY-2	PWR	P4 REP 1300	3817	1382	1330 EDF	FRAM	1984-8	1992-2	1992-11	81.7	83	-
	FR -65	CATTENOM-4	PWR	P4 REP 1300	3817	1362	1300 EDF	FRAM	1983-9	1991-5	1992-1	79.6	82.2	-
	FR -68	GOLFECH-2	PWR	P4 REP 1300	3817	1363	1310 EDF	FRAM	1984-10	1993-6	1994-3	82.7	84.4	-
	FR -70	CHOOZ B-2	PWR	N4 REP 1450	4270	1560	1500 EDF	FRAM	1985-12	1997-4	2000-9	72.5	79.5	-
	FR -72	CIVAUX-1	PWR	N4 REP 1450	4270	1561	1495 EDF	FRAM	1988-10	1997-12	2002-1	71.6	74.2	-
	FR -73	CIVAUX-2	PWR	N4 REP 1450	4270	1561	1495 EDF	FRAM	1991-4	1999-12	2002-4	72.5	77	-
	GERMANY	DE -31	ISAR-2	PWR	Konvoi	3950	1485	1410 PElektra	KWU	1982-9	1988-1	1988-4	92.5	92.8
DE -33		EMSLAND	PWR	Konvoi	3850	1406	1335 KLE	KWU	1982-8	1988-4	1988-6	93.3	93.6	-
DE -44		NECKARWESTHEIM-2	PWR	Konvoi	3850	1400	1310 EnKK	KWU	1982-11	1989-1	1989-4	92.3	92.6	-
HUNGARY	HU -1	PAKS-1	PWR	VVER V-213	1485	509	479 PAKS Zt	AEE	1974-8	1982-12	1983-8	86.7	86.8	-
	HU -2	PAKS-2	PWR	VVER V-213	1485	506	479 PAKS Zt	AEE	1974-8	1984-9	1984-11	83.1	83.3	DH
	HU -3	PAKS-3	PWR	VVER V-213	1485	506	479 PAKS Zt	AEE	1979-10	1986-9	1986-12	87.6	88	DH

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA	
					Thermal	Gross									Net
HUNGARY	HU -4	PAKS-4	PWR	VVER V-213	1485	506	479 PAKS Zrt	AEE	1979-10	1987-8	1987-11	88.2	88.6	DH	
	IN -10	KAKRAPAR-2	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	1985-4	1995-3	1995-9	71.2	79.6	-	
INDIA	IN -11	RAJASTHAN-3	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	1990-2	2000-3	2000-6	80.2	90.1	PH	
	IN -12	RAJASTHAN-4	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	1990-10	2000-11	2000-12	81.6	90.8	PH	
	IN -13	KAIGA-1	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	1989-9	2000-10	2000-11	78.3	92.2	-	
	IN -14	KAIGA-2	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	1989-12	2000-3	2000-3	77.2	90.7	-	
	IN -15	KAIGA-3	PHWR	Horizontal Pre	800	220	202 NPCIL	NPCIL	2002-3	2007-4	2007-5	74.1	84.9	-	
	IN -16	KAIGA-4	PHWR	Horizontal Pre	800	220	202 NPCIL	NPCIL	2002-5	2011-1	2011-1	86.4	91.5	-	
	IN -19	RAJASTHAN-5	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	2002-9	2009-12	2010-2	90.6	90.9	-	
	IN -20	RAJASTHAN-6	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	2003-1	2010-3	2010-3	81.5	81.9	-	
	IN -23	TARAPUR-3	PHWR	Horizontal Pre	1730	540	490 NPCIL	NPCIL	2000-5	2006-6	2006-8	79.7	88.5	-	
	IN -24	TARAPUR-4	PHWR	Horizontal Pre	1730	540	490 NPCIL	NPCIL	2000-3	2005-6	2005-9	73.2	85.1	-	
	IN -25	KUDANKULAM-1	PWR	VVER V-412	3000	1000	932 NPCIL	MAEP	2002-3	2013-10	2014-12	59.9	61.2	-	
	IN -26	KUDANKULAM-2	PWR	VVER V-412	3000	1000	932 NPCIL	MAEP	2002-7	2016-8	2017-3	59.9	59.9	-	
	IN -30	KAKRAPAR-3	PHWR	PHWR-700	2166	700	630 NPCIL	NPCIL	2010-11	2021-1	2021-1	0	0	-	
	IN -4	RAJASTHAN-2	PHWR	Horizontal Pre	693	200	187 NPCIL	AEC/DAE	1968-4	1980-11	1981-4	59.3	62.8	PH	
	IN -6	MADRAS-2	PHWR	Horizontal Pre	801	220	205 NPCIL	NPCIL	1972-10	1985-9	1986-3	63.2	74	DS	
	IN -7	NARORA-1	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	1976-12	1989-7	1991-1	63.8	74.5	-	
	IN -8	NARORA-2	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	1977-11	1992-1	1992-7	65.7	75.6	-	
	IN -9	KAKRAPAR-1	PHWR	Horizontal Pre	801	220	202 NPCIL	NPCIL	1984-12	1992-11	1993-5	63.2	67.9	-	
	IRAN,ISL.REP	IR -1	BUSHEHR-1	PWR	VVER V-446	3000	1000	915 NPPDCO	JSC ASE	1975-5	2011-9	2013-9	73.6	74.1	-
	JAPAN	JP -14	MIHAMA-3	PWR	M (3-loop)	2440	826	780 KEPCO	MHI	1972-8	1976-2	1976-12	54.4	54.4	-
JP -28		SENDAI-1	PWR	M (3-loop)	2660	890	846 KYUSHU	MHI	1979-12	1983-9	1984-7	72.2	72.2	-	

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Net	Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA	
					Thermal	Gross										
JAPAN	JP -29	TAKAHAMA-3	PWR	M (3-loop)	2660	870	830	KEPCO	MHI	1980-12	1984-5	1985-1	70.7	70.8	DS	
	JP -30	TAKAHAMA-4	PWR	M (3-loop)	2660	870	830	KEPCO	MHI	1981-3	1984-11	1985-6	71.7	71.8	DS	
	JP -37	SENDAI-2	PWR	M (3-loop)	2660	890	846	KYUSHU	MHI	1981-10	1985-4	1985-11	72.9	72.9	-	
	JP -45	GENKAI-3	PWR	M (4-loop)	3423	1180	1127	KYUSHU	MHI	1988-6	1993-6	1994-3	61.5	61.5	DS	
	JP -46	GENKAI-4	PWR	M (4-loop)	3423	1180	1127	KYUSHU	MHI	1992-7	1996-11	1997-7	62.6	62.6	DS	
	JP -47	IKATA-3	PWR	M (3-loop)	2660	890	846	SHIKOKU	MHI	1990-10	1994-3	1994-12	65.4	65.4	DS	
	JP -50	OHI-3	PWR	M (4-loop)	3423	1180	1127	KEPCO	MHI	1987-10	1991-6	1991-12	64.6	64.6	DS	
	JP -51	OHI-4	PWR	M (4-loop)	3423	1180	1127	KEPCO	MHI	1988-6	1992-6	1993-2	69.3	69.3	DS	
	KOREA, REP. OF	KR -10	HANUL-2	PWR	France CPI	2775	1011	967	KHNP	FRAM	1983-7	1989-4	1989-9	86.8	87.1	-
	KR -11	HANBIT-3	PWR	OPR-1000	2825	1041	966	KHNP	DHICKAEC	1989-12	1994-10	1995-3	77.7	77.9	-	
KR -12	HANBIT-4	PWR	OPR-1000	2825	1041	970	KHNP	DHICKAEC	1990-5	1995-7	1996-1	70.3	70.5	-		
KR -13	HANUL-3	PWR	OPR-1000	2825	1051	997	KHNP	DHICKOPC	1993-7	1998-1	1998-8	85.5	85.7	-		
KR -14	HANUL-4	PWR	OPR-1000	2825	1052	999	KHNP	DHICKOPC	1993-11	1998-12	1999-12	81.2	81.3	-		
KR -15	WOLSONG-3	PHWR	CANDU 6	2061	624	605	KHNP	AECL/DHI	1984-3	1998-3	1998-7	85.4	86.7	-		
KR -16	WOLSONG-4	PHWR	CANDU 6	2061	589	574	KHNP	AECL/DHI	1984-7	1999-5	1999-10	90.7	91.5	-		
KR -17	HANBIT-5	PWR	OPR-1000	2825	1051	992	KHNP	DHICKOPC	1997-6	2001-12	2002-5	81.5	81.7	-		
KR -18	HANBIT-6	PWR	OPR-1000	2825	1053	993	KHNP	DHICKOPC	1997-11	2002-9	2002-12	84.8	85.1	-		
KR -19	HANUL-5	PWR	OPR-1000	2825	1049	998	KHNP	DHICKOPC	1999-10	2003-12	2004-7	88.4	88.6	-		
KR -2	KORI-2	PWR	WH F	1882	681	640	KHNP	WH	1977-12	1983-4	1983-7	84	84.3	-		
KR -20	HANUL-6	PWR	OPR-1000	2825	1049	997	KHNP	DHICKOPC	2000-9	2005-1	2005-4	88.8	89	-		
KR -21	SHIN-KORI-1	PWR	OPR-1000	2825	1048	996	KHNP	DHICKOPC	2006-6	2010-8	2011-2	75.1	76.2	-		
KR -22	SHIN-KORI-2	PWR	OPR-1000	2825	1047	996	KHNP	DHICKOPC	2007-6	2012-1	2012-7	82.4	83.4	-		
KR -23	SHIN-WOLSONG-1	PWR	OPR-1000	2825	1048	997	KHNP	DHICKOPC	2007-11	2012-1	2012-7	82.7	82.9	-		

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Net	Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross									
KOREA, REP. OF	KR -24	SHIN-WOLSONG-2	PWR	OPR-1000	2825	1048	993	KHNP	DHICKOPC	2008-9	2015-2	2015-7	83.4	83.5	-
	KR -25	SAEUL-1	PWR	APR-1400	3983	1488	1416	KHNP	DHICKOPC	2008-10	2016-1	2016-12	80	80.2	-
	KR -26	SAEUL-2	PWR	APR-1400	3983	1491	1418	KHNP	DHICKOPC	2009-8	2019-4	2019-8	79.5	79.7	-
	KR -27	SHIN-HANUL-1	PWR	APR-1400	3983	1455	1414	KHNP	DHICKOPC	2012-7	2022-6	2022-12	100	100	-
	KR -4	WOLSONG-2	PHWR	CANDU 6	2061	599	569	KHNP	AECL/DHI	1992-9	1997-4	1997-7	87.8	89	-
	KR -5	KORI-3	PWR	WH F	2912	1046	1011	KHNP	WH	1979-10	1985-1	1985-9	82.6	82.9	-
	KR -6	KORI-4	PWR	WH F	2912	1046	1012	KHNP	WH	1980-4	1985-12	1986-4	84	84.5	-
	KR -7	HANBIT-1	PWR	WH F	2787	1025	995	KHNP	WH	1981-6	1986-3	1986-8	83.7	84	-
	KR -8	HANBIT-2	PWR	WH F	2787	1024	988	KHNP	WH	1981-12	1986-11	1987-6	82.8	83	-
MEXICO	KR -9	HANUL-1	PWR	France CPI	2775	1014	966	KHNP	FRAM	1983-1	1988-4	1988-9	85.5	85.9	-
	MX -1	LAGUNA VERDE-1	BWR	BWR-5	2317	805	777	CFE	GE	1976-9	1989-4	1990-7	80.4	81.8	-
	MX -2	LAGUNA VERDE-2	BWR	BWR-5	2317	803	775	CFE	GE	1977-6	1994-11	1995-4	82.6	83.6	-
NETHERLANDS	NL -2	BORSSELE	PWR	KWU 2LP	1366	515	482	EPZ	S/KWU	1969-7	1973-7	1973-10	85.1	85.5	-
PAKISTAN	PK -2	CHASNUPP-1	PWR	CNP-300	999	325	300	PAEC	CNNC	1993-8	2000-6	2000-9	78.6	79	-
	PK -3	CHASNUPP-2	PWR	CNP-300	999	325	300	PAEC	CNNC	2005-12	2011-3	2011-5	86.6	86.9	-
	PK -4	CHASNUPP-3	PWR	CNP-300	999	340	315	PAEC	CNNC	2011-5	2016-10	2016-12	89.5	90.4	-
	PK -5	CHASNUPP-4	PWR	CNP-300	999	340	313	PAEC	CNNC	2011-12	2017-6	2017-9	90.1	91	-
	PK -6	KANUPP-2	PWR	ACP-1000	3080	1100	1017	PAEC	CZEC	2015-8	2021-3	2021-5	80.8	82.4	-
ROMANIA	PK -7	KANUPP-3	PWR	ACP-1000	3080	1100	1017	PAEC	CZEC	2016-5	2022-3	2022-4	96.5	96.5	-
	RO -1	CERNAVODA-1	PHWR	CANDU 6	2180	706	650	SNN	AECL	1983-3	1996-7	1996-12	89.5	90.6	DH
	RO -2	CERNAVODA-2	PHWR	CANDU 6	2180	705	650	SNN	AECL	1983-7	2007-8	2007-11	94	94.8	DH
	RU -11	NOVOVORONEZH-4	PWR	VVER V-179	1375	417	385	REA	AEM	1967-7	1972-12	1973-3	77.9	79.2	DH, PH
RU -116	BELOYARSK-4	FBR	BN-800	2100	885	820	REA	AEM	2006-7	2015-12	2016-10	66.8	68	-	

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross								
RUSSIA	RU-12	KOLA-1	PWR	VVER V-230	1375	440	411 REA	AEM	1970-5	1973-6	1973-12	72.5	77.5	DH, PH
	RU-13	KOLA-2	PWR	VVER V-230	1375	440	411 REA	AEM	1970-5	1974-12	1975-2	73.2	77.6	DH, PH
	RU-142	BILIBINO-2	LWGR	EGP-6	62	12	11 REA	AEM	1970-1	1974-12	1975-2	73.2	81.6	DH
	RU-143	BILIBINO-3	LWGR	EGP-6	62	12	11 REA	AEM	1970-1	1975-12	1976-2	73.2	81.7	DH
	RU-144	BILIBINO-4	LWGR	EGP-6	62	12	11 REA	AEM	1970-1	1976-12	1977-1	72	80.2	DH
	RU-151	AKADEMIK LOMONOSOV-1	PWR	KLt-40S Float	150	35	32 REA	AEM	2007-4	2019-12	2020-5	72.7	72.7	-
	RU-152	AKADEMIK LOMONOSOV-2	PWR	KLt-40S Float	150	35	32 REA	AEM	2007-4	2019-12	2020-5	69.1	69.1	-
	RU-161	NOVOVORONEZH 2-1	PWR	VVER V-392M	3200	1180	1100 REA	AEM	2008-6	2016-8	2017-2	76.8	78.9	-
	RU-162	NOVOVORONEZH 2-2	PWR	VVER V-392M	3200	1181	1101 REA	AEM	2009-7	2019-5	2019-10	80.3	82.4	-
	RU-163	LENINGRAD 2-1	PWR	VVER V-491	3200	1188	1101 REA	AEM	2008-10	2018-3	2018-10	79.6	80.8	-
	RU-164	LENINGRAD 2-2	PWR	VVER V-491	3200	1188	1101 REA	AEM	2010-4	2020-10	2021-3	82.3	83.9	-
	RU-20	NOVOVORONEZH-5	PWR	VVER V-187	3000	1000	950 REA	AEM	1974-3	1980-5	1981-2	67.5	68.3	DH, PH
	RU-21	BELOYARSK-3	FBR	BN-600	1470	600	560 REA	AEM	1969-1	1980-4	1981-11	75.8	76.3	DH, PH
	RU-22	KURSK-2	LWGR	RBMK-1000	3200	1000	925 REA	AEM	1973-1	1979-1	1979-8	64.6	66.5	DH, PH
	RU-23	SMOLENSK-1	LWGR	RBMK-1000	3200	1000	925 REA	AEM	1975-10	1982-12	1983-9	74.3	76	DH, PH
	RU-24	SMOLENSK-2	LWGR	RBMK-1000	3200	1000	925 REA	AEM	1976-6	1985-5	1985-7	76	77.8	DH, PH
	RU-30	KALININ-1	PWR	VVER V-338	3000	1000	950 REA	AEM	1977-2	1984-5	1985-6	75.2	75.8	DH, PH
	RU-31	KALININ-2	PWR	VVER V-338	3000	1000	950 REA	AEM	1982-2	1986-12	1987-3	77.9	79.7	DH, PH
	RU-32	KOLA-3	PWR	VVER V-213	1375	440	411 REA	AEM	1977-4	1981-3	1982-12	76.8	82.4	DH, PH
	RU-33	KOLA-4	PWR	VVER V-213	1375	440	411 REA	AEM	1976-8	1984-10	1984-12	76.7	82.2	DH, PH
	RU-34	LENINGRAD-3	LWGR	RBMK-1000	3200	1000	925 REA	AEM	1973-12	1979-12	1980-6	73.7	74.5	DH, PH
	RU-35	LENINGRAD-4	LWGR	RBMK-1000	3200	1000	925 REA	AEM	1975-2	1981-2	1981-8	75	75.9	DH, PH
	RU-36	KALININ-3	PWR	VVER V-320	3200	1000	950 REA	AEM	1985-10	2004-12	2005-11	84	84.1	DH, PH

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.



TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA	
					Thermal	Gross									Net
RUSSIA	RU -37	KALININ-4	PWR	VVER V-320	3200	1000	950 REA	AEM	1986-8	2011-11	2012-12	88.8	88.8	DH, PH	
	RU -38	KURSK-3	LWGR	RBMK-1000	3200	1000	925 REA	AEM	1978-4	1983-10	1984-3	74	75.2	DH, PH	
	RU -39	KURSK-4	LWGR	RBMK-1000	3200	1000	925 REA	AEM	1981-5	1985-12	1986-2	77.2	78.2	DH, PH	
	RU -59	ROSTOV-1	PWR	VVER V-320	3200	1041	989 REA	AEM	1981-9	2001-3	2001-12	88.5	88.8	-	
	RU -62	ROSTOV-2	PWR	VVER V-320	3200	1000	950 REA	AEM	1983-5	2010-3	2010-12	89.8	90.1	-	
	RU -63	ROSTOV-3	PWR	VVER V-320	3000	1000	950 REA	AEM	2009-9	2014-12	2015-9	85.9	86.8	-	
	RU -64	ROSTOV-4	PWR	VVER V-320	3000	1030	979 REA	AEM	2010-6	2018-2	2018-9	89.9	91.4	-	
	RU -67	SMOLENSK-3	LWGR	RBMK-1000	3200	1000	925 REA	AEM	1984-5	1990-1	1990-10	79	80.6	DH, PH	
	RU -96	BALAKOVO-1	PWR	VVER V-320	3000	1000	950 REA	AEM	1980-12	1985-12	1986-5	75.2	76.9	DH, PH	
	RU -97	BALAKOVO-2	PWR	VVER V-320	3000	1000	950 REA	AEM	1981-8	1987-10	1988-1	74.7	77	DH, PH	
	RU -98	BALAKOVO-3	PWR	VVER V-320	3000	1000	950 REA	AEM	1982-11	1988-12	1989-4	77.1	79.9	DH, PH	
	RU -99	BALAKOVO-4	PWR	VVER V-320	3200	1000	950 REA	AEM	1984-4	1993-4	1993-12	81.3	84.3	DH, PH	
	SLOVAKIA	SK -13	BOHUNICE-3	PWR	VVER V-213	1471	500	466 SE	ŠKODA	1976-12	1984-8	1985-2	81.9	85.1	DH, PH
		SK -14	BOHUNICE-4	PWR	VVER V-213	1471	500	466 SE	ŠKODA	1976-12	1985-8	1985-12	82.9	85.9	DH, PH
SK -6		MOCHOVCE-1	PWR	VVER V-213	1471	500	467 SE	ŠKODA	1983-10	1998-7	1998-10	87.1	88.7	-	
SK -7		MOCHOVCE-2	PWR	VVER V-213	1471	500	469 SE	ŠKODA	1983-10	1999-12	2000-4	87.5	88.9	-	
SLOVENIA	SI -1	KRSKO	PWR	WH 2LP	1994	727	688 NEK	WH	1975-3	1981-10	1983-1	86.5	87.5	-	
	ZA -1	KOEBERG-1	PWR	CP1	2775	970	924 ESKOM	FRAM	1976-7	1984-4	1984-7	73.9	77	-	
SOUTH AFRICA	ZA -2	KOEBERG-2	PWR	CP1	2775	970	930 ESKOM	FRAM	1976-7	1985-7	1985-11	73.1	78.9	-	
	ES -10	COFREPES	BWR	BWR-6 (Mark 3)	3237	1102	1064 ID	GE	1975-9	1984-10	1985-3	87.5	88.4	-	
SPAIN	ES -11	TRILLO-1	PWR	PWR 3 loops	3010	1066	1003 CNAT	KWU	1979-8	1988-5	1988-8	87.3	87.8	-	
	ES -16	VANDELLOS-2	PWR	WH 3LP	2941	1087	1047 ANAV	WH	1980-12	1987-12	1988-3	82.5	83.5	-	
	ES -6	ALMARAZ-1	PWR	WH 3LP	2947	1049	1011 CNAT	WH	1973-7	1981-5	1983-9	86.2	87.3	-	

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross								
SPAIN	ES-7	ALMARAZ-2	PWR	WH 3LP	2947	1044	1006 CNAT	WH	1973-7	1983-10	1984-7	87.6	88.7	-
	ES-8	ASCO-1	PWR	WH 3LP	2941	1033	995 ANAV	WH	1974-5	1983-8	1984-12	85.8	86.5	-
	ES-9	ASCO-2	PWR	WH 3LP	2941	1027	997 ANAV	WH	1975-3	1985-10	1986-3	87.6	88.5	-
SWEDEN	SE-10	RINGHALS-4	PWR	WH 3LP	3300	1171	1130 RAB	WH	1973-11	1982-6	1983-11	82.3	84.6	-
	SE-11	FORSMARK-2	BWR	AA-III, BWR-25	3253	1160	1121 FKA	ABB ATOM	1975-1	1981-1	1981-7	83	84.9	-
	SE-12	OSKARSHAMIN-3	BWR	AA-IV, BWR-300	3900	1450	1400 OKG	ABB ATOM	1980-5	1985-3	1985-8	81.2	82.4	-
	SE-14	FORSMARK-3	BWR	AA-IV, BWR-300	3300	1208	1172 FKA	ABB ATOM	1979-1	1985-3	1985-8	85.6	87.6	-
	SE-7	RINGHALS-3	PWR	WH 3LP	3135	1117	1074 RAB	WH	1972-9	1980-9	1981-9	78.5	80.4	-
	SE-9	FORSMARK-1	BWR	AA-III, BWR-25	3075	1078	1040 FKA	ABB ATOM	1973-6	1980-6	1980-12	84.5	86.5	-
SWITZERLAND	CH-1	BEZNAU-1	PWR	WH 2LP	1130	380	365 Axpo AG	WH	1965-9	1969-7	1969-12	80.6	80.9	DH
	CH-3	BEZNAU-2	PWR	WH 2LP	1130	380	365 Axpo AG	WH	1968-1	1971-10	1972-3	87.6	87.8	DH
	CH-4	GOESGEN	PWR	PWR 3 Loop	3002	1060	1010 KKG	KWU	1973-12	1979-2	1979-11	89	89.8	PH
	CH-5	LEIBSTADT	BWR	BWR-6	3600	1275	1233 KKL	GETSCO	1974-1	1984-5	1984-12	82.2	83.8	-
UAE	AE-01	BARAKAH-1	PWR	APR-1400	3983	1417	1337 NAWAH	KEPCO	2012-7	2020-8	2021-4	76.8	77.2	-
	AE-02	BARAKAH-2	PWR	APR-1400	3983	1417	1337 NAWAH	KEPCO	2013-4	2021-9	2022-3	98.4	99.1	-
	AE-03	BARAKAH-3	PWR	APR-1400	3983	1417	1337 NAWAH	KEPCO	2014-9	2022-10	2023-2	0	0	-
UK	GB-19A	HARTLEPOOL A-1	GCR	AGR	1500	655	590 EDF UK	NPC	1968-10	1983-8	1989-4	69.8	70	-
	GB-19B	HARTLEPOOL A-2	GCR	AGR	1500	655	595 EDF UK	NPC	1968-10	1984-10	1989-4	71.4	71.6	-
	GB-20A	HEYSHAM A-1	GCR	AGR	1500	625	485 EDF UK	NPC	1970-12	1983-7	1989-4	68.3	68.6	-
	GB-20B	HEYSHAM A-2	GCR	AGR	1500	625	575 EDF UK	NPC	1970-12	1984-10	1989-4	66.8	67.3	-
	GB-22A	HEYSHAM B-1	GCR	AGR	1550	680	620 EDF UK	NPC	1980-8	1988-7	1989-4	78.5	79.1	-
	GB-22B	HEYSHAM B-2	GCR	AGR	1550	680	620 EDF UK	NPC	1980-8	1988-11	1989-4	78	78.9	-
GB-23A	TORNES-1	GCR	AGR	1623	682	595 EDF UK	NNC	1980-8	1988-5	1988-5	77.4	78.9	-	

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Net	Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross									
UK	GB-23B	TORNES-2	GCR	AGR	1623	682	605	EDF UK	NNC	1980-8	1989-2	1989-2	76.5	77.5	-
	GB-24	SIZEWELL B	PWR	SNUPPS	3425	1250	1198	EDF UK	PPC	1988-7	1995-2	1995-9	84.2	85	-
UKRAINE	UA-126	ZAPOROZHYE-5	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1985-11	1989-8	1989-10	73.4	75.3	DH
	UA-127	ZAPOROZHYE-6	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1986-6	1995-10	1996-9	78.6	80.7	DH
	UA-27	RIVNE-1	PWR	VVER V-213	1375	420	381	NNEGC	PAIP	1973-8	1980-12	1981-9	79.2	80	DH
	UA-28	RIVNE-2	PWR	VVER V-213	1375	415	376	NNEGC	PAIP	1973-10	1981-12	1982-7	80.4	81.5	DH
	UA-29	RIVNE-3	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1980-2	1986-12	1987-5	69	71	DH
	UA-40	KHEMELITSKI-1	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1981-11	1987-12	1988-8	71.5	72.7	DH
	UA-41	KHEMELITSKI-2	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1985-2	2004-8	2005-12	78.3	79.8	DH
	UA-44	SOUTH UKRAINE-1	PWR	VVER V-302	3000	1000	950	NNEGC	PAA	1976-8	1982-12	1983-12	68	70.4	DH
	UA-45	SOUTH UKRAINE-2	PWR	VVER V-338	3000	1000	950	NNEGC	PAA	1981-7	1985-1	1985-4	65.2	67.6	DH
	UA-48	SOUTH UKRAINE-3	PWR	VVER V-320	3000	1000	950	NNEGC	PAA	1984-11	1989-9	1989-12	68.3	71.8	DH
USA	UA-54	ZAPOROZHYE-1	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1980-4	1984-12	1985-12	66.7	68.9	DH
	UA-56	ZAPOROZHYE-2	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1981-1	1985-7	1986-2	68.5	71	DH
	UA-69	RIVNE-4	PWR	VVER V-320	3000	1000	950	NNEGC	PAA	1986-8	2004-10	2006-4	76	78.1	DH
	UA-78	ZAPOROZHYE-3	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1982-4	1986-12	1987-3	71.4	74.1	DH
	UA-79	ZAPOROZHYE-4	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1983-4	1987-12	1988-4	73	75.2	DH
	US-220	NINE MILE POINT-1	BWR	BWR-2 (Mark 1)	1850	642	613	EXELON	GE	1965-4	1969-11	1969-12	79.6	79.6	-
	US-237	DRESDEN-2	BWR	BWR-3 (Mark 1)	2957	950	894	EXELON	GE	1966-1	1970-4	1970-6	82.7	82.8	-
	US-244	GINNA	PWR	WH 2LP (DRYAMB)	1775	608	560	EXELON	WH	1966-4	1969-12	1970-7	87.7	87.7	-
	US-249	DRESDEN-3	BWR	BWR-3 (Mark 1)	2957	935	879	EXELON	GE	1966-10	1971-7	1971-11	80.3	80.3	-
	US-250	TURKEY POINT-3	PWR	WH 3LP (DRYAMB)	2644	829	837	FPL	WH	1967-4	1972-11	1972-12	80.6	80.8	-
US-251	TURKEY POINT-4	PWR	WH 3LP (DRYAMB)	2644	829	821	FPL	WH	1967-4	1973-6	1973-9	81.1	81.1	-	

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross								
USA	US -254	QUAD CITIES-1	BWR	BWR-3 (Mark 1)	2957	940	908	EXELON	GE	1967-2	1972-4	1973-2	83	-
	US -259	BROWNS FERRY-1	BWR	BWR-4 (Mark 1)	3458	1256	1200	TVA	GE	1967-5	1973-10	1974-12	78.7	79
	US -260	BROWNS FERRY-2	BWR	BWR-4 (Mark 1)	3458	1259	1200	TVA	GE	1967-5	1974-8	1975-3	83.6	83.8
	US -261	ROBINSON-2	PWR	WH-3LP (DRYAMB)	2339	780	741	PROGRESS	WH	1967-4	1970-9	1971-3	81.3	81.5
	US -263	MONTICELLO	BWR	BWR-3 (Mark 1)	2004	691	628	NSP	GE	1967-6	1971-3	1971-6	86.3	86.3
	US -265	QUAD CITIES-2	BWR	BWR-3 (Mark 1)	2957	940	911	EXELON	GE	1967-2	1972-5	1973-3	81.7	82.2
	US -266	POINT BEACH-1	PWR	WH-2LP (DRYAMB)	1800	640	591	NEXTERA	WH	1967-7	1970-11	1970-12	86	86.3
	US -269	OCONEE-1	PWR	B&W LLP (DRYAM)	2568	891	847	DUKEENER	B&W	1967-11	1973-5	1973-7	83.2	83.4
	US -270	OCONEE-2	PWR	B&W LLP (DRYAM)	2568	891	848	DUKEENER	B&W	1967-11	1973-12	1974-9	84.9	85.1
	US -272	SALEM-1	PWR	WH-4LP (DRYAMB)	3459	1254	1169	PSEG	WH	1968-9	1976-12	1977-6	74	74.2
	US -275	DIABLO CANYON-1	PWR	WH-4LP (DRYAMB)	3411	1197	1138	PG&E	WH	1968-4	1984-11	1985-5	88.5	88.6
	US -277	PEACH BOTTOM-2	BWR	BWR-4 (Mark 1)	3951	1412	1300	EXELON	GE	1968-1	1974-2	1974-7	80.7	80.7
	US -278	PEACH BOTTOM-3	BWR	BWR-4 (Mark 1)	3951	1412	1331	EXELON	GE	1968-1	1974-9	1974-12	81.1	81.1
	US -280	SURRY-1	PWR	WH-3LP (DRYSUB)	2587	890	838	DOMINION	WH	1968-6	1972-7	1972-12	79.6	79.7
	US -281	SURRY-2	PWR	WH-3LP (DRYSUB)	2587	890	838	DOMINION	WH	1968-6	1973-3	1973-5	80.4	80.4
	US -282	PRAIRIE ISLAND-1	PWR	WH-2LP (DRYAMB)	1677	566	522	NSP	WH	1968-6	1973-12	1973-12	87.6	87.6
	US -287	OCONEE-3	PWR	B&W LLP (DRYAM)	2568	900	859	DUKEENER	B&W	1967-11	1974-9	1974-12	84.1	84.3
	US -296	BROWNS FERRY-3	BWR	BWR-4 (Mark 1)	3458	1260	1210	TVA	GE	1968-7	1976-9	1977-3	85.4	85.7
	US -298	COOPER	BWR	BWR-4 (Mark 1)	2419	801	769	ENTERGY	GE	1968-6	1974-5	1974-7	80.3	80.3
	US -301	POINT BEACH-2	PWR	WH-2LP (DRYAMB)	1800	640	591	NEXTERA	WH	1968-7	1972-8	1972-10	87.2	87.2
	US -306	PRAIRIE ISLAND-2	PWR	WH-2LP (DRYAMB)	1677	560	519	NSP	WH	1969-6	1974-12	1974-12	88.6	88.6
	US -311	SALEM-2	PWR	WH-4LP (DRYAMB)	3459	1200	1158	PSEG	WH	1968-9	1981-6	1981-10	76.9	76.9
	US -313	ANO-1	PWR	B&W LLP (DRYAM)	2568	903	836	ENTERGY	B&W	1968-10	1974-8	1974-12	81.5	81.9

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross								
USA	US -315	COOK-1	PWR	WH 4LP (ICECDN)	3304	1131	1030 AEP	WH	1969-3	1975-2	1975-8	73.6	73.7	-
	US -316	COOK-2	PWR	WH 4LP (ICECDN)	3468	1231	1168 AEP	WH	1969-3	1978-3	1978-7	74.9	75.1	-
	US -317	CALVERT CLIFFS-1	PWR	CE 2LP (DRYAMB)	2737	918	877 EXELON	CE	1968-6	1975-1	1975-5	82.5	82.8	-
	US -318	CALVERT CLIFFS-2	PWR	CE 2LP (DRYAMB)	2737	911	855 EXELON	CE	1968-6	1976-12	1977-4	85.5	85.6	-
	US -321	HATCH-1	BWR	BWR-4 (Mark 1)	2804	911	876 SOUTHERN	GE	1968-9	1974-11	1975-12	84.2	84.2	-
	US -323	DIABLO CANYON-2	PWR	WH 4LP (DRYAMB)	3411	1197	1118 PG&E	WH	1970-12	1985-10	1986-3	88.3	88.4	-
	US -324	BRUNSWICK-2	BWR	BWR-4 (Mark 1)	2923	960	932 PROGRESS	GE	1970-2	1975-4	1975-11	78.9	79.2	-
	US -325	BRUNSWICK-1	BWR	BWR-4 (Mark 1)	2923	990	938 PROGRESS	GE	1970-2	1976-12	1977-3	79.7	80	-
	US -327	SEQUOYAH-1	PWR	WH 4LP (ICECDN)	3455	1221	1152 TVA	WH	1970-5	1980-7	1981-7	77.7	77.7	-
	US -328	SEQUOYAH-2	PWR	WH 4LP (ICECDN)	3455	1200	1139 TVA	WH	1970-5	1981-12	1982-6	81.1	81.1	-
	US -333	FITZPATRICK	BWR	BWR-4 (Mark 1)	2536	849	813 EXELON	GE	1968-9	1975-2	1975-7	82	82.2	-
	US -334	BEAVER VALLEY-1	PWR	WH 3LP (DRYSUB)	2900	959	908 FENOC	WH	1970-6	1976-6	1976-10	79	79	-
	US -335	ST. LUCIE-1	PWR	CE 2LP (DRYAMB)	3020	1045	981 FPL	CE	1970-7	1976-5	1976-12	83.8	84	-
	US -336	MILLSTONE-2	PWR	CE 2LP (DRYAMB)	2700	918	869 DOMINION	CE	1969-11	1975-11	1975-12	73.5	74.1	-
	US -338	NORTH ANNA-1	PWR	WH 3LP (DRYSUB)	2940	990	948 DOMINION	WH	1971-2	1978-4	1978-6	84.7	85.2	-
	US -339	NORTH ANNA-2	PWR	WH 3LP (DRYSUB)	2940	1011	944 DOMINION	WH	1971-2	1980-8	1980-12	87	87.7	-
	US -341	FERMI-2	BWR	BWR-4 (Mark 1)	3486	1198	1115 DTEDISON	GE	1972-9	1986-9	1988-1	80.3	80.3	-
	US -346	DAVIS BESSE-1	PWR	B&W RLP (DRYAM)	2817	925	894 FENOC	B&W	1970-9	1977-8	1978-7	74.9	75	-
	US -348	FARLEY-1	PWR	WH 3LP (DRYAMB)	2775	918	874 SOUTHERN	WH	1970-10	1977-8	1977-12	85.7	85.8	-
	US -352	LIMERICK-1	BWR	BWR-4 (Mark 2)	3515	1194	1134 EXELON	GE	1974-6	1985-4	1986-2	91.9	91.9	-
	US -353	LIMERICK-2	BWR	BWR-4 (Mark 2)	3515	1194	1134 EXELON	GE	1974-6	1989-9	1990-1	93.9	94	-
	US -354	HOPE CREEK-1	BWR	BWR-4 (Mark 1)	3840	1240	1172 PSEG	GE	1976-3	1986-8	1986-12	88.7	88.7	-
	US -364	FARLEY-2	PWR	WH 3LP (DRYAMB)	2775	928	883 SOUTHERN	WH	1970-10	1981-5	1981-7	89.5	89.5	-

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA
					Thermal	Gross								
USA	US -366	HATCH-2	BWR	BWR-4 (Mark 1)	2804	921	883 SOUTHERN	GE	1972-2	1978-9	1979-9	85.9	85.9	-
	US -368	ANO-2	PWR	CE 2LP (DRYAMB)	3026	1065	988 ENTERGY	CE	1968-12	1978-12	1980-3	84.5	84.6	-
	US -369	MCGUIRE-1	PWR	WH 4LP (ICECND)	3411	1215	1158 DUKEENER	WH	1971-4	1981-9	1981-12	84.4	84.6	-
	US -370	MCGUIRE-2	PWR	WH 4LP (ICECND)	3411	1215	1158 DUKEENER	WH	1971-4	1983-5	1984-3	87.4	87.4	-
	US -373	LASALLE-1	BWR	BWR-5 (Mark 2)	3546	1207	1137 EXELON	GE	1973-9	1982-9	1984-1	82.9	82.9	-
	US -374	LASALLE-2	BWR	BWR-5 (Mark 2)	3546	1207	1140 EXELON	GE	1973-9	1984-4	1984-10	82.2	82.2	-
	US -382	WATERFORD-3	PWR	CE 2LP (DRYAMB)	3716	1250	1168 ENTERGY	CE	1974-11	1985-3	1985-9	87.6	87.8	-
	US -387	SUSQUEHANNA-1	BWR	BWR-4 (Mark 2)	3952	1330	1257 PPL_SUSQ	GE	1973-11	1982-11	1983-6	86.1	86.2	-
	US -388	SUSQUEHANNA-2	BWR	BWR-4 (Mark 2)	3952	1330	1257 PPL_SUSQ	GE	1973-11	1984-7	1985-2	89	89	-
	US -389	ST. LUCIE-2	PWR	CE 2LP (DRYAMB)	3020	1050	987 FPL	CE	1977-6	1983-6	1983-8	86.8	87.2	-
	US -390	WATTS BAR-1	PWR	WH 4LP (ICECND)	3459	1210	1157 TVA	WH	1973-7	1986-2	1986-5	90.4	90.4	-
	US -391	WATTS BAR-2	PWR	WH 4LP (ICECND)	3411	1218	1164 TVA	WH	1973-9	2016-6	2016-10	81.8	81.8	-
	US -395	SUMMER-1	PWR	WH 3LP (DRYAMB)	2900	1006	973 SOE&G	WH	1973-3	1982-11	1984-1	86.3	86.3	-
	US -397	COLUMBIA	BWR	BWR-5 (Mark 2)	3486	1190	1131 ENERGYNW	GE	1972-8	1984-5	1984-12	82.1	82.7	-
	US -400	HARRIS-1	PWR	WH 3LP (DRYAMB)	2900	980	964 PROGRESS	WH	1978-1	1987-1	1987-5	89.6	89.7	-
	US -410	NINE MILE POINT-2	BWR	BWR-5 (Mark 2)	3988	1320	1277 EXELON	GE	1975-8	1987-8	1988-3	87.7	87.7	-
	US -412	BEAVER VALLEY-2	PWR	WH 3LP (DRYSUB)	2900	958	905 FENOC	WH	1974-5	1987-8	1987-11	89.1	89.1	-
	US -413	CATAWBA-1	PWR	WH 4LP (ICECND)	3411	1188	1160 DUKEENER	WH	1974-5	1985-1	1985-6	87.6	87.6	-
	US -414	CATAWBA-2	PWR	WH 4LP (ICECND)	3411	1188	1150 DUKEENER	WH	1974-5	1986-5	1986-8	88.1	88.1	-
	US -416	GRAND GULF-1	BWR	BWR-6 (Mark 3)	4408	1500	1401 ENTERGY	GE	1974-5	1984-10	1985-7	84.4	84.6	-
	US -423	MILLSTONE-3	PWR	WH 4LP (DRYSUB)	3650	1280	1210 DOMINION	WH	1974-8	1986-2	1986-4	81.8	81.8	-
	US -424	VOGTLE-1	PWR	WH 4LP (DRYAMB)	3626	1229	1150 SOUTHERN	WH	1976-8	1987-3	1987-6	91.7	91.7	-
	US -425	VOGTLE-2	PWR	WH 4LP (DRYAMB)	3626	1229	1152 SOUTHERN	WH	1976-8	1989-4	1989-5	91.9	91.9	-

Note: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

**TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Const. Start	Grid Connection	Comm. Operation	EAF % 2012 - 2022	UCF % 2012 - 2022	NEA	
					Thermal	Gross									Net
USA	US-440	PERRY-1	BWR	BWR-6 (Mark 3)	3758	1303	1240	FENOC	GE	1974-10	1986-12	1987-11	84.8	84.8	-
	US-443	SEABROOK-1	PWR	WH 4LP (DRYAMB)	3648	1296	1246	NEXTERA	WH	1976-7	1990-5	1990-8	89.3	89.4	-
	US-445	COMANCHE PEAK-1	PWR	WH 4LP (DRYAMB)	3612	1259	1205	LUMINANT	WH	1974-12	1990-4	1990-8	90.9	90.9	-
	US-446	COMANCHE PEAK-2	PWR	WH 4LP (DRYAMB)	3612	1250	1195	LUMINANT	WH	1974-12	1993-4	1993-8	91.5	91.5	-
	US-454	BYRON-1	PWR	WH 4LP (DRYAMB)	3645	1242	1164	EXELON	WH	1975-4	1985-3	1985-9	90.5	90.5	-
	US-455	BYRON-2	PWR	WH 4LP (DRYAMB)	3645	1210	1136	EXELON	WH	1975-4	1987-2	1987-8	93.3	93.3	-
	US-456	BRAIDWOOD-1	PWR	WH 4LP (DRYAMB)	3645	1270	1194	EXELON	WH	1975-8	1987-7	1988-7	90.7	90.7	-
	US-457	BRAIDWOOD-2	PWR	WH 4LP (DRYAMB)	3645	1230	1160	EXELON	WH	1975-8	1988-5	1988-10	92.7	92.7	-
	US-458	RIVER BEND-1	BWR	BWR-6 (Mark 3)	3091	1016	967	ENTERGY	GE	1977-3	1985-12	1986-6	85.3	85.5	-
	US-461	CLINTON-1	BWR	BWR-6 (Mark 3)	3473	1098	1062	EXELON	GE	1975-10	1987-4	1987-11	82.9	83	-
	US-482	WOLF CREEK	PWR	WH 4LP (DRYAMB)	3565	1285	1200	WCNOC	WH	1977-5	1985-6	1985-9	85.8	85.8	-
	US-483	CALLAWAY-1	PWR	WH 4LP (DRYAMB)	3565	1275	1215	AmerenUE	WH	1975-9	1984-10	1984-12	86.9	87	-
	US-498	SOUTH TEXAS-1	PWR	WH 4LP (DRYAMB)	3853	1354	1280	STP	WH	1975-12	1988-3	1988-8	85	85	-
	US-499	SOUTH TEXAS-2	PWR	WH 4LP (DRYAMB)	3853	1354	1280	STP	WH	1975-12	1989-4	1989-6	84.7	84.7	-
	US-528	PALO VERDE-1	PWR	CE60 2LP (DRYA)	3990	1414	1311	APS	CE	1976-5	1985-6	1986-1	82.9	83	-
US-529	PALO VERDE-2	PWR	CE60 2LP (DRYA)	3990	1414	1314	APS	CE	1976-6	1986-5	1986-9	84.9	85	-	
US-530	PALO VERDE-3	PWR	CE60 2LP (DRYA)	3990	1414	1312	APS	CE	1976-6	1987-11	1988-1	86.4	86.6	-	

Notes: The column Non-Electrical Applications indicates the use of the facility to provide: DH district heating, DS desalination, PH process heating.

Status as of 31 December 2022, 411 reactors (370991 MW(e)) were connected to the grid, including 3 units (2859MW(e)) in Taiwan, China.

TAIWAN, CHINA	TW-4	KUOSHENG-2	BWR	BWR-6	2894	985	985	TPC	GE	1976-3	1982-6	1983-3	83.8	84.8	-
	TW-5	MAANSHAN-1	PWR	WH 3LP (WE 312)	2822	951	936	TPC	WH	1978-8	1984-5	1984-7	86.8	87.8	-
	TW-6	MAANSHAN-2	PWR	WH 3LP (WE 312)	2822	951	938	TPC	WH	1979-2	1985-2	1985-5	86.7	87.8	-

The EAF and UCF calculated for Ukrainian reactor units are from 2012-2021 as operational data were not submitted for the year 2022 by the time of publication.

**TABLE 15. REACTORS IN SUSPENDED OPERATION, 31 DEC. 2022**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Suspended Operation date
					Thermal	Gross						
INDIA	IN-5	MADRAS-1	PHWR	Horizontal Pte	801	220	205 NPCIL	NPCIL	1971-1	1983-7	1984-1	2018-1
	IN-3	RAJASTHAN-1	PHWR	Horizontal Pte	346	100	134 NPCIL	AECL	1965-8	1972-11	1973-12	2004-10
	IN-1	TARAPUR-1	BWR	BWR-1 (Mark 2)	530	160	150 NPCIL	GE	1964-10	1969-4	1969-10	2020-1
	IN-2	TARAPUR-2	BWR	BWR-1 (Mark 2)	530	160	150 NPCIL	GE	1964-10	1969-5	1969-10	2020-7
	JP-36	HAMAOKA-3	BWR	BWR-5	3293	1100	1056 CHUBU	TOSHIBA	1983-4	1987-1	1987-8	2010-11
JAPAN	JP-49	HAMAOKA-4	BWR	BWR-5	3293	1137	1092 CHUBU	TOSHIBA	1989-10	1993-1	1993-9	2011-5
	JP-60	HAMAOKA-5	BWR	ABWR	3926	1380	1325 CHUBU	TOSHIBA	2000-7	2004-4	2005-1	2011-5
	JP-58	HIGASHI-DORI-1 (TOHOKU)	BWR	BWR-5	3293	1100	1067 TOHOKU	TOSHIBA	2000-11	2005-3	2005-12	2011-3
	JP-33	KASHIWAZAKI KARIWA-1	BWR	BWR-5	3293	1100	1067 TEPCO	TOSHIBA	1980-6	1985-2	1985-9	2011-8
	JP-39	KASHIWAZAKI KARIWA-2	BWR	BWR-5	3293	1100	1067 TEPCO	TOSHIBA	1985-11	1990-2	1990-9	2007-7
	JP-52	KASHIWAZAKI KARIWA-3	BWR	BWR-5	3293	1100	1067 TEPCO	TOSHIBA	1989-3	1992-12	1993-8	2007-9
	JP-53	KASHIWAZAKI KARIWA-4	BWR	BWR-5	3293	1100	1067 TEPCO	HITACHI	1990-3	1993-12	1994-8	2008-2
	JP-40	KASHIWAZAKI KARIWA-5	BWR	BWR-5	3293	1100	1067 TEPCO	HITACHI	1985-6	1989-9	1990-4	2012-1
	JP-55	KASHIWAZAKI KARIWA-6	BWR	ABWR	3926	1356	1315 TEPCO	TOSHIBA	1992-11	1996-1	1996-11	2012-3
	JP-56	KASHIWAZAKI KARIWA-7	BWR	ABWR	3926	1356	1315 TEPCO	HITACHI	1993-7	1996-12	1997-7	2011-8
	JP-54	ONAGAWA-2	BWR	BWR-5	2436	825	796 TOHOKU	TOSHIBA	1991-4	1994-12	1995-7	2011-3
	JP-57	ONAGAWA-3	BWR	BWR-5	2436	825	796 TOHOKU	TOSHIBA	1998-1	2001-5	2002-1	2011-3
	JP-48	SHIKA-1	BWR	BWR-5	1593	540	505 HOKURIKU	HITACHI	1989-7	1993-1	1993-7	2011-3
JP-59	SHIKA-2	BWR	ABWR	3926	1206	1108 HOKURIKU	HITACHI	2001-8	2005-7	2006-3	2011-3	
JP-41	SHIMANE-2	BWR	BWR-5	2436	820	789 CHUGOKU	HITACHI	1985-2	1988-7	1989-2	2012-1	
JP-8	TAKAHAMA-1	PWR	M (3-loop)	2440	826	780 KEPCO	WH/MIHI	1970-4	1974-3	1974-11	2011-1	
JP-13	TAKAHAMA-2	PWR	M (3-loop)	2440	826	780 KEPCO	MIHI	1971-3	1975-1	1975-11	2011-11	



**TABLE 15. REACTORS IN SUSPENDED OPERATION, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Model	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Suspended Operation date
					Thermal	Gross						
JAPAN	JP-21	TOKAI-2	BWR	BWR-5	3293	1100	1060 JAPCO	GE	1973-10	1978-3	1978-11	2011-3
	JP-43	TOMARI-1	PWR	M (2-loop)	1650	579	550 HEPCO	MHI	1985-4	1988-12	1989-6	2011-4
	JP-44	TOMARI-2	PWR	M (2-loop)	1650	579	550 HEPCO	MHI	1985-6	1990-8	1991-4	2011-8
	JP-64	TOMARI-3	PWR	M (3-loop)	2660	912	866 HEPCO	MHI	2004-11	2009-3	2009-12	2012-5
	JP-34	TSURUGA-2	PWR	M (4-loop)	3411	1160	1108 JAPCO	MHI	1982-11	1986-6	1987-2	2011-5

Note:

Status as of 31 December 2022, 27 reactors were in Suspended Operation.

**TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2022**

Country	Reactor Code	Reactor Name	Type	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Shutdown
				Thermal	Gross						
ARMENIA	AM -18	ARMENIAN-1	PWR	1375	408	376 ANPPC/ISC	FAEA	1969-7	1976-12	1977-10	1989-2
	BE -1	BR-3	PWR	41	12	10 CEN/SCK	WH	1957-11	1982-10	1982-10	1987-6
	BE -5	DOEL-3	PWR	3054	1056	1006 EBL+EDF	FRAMACEC	1975-1	1982-6	1982-10	2022-9
BULGARIA	BG -1	KOZLODUY-1	PWR	1375	440	408 K N N P	AEE	1970-4	1974-7	1974-10	2002-12
	BG -2	KOZLODUY-2	PWR	1375	440	408 KOZNP	AEE	1970-4	1975-8	1975-11	2002-12
	BG -3	KOZLODUY-3	PWR	1375	440	408 K N N P	AEE	1973-10	1980-12	1981-1	2006-12
	BG -4	KOZLODUY-4	PWR	1375	440	408 K N N P	AEE	1973-10	1982-5	1982-6	2006-12
CANADA	CA -2	DOUGLAS POINT	PHWR	704	218	206 OH	AECL	1960-2	1967-1	1968-9	1984-5
	CA -3	GENTILLY-1	H/LWR	792	266	250 HQ	AECL	1966-9	1971-4	1972-5	1977-6
	CA -12	GENTILLY-2	PHWR	2156	675	635 HQ	AECL	1974-4	1982-12	1983-10	2012-12
	CA -5	PICKERING-2	PHWR	1744	542	515 OPG	OHI/AECL	1966-9	1971-10	1971-12	2007-5
	CA -6	PICKERING-3	PHWR	1744	542	515 OPG	OHI/AECL	1967-12	1972-5	1972-6	2008-10
	CA -1	ROLPHTON NPD	PHWR	92	25	22 OH	CGE	1958-1	1982-6	1982-10	1987-8
FRANCE	FR -9	BUGEY-1	GCR	1954	555	540 EDF	FRAM	1965-12	1972-4	1972-7	1994-5
	FR -2	CHINON A-1	GCR	300	80	70 EDF	LEVIVIER	1957-2	1963-6	1964-2	1973-4
	FR -3	CHINON A-2	GCR	800	230	180 EDF	LEVIVIER	1959-8	1965-2	1965-2	1985-6
	FR -4	CHINON A-3	GCR	1170	480	360 EDF	GTM	1961-3	1966-8	1966-8	1990-6
	FR -5	CHOOZA (ARDENNES)	PWR	1040	320	305 SENA	A/F/W	1962-1	1967-4	1967-4	1991-10
	FR -6	EL-4 (MONTS D'ARREE)	H/WGCR	250	75	70 EDF	GAAA	1962-7	1967-7	1968-6	1985-7
	FR -11	FESSENHEIM-1	PWR	2785	920	880 EDF	FRAM	1971-9	1977-4	1978-1	2020-2
	FR -12	FESSENHEIM-2	PWR	2785	920	880 EDF	FRAM	1972-2	1977-10	1978-4	2020-6
	FR -1B	G-2 (MARCOCULE)	GCR	260	43	39 COGEMA	SACM	1955-3	1959-4	1959-4	1980-2
	FR -1	G-3 (MARCOCULE)	GCR	260	43	40 COGEMA	SACM	1956-3	1960-4	1960-4	1984-6
FR -10	PHENIX	FBR	345	142	130 CEAE/EDF	CNCLNEY	1968-11	1973-12	1974-7	2010-2	
FR -7	ST. LAURENT A-1	GCR	1650	500	390 EDF	FRAM	1963-10	1969-3	1969-6	1990-4	
FR -8	ST. LAURENT A-2	GCR	1475	530	465 EDF	FRAM	1966-1	1971-8	1971-11	1992-5	
FR -24	SUPER-PHENIX	FBR	3000	1242	1200 EDF	ASPALDO	1976-12	1986-1	1986-12	1996-12	

**TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2022 — continued**

Country	Reactor		Type	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Shutdown
	Code	Name		Thermal	Gross						
GERMANY	DE -4	AVR JUELICH	HTGR	46	15	13	AVR	1961-8	1967-12	1969-5	1988-12
	DE -12	BIBLIS-A	PWR	3517	1225	1167	RWE	1970-1	1974-8	1975-2	2011-8
	DE -18	BIBLIS-B	PWR	3733	1300	1240	RWE	1972-2	1976-4	1977-1	2011-8
	DE -32	BROKDORF	PWR	3900	1480	1410	PElektra	1976-1	1986-10	1986-12	2021-12
	DE -13	BRUNSBUEITTEL	BWR	2292	806	771	KKB	1970-4	1976-7	1977-2	2011-8
	DE -23	GRAFENRHEINFELD	PWR	3765	1345	1275	E.ON	1975-1	1981-12	1982-6	2015-6
	DE -502	GREIFSWALD-1	PWR	1375	440	408	EWN	1970-3	1973-12	1974-7	1990-12
	DE -503	GREIFSWALD-2	PWR	1375	440	408	EWN	1970-3	1974-12	1975-4	1990-2
	DE -504	GREIFSWALD-3	PWR	1375	440	408	EWN	1972-4	1977-10	1978-5	1990-2
	DE -505	GREIFSWALD-4	PWR	1375	440	408	EWN	1972-4	1979-9	1979-11	1990-6
	DE -506	GREIFSWALD-5	PWR	1375	440	408	EWN	1976-12	1989-4	1989-11	1989-11
	DE -27	GROHNDE	PWR	3900	1430	1360	PElektra	1976-6	1984-9	1985-2	2021-12
	DE -3	GUNDREMMINGEN-A	BWR	801	250	237	KGB	1962-12	1966-12	1967-4	1977-1
	DE -26	GUNDREMMINGEN-B	BWR	3840	1344	1284	KGG	1976-7	1984-3	1984-7	2017-12
	DE -28	GUNDREMMINGEN-C	BWR	3840	1344	1288	KGG	1976-7	1984-11	1985-1	2021-12
	DE -16	ISAR-1	BWR	2575	912	878	E.ON	1972-5	1977-12	1979-3	2011-8
	DE -8	KINK II	FBR	58	21	17	KBG	1974-9	1978-4	1979-3	1991-8
	DE -20	KRUEMMEL	BWR	3690	1402	1346	KKK	1974-4	1983-9	1984-3	2011-8
	DE -6	LINGEN	BWR	520	268	183	KWL	1964-10	1968-7	1968-10	1977-1
	DE -22	MUELHEIM-KAERLICH	PWR	3760	1302	1219	KGG	1975-1	1986-3	1987-8	1988-9
DE -2	MZFR	PHWR	200	57	52	KBG	SIEMENS	1961-12	1966-3	1966-12	1984-5
DE -15	NECKARWESTHEIM-1	PWR	2497	840	785	EnKK	KWU	1972-2	1976-6	1976-12	2011-8
DE -5	ORRIGHEIM	PWR	1050	357	340	EnBW	SIEM,KWU	1965-3	1968-10	1969-3	2005-5
DE -14	PHILIPPSBURG-1	BWR	2575	926	890	EnKK	KWU	1970-10	1979-5	1980-3	2011-8
DE -24	PHILIPPSBURG-2	PWR	3950	1468	1402	EnKK	KWU	1977-7	1984-12	1985-4	2019-12
DE -501	RHEINBERG	PWR	265	70	62	EWN	AAE	1960-1	1966-5	1966-10	1990-6
DE -10	STADE	PWR	1900	672	640	E.ON	KWU	1967-12	1972-1	1972-5	2003-11

**TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2022 — continued**

Country	Reactor		Type	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Shutdown
	Code	Name		Thermal	Gross						
GERMANY	DE -19	THTR-300	HTR	760	308	296	HKG	1971-5	1985-11	1987-6	1988-9
	DE -17	UNTERWESER	PWR	3900	1410	1345	E.ON	1972-7	1978-9	1979-9	2011-8
	DE -9	WUERGASSEN	BWR	1912	670	640	PE	1968-1	1971-12	1975-11	1984-8
ITALY	IT -4	CAORSO	BWR	2651	882	860	SOGIN	1970-1	1978-5	1981-12	1990-7
	IT -3	ENRICO FERMI	PWR	870	270	260	SOGIN	1961-7	1964-10	1965-1	1990-7
	IT -2	GARIGLIANO	BWR	506	160	150	SOGIN	1959-11	1964-1	1964-6	1982-3
JAPAN	IT -1	LATINA	GCR	660	160	153	SOGIN	1958-11	1963-5	1964-1	1987-12
	JP -20	FUGEN ATR	HWR	557	165	148	JAEA	1972-5	1978-7	1979-3	2003-3
	JP -5	FUKUSHIMA-DAIICHI-1	BWR	1380	460	439	TEPCO	1967-7	1970-11	1971-3	2011-5
	JP -9	FUKUSHIMA-DAIICHI-2	BWR	2381	784	760	TEPCO	1969-6	1973-12	1974-7	2011-5
	JP -10	FUKUSHIMA-DAIICHI-3	BWR	2381	784	760	TEPCO	1970-12	1974-10	1976-3	2011-5
	JP -16	FUKUSHIMA-DAIICHI-4	BWR	2381	784	760	TEPCO	1973-2	1978-2	1978-10	2011-5
	JP -17	FUKUSHIMA-DAIICHI-5	BWR	2381	784	760	TEPCO	1972-5	1977-9	1978-4	2013-12
	JP -18	FUKUSHIMA-DAIICHI-6	BWR	3293	1100	1067	TEPCO	1973-10	1979-5	1979-10	2013-12
	JP -25	FUKUSHIMA-DAINI-1	BWR	3293	1100	1067	TEPCO	1976-3	1981-7	1982-4	2019-9
	JP -26	FUKUSHIMA-DAINI-2	BWR	3293	1100	1067	TEPCO	1979-5	1983-6	1984-2	2019-9
JP -35	FUKUSHIMA-DAINI-3	BWR	3293	1100	1067	TEPCO	1981-3	1984-12	1985-6	2019-9	
JP -38	FUKUSHIMA-DAINI-4	BWR	3293	1100	1067	TEPCO	1981-5	1986-12	1987-8	2019-9	
JP -12	GENKA-1	PWR	1650	559	529	KYUSHU	1971-9	1975-2	1975-10	2015-4	
JP -27	GENKA-2	PWR	1650	559	529	KYUSHU	1977-2	1980-6	1981-3	2019-4	
JP -11	HAMAOKA-1	BWR	1593	540	515	CHUBU	1971-6	1974-8	1976-3	2009-1	
JP -24	HAMAOKA-2	BWR	2436	840	806	CHUBU	1974-6	1978-5	1978-11	2009-1	
JP -23	IKATA-1	PWR	1650	566	538	SHIKOKU	1973-9	1977-2	1977-9	2016-5	
JP -32	IKATA-2	PWR	1650	566	538	SHIKOKU	1978-8	1981-8	1982-3	2018-5	
JP -1	JPDR	BWR	90	13	12	JAEA	1960-12	1963-10	1965-3	1976-3	
JP -4	MIHAMA-1	PWR	1031	340	320	KEPCO	1967-2	1970-8	1970-11	2015-4	
JP -6	MIHAMA-2	PWR	1456	500	470	KEPCO	1968-5	1972-4	1972-7	2015-4	

**TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Capacity [MW]		Net	Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Shutdown
				Thermal	Gross							
JAPAN	JP-31	MONJU	FBR	714	280	246	JAEA	T/HIF/M	1986-5	1995-8	1979-3	2017-12
	JP-15	OHI-1	PWR	3423	1175	1120	KEPCO	WH	1972-10	1977-12	1979-3	2018-3
	JP-19	OHI-2	PWR	3423	1175	1120	KEPCO	WH	1972-12	1978-10	1979-12	2018-3
	JP-22	ONAGAWA-1	BWR	1593	524	498	TOHOKU	TOSHIBA	1980-7	1983-11	1984-6	2018-12
	JP-7	SHIMANE-1	BWR	1380	460	439	CHUGOKU	HITACHI	1970-7	1973-12	1974-3	2015-4
	JP-2	TOKAI-1	GCR	587	166	137	JAPCO	GEC	1961-3	1965-11	1966-7	1988-3
	JP-3	TSURUGA-1	BWR	1070	357	340	JAPCO	GE	1966-11	1969-11	1970-3	2015-4
KAZAKHSTAN	KZ-10	AKTAU	FBR	1000	90	52	MAEC-KAZ	MAEC-KAZ	1964-10	1973-7	1973-7	1999-4
	KR-1	KORI-1	PWR	1729	607	576	KHNP	WH	1972-8	1977-6	1978-4	2019-6
KOREA, REP. OF	KR-3	WOLSONG-1	PHWR	2061	683	661	KHNP	AECI	1977-10	1982-12	1983-4	2019-12
	LT-46	IGNALINA-1	LWGR	4800	1300	1185	INPP	MAEP	1977-5	1983-12	1985-5	2004-12
LITHUANIA	LT-47	IGNALINA-2	LWGR	4800	1300	1185	INPP	MAEP	1978-1	1987-8	1987-12	2009-12
	NL-1	DODEWAARD	BWR	183	60	55	BV GKN	RDM	1965-5	1968-10	1969-3	1997-3
NETHERLANDS	NL-1	DODEWAARD	BWR	183	60	55	BV GKN	RDM	1965-5	1968-10	1969-3	1997-3
	PK-1	KANUPP-1	PHWR	337	100	90	PAEC	CGE	1966-8	1971-10	1972-12	2021-8
PAKISTAN	PK-1	KANUPP-1	PHWR	337	100	90	PAEC	CGE	1966-8	1971-10	1972-12	2021-8
	RU-1	AFS-1 OBNINSK	LWGR	30	6	5	MSM	MSM	1951-1	1954-6	1954-12	2002-4
RUSSIA	RU-3	BELOYARSK-1	LWGR	286	108	102	REA	MSM	1958-6	1964-4	1964-4	1983-1
	RU-6	BELOYARSK-2	LWGR	530	160	146	REA	MSM	1962-1	1967-12	1969-12	1990-1
RU-141	RU-141	BILIRINO-1	LWGR	62	12	11	REA	AEM	1970-1	1974-1	1974-4	2019-1
	RU-17	KURSK-1	LWGR	3200	1000	925	REA	AEM	1972-6	1976-12	1977-10	2021-12
RU-15	RU-15	LENINGRAD-1	LWGR	3200	1000	925	REA	AEM	1970-3	1973-12	1974-11	2018-12
	RU-16	LENINGRAD-2	LWGR	3200	1000	925	REA	AEM	1970-6	1975-7	1976-2	2020-11
RU-4	RU-4	NOVOVORONEZH-1	PWR	760	210	197	REA	MSM	1957-7	1964-9	1964-12	1988-2
	RU-8	NOVOVORONEZH-2	PWR	1320	365	336	REA	MSM	1964-6	1969-12	1970-4	1990-8
RU-9	RU-9	NOVOVORONEZH-3	PWR	1375	417	385	REA	AEM	1967-7	1971-12	1972-6	2016-12
	SK-1	BOHUNICE A1	HWCGR	560	143	93	JAVYS	ŠKODA	1958-8	1972-12	1972-12	1977-2
SLOVAKIA	SK-1	BOHUNICE A1	HWCGR	560	143	93	JAVYS	ŠKODA	1958-8	1972-12	1972-12	1977-2
	SK-2	BOHUNICE-1	PWR	1375	440	408	JAVYS	AEE	1972-4	1978-12	1980-4	2006-12
SK-3	BOHUNICE-2	PWR	1375	440	408	JAVYS	AEE	1972-4	1980-3	1981-1	2008-12	

**TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2022 — continued**

Country	Reactor		Type	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Shutdown
	Code	Name		Thermal	Gross						
SPAIN	ES -1	JOSE CABRERA-1	PWR	510	150	141 UFG	WH	1964-6	1968-7	1969-8	2006-4
	ES -2	SANTA MARIA DE GARONA	BWR	1381	466	446 NUCLENOR	GE	1966-9	1971-3	1971-5	2017-8
	ES -3	VANDELLOS-1	GCR	1670	500	480 HIFRENSA	CEA	1968-6	1972-5	1972-8	1990-7
SWEDEN	SE -1	AGESTA	PHWR	80	12	10 SVAFO	ABB ATOM	1957-12	1964-5	1964-5	1974-6
	SE -6	BARSEBACK-1	BWR	1800	615	600 BKAB	ASEASTAL	1971-2	1975-5	1975-7	1999-11
	SE -8	BARSEBACK-2	BWR	1800	615	600 BKAB	ABB ATOM	1973-1	1977-3	1977-7	2005-5
	SE -2	OSKARSHAMIN-1	BWR	1375	492	473 OKG	ABB ATOM	1966-8	1971-8	1972-2	2017-6
	SE -3	OSKARSHAMIN-2	BWR	1800	661	638 OKG	ABB ATOM	1969-9	1974-10	1975-1	2016-12
SWITZERLAND	SE -4	RINGHALS-1	BWR	2540	910	881 RAB	ABB ATOM	1969-2	1974-10	1976-1	2020-12
	SE -5	RINGHALS-2	PWR	2652	963	852 RAB	WH	1970-10	1974-8	1975-5	2019-12
	CH -8	LUCENS	HWGCR	28	7	6 EOS	NGA	1962-4	1968-1		1969-1
	CH -2	MUEHLEBERG	BWR	1097	390	373 BKW	GETSCO	1967-3	1971-7	1972-11	2019-12
	GB -3A	BERKELEY-1	GCR	620	166	138 ML	TNPG	1957-1	1962-6	1962-6	1989-3
UK	GB -3B	BERKELEY-2	GCR	620	166	138 ML	TNPG	1957-1	1962-6	1962-10	1988-10
	GB -4A	BRADWELL-1	GCR	481	146	123 ML	TNPG	1957-1	1962-7	1962-7	2002-3
	GB -4B	BRADWELL-2	GCR	481	146	123 ML	TNPG	1957-1	1962-7	1962-11	2002-3
	GB -1A	CALDER HALL-1	GCR	268	60	49 SL	UKAEA	1953-8	1956-8	1956-10	2003-3
	GB -1B	CALDER HALL-2	GCR	268	60	49 SL	UKAEA	1953-8	1957-2	1957-2	2003-3
	GB -1C	CALDER HALL-3	GCR	268	60	49 SL	UKAEA	1955-8	1958-3	1958-5	2003-3
	GB -1D	CALDER HALL-4	GCR	268	60	49 SL	UKAEA	1955-8	1959-4	1959-4	2003-3
	GB -2A	CHAPELCROSS-1	GCR	260	60	48 ML	UKAEA	1955-10	1959-2	1959-3	2004-6
	GB -2B	CHAPELCROSS-2	GCR	260	60	48 ML	UKAEA	1955-10	1959-7	1959-8	2004-6
	GB -2C	CHAPELCROSS-3	GCR	260	60	48 ML	UKAEA	1955-10	1959-11	1959-12	2004-6
	GB -2D	CHAPELCROSS-4	GCR	260	60	48 ML	UKAEA	1955-10	1960-1	1960-3	2004-6
	GB -14	DOUNREAY DFR	FBR	60	15	11 UKAEA	UKAEA	1955-3	1962-10	1962-10	1977-3
	GB -15	DOUNREAY PFR	FBR	600	250	234 UKAEA	TNPG	1966-1	1975-1	1976-7	1994-3
	GB -9A	DUNGENESS A-1	GCR	840	230	225 ML	TNPG	1960-7	1965-9	1965-10	2006-12

**TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Shutdown
				Thermal	Gross						
UK	GB -9B	DUNGENESS A-2	GCR	840	230	225 ML	TNPG	1960-7	1965-11	1965-12	2006-12
	GB -18A	DUNGENESS B-1	GCR	1500	615	545 EDF UK	APC	1965-10	1983-4	1985-4	2021-6
	GB -18B	DUNGENESS B-2	GCR	1500	615	545 EDF UK	APC	1965-10	1985-12	1989-4	2021-6
	GB -7A	HINKLEY POINT A-1	GCR	900	267	235 ML	EE/B&W/T	1957-11	1965-2	1965-3	2000-5
	GB -7B	HINKLEY POINT A-2	GCR	900	267	235 ML	EE/B&W/T	1957-11	1965-3	1965-5	2000-5
	GB -16A	HINKLEY POINT B-1	GCR	1494	655	485 EDF UK	TNPG	1967-9	1976-10	1978-10	2022-8
	GB -16B	HINKLEY POINT B-2	GCR	1494	655	480 EDF UK	TNPG	1967-9	1976-2	1976-9	2022-7
	GB -6A	HUNTERSTON A-1	GCR	595	173	150 ML	GEC	1957-10	1964-2	1964-2	1990-3
	GB -6B	HUNTERSTON A-2	GCR	595	173	150 ML	GEC	1957-10	1964-6	1964-7	1989-12
	GB -17A	HUNTERSTON B-1	GCR	1496	644	490 EDF UK	TNPG	1967-11	1976-2	1976-2	2021-11
	GB -17B	HUNTERSTON B-2	GCR	1496	644	495 EDF UK	TNPG	1967-11	1977-3	1977-4	2022-1
	GB -11A	OLDBURY A-1	GCR	730	230	217 ML	TNPG	1962-5	1967-11	1967-12	2012-2
	GB -11B	OLDBURY A-2	GCR	660	230	217 ML	TNPG	1962-5	1968-4	1968-9	2011-6
	GB -10A	SIZEWELL A-1	GCR	1010	245	210 ML	EE/B&W/T	1961-4	1966-1	1966-3	2006-12
	GB -10B	SIZEWELL A-2	GCR	1010	245	210 ML	EE/B&W/T	1961-4	1966-4	1966-9	2006-12
	GB -8A	TRAWSFYNVDD-1	GCR	850	235	195 ML	APC	1959-7	1965-1	1965-3	1991-2
	GB -8B	TRAWSFYNVDD-2	GCR	850	235	195 ML	APC	1959-7	1965-2	1965-3	1991-2
UKRAINE	GB -5	WINDSCALE AGR	GCR	120	36	24 UKAEA	UKAEA	1958-11	1963-2	1963-3	1981-4
	GB -12	WINFRITH SGHWR	SGHWR	318	100	92 UKAEA	ICUFE	1963-5	1967-12	1968-1	1990-9
	GB -13A	WYLFA-1	GCR	1650	530	490 ML	EE/B&W/T	1963-9	1971-1	1971-11	2015-12
	GB -13B	WYLFA-2	GCR	1920	540	490 ML	EE/B&W/T	1963-9	1971-7	1972-1	2012-4
	UA -25	CHERNOBYL-1	LWGR	3200	800	740 MTE	FAEA	1970-3	1977-9	1978-5	1996-11
	UA -26	CHERNOBYL-2	LWGR	3200	1000	925 MTE	FAEA	1973-2	1978-12	1979-5	1991-10
USA	UA -42	CHERNOBYL-3	LWGR	3200	1000	925 MTE	FAEA	1976-3	1981-12	1982-6	2000-12
	UA -43	CHERNOBYL-4	LWGR	3200	1000	925 MTE	FAEA	1979-4	1983-12	1984-3	1986-4
	US -155	BIG ROCK POINT	BWR	240	71	67 CPC	GE	1960-5	1962-12	1963-3	1997-8
	US -014	BONUS	BWR	50	18	17 DOE/PRWR	GNEPRWRA	1960-1	1964-8	1965-9	1968-6

**TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2022 — continued**

Country	Reactor		Type	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Shutdown	
	Code	Name		Thermal	Gross							Net
USA	US -302	CRYSTAL RIVER-3	PWR	2568	890	860	PROGRESS	B&W	1968-9	1977-1	1977-3	2013-2
	US -144	CVTR	PHWR	65	19	17	CVPA	WH	1960-1	1963-12	1963-12	1967-1
	US -10	DRESDEN-1	BWR	700	207	197	EXELON	GE	1956-5	1960-4	1960-7	1978-10
	US -331	DUANE ARNOLD-1	BWR	1912	624	601	NEXTERA	GE	1970-6	1974-5	1975-2	2020-10
	US -011	ELK RIVER	BWR	58	24	22	RCPA	AC	1959-1	1963-8	1964-7	1968-2
	US -16	FERMI-1	FBR	200	65	61	DTEDISON	UEC	1956-8	1966-8	1966-8	1972-11
	US -285	FORT CALHOUN-1	PWR	1500	512	482	EXELON	CE	1968-6	1973-8	1973-9	2016-10
	US -267	FORT ST. VRAIN	HTGR	842	342	330	PSCC	GA	1968-9	1976-12	1979-7	1989-8
	US -018	GE VALLECITOS	BWR	50	24	24	GE	GE	1956-1	1957-10	1957-10	1963-12
	US -213	HADDAM NECK	PWR	1825	603	560	CYAPC	WH	1964-5	1967-8	1968-1	1996-12
	US -077	HALLAM	X	256	84	75	AEC/NPPD	GE	1959-1	1963-9	1963-11	1964-9
	US -133	HUMBOLDT BAY	BWR	220	65	63	PG&E	GE	1960-11	1963-4	1963-8	1976-7
	US -013	INDIAN POINT-1	PWR	615	277	257	ENTERGY	B&W	1956-5	1962-9	1962-10	1974-10
	US -247	INDIAN POINT-2	PWR	3216	1067	998	ENTERGY	WH	1966-10	1973-6	1974-8	2020-4
	US -286	INDIAN POINT-3	PWR	3216	1085	1030	ENTERGY	WH	1968-10	1976-4	1976-8	2021-4
	US -305	KEWAUNEE	PWR	1772	595	566	DOMINION	WH	1968-8	1974-4	1974-6	2013-5
	US -409	LACROSSE	BWR	165	55	48	DPC	AC	1963-3	1968-4	1969-11	1987-4
	US -309	MAINE YANKEE	PWR	2630	900	860	MYAPC	CE	1968-10	1972-11	1972-12	1997-8
	US -245	MILLSTONE-1	BWR	2011	684	641	DOMINION	GE	1966-5	1970-11	1971-3	1998-7
	US -219	OYSTER CREEK	BWR	1930	652	619	EXELON	GE	1964-12	1969-9	1969-12	2018-9
US -255	PALISADES	PWR	2565	850	805	ENTERGY	CE	1967-3	1971-12	1971-12	2022-5	
US -130	PATHFINDER	BWR	220	63	59	NMC	AC	1959-1	1966-7	1966-8	1967-10	
US -171	PEACH BOTTOM-1	HTGR	115	42	40	EXELON	GA	1962-2	1967-1	1967-6	1974-11	
US -293	PILGRIM-1	BWR	2028	711	677	ENTERGY	GE	1968-8	1972-7	1972-12	2019-5	
US -012	PIQUA	X	46	12	12	CoPiquia	GE	1960-1	1963-7	1963-11	1966-1	
US -312	RANCHO SECO-1	PWR	2772	917	873	SMUD	B&W	1969-4	1974-10	1975-4	1989-6	
US -206	SAN ONOFRE-1	PWR	1347	456	436	SCE	WH	1964-5	1967-7	1968-1	1992-11	



**TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2022 — continued**

Country	Code	Reactor Name	Type	Capacity [MW]		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	Shutdown	
				Thermal	Gross							Net
USA	US -361	SAN ONOFRE-2	PWR	3438	1127	1070	SCE	1974-3	1982-9	1983-8	2013-6	
	US -362	SAN ONOFRE-3	PWR	3438	1127	1080	SCE	1974-3	1983-9	1984-4	2013-6	
	US -146	SAXTON	PWR	24	3	3	SNEC	1960-1	1967-3		1972-5	
	US -001	SHIPPINGPORT	PWR	236	68	60	DOE DUQU	1954-1	1957-12	1958-5	1982-10	
	US -322	SHOREHAM	BWR	2436	849	820	LIPA	1972-11	1986-8		1989-6	
	US -289	THREE MILE ISLAND-1	PWR	2568	880	819	EXELON	1968-5	1974-6	1974-9	2019-9	
	US -320	THREE MILE ISLAND-2	PWR	2772	959	880	GPU	1969-11	1978-4	1978-12	1979-3	
	US -344	TROJAN	PWR	3411	1155	1095	PORTGE	1970-2	1975-12	1976-5	1992-11	
	US -271	VERMONT YANKEE	BWR	1912	635	605	ENTERGY	1967-12	1972-9	1972-11	2014-12	
	US -29	YANKEE NPS	PWR	600	180	167	YAEC	1957-11	1960-11	1961-7	1991-10	
	US -295	ZION-1	PWR	3250	1085	1040	EXELON	1968-12	1973-6	1973-12	1998-2	
	US -304	ZION-2	PWR	3250	1085	1040	EXELON	1968-12	1973-12	1974-9	1998-2	
	TAIWAN, CHINA	TW-1	CHINSHAN-1	BWR	1840	636	604	TPC	1972-6	1977-11	1978-12	2018-12
		TW-2	CHINSHAN-2	BWR	1840	636	604	TPC	1973-12	1978-12	1979-7	2019-7
TW-3		KUOSHENG-1	BWR	2894	985	985	TPC	1975-11	1981-5	1981-12	2021-12	

Note: Status as of 31 December 2022, 204 reactors (69047 MW(e)) have been permanently shut down, including 3 units (2193MW(e)) in Taiwan, China.

**TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2022**

Country	Reactor Ref. no.	Unit	Shutdown	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel managemt phase	Decom. licensee	License Expiration
ARMENIA	AM -18	ARMENIAN-1	1989-2	None of the above	Other		4	ANPPC/JSC	
BELGIUM	BE -1	BR-3	1987-6	3,7	ID			GEN/ISCK	2020
BULGARIA	BG -1	KOZLODUY-1	2002-12	None of the above	Dd+PD+SE	10,12	3,4,10	E-03492	2031
	BG -2	KOZLODUY-2	2002-12	None of the above	Dd+PD+SE	10,12	4,10	E-03493	2031
	BG -3	KOZLODUY-3	2006-12	None of the above	Dd+PD+SE	10,12	4,10	E-00174	2031
	BG -4	KOZLODUY-4	2006-12	None of the above	Dd+PD+SE	10,12	4,10	E-0008	2031
	CA -1	ROLPHON NPD	1987-8	3	Dd+PD+SE			AECL	
CANADA	CA -2	DOUGLAS POINT	1984-5	3	Dd+SE			AECL	
	CA -3	GENTILLY-1	1977-6	3	Dd+PD+SE	9		AECL/HQ	
	CA -5	PICKERING-2	2007-5	3	Dd+SE	7,9		OPG	2064
	CA -6	PICKERING-3	2008-10	3	Dd+SE	7		OPG	2064
FRANCE	FR -10	PHENIX	2010-2	None of the above	ID			.	
	FR -2	CHINON A-1	1973-4	1,3	ID	10		EDF	
	FR -24	SUPER-PHENIX	1988-12	None of the above	ID	10	3	NERSA	2026
	FR -3	CHINON A-2	1985-6	1,3	ID	10		EDF	
	FR -4	CHINON A-3	1980-6	1,3	ID	10		EDF	
	FR -5	CHOOZ-A (ARDENNES)	1991-10	None of the above	ID			SENA	
	FR -6	EL-4 (MONTS D'ARREE)	1985-7	1,3	ID			EDF	
	FR -7	ST. LAURENT A-1	1980-4	1,3	ID			EDF	
	FR -8	ST. LAURENT A-2	1982-5	1,3	ID			EDF	
	FR -9	BUGEY-1	1984-5	1,3	ID		10	EDF	
GERMANY	DE -1	VAK KAHL	1985-11	7	ID			VAK	2010
	DE -10	STADE	2003-11	3	ID	6,10,11,13,14,15		PElektra	2026
	DE -11	NIEDERACHBACH	1974-7	7	Dd+SE			KIT	1995
	DE -12	BIBLIS-A	2011-8	2	ID	10	3	RWE	
	DE -13	BRUNSBUETTEL	2011-8	2	ID	10	3	KKB	
	DE -14	PHILIPPSBURG-1	2011-8	2	ID	10	3	EnKK	

**TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2022 — continued**

Country	Reactor Ref. no.	Unit	Shutdown	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management phase	Decom. licensee	License Expiration
GERMANY	DE -15	NECKARWESTHEIM-1	2011-8	2	ID	10	3	EnKK	
	DE -16	ISAR-1	2011-8	2	ID	10		PElektra	2036
	DE -17	UNTERWESER	2011-8	2	ID	10	3	PElektra	2033
	DE -18	BIBLIS-B	2011-8	2	ID	10	3	RWE	
	DE -19	THTR-300	1988-9	3	Dd+SE	7	4	HKG	
	DE -2	MZFR	1984-5	7	ID	10		KTE	
	DE -20	KRUEMMEL	2011-8	2	ID	1,2	3	KKK	
	DE -22	MUELHEIM-KAERLICH	1988-9	2	ID	10		RWE	
	DE -23	GRAFENRHEINFELD	2015-6	2	ID	6,10		PElektra	2035
	DE -24	PHILIPPSBURG-2	2019-12	2	ID	2,3,5	3	EnKK	
	DE -26	GUNDREMMINGEN-B	2017-12	2	ID	2,3,6	3	RWE/E.ON	
	DE -27	GROHNDE	2021-12	2	ID	1,2,3	3	PElektra	2038
	DE -28	GUNDREMMINGEN-C	2021-12	2	ID	2,3,6	3	RWE/PEL	
	DE -3	GUNDREMMINGEN-A	1977-1	6,8	ID	10	3	RWE	
	DE -32	BROKDORF	2021-12	2	ID	1,2,3	3	PElektra	2039
	DE -4	AVR JUELICH	1988-12	3	ID	10		JEN	
	DE -5	OBRIEGHEIM	2005-5	2	ID	10	3	EnKK	
	DE -501	RHEINBERG	1980-6	2	ID	10	4	EWN	
	DE -502	GREIFSWALD-1	1990-12	3	ID	10	4	EWN	
	DE -503	GREIFSWALD-2	1990-2	3	ID	10	4	EWN	
	DE -504	GREIFSWALD-3	1990-2	3	ID	10	4	EWN	
	DE -505	GREIFSWALD-4	1990-6	3	ID	10	4	EWN	
	DE -506	GREIFSWALD-5	1989-11	3	ID	10	4	EWN	
	DE -6	LINGEN	1977-1	3,7	Dd+SE	1,10,14,15		RWE AG	2032
	DE -7	HDR GROSSWELZHEIM	1971-7	1	ID			KIT	1998
	DE -8	KNK II	1991-8	7	ID	10	4	KTE	
	DE -9	WUERGASSEN	1984-8	3	ID	14		PElektra	2019

**TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2022 — continued**

Country	Reactor Ref. no.	Unit	Shutdown	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management phase	Decom. licensee	License Expiration	
ITALY	IT-1	LATINA	1987-12	2, None of the above	Other	6, 14		SOGIN	2043	
	IT-2	GARIGLIANO	1982-3	None of the above	ID	6, 10, 14		SOGIN	2039	
	IT-3	ENRICO FERMI	1990-7	2, None of the above	ID	10, 11		SOGIN	2037	
	IT-4	CAORSO	1990-7	2, None of the above	ID	10, 14, 15		SOGIN	2036	
	JAPAN	JP-1	JPDR	1976-3	None of the above	ID	14		JAERI	1996
		JP-10	FUKUSHIMA-DAIICHI-3	2011-5	5	Other			TEPCO DL	
		JP-11	HAMAOKA-1	2009-1	8	Dd+SE	6, 7, 8, 14		CHUBU DL	2037
		JP-12	GENKAI-1	2015-4	4	Dd+PD+SE	10		KYUSHU	
		JP-15	OHI-1	2018-3	4	Dd+PD+SE	3, 6, 8	9	KEPCO	2049
		JP-16	FUKUSHIMA-DAIICHI-4	2011-5	5	Other			TEPCO DL	
		JP-17	FUKUSHIMA-DAIICHI-5	2013-12	5	Other			TEPCO DL	
		JP-18	FUKUSHIMA-DAIICHI-6	2013-12	5	Other			TEPCO DL	
		JP-19	OHI-2	2018-3	4	Dd+PD+SE	3, 6, 8	9	KEPCO	2049
		JP-20	TOKAI-1	1998-3	3	Dd+PD+SE	6, 8, 10, 14, 15		JAPCO	2030
	KAZAKHSTAN	JP-23	FUGEN ATR	2003-3	3	ID	1, 6	3, 5	JAEA	2032
		JP-24	IKATA-1	2016-5	None of the above	Dd+SE			SHIKOKU	2056
		JP-27	HAMAOKA-2	2009-1	8	Dd+SE	6, 7, 8, 14		SHIKOKU	2037
		JP-31	GENKAI-2	2019-4	4	Dd+PD+SE	10		CHUBU DL	
JP-32		TSURUGA-1	2015-4	4	Dd+PD+SE	3, 4, 6, 7		KYUSHU		
JP-33		MONJU	2017-12	2	ID	1, 2, 3	1	JAPCO	2040	
JP-34		IKATA-2	2018-5	None of the above	Other			...	2047	
JP-4		MIHAMA-1	2015-4	4	Dd+PD+SE	3, 6, 8	9	SHIKOKU	2059	
JP-5		FUKUSHIMA-DAIICHI-1	2011-5	5	Other			KEPCO	2046	
JP-6		MIHAMA-2	2015-4	4	Dd+PD+SE	3, 6, 8	9	TEPCO DL	2046	
JP-7		SHIMANE-1	2015-4	8	Other	2, 5, 6, 7		KEPCO	2046	
JP-9		FUKUSHIMA-DAIICHI-2	2011-5	5	Other			CHUGOKU	2046	
KZ-10	AKTAU	1989-4	3, 7	Dd+PD+SE	1, 6	4	TEPCO DL	MAEC-KAZ		

**TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2022 — continued**

Country	Reactor Ref. no.	Unit	Shutdown	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management phase	Decom. licensee	License Expiration
KOREA, REP. OF	KR -1	KORI-1	2017-6	2, None of the above	ID	2		KHNP	
	KR -3	WOLSONG-1	2019-12	None of the above	ID	1,2		KHNP	2034
	LT -46	IGNALINA-1	2004-12	2, None of the above	ID	2, 10, 11, 12, 13, 14		INPP	2027
LITHUANIA	LT -47	IGNALINA-2	2009-12	2, None of the above	ID	2, 10, 11, 12, 13, 14	3	INPP	2027
	NL -1	DODEWAARD	1997-3	3, None of the above	Dd+SE	7, 8		BV GKN	2055
NETHERLANDS	PK -1	KANUPP-1	2021-8	None of the above	Dd+SE			PAEC	
PAKISTAN	RU -3	BELOYARSK-1	1983-1	None of the above	Other			EA	
	RU -4	NOVORONEZH-1	1988-2	None of the above	Other			EA	
RUSSIA	RU -6	BELOYARSK-2	1990-1	None of the above	Other			EA	
	RU -8	NOVORONEZH-2	1990-8	None of the above	Other			EA	
SLOVAKIA	SK -1	BOHUNICE A1	1977-2	5	Dd+PD+SE	6, 14		JAVYS	
	SK -2	BOHUNICE-1	2006-12	2	ID	10, 13, 14, 15		JAVYS	2025
	SK -3	BOHUNICE-2	2008-12	2	ID	10, 14, 15		JAVYS	
SPAIN	ES -1	JOSE CABRERA-1	2006-4	4	ID	10, 11, 13, 14, 15		UFG	2024
	ES -2	SANTA MARIA DE GARONA	2017-8	4	ID	2, 3, 5, 14, 15	3	Enresa	2031
	ES -3	VANDELLOS-1	1990-7	5	Dd+SE	7, 9		Enresa	2044
SWEDEN	SE -1	AGESTA	1974-6	3	Dd+SE	10, 11, 14, 15		VAB	2024
	SE -2	OSKARSHAMIN-1	2017-6	3	ID	2, 10, 12, 14, 15	4	OKG	2026
	SE -3	OSKARSHAMIN-2	2016-12	3	ID	2, 10, 12, 14, 15	4	OKG	2026
SWITZERLAND	SE -4	RINGHALS-1	2020-12	8	ID			RAB	
	SE -6	BARSEBACK-1	1999-11	None of the above	Other	10, 14, 15	4	BKAB	2033
	SE -8	BARSEBACK-2	2005-5	None of the above	Other	10, 14, 15	4	BKAB	2033
UK	CH -2	MUEHLEBERG	2019-12	3	ID		4	BKW	2030
	CH -8	LUCENS	1969-1	5	Dd+SE	1		EOS	2003
UK	GB -10A	SIZEWELL A-1	2006-12	3, 6	Dd+SE	9		Magnox S	
	GB -10B	SIZEWELL A-2	2006-12	3, 6	Dd+SE	9		Magnox S	
	GB -12	WINFRITH SGHWR	1990-9	None of the above	ID			UKAEA	2019

**TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2022 — continued**

Country	Reactor Ref. no.	Unit	Shutdown	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management phase	Decom. licensee	License Expiration	
UK	GB -14	DOUNREAY DFR	1977-3	None of the above	Dd+PD+SE	4		DSR		
	GB -15	DOUNREAY PFR	1984-3	None of the above	Dd+PD+SE	4		Magnox N		
	GB -1A	CALDER HALL-1	2003-3	3,6		Dd+PD+SE	9	SL		
	GB -1B	CALDER HALL-2	2003-3	3,6		Dd+PD+SE	9	SL		
	GB -1C	CALDER HALL-3	2003-3	3,6		Dd+PD+SE	9	SL		
	GB -1D	CALDER HALL-4	2003-3	3,6		Dd+PD+SE	9	SL		
	GB -2A	CHAPELCROSS-1	2004-6	3,6		Dd+PD+SE	9	Magnox N		
	GB -2B	CHAPELCROSS-2	2004-6	3,6		Dd+PD+SE	9	Magnox N		
	GB -2C	CHAPELCROSS-3	2004-6	3,6		Dd+PD+SE	9	Magnox N		
	GB -2D	CHAPELCROSS-4	2004-6	3,6		Dd+PD+SE	9	Magnox N		
	GB -3A	BERKELEY-1	1989-3	3,6		Dd+SE	9	Magnox S		
	GB -3B	BERKELEY-2	1988-10	3,6		Dd+SE	9	Magnox S		
	GB -4A	BRADWELL-1	2002-3	3,6		Dd+SE	9	Magnox S		
	GB -4B	BRADWELL-2	2002-3	3,6		Dd+SE	9	Magnox S		
	GB -5	WINDSCALE AGR	1981-4	None of the above	Dd+PD+SE	8		SL		
	GB -6A	HUNTERSTON A-1	1980-3	3,6		Dd+PD+SE	9	Magnox N		
	GB -6B	HUNTERSTON A-2	1989-12	3,6		Dd+PD+SE	9	Magnox N		
	GB -7A	HINKLEY POINT A-1	2000-5	3,6		Dd+PD+SE	9	Magnox S		
	GB -7B	HINKLEY POINT A-2	2000-5	3,6		Dd+PD+SE	9	Magnox S		
	GB -8A	TRAFALGARVALE DD-1	1991-2	3,6		Dd+PD+SE	9	Magnox N		
	GB -8B	TRAFALGARVALE DD-2	1991-2	3,6		Dd+PD+SE	9	Magnox N		
	GB -9A	DUNGENESS A-1	2006-12	3,6		Dd+PD+SE	9	Magnox S		
	GB -9B	DUNGENESS A-2	2006-12	3,6		Dd+PD+SE	9	Magnox S		
	USA	US -001	SHIPPINGPORT	1982-10	1,10	ID			DOE DUQU	1974
		US -011	ELK RIVER	1988-2	1, None of the above	ID			RCPA	
		US -012	PIQUA	1966-1	7, 10	Other			CofPiqua	
US -013		INDIAN POINT-1	1974-10	7	Dd+PD+SE			ENERGY		

**TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2022 — continued**

Country	Reactor Ref. no.	Unit	Shutdown	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management phase	Decom. licensee	License Expiration
USA	US -014	BONUS	1988-6	7,8	ISD			DOE/PRWR	
	US -018	GE VALLECITOS	1983-12	1	Dd+SE			GE&PGEC	1965
	US -077	HALLAM	1964-9	7	Dd+SE			AEC&NPPD	
	US -10	DRESDEN-1	1978-10	8	Dd+SE	10,12		EXELON	
	US -130	PATHFINDER	1967-10	7,10	Other	12		NMC	
	US -133	HUMBOLDT BAY	1976-7	7	Dd+PD+SE	6,14,15		PG&E	
	US -144	CVTR	1967-1	2, None of the above	Dd+SE			CVPA	1986
	US -146	SAXTON	1972-5	None of the above, <sup>10</sup>	Other			GPUNC	
	US -155	BIG ROCK POINT	1997-8	3, None of the above	ID			CPC	
	US -16	FERMI-1	1972-11	5,7	Dd+SE	10,12		DTEDISON	
	US -171	PEACH BOTTOM-1	1974-11	1	Dd+SE	1,10		EXELON	
	US -206	SAN ONOFRE-1	1982-11	None of the above, <sup>10</sup>	Other	15		SCE	
	US -213	HADDAM NECK	1986-12	8	ID	6,15		CYAPC	
	US -219	OYSTER CREEK	2018-9	2,3	Dd+PD+SE			EXELCORP	
	US -245	MILLSTONE-1	1998-7	8	Dd+PD+SE			DOMINRES	
	US -247	INDIAN POINT-2	2020-4	None of the above	ISD			ENERGY	
	US -255	PALISADES	2022-5	3	Dd+PD+SE			ENERGY	
	US -267	FORT ST. VRAIN	1989-8	1, None of the above	ID			PSCC	
	US -271	VERMONT YANKEE	2014-12	2	Dd+PD+SE			ENERGY	
	US -285	FORT CALHOUN-1	2016-10	3	Dd+SE			OPPD	
	US -286	INDIAN POINT-3	2021-4	2,3	Dd+SE			ENERGY	
	US -289	THREE MILE ISLAND-1	2019-9	3	Dd+PD+SE			EXELCORP	
	US -29	YANKEE NPS	1991-10	1,2	Other	6,15		YAEC	
	US -293	PILGRIM-1	2019-5	3	Dd+PD+SE			ENERGY	
	US -295	ZION-1	1998-2	8,10	Dd+PD+SE	1,10		CommonEd	
	US -302	CRYSTAL RIVER-3	2013-2	7	Dd+PD+SE			DUKEENER	
	US -304	ZION-2	1988-2	8,10	Other	1,10		COMMED	

**TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2022 — continued**

Country	Reactor Ref. no.	Unit	Shutdown	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management phase	Decom. licensee	License Expiration
USA	US -305	KEWAUNEE	2013-5	3,8	Dd+SE			Entergy Nuclear	
	US -309	MAINE YANKEE	1997-8	8,10	Other	15		MYAPC	
	US -312	RANCHO SECO-1	1989-6	8,10	Other			SMUD	
	US -320	THREE MILE ISLAND-2	1979-3	5,10	Other	10,12	4	GPU	
	US -322	SHOREHAM	1989-6	2,10	ID			LIPA	1995
	US -331	DUANE ARNOLD-1	2020-10	3,7	Dd+SE			NEXTERA	
	US -344	TROJAN	1992-11	8,10	Other	10		PORTGE	
	US -361	SAN ONOFRE-2	2013-6	2	Dd+PD+SE			SCE	
	US -362	SAN ONOFRE-3	2013-6	2	Dd+PD+SE			SCE	
	US -409	LACROSSE	1987-4	3	Dd+PD+SE	10		DPC	



**TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2022 — continued**

Table 17: Definitions for reactors in decommissioning process or decommissioned		
Shutdown reason	Description	Description
1	Obsolete technology or major technology failure or deterioration	Immediate dismantling and removal of all radioactive material
2	Political decision	Deferred dismantling, placing all radiological areas into safe enclosure
3	Economic case no longer viable	A combination of immediate and deferred dismantling
4	Licence not granted for continued operation	In situ disposal, involving encapsulation of radioactive materials and subsequent restriction of access
5	Accident	None of the above
6	After major component failure	
7	Other technological reasons	
8	Other economical reasons	
10	Licence terminated - legal act at the end of the decommissioning process (and site released for restricted/unrestricted use)	
Other	None of the above	
Fuel Management	Description	Description
1	Transfer for Storage at reactor facility (AFR Pool)	1. Drawing up the Final Decommissioning Plan
3	Transfer for storage in away from reactor facility (AFR-RS) on reactor site - Dry Storage Technology	2. Transition phase following permanent shutdown, including reactor core defuelling (See also Fuel Management) and strategy preparation
4	Transfer for storage in away from reactor facility (AFR-OS) off reactor site - Dry Storage Technology	2.1. Core defuelling
5	Shipment to a reprocessing plant	2.2. Preparation for Safe Enclosure
8	Pre-disposal activities (Encapsulation)	2.3. Preparation for dismantling of major equipment and buildings
9	Transfer for storage in away from reactor facility (AFR-RS) on reactor site - Wet Storage Technology	2.4. Partial dismantling of peripheral structures or buildings in advance of the main plant deferred dismantling
10	Transfer for storage in away from reactor facility (AFR-OS) off reactor site - Wet Storage Technology	3. Safe enclosure period
		3.1. Active safe enclosure period
		3.2. Passive safe enclosure period
		4. Dismantling of major plant and buildings
		5. Preparation for site release, including final survey
		6. Licence terminated - legal act at the end of the decommissioning process (and site released for restricted/unrestricted use)
		7. Demolition (if disconnected from nuclear dismantling / conventional demolition)
		8. Waste conditioning on-site - only for decommissioning waste
		9. Waste shipment off-site - only for decommissioning waste

**TABLE 18. PERFORMANCE FACTORS BY REACTOR CATEGORY (2020-2022)**

Reactor Category	Number of Units	Reactors reporting to IAEA PRIS (see note)						
		Availability Factor (EAF) %	Planned Cap.Loss Factor (PCL) %	Capacity Factor (UCF) %	Forced Loss Rate (FLR) %	Operating Factor (OF) %	Load Factor (LF) %	
PWR	306	80.5	12.9	82.2	3.2	82.2	79.5	
PWR < 600 MWe	39	87.6	9.9	88.6	0.9	87.4	85.8	
PWR >= 600 MWe	267	80.1	13.1	81.8	3.4	81.4	79.1	
BWR	46	91.1	6.6	91.5	1.6	91.9	90.3	
BWR < 600 MWe	0							
BWR >= 600 MWe	46	91.1	6.6	91.5	1.6	91.9	90.3	
PHWR	46	76.4	18.3	77.2	4.1	81.1	76.7	
PHWR < 600 MWe	26	81	12.8	82.4	3.7	84.3	81.3	
PHWR >= 600 MWe	20	73.9	21.4	74.3	4.4	77.1	74.2	
LWGR	13	77.3	19.9	78.3	1.9	79.9	78.1	
LWGR < 600 MWe	3	80.6	19.4	80.6	0	79.2	80.4	
LWGR >= 600 MWe	10	77.3	19.9	78.3	1.9	80.1	78.3	
GCR	14	60.7	14.1	61.3	8.9	64.7	60.2	
FBR	2	71	23.7	71.7	6	75.2	72.1	
<b>TOTAL</b>	<b>427</b>	<b>81.1</b>	<b>12.7</b>	<b>82.5</b>	<b>3.1</b>	<b>82.5</b>	<b>80.3</b>	

Note:

1. Reactors shut down during 2020 to 2022 (20 units ) are considered.
2. Nuclear power operating statistics do not include outage data from Ukrainian reactor units as information for these units was not available by the time of publication.

**TABLE 19. FULL OUTAGE STATISTICS DURING 2022**

Reactor Type	Number of Units	Full Outage Hours per Operating Experience Year	% Planned Outages	% Unplanned Outages	% External Outages
PWR	300	1510	66.7	27.4	5.9
PWR < 600 MWe	39	922	85.2	7	7.8
PWR ≥ 600 MWe	261	1598	65.1	29.1	5.8
BWR	42	626	83.2	16.8	0
BWR < 600 MWe	0	0	0	0	0
BWR ≥ 600 MWe	42	626	83.2	16.8	0
PHWR	45	1849	79.7	19.7	0.6
PHWR < 600 MWe	25	1345	68.2	30.8	1
PHWR ≥ 600 MWe	20	2478	87.5	12.1	0.4
LWGR	11	1633	91	9	0
LWGR < 600 MWe	3	1816	100	0	0
LWGR ≥ 600 MWe	8	1564	87.2	12.8	0
GCR	11	1578	71.6	26	2.4
FBR	2	2110	100	0	0
<b>ALL REACTORS</b>	<b>411</b>	<b>1465</b>	<b>70.3</b>	<b>25.1</b>	<b>4.6</b>

Notes:

1. Only reactors in commercial operation are considered.
2. Reactors shut down during 2022 (5 unit(s)) are considered.

**TABLE 20. DIRECT CAUSES OF FULL OUTAGES DURING 2022**

Direct Outage Cause	Planned Full Outages			Unplanned Full Outages		
	Energy Lost GW.h	%	Time Lost Hours	Energy Lost GW.h	%	Time Lost Hours
Plant equipment problem/failure	83337	19.12	81048	115506	93.83	101225
Refuelling without maintenance						
Inspection, maintenance or repair combined with refuelling	282945	64.91	295560			
Inspection, maintenance or repair without refuelling	40394	9.27	61265			
Testing of plant systems or components	3053	0.7	2251	16	0.01	35
Major backfitting, refurbishment or upgrading activities with refuelling	22219	5.1	26112			
Major backfitting, refurbishment or upgrading activities without refuelling	315	0.07	1562			
Nuclear regulatory requirements	2713	0.62	3814	3111	2.53	2998
Human factor related				545	0.44	756
Other	957	0.22	2159	3922	3.19	2712
<b>TOTAL</b>	<b>435933</b>	<b>100</b>	<b>473771</b>	<b>123100</b>	<b>100</b>	<b>107726</b>

Note:

1. Only reactors which have achieved full commercial operation in or before 2022 are counted.
2. Nuclear power operating statistics do not include outage data from Ukrainian reactor units as information for these units was not available by the time of publication.

**TABLE 21. DIRECT CAUSES OF FULL OUTAGES (2018-2022)**

Direct Outage Cause	Planned Full Outages			Unplanned Full Outages		
	Energy Lost GW.h	%	Time Lost Hours	Energy Lost GW.h	%	Time Lost Hours
Plant equipment problem/failure	293144	12.35	287038	347731	88.19	359973
Refuelling without maintenance	1629040	68.63	1782260			
Inspection, maintenance or repair combined with refuelling	190185	8.01	311370			
Inspection, maintenance or repair without refuelling	10787	0.45	10975	791	0.20	1365
Testing of plant systems or components	80400	3.39	102378			
Major backfitting, refurbishment or upgrading activities with refuelling	162801	6.86	195735			
Major backfitting, refurbishment or upgrading activities without refuelling	3781	0.16	9106	3319	0.84	3327
Nuclear regulatory requirements				7022	1.78	7257
Human factor related				1907	0.48	1524
Fire	207	0.01	404	2033	0.52	11580
Fuel management limitation (including high flux tilt, stretch out or coast-down operation)	3233	0.14	12423	31478	7.98	28295
Other						
<b>TOTALS</b>	<b>2373578</b>	<b>100</b>	<b>2711689</b>	<b>384281</b>	<b>100</b>	<b>413321</b>

**Notes**

1. Only reactors which have achieved full commercial operation in or before 2022 are counted.
2. Nuclear power operating statistics do not include outage data from Ukrainian reactor units as information for these units was not available by the time of publication.

**TABLE 22. COUNTRIES: ABBREVIATIONS AND SUMMARY**

Country Code	Full Name	Number of reactors, as of 31 Dec. 2022				
		Under construction	Operational	Suspended Operation	Shutdown	Planned
AR	ARGENTINA	1	3			
AM	ARMENIA		1		1	
BD	BANGLADESH	2				
BY	BELARUS	1	1			
BE	BELGIUM		6		2	
BR	BRAZIL	1	2			
BG	BULGARIA		2		4	
CA	CANADA		19		6	
CN	CHINA	20	54			32
CZ	CZECH REPUBLIC		6			
EG	EGYPT	2				1
FI	FINLAND		5			1
FR	FRANCE	1	56		14	
DE	GERMANY		3		30	
HU	HUNGARY		4			2
IN	INDIA	8	19	4		4
IR	IRAN, ISLAMIC REPUBLIC OF	1	1			2
IT	ITALY				4	
JP	JAPAN	2	10	23	27	9
KZ	KAZAKHSTAN					
KR	KOREA, REPUBLIC OF	3	25		1	
LT	LITHUANIA				2	
MX	MEXICO		2			
NL	NETHERLANDS		1			1
PK	PAKISTAN		6			1
RO	ROMANIA		2			
RU	RUSSIA	3	37		10	18

**TABLE 22. COUNTRIES: ABBREVIATIONS AND SUMMARY — continued**

Country Code	Full Name	Number of reactors, as of 31 Dec. 2022				
		Under construction	Operational	Suspended Operation	Shutdown	Planned
SK	SLOVAKIA	2	4			3
SI	SLOVENIA		1			
ZA	SOUTH AFRICA		2			
ES	SPAIN		7			3
SE	SWEDEN		6			7
CH	SWITZERLAND		4			2
TR	TÜRKIYE	4				
UA	UKRAINE	2	15			4
AE	UNITED ARAB EMIRATES	1	3			
GB	UNITED KINGDOM	2	9			36
US	UNITED STATES OF AMERICA	2	92			41
<b>TOTAL</b>		<b>58</b>	<b>411</b>	<b>27</b>	<b>204</b>	<b>69</b>

Note:

The total includes the following data from Taiwan, China

— 3 units in operation; 3 units in shutdown;

**TABLE 23. REACTOR TYPES: ABBREVIATIONS AND SUMMARY**

Type Code	Type	Under construction	Operational	Suspended Operation	Shutdown
BWR	Boiling Light-Water Cooled and Moderated Reactor	2	42	19	52
FBR	Fast Breeder Reactor	4	2		8
GCR	Gas Cooled, Graphite Moderated Reactor		8		44
HTGR	High Temperature Gas Cooled Reactor		1		4
HWGCR	Heavy-Water Moderated, Gas Cooled Reactor				3
HWLWR	Heavy-Water Moderated, Boiling Light-Water Cooled Reactor				2
LWGR	Light-Water Cooled, Graphite Moderated Reactor		11		13
PHWR	Pressurized Heavy-Water Moderated and Cooled Reactor	3	46	2	10
PWR	Pressurized Light-Water Moderated and Cooled Reactor	49	301	6	65
SGHWR	Steam Generating Heavy-Water Reactor				1
X	Other				2
<b>TOTAL</b>		<b>58</b>	<b>411</b>	<b>27</b>	<b>204</b>



**TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY**

Operator Code	Full Name	Under construction	Operational	Suspended Operation	Shutdown
AEC/NPPD	ATOMIC ENERGY COMMISSION AND NEBRASKA PUBLIC POWER DISTRICT				1
AEP	AMERICAN ELECTRIC POWER COMPANY, INC.		2		
AmerenUE	AMEREN UE, UNION ELECTRIC COMPANY		1		
ANAV	ASOCIACIÓN NUCLEAR ASCÓ-VANDELLOS A.I.E. (ENDESA/ID)		3		
ANC	□	3			
ANJSC	AKKUYU NUCLEAR JOINT STOCK COMPANY (JSC)	1			
ANPPC/JSC	CLOSED JOINT STOCK COMPANY ARMENIAN NPP		1		1
APS	ARIZONA PUBLIC SERVICE CO.		3		
AVR	ARBEITSGEMEINSCHAFT VERSUCHSREAKTOR GMBH				1
Axpo AG	KERNKRAFTWERK BEZNAU CH-5312 DÖTTINGEN		2		
BelNPP	REPUBLICAN UNITARY ENTERPRISE "BELARUSIAN NUCLEAR POWER PLANT"	1			
BHAVINI	BHARATIYA NABHIKIYA VIDYUT NIGAM LIMITED	1			
BKAB	BARSEBÄCK KRAFT AB				2
BKW	BKW ENERGIE AG				1
BRUCEPOW	BRUCE POWER		8		
BV GKN	BV GEMEENSCHAPPELLIJKE KERNENERGIECENTRALE NEDERLAND (BV GKN)				1
CEA/EDF	COMMISSARIAT À L'ENERGIE ATOMIQUE (80%) ELECTRICITÉ DE FRANCE (20%)				1
CEN/SCK	CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE / STUDIECENTRUM VOOR KERNENERGIE				1
CEZ	CZECH POWER CO., CEZ A.S.		6		
CFE	COMISION FEDERAL DE ELECTRICIDAD		2		
CGCNP	CGN GANGNAN NUCLEAR CO.,LTD	2			
CHG	CHINA HUANENG GROUP	2			
CHUBU	CHUBU ELECTRIC POWER CO., INC.				2
CHUGOKU	THE CHUGOKU ELECTRIC POWER CO., INC.	1		3	
CMAT	CENTRALES NUCLEARES ALMARAZ-TRILLO (ID/UFGENDESA/H/NUCLENOR)				1
CNEA	COMISION NACIONAL DE ENERGIA ATOMICA	1		3	

**TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued**

Operator Code	Full Name	Under construction	Operational	Suspended Operation	Shutdown
CNCC	CHINA NATIONAL NUCLEAR CORPORATION	2			
CNNO	CNNC NUCLEAR OPERATION MANAGEMENT COMPANY LIMITED		1		1
CofPiqua	CITY OF PIQUA GOVERNMENT				2
COGEMA	COMPAGNIE GENERALE DES MATIERES NUCLEAIRES				1
CPC	CONSUMERS POWER CO.				1
CVPA	CAROLINAS-VIRGINIA NUCLEAR POWER ASSOC.				1
CYAPC	CONNECTICUT YANKEE ATOMIC POWER CO.				1
DNMC	DAYA BAY NUCLEAR POWER OPERATIONS AND MANAGEMENT CO, LTD.		6		
DOE DUQU	DEPARTMENT OF ENERGY AND DUQUESNE LIGHT CO.				1
DOE/PRWR	DOE & PUERTO RICO WATER RESOURCES				1
DOMINION	DOMINION ENERGY		6		2
DPC	DAIRYLAND POWER COOPERATIVE				1
DTEDISON	DETROIT EDISON CO.		1		1
DUKEENER	DUKE ENERGY CORP.		7		
E-ON	E-ON KERNKRAFT GMBH				4
EBL	ENGIE ELECTRABEL		3		
EBL-EDF	ENGIE ELECTRABEL + EDF BELGIUM + EDF LUMINUS		3		1
EDF	ÉLECTRICITÉ DE FRANCE	1	56		10
EDF UK	EDF ENERGY		9		6
EDF-CGN	EDF ENERGY - CHINA GENERAL NUCLEAR JOINT VENTURE	2			
ELETROBR	□		1		
ELETRONU	□	1	1		
EnBW	ENBW KRAFTWERKE AG				1
ENERGYNW	ENERGY NORTHWEST		1		
EnKK	ENBW KERNKRAFT GMBH		1		3
ENERGY	ENERGY NUCLEAR OPERATIONS, INC.		6		6
EOS	ENERGIE DE LOUEST SUISSE				1

**TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued**

Operator Code	Full Name	Under construction	Operational	Suspended Operation	Shutdown
EPDC	ELECTRIC POWER DEVELOPMENT CO., LTD.	1			
EPZ	N.V. ELEKTRICITEITS-PRODUKTIEMAATSCHAPPIJ ZUID-NEDERLAND		1		
ESKOM	ESKOM		2		
EWN	ENERGIEWERKE NORD GMBH				6
EXELON	EXELON GENERATION CO., LLC		21		7
FENOC	FIRST ENERGY NUCLEAR OPERATING CO.		4		
FKA	FORSMARK KRAFTGRUPP AB		3		
FORTUMPH	FORTUM POWER AND HEAT OY (FORMER IVO)		2		
FPL	FLORIDA POWER & LIGHT CO.		4		
FQNP	CNNC FUJIAN FUJING NUCLEAR POWER CO., LTD		6		
FSNPC	FUJIAN SANMING NUCLEAR POWER CO., LTD.				
FV	FENNOVOIMA OY				
GE	GENERAL ELECTRIC				1
GFNPC	GUANGXI FANGCHENGANG NUCLEAR POWER COMPANY, LTD.	2	2		
GPU	GENERAL PUBLIC UTILITIES (OWNED BY FIRSTENERGY CORP.)				1
HEPCO	HOKKAIDO ELECTRIC POWER CO., INC.			3	
HIFRENSA	HISPANO-FRANCESA DE ENERGIA NUCLEAR, S.A.				1
HKG	HOCHTEMPERATUR-KERNKRAFTWERK GMBH				1
HNPC	HAINAN NUCLEAR POWER COMPANY	1	2		
HOKURIKU	HOKURIKU ELECTRIC POWER CO.			2	
HQ	HYDRO QUEBEC				2
HSDNPC	SHANDONG HONGSHIDING NUCLEAR POWER PLANT				
HSNPC	HUANENG SHANDONG SHIDAO BAY NUCLEAR POWER COMPANY, LTD.		1		
HZNP	CGN HUIZHOU NUCLEAR POWER CO.,LTD.	2			
ID	IBERDROLA, S.A.		1		
INPP	IGNALINA NUCLEAR POWER PLANT				2
JAEA	JAPAN ATOMIC ENERGY AGENCY				3

**TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued**

Operator Code	Full Name	Under construction	Operational	Suspended Operation	Shutdown
JAPCO	JAPAN ATOMIC POWER CO.			2	2
JAVYS	JADROVA A VYRADOVACIA SPOLOCNOST /NUCLEAR AND DECOMMISSIONING COMPANY, PLC./				3
JNPC	JIANGSU NUCLEAR POWER CORPORATION	2		6	3
K N N P	KOZLODUY NUCLEAR POWER PLANT			1	
KBG	KERNKRAFTWERK-BETRIEBSGESELLSCHAFT MBH				2
KEPCO	KANSAI ELECTRIC POWER CO.			5	4
KBG	KERNKRAFTWERKE GUNDREMMINGEN BETRIEBSGESELLSCHAFT MBH				1
KBG	KERNKRAFTWERK GUNDREMMINGEN GMBH				4
KBG	KERNKRAFTWERK GUNDREMMINGEN GMBH				3
KHNP	KOREA HYDRO AND NUCLEAR POWER CO.	3		25	2
KBK	KERNKRAFTWERK BRUNSBÜTTEL GMBH & CO. OHG				1
KBG	KERNKRAFTWERK GÖSGEN-DÄNIKEN AG			1	
KBK	KERNKRAFTWERK KRÜMMEL GMBH & CO. OHG				1
KKL	KERNKRAFTWERK LEIBSTADT			1	
KLE	KERNKRAFTWERKE LIPPE-EMS GMBH			1	
KNPP	KOZLODUY NPP .LC			1	
KNPP	□				1
KWL	KERNKRAFTWERK LINGEN GMBH				1
KYUSHU	KYUSHU ELECTRIC POWER CO., INC.				1
LFNPC	CGN LUFEENG NUCLEAR POWER CO., LTD			4	2
LHNPC	LIAONING HONGYANHE NUCLEAR POWER CO. LTD. (LHNPC)	1			
LIPA	LONG ISLAND POWER AUTHORITY			6	
LNPC	LIAONING NUCLEAR POWER COMPANY, LMT.	2			1
LUMINANT	LUMINANT GENERATION COMPANY, LLC			2	
MAEC-KAZ	LIMITED LIABILITY PARTNERSHIP «MANGISTAU ATOMIC ENERGY COMPLEX-KAZATOMPROM»				1
ML	MAGNOX, LTD				22
MSM	MINISTRY OF MEDIUM MACHINE BUILDING OF THE USSR (MINSREDMASH)				1
MTE	MINTOPENERGO OF UKRAINE - MINISTRY OF FUEL AND ENERGY OF UKRAINE				4

**TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued**

Operator Code	Full Name	Under construction	Operational	Suspended Operation	Shutdown
MYAPC	MAINE YANKEE ATOMIC POWER CO.				1
NASA	NUCLEOELECTRICA ARGENTINA S.A.		3		
NAWAH	NAWAH ENERGY COMPANY	1			
NBEPG	NEW BRUNSWICK ELECTRIC POWER COMMISSION		3		
NDNP	FUJIAN NINGDE NUCLEAR POWER COMPANY, LTD.		1		
NEK	NUKLEARNA ELEKTRARNA KRŠKO		4		
NEXTERA	NEXTERA ENERGY RESOURCES, LLC		1		
			3		1
NMC	NUCLEAR MANAGEMENT CO.				1
NNEGC	STATE ENTERPRISE "NATIONAL NUCLEAR ENERGY GENERATING COMPANY 'ENERGOATOM'"	2	15		
NPCBL	NUCLEAR POWER PLANT COMPANY BANGLADESH LIMITED	2			
NPCIL	NUCLEAR POWER CORPORATION OF INDIA, LTD.	7	19	4	
NPPA	NUCLEAR POWER PLANTS AUTHORITY	2			
NPPDCO	NUCLEAR POWER PRODUCTION AND DEVELOPMENT CO. OF IRAN	1	1		
NPQJVC	NUCLEAR POWER PLANT QINSHAN JOINT VENTURE COMPANY LTD.		4		
NSP	NORTHERN STATES POWER CO. (SUBSIDIARY OF XCEL ENERGY)		3		
NUCLENOR	NUCLENOR, S.A.				1
OH	ONTARIO HYDRO				2
OKG	OKG AKTIEBOLAG		1		2
OPG	ONTARIO POWER GENERATION		10		2
PAEC	PAKISTAN ATOMIC ENERGY COMMISSION		6		1
PAKS II	MVM PAKS II, LTD.				
PAKS Zrt	PAKS NUCLEAR POWER PLANT, LTD.		4		
PE	PREUSSENELEKTRA KERNKRAFT GMBH&CO KG				1
PElektra	PREUSSENELEKTRA GMBH		1		2
PG&E	PACIFIC GAS AND ELECTRIC COMPANY		2		1
PORTGE	PORTLAND GENERAL ELECTRIC CO.				1
PPL_SUSQ	PPL SUSQUEHANNA, LLC		2		

**TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued**

Operator Code	Full Name	Under construction	Operational	Suspended Operation	Shutdown
PROGRESS	PROGRESS ENERGY		4		1
PSCC	PUBLIC SERVICE CO. OF COLORADO				1
PSEG	PSEG NUCLEAR, LLC		3		
QNPC	QINSHAN NUCLEAR POWER COMPANY		2		2
RAB	RINGHALS AB		2		1
RCFA	RURAL COOPERATIVE POWER ASSOC.				9
REA	JOINT STOCK COMPANY 'CONCERN ROSENERGOATOM'	2	37		2
RWE	RWE POWER AG				3
SCE	SOUTHERN CALIFORNIA EDISON CO.		1		
SCE&G	SOUTH CAROLINA ELECTRIC & GAS CO.		2		
SDNPC	SHANDONG NUCLEAR POWER COMPANY, LTD.	1	4		1
SE	SLOVENSKÉ ELEKTRÁRNE, A.S.	2			2
SENA	SOCIETE D'ENERGIE NUCLEAIRE FRANCO-BELGE DES ARDENNES				1
SHIKOKU	SHIKOKU ELECTRIC POWER CO., INC		1		2
SKHK	□	1			4
SL	SELLAFIELD LIMITED				
SMNPC	SANIMEN NUCLEAR POWER CO., LTD.	1	2		1
SMUD	SACRAMENTO MUNICIPAL UTILITY DISTRICT				1
SNEC	SAXTON NUCLEAR EXPERIMENTAL REACTOR CORPORATION		2		4
SNN	SOCIETATEA NATIONALA NUCLEARELECTRICA, S.A.				
SNPDP	STATE NUCLEAR POWER DEMONSTRATION PLANT CO., LTD.				2
SOGIN	SOCIETA GESTIONE IMPANTI NUCLEARI S.P.A.				6
SOUTHERN	SOUTHERN NUCLEAR OPERATING COMPANY, INC.	2			2
STP	STP NUCLEAR OPERATING CO.				1
SVAFO	AB SVAFO				10
TEPCO	TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC.				7
TNPJVC	TAISHAN NUCLEAR POWER JOINT VENTURE COMPANY LIMITED		2		3
TOHOKU	TOHOKU ELECTRIC POWER CO., INC				1

**TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued**

Operator Code	Full Name	Under construction	Operational	Suspended Operation	Shutdown
TPC	TAIWAN POWER CO.		3		3
TONPC	THE THIRD QINSHAN JOINT VENTURE COMPANY, LTD.		2		
TVA	TENNESSEE VALLEY AUTHORITY		7		
TVO	TEOLLISUUDEN VOIMA OYJ		3		
UFG	UNION FENOSA GENERATION, S.A.				1
UKAEA	UNITED KINGDOM ATOMIC ENERGY AUTHORITY				4
WCNOC	WOLF CREEK NUCLEAR OPERATING CORP.		1		
YAEC	YANKEE ATOMIC ELECTRIC CO.				1
YJNPC	YANGJIANG NUCLEAR POWER COMPANY		6		
ZGZEC	CNNP GUODIAN ZHANGZHOU ENERGY CO.,LTD	2			
<b>TOTAL</b>		<b>58</b>	<b>411</b>	<b>27</b>	<b>204</b>

**TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY**

Supplier Code	Type	Under Construction	Operational	Suspended Operation	Shutdown
AJFW	ASSOCIATION ACEC-FRAMATOME AND WESTINGHOUSE.				1
ABB ATOM	ABB ATOM (FORMERLY ASEA-ATOM)		4		5
AC	ALLIS CHALMERS				3
ACECOWEN	ACECOWEN (ACEC-COCKERILL-WESTINGHOUSE)		4		
ACLF	(ACECOWEN - CREUSOT LOIRE - FRAMATOME)		1		
AECL	ATOMIC ENERGY OF CANADA, LTD.		6	1	4
AECL/DAE	ATOMIC ENERGY OF CANADA LTDA AND DEPARTMENT OF ATOMIC ENERGY(INDIA)		1		
AECL/DHI	ATOMIC ENERGY OF CANADA LTD./DOOSAN HEAVY INDUSTRIES & CONSTRUCTION		3		
AEE	ATOMENERGOEXPORT		8		12
AEG	ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT				1
AEG,GE	ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT, GENERAL ELECTRIC COMPANY (US)				1
AEG,KWU	ALLGEMEINE ELEKTRICITAETS GESELLSCHAFT, KRAFTWERK UNION AG				1
AEM	ATOMENERGOMASH	8		37	5
AMN/GETS	ANSALDO MECCANICO NUCLEARE SPA / GENERAL ELECTRIC TECHNICAL SERVICES CO.				1
APC	ATOMIC POWER CONSTRUCTION, LTD.				4
ASEASTAL	ASEA-ATOM / STAL-LAVAL		2		1
ASPALDO	ASPALDO				1
Atom mash	ATOMMASH AEM-TECHNOLOGIES	3			5
B&W	BABCOCK & WILCOX CO.				1
BBK	BROWN BOVERI-KRUPP REAKTORBAU GMBH		5		1
BBR	BROWN BOVERI REAKTOR GMBH				1
CE	COMBUSTION ENGINEERING CO.		10		5
CEA	COMMISSARIAT A L'ENERGIE ATOMIQUE				1
CFHI	CHINA FIRST HEAVY INDUSTRIES	11		9	
CGE	CANADIAN GENERAL ELECTRIC				2
CIAE(Chi)	CHINA INSTITUTE OF ATOMIC ENERGY				
CNCLNEY	CNIM-CONSTRUCTIONS NAVALES ET INDUSTRIELLES DE MEDITERRANEE CL - CREUSOT LOIRE, NEY - NEYRPIG	2			1



**TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY — continued**

Supplier Code	Type	Under Construction	Operational	Suspended Operation	Shutdown
CNEA	COMISIÓN NACIONAL DE ENERGÍA ATÓMICA	1			
CNRC	CHINA NATIONAL NUCLEAR CORPORATION		9		
CZEC	CHINA ZHONGYUAN ENGINEERING CORPORATION		2		
DEC	DONGFANG ELECTRIC CORPORATION	1	13		
DHICKAEC	DOOSAN HEAVY INDUSTRIES AND CONSTRUCTION CO. LTD./KOREA ATOMIC ENERGY RESEARCH INSTITUTE/COMBUSTION ENGINEERING		2		
DHICKOPC	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.LTD./KOREA POWER ENGINEERING COMPANY/COMBUSTIONENGINEERING	3	13		
EE/BAW/T	THE ENGLISH ELECTRIC CO., LTD / BABCOCK & WILCOX CO. / TAYLOR WOODROW CONSTRUCTION, LTD.				6
EL/WEST	ELETTRONUCLEARE ITALIANA / WESTINGHOUSE ELECTRIC CORP.				1
FAEA	FEDERAL ATOMIC ENERGY AGENCY		1		5
FRAM	FRAMATOME		64		5
FRAMACEC	FRAMATECO ( FRAMATOME-ACEC-COCKERILL )		1		1
GA	GENERAL ATOMIC CORP.				2
GAAA	GROUPEMENT ATOMIQUE ALSACIENNE ATLANTIQUE				1
GE	GENERAL ELECTRIC CO.		35	3	20
GE/GETSC	GENERAL ELECTRIC CO. / GENERAL ELECTRIC TECHNICAL SERVICES CO.				1
GE/T	GENERAL ELECTRIC CO. / TOSHIBA CORPORATION				2
GEC	GENERAL ELECTRIC COMPANY (UK)				3
GETSCO	GENERAL ELECTRIC TECHNICAL SERVICES CO.		1		1
GNEP/RWA	GENERAL NUCLEAR ENGINEERING & PUERTO RICO WATER RESOURCES AUTHORITY (US)				1
GTM	GRANDS TRAVAUX DE MARSEILLE				1
H/G	HITACHI GE NUCLEAR ENERGY, LTD.	1			
HITACHI	HITACHI, LTD.	1			
HRB	HOCHTEMPERATUR-REAKTORBAU GMBH			6	5
IA	INTERNATOM INTERNATIONALE ATOMREAKTORBAU GMBH				1
IC/LIFE	INTERNATIONAL COMBUSTION LTD. / FAIREY ENGINEERING LTD.				1
IZ	IZHORSKIYE ZAVODY		4		1

**TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY — continued**

Supplier Code	Type	Under Construction	Operational	Suspended Operation	Shutdown
JSC ASE	JSC "ATOMSTROYEXPORT"	10			
KEPCO	KOREA ELECTRIC POWER CORPORATION	1		2	
KWU	KRAFTWERK UNION, AG	1		3	
LEVIVIER	LEVIVIER			6	15
MAEC-KAZ	MAEC-KAZATOMPROM LIMITED LIABILITY PARTNERSHIP «MANGISTAU ATOMIC ENERGY COMPLEX-KAZATOMPROM»				2
MAEP	MINATOMENERGOPROM, MINISTRY OF NUCLEAR POWER AND INDUSTRY			2	2
MHI	MITSUBISHI HEAVY INDUSTRIES, LTD.			10	5
MSM	MINISTRY OF MEDIUM MACHINE BUILDING OF THE USSR (MINSREDMASH)				5
NA	NA	1			
NGA	NATIONALE GESELLSCHAFT ZUR FÖRDERUNG DER INDUSTRIELLEN ATOMTECHNIK				1
NNC	NATIONAL NUCLEAR CORPORATION			2	
NPC	NUCLEAR POWER CO., LTD.			6	
NPCIL	NUCLEAR POWER CORPORATION OF INDIA, LTD.	3		16	1
NPIC	VIKRAM SARABHAI BHAVAN, ANUSHAKTI NAGAR, MUMBAI - 400 094.				
OH/AECL	NUCLEAR POWER INSTITUTE OF CHINA			8	
ORANO	ONTARIO HYDRO / ATOMIC ENERGY OF CANADA, LTD.			18	
PAA	ORANO	3		3	
PAIP	PRODUCTION AMALGAMATION 'ATOMMASH', VOLGODONSK			4	
PPC	PRODUCTION AMALGAMATION IZHORSKY PLANT ATOMMASH, VOLGODONSK, RUSSIA			11	
RDM	PWR POWER PROJECTS, LTD.			1	
Russian	ROTTERDAMSE DROOGDOEK MAATSCHAPPIJ (RDM) IN ROTTERDAM (NL)				1
SI/KWU	RUSSIAN HYDRAULIC PRESS DESIGN INSTITUTE (OKB)	1			
SACM	SIEMENS/KRAFTWERK UNION, AG.			1	
SENPE	SOCIETE ALSACIENNE DE CONSTRUCTIONS MECANIQUES				2
Shanghai	SHANGHAI ELECTRIC NUCLEAR POWER EQUIPMENT CO., LTD				
SHE	SHANGHAI NUCLEAR ENGINEERING RESEARCH & DESIGN INSTITUTE CO., LTD.	1		2	
	SHANGHAI ELECTRIC				

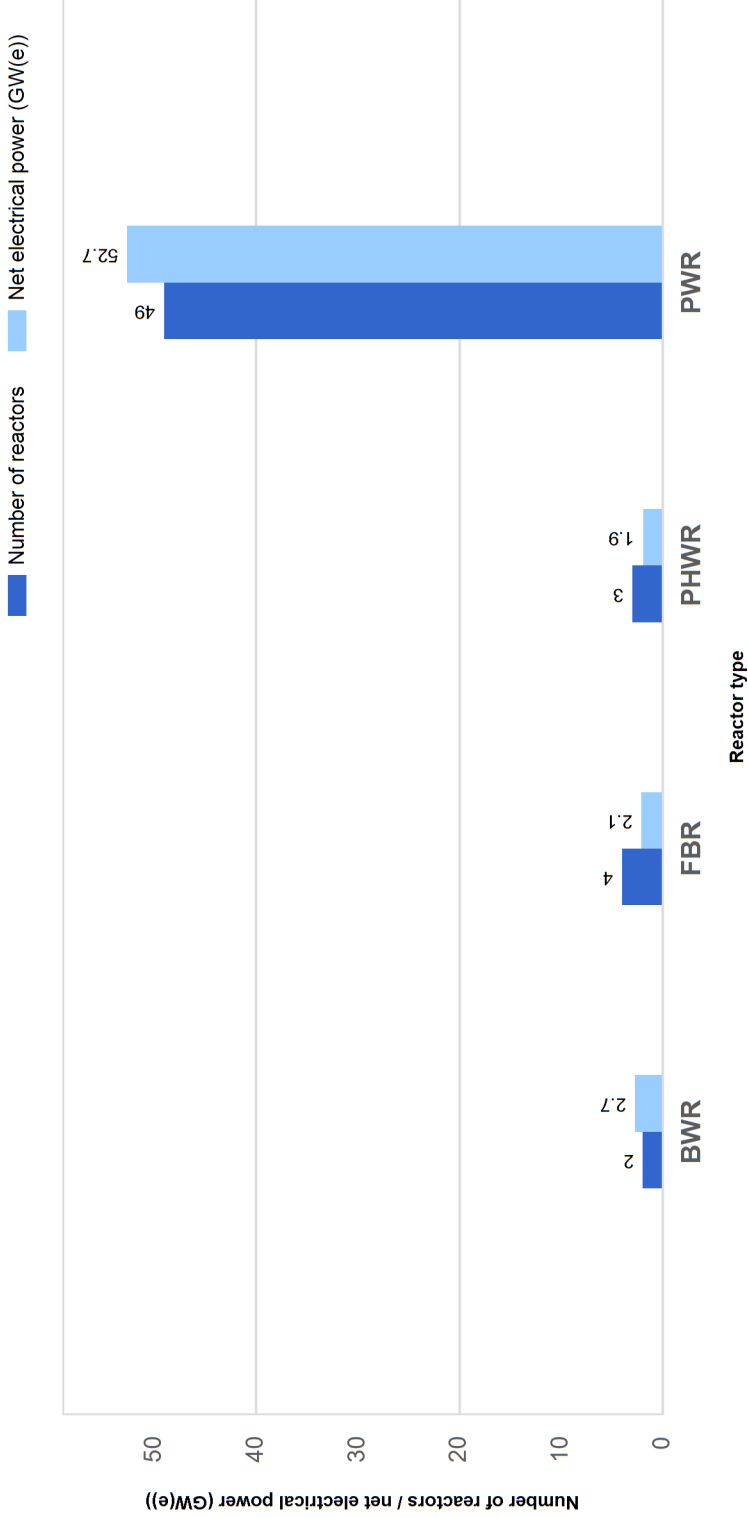
TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY — continued

Supplier Code	Type	Under Construction	Operational	Suspended Operation	Shutdown
SIEM,KWU	SIEMENS AG, KRAFTWERK UNION AG				1
SIEMENS	SIEMENS AG, POWER GENERATION			2	1
ŠKODA	ŠKODA CONCERN NUCLEAR POWER PLANT WORKS	2		10	1
SNERDI	SHANGHAI NUCLEAR ENGINEERING RESEARCH AND DESIGN INSTITUTE CO. LTD	1			
T/H/F/M	TOSHIBA / HITACHI / FUJI ELECTRIC HOLDINGS / MITSUBISHI HEAVY INDUSTRIES				1
TNPG	THE NUCLEAR POWER GROUP, LTD.				14
TOSHIBA	TOSHIBA CORPORATION			10	7
TSINGHUA	TSINGHUA UNIVERSITY			1	
UEC	UNITED ENGINEERS AND CONTRACTORS				1
UKAEA	UNITED KINGDOM ATOMIC ENERGY AUTHORITY				10
WH	WESTINGHOUSE ELECTRIC CORPORATION	2		66	18
WH/MI	WESTINGHOUSE ELECTRIC CORPORATION / MITSUBISHI HEAVY INDUSTRIES, LTD.			2	1
Not specified	OTHERS	1			
<b>TOTAL</b>		<b>58</b>	<b>411</b>	<b>27</b>	<b>204</b>

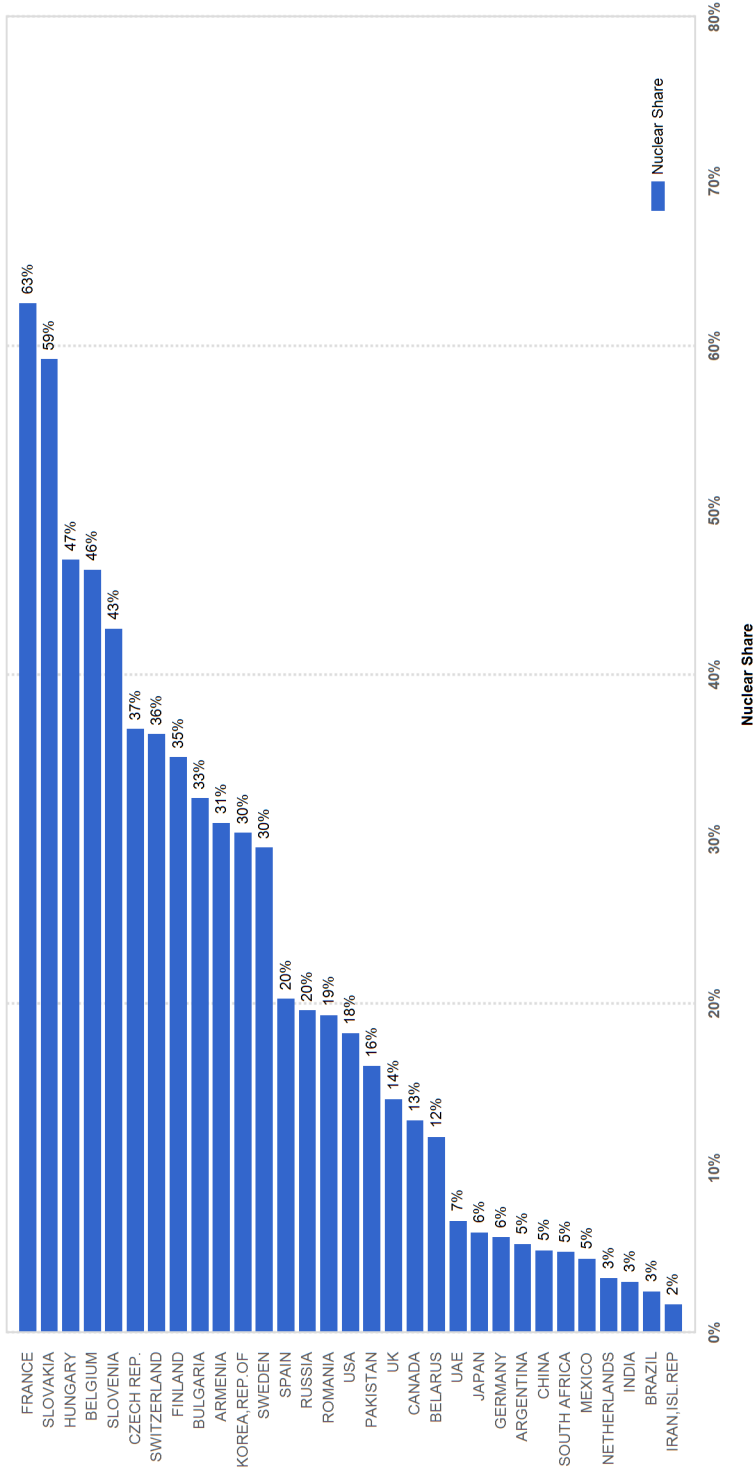
**Figure 1. Number of operational reactors by type and net electrical power (as of 31 Dec. 2022)**



**Figure 2. Reactors under construction by type and net electrical power (as of 31 Dec. 2022)**



**Figure 3. Nuclear share of electricity generation (as of 31 Dec. 2022)**



Note: The nuclear share of electricity supplied in Taiwan, China was 9.1% of the total.

**Figure 4. Worldwide median construction time in months (as of 31 Dec. 2022)**

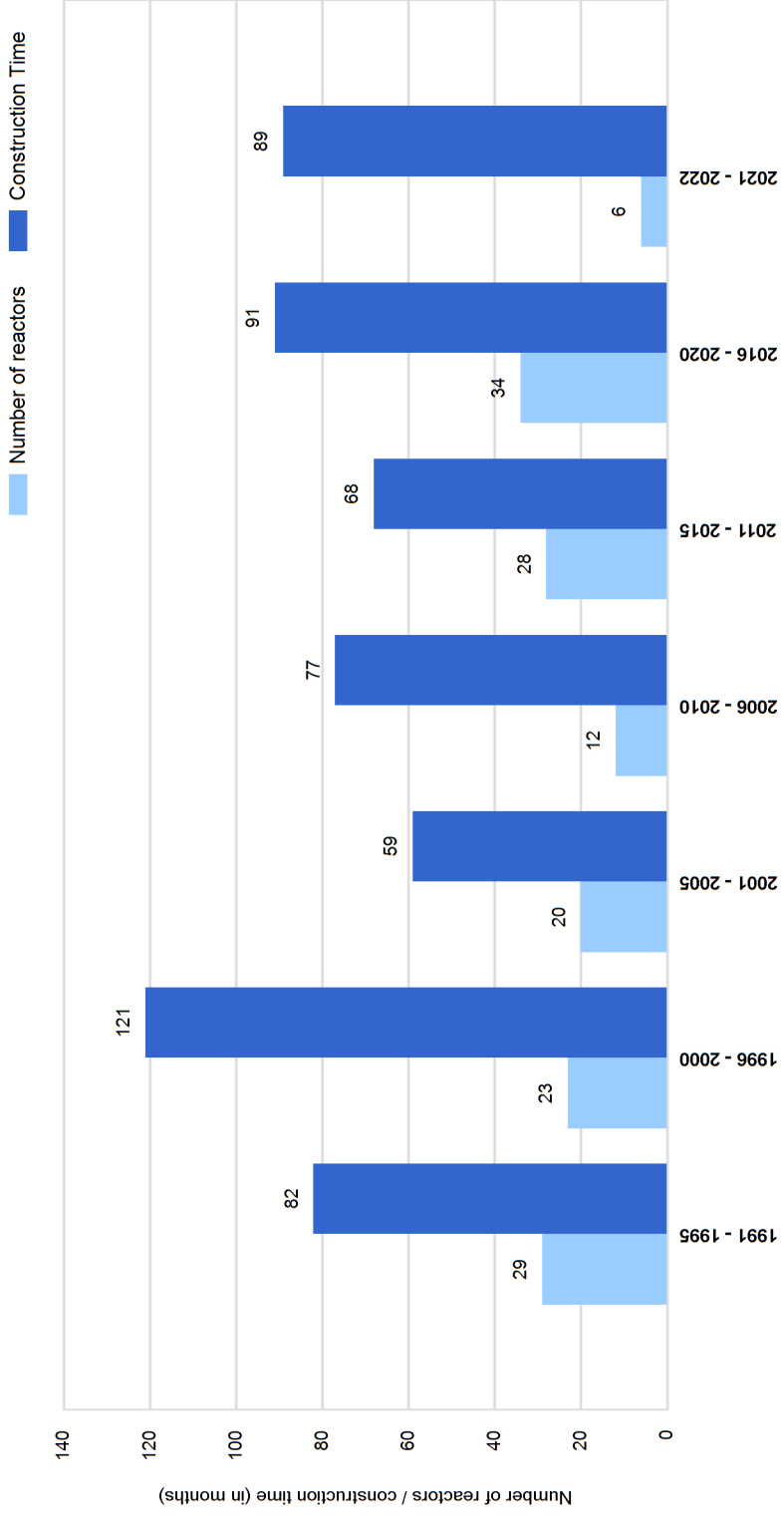


Figure 5. Number of operational reactors by age (as of 31 Dec. 2022)

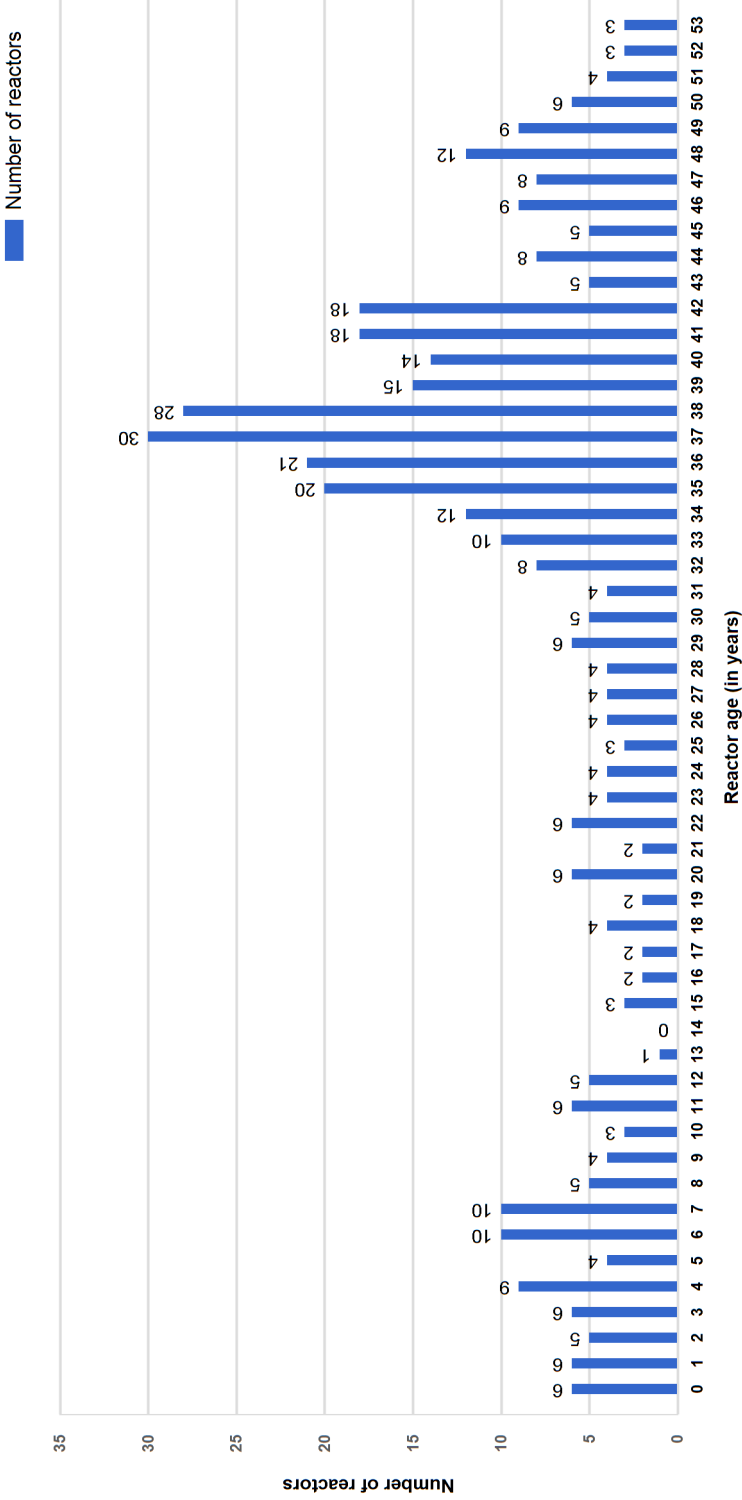
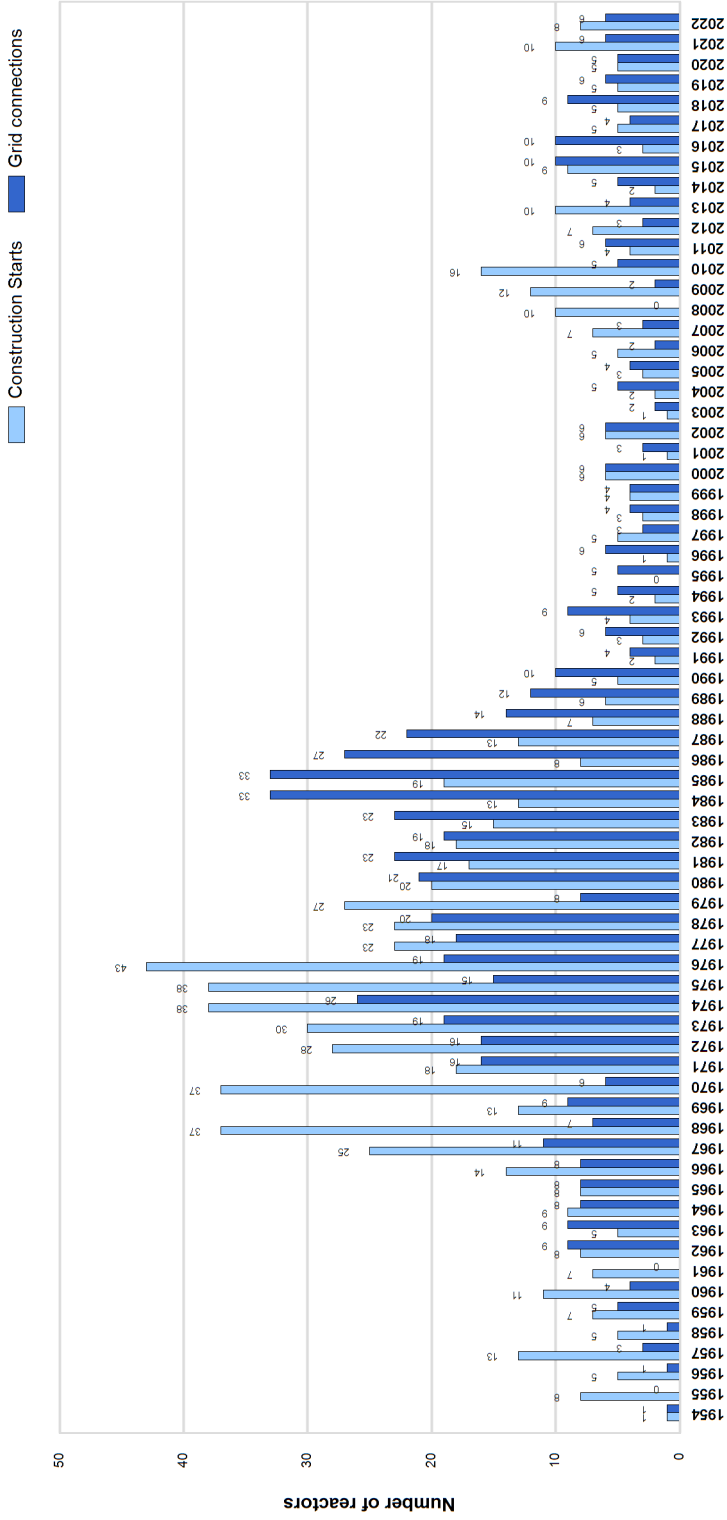
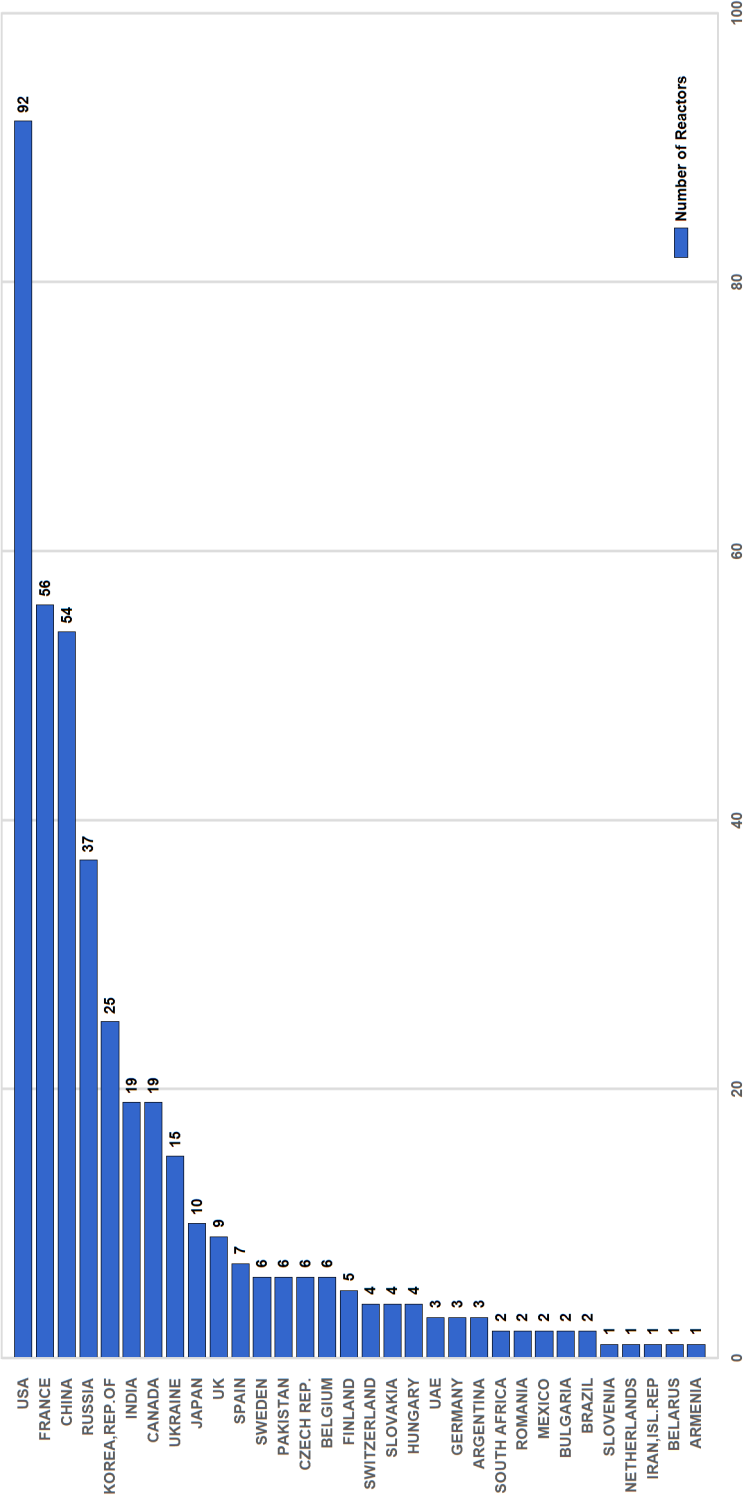




Figure 6. Annual construction starts and connections to the grid (1954 - 2022)



**Figure 7. Number of reactors in operation worldwide (as of 31 Dec. 2022)**



**Figure 8. Number of reactors under construction worldwide (as of 31 Dec. 2022)**

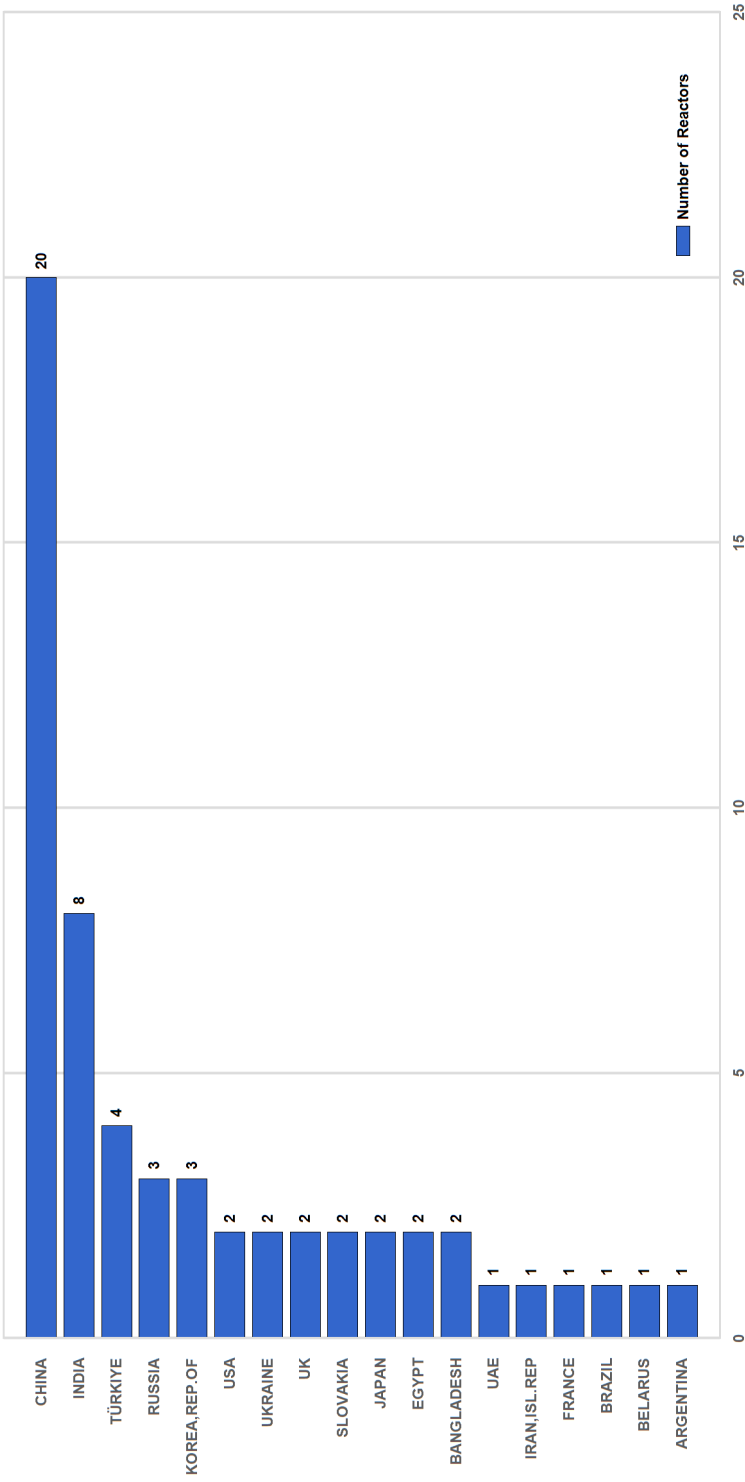
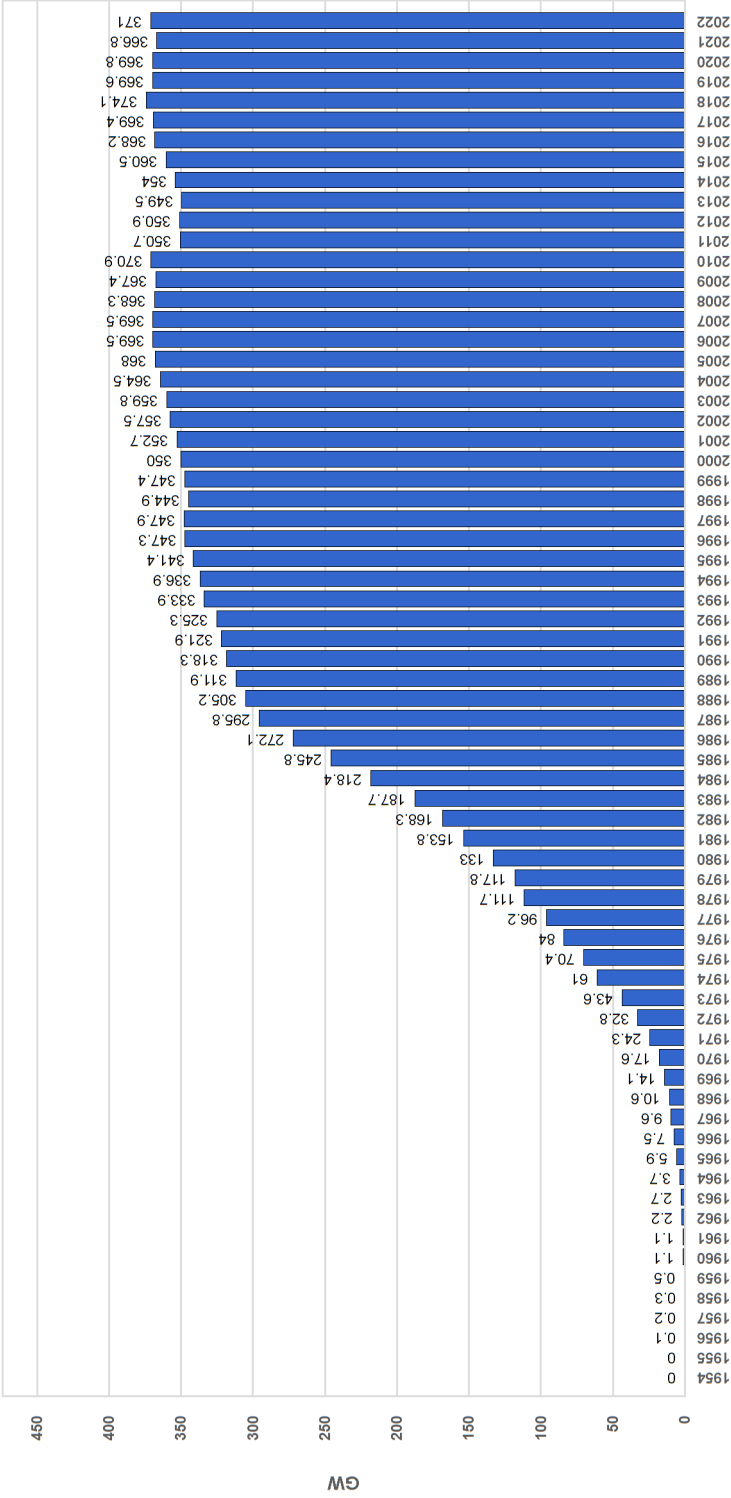


Figure 9. Historical evolution of the worldwide nuclear power (as of 31 Dec. 2022)





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