Fact Sheet on “Nuclear Renaissance” in the World

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Fact Sheet 1.

Countries/areas having Nuclear Power Plants in Operation & under Construction

Notes: Total capacity of nuclear power plants and the number of reactor units are based on the data of 2007 end, JAIF
Share of nuclear power generation is based on the data of 2007, IAEA website
Operational ratio is quoted from the data of Nucleonics Week, March 5, 2009

	Country/ Area	Total Capacity of NPPs Unit: 10,000MW (Number of reactor units)		**Share** of Nuclear Power Generation	Operational **Ratio** In 2007 In 2008 (%)	**Nuclear Trend**
		In Operation	Under Construction			
1	**U.S.A.**	10,606 (104)		19.4%	91.01 89.91	● No new NPPs have been built for 30 years since the TMI accident in 1979. Through power upgrades at NPPs, however, total operational capacity increased by approx. 5,000 MW. ● Move toward new NPPs: Applications were filed for combined construction-operating licenses (COL) for 26 units in the period from the latter half of 2007 through the end of 2008, including aims of commercial operation of 4-6 units by 2016. ● The Obama Administration in office from 2009. Energy secretary (DOE): Mr. Steven Chu. Probable readjustment of Yucca Mountain disposal plan, toward new radioactive waste strategy.
2	**France**	6,602 (59)	163 (1)	76.9%	75.98 76.09	● France exports surplus nuclear electricity to neighboring countries. ● Energy source diversification and the importance of nuclear energy were clearly incorporated into law in July 2005. ● The shift to Gen-III EPRs is expected around 2020. ● Construction of the EPR first unit (Flamanville-3 NPS) was launched in 2007. ● A shift to Gen-IV will occur in the 2030s to 2040s.
3	**Japan**	4,958 (55)	257 (3)	27.5%	63.87 59.16	● 13 units totaling 17,230 MW are planned, including 3 under construction and 10 in preparation for construction. ● ”Steady promotion of nuclear generation is very important,” said former Prime Minister Fukuda in a speech at the JAIF Annual Conference in 2008. ● An ”Action Plan for Achieving a Low-Carbon Society” was decided by the Cabinet in July 2008: increasing the share of nuclear and other zero-carbon-emission power sources to 50% or more by 2020. ● In Dec. 2008, Chubu Electric decided to decommission its Hamaoka-1 & 2 and to build Hamaoka-6.
4	**Russian Federation**	2,319 (27)	615 (8)	16.0%	70.69 73.09	● Russia’s basic direction for power generation is to reduce gas-fired generation while increasing nuclear generation. ● The aim is to increase the nuclear generation share to 25-28% by 2020, from 16% in 2007. ● New commercial operation of about 30 units is needed to achieve that target.
5	**Germany**	2,137 (17)	--	27.3%	73.42 76.69	● In April 2002, the Nuclear Phase Out Law went into effect (phasing out nuclear power generation, etc.). ● The present coalition between the SPD and CDU/CSU has maintained that line. ● Toward the general election in Sept. 2009, however, CDU/CSU clearly sees the necessity of nuclear generation.
6	**Republic of Korea**	1,772 (20)	680 (6)	35.3%	87.93 93.29	● The Power Supply-and-Demand Plan (decided by the government in Dec. 2008) includes 12 NPPs to be built by 2022, increasing the nuclear generation share to 48%.
7	**Ukraine**	1,384 (15)	200 (2)	48.1%	75.26 73.25	● The Energy Strategy of Ukraine (March 2006) calls for ensuring the current 50% nuclear generation share in 2030, requiring construction of NPPs generating 20,000 MW.
8	**Canada**	1,343 (18)	--	14.7%	66.74	● Canada accounts for approx. one-third of global uranium production.

					66.73	● There are plans to construct new NPPs in the provinces of Ontario, New Brunswick and Alberta.
9	**U.K.**	1,195 (19)	--	15.1%	53.34 48.71	● By around 2020, the number of NPPs will have declined to just several units, due to deterioration of gas-cooled reactors. ● In Jan. 2008, the government released a Nuclear White Paper toward constructing new NPPs. ● AECL of Canada, Areva of France, GE Hitachi and WH are being considered in a Generic Design Assessment (GDA). ● EDF, France, completed acquisition of British Energy, the largest power company of the U. K..
10	**Sweden**	938 (10)	--	46.1%	80.42 78.17	● Phase-out of NPPs by 2010 was decided based on the results of a national referendum (1980). ● The Barseback-1 NPS was shutdown in 1999, Barseback-2 in 2005. ● With no power source to replace nuclear, power upgrades were carried out at NPPs in operation. ● The four-party winners in the general election in Sept. 2006 agreed to a moratorium on the nuclear phase-out. ● In Feb. 2009, the government announced a change to the nuclear phase-out policy, and a new bill is to be introduced in Parliament in March.
11	**China**	912 (11)	790 (8)	1.9%	79.61 89.84	● The Long/Medium-Term Nuclear Development Plan (Oct. 2007) aims at 40,000 MW by 2020. ● In Feb. 2009, expansion of nuclear development to 70,000MW by 2020 was announced ● Introduction of foreign technology and independent, domestic production are both being promoted. ● The French Areva, Russian Rosatom, WH and Canadian AECL are fiercely competing for orders.
12	**Spain**	773 (8)	--	17.4%	81.88 87.76	● The Spanish Socialist Workers Party government elected in 2004 pursues a nuclear phase-out policy. ● The Spanish Federation of Electric Utility Companies emphasizes the need for nuclear energy in its “Power Source Development Outlook in 2030.”
13	**Belgium**	612 (7)	--	54.1%	90.06 85.14	● Belgium is heavily dependent on nuclear generation, which has a share of over 50%. ● A move is underway to review the act (passed in Jan. 2003) phasing out nuclear power.
14	**Taiwan**	516 (6)	270 (2)	19.3%	90.29 88.98	● In May 2008, the Chinese Nationalist Party administration led by President Ma Ying-jeou took office and reversed the Democratic Progressive Party’s de-nuclearization vision ● Two units are under construction at the Lungmen- NPP (the first ABWR construction outside of Japan). ● Commercial operation of Unit 1 and Unit 2, set for Jul. 2009 and Jul. 2010 respectively, could be delayed.
15	**India**	412 (17)	316 (6)	2.5%	48.75 42.70	● India is pursuing a three-stage development plan based on its limited uranium resources and substantial thorium resources. ● Its target is 63,000 MW of nuclear generation by 2032 (9% of total generated electricity (700,000 MW). ● Although a non-NPT state, India is being treated by the NSG as an exception, and foreign manufacturers are competing for orders. ● (Plans envision 25-30 units of 1,000-MW-class LWRs.)
16	**Czech Republic**	386 (6)	--	30.3%	83.38 83.19	● In Jul. 2008, the Czech Power announced plans to build two units with combined output of 3,400 MW at its Temelin NPP site (construction to start in 2013 with commercial operation of the first unit in 2020). ● The utility expressed the possibility of also building one unit at the Dukovany NPP site.
17	**Switzerland**	337 (5)	--	40.0%	93.68 93.76	● A nuclear moratorium was voted down in a 2003 national referendum, and maintaining a nuclear option was clarified in a revised Nuclear Act in 2005. ● The ”Energy Outlook by 2035” (Feb. 2007) concluded that construction of new NPPs is necessary to meet medium/long-term electricity demand. ● In Jun. 2008, documents were filed for construction of a new site next to the Gosgen NPP. ● Renewals of the Beznau-1&2 and Mulheberg NPPs are being planned.

18	**Finland**	238 (4)	170 (1)	28.9%	95.46 92.62	● Construction of a new NPP (Olkilouoto-3, EPR, 1,700 MW) commenced in Aug. 2005, the first in Finland in 30 years, and the first in Europe in 15 years. Construction has since been slightly delayed. ● There is a move to build another unit, and three companies are candidates.
19	**Slovakia**	220 (5)	--	54.3%	79.57 86.45	● The Slovak Power resumed construction of the Mochovce-3&4 NPPs, which had been suspended for more than 10 years. ● In Jan. 2009, the government expressed the possibility of resuming operation of the Bohunice NPP, suspended at the end of 2008.
20	**Brazil**	201 (2)	--	2.8%	64.35 74.67	● The Brazilian National Energy Plan (PEN2030) aims at operating one unit (Angra-3) by 2015; and four to eight 1,000-MW-class units by 2030.
21	**Bulgaria**	200 (2)	--	32.1%	81.28 89.73	● As a condition for joining the EU, operation of the Kozloduy-1 through -4 NPPs had been suspended by the end of 2006. ● In May 2004, the government decided to resume construction of the Belene-1&2 NPPs, which had been suspended. ● In Jan. 2009, Parliament approved resumed operation of two of the shutdown units at Kozloduy.
22	**Hungary**	194 (4)	--	36.8%	87.64 86.89	● Hungary plans to extend the lives and upgrade the outputs of its four existing NPPs. ● It also sees the need to build two additional NPPs by 2020-25 (under consideration).
23	**South Africa**	189 (2)	--	5.5%	78.00 78.49	● ESKOM's 2025 Plan: Expansion of the nuclear generation share from the present 5% to 30%. Development of nuclear generation capacity of 20,000 MW (LWRs and PBMRs). ● In Dec. 2008, ESKOM announced shelving of the nuclear development plan (suspending selection of Areva and WH).
24	**Lithuania**	150 (1)	--	64.4%	86.33 87.11	● Lithuania's nuclear generation share is second highest in the world. ● As a condition for joining the EU, Ignalina-1 was shut down at 2004 end, and Ignalina-2 is to be closed at 2009 end (postponement of shutdown of Unit 2 is being discussed). ● A plan is being developed to build a new NPP (participation by all three Baltic countries and Poland), aiming at commercial operation in 2015.
25	**Romania**	141 (2)	212 (3)	13.0%	80.81 90.51	● The country's Energy Strategy (Feb. 2007) calls for expanding nuclear share to 30% by 2015. ● In Nov. 2008, construction of Cernavoda-3&4 NPPs was decided (commercial operation in 2014 and 2015).
26	**Mexico**	136 (2)	--	4.6%	87.15 81.77	● Upgrading two operating units by 20% each is planned for 2009-2010. ● Construction of a new NPP is under consideration.
27	**Argentina**	101 (2)	75 (1)	6.2%	84.32 83.71	● Argentine Nuclear Reactivation Plan (Aug. 2006): Completing Atucha-2 NPP, construction of which had been suspended. Upon commercial operation of Atucha-2 NPP, commencing a feasibility study for the country's fourth nuclear unit.
28	**Slovenia**	73 (1)	--	41.6%	89.42 98.22	● Slovenia operates Krsko NPP, jointly owned with Croatia. ● Construction of Krsko-2 NPP is under consideration (construction to be commenced in 2013 with commercial operation in 2017).
29	**The Netherlands**	51 (1)	--	4.1%	93.61 91.91	● The government decided to suspend nuclear development in 1995, partly as a result of the Chernobyl accident. ● More recent movement is toward reviewing nuclear policy. Extension of the life of the Borssele NPP, the only reactor in operation, to 60 years was approved in 2006. ● Whether or not to build a new reactor is being discussed within the government.
30	**Pakistan**	46 (2)	30 (1)	2.3%	54.23 42.91	● Chashma-2 is being constructed with the cooperation of China (commercial operation scheduled in 2011). ● The aim is to satisfy about 10% of the predicted power demand of 52,000 MW in 2020.
31	**Armenia**	41 (1)		43.5%	71.43 68.68	● A replacement could be constructed for the currently-operating Armenia-2.
Total		39,224 (435)	3,877 (43)	15.0%	78.71 79.36	

(continued to Fact Sheet 2.)

Fact Sheet 2.

Countries Planning & Considering Introduction of Nuclear Power Generation

Region	Country	Nuclear Trend
Europe	**Italy**	● In the wake of the Chernobyl accident, nuclear power generation (including then operating NPPs) was completely suspended following a public referendum. ● Italy suffers from a chronic shortage of electricity, and imports power from France and other countries. ● The Italian energy company ENEL is negotiating with the French EDF for EDF's participation in a power development program. ● Economic Development Minister Claudio Scajola has said that "nuclear is the first option in diversifying energy sources."
	Poland	● Poland is considering participation in a program to replace Ingalia-2 NPP in Lithuania (joint construction with the three Baltic countries). ● In Jan. 2009, Prime Minister Donald Tusk declared the intention to build two NPPs within the country, with commercial operation of the first by 2020.
Asia	**Indonesia**	● A plan has been decided for constructing Muria NPPs (1,000 MW each x 2 units) in the central part of Java, starting in 2010, with commercial operation in 2016-17. ● In July 2007, an FS memorandum was signed with KHNP of Republic of Korea toward construction of the units.
	Vietnam	● In Jan. 2006, Prime Minister Nguyen Tan Dung approved a "Long-term Strategy for Peaceful Utilization of Atomic Energy up to 2020." ● In Apr. 2008, the government decided to construct four 1,000-MW reactors by 2020 (2 units each at two sites in Ninh Thuan Province). ● Japan, France, Russia, Canada, China, Republic of Korea and the U.S. are interested in bidding for the reactors.
	Thailand	● Recently, in the face of a supply-and-demand forecast (7% annual increase over the coming 20 years), a plan to introduce nuclear generation has been brought back. ("National Energy Policy and Development Plan" of November, 2006.) ● In Jun. 2007, the Energy Ministry announced a plan to develop 4,000 MW of generating capacity. Construction is to be launched in 2014 with commercial operation in 2020 and after. ● In Oct. 2008, the Electricity Generating Authority of Thailand (EGAT) commissioned the U.S.'s Burns & Roe to conduct studies on introduction of reactors.
	Bangladesh	● In 2007, the Bangladesh Atomic Energy Commission proposed a plan to build Rooppur NPPs (two 500-MW reactors) by 2015. ● In Apr. 2005, Nuclear Power Cooperation Agreement was concluded with China. (Probe of nuclear material and construction of NPPs.) ● In Apr. 2008, the government stated again its intention to cooperate with China on construction of the NPPs (Russia and Republic of Korea are also proposing cooperation).
	The Philippines	● The Bataan NPP (620 MW) was completed in 1984, but was mothballed before shipping the fuel, due to financial problems and concerns about safety and contract. The gas combined cycle operation as an alternative proposal was considered, but ends up with no progress. ● The 2008 national energy plan mentions a necessity of introduction of a 600-MW NPP (commercial operation in 2025). ● In 2008, an IAEA Mission investigated the Bataan NPP and advised that it could be operated economically and safely after remodeling. ● In Dec. 2008, an FS on operation of the Bataan NPP was commissioned to KEPCO of Republic of Korea.
	Malaysia	● In Jul. 2008, the government ordered national power company Tenaga Nasional Berhad (TNB) to establish a nuclear reactor FS task force. ● In Sept. 2008, the government decided to develop NPPs by 2023.
	Mongolia	● The country has a close relationship with Russia and the two have signed a nuclear plant FS agreement and an agreement on cooperation for uranium resource development.
CIS	**Azerbaijan**	● Plans to build a 1,000-1,500 MW NPP.
	Georgia	● Discussions are going on construction of NPPs as a means to energy independence.
	Kazakhstan	● A BN-350 fast reactor on the Caspian Sea was operated 1973-99 for power generation and desalination of seawater. ● A plan is being carried out to build NPPs for local cities in the southern and western areas. ● An FS on new NPPs is to be completed in 2009 (commercial operation of the first unit in 2016). ● The country ranks second in the world in uranium resources and third in annual uranium production; it

		aims to be first in production by 2010.
	Belarus	● Construction of two NPPs (2,000 MW combined) is being planned (commercial operation targeted at 2016 for Unit 1 and 2018 for Unit 2.)
Oceania	**Australia**	● Discussions have begun on the possibility of introducing nuclear generation because CO2 emission of the country is large. ● At the end of 2006, a taskforce established by the prime minister reported that with introduction of a CO2 tax, nuclear power would be competitive, and that with a first nuclear unit starting commercial operation in 15 years, nuclear could satisfy one-third of the national power demand by 2050.
Middle East/ North Africa	**Turkey**	● Turkey has been considering construction of NPPs since the 1970s, and a plan, suspended several times due to economic conditions, etc., is currently on the table again. ● In Aug. 2006, the government announced a plan to build 3 NPP units totally 4,500MW (commercial operation in 2012-2015). ● In Mar. 2008, the Turkish Atomic Energy Authority (TAEK) invited international bidding. Only Russia bid.
	Iran	● Iran's first NPP (Bushehr), being constructed by Russia, is almost complete.
	GCC (The Gulf Cooperation Council): Kuwait, Saudi Arabia, Bahrain, UAE, Qatar, & Oman	● In Dec. 2006, GCC announced a start of an investigation into peaceful uses of nuclear energy. ● In Feb. 2007, GCC and IAEA agreed on FS cooperation regarding a plan for nuclear generation and desalinization of seawater. ● In Apr. 2008, UAE announced its own comprehensive nuclear policy, aiming at commercial operation of 5,000-MW-worth of NPP capacity by 2020. ● UAE's Emirates Nuclear Energy Corporation (ENEC) concluded with the U.S.'s C2HM Hill an agreement on the latter's being Managing Agent for the NPP introduction program. ● Jordan announced a target of starting commercial operation of an NPP by 2015 (nuclear share of 30% in 2030-40). ● The U.S., France, Russia, the U.K., South Korea, China and others have sought contracts, agreements, etc.
	Jordan	● In May 2008, Jordon commenced discussions with the French Areva on the possibility of building an NPP.
	Egypt	● In Oct. 2006, the Minister of Electricity and Energy (Dr. Hassan Younis) announced construction of a 1,000-MW reactor by 2015. ● In Dec. 2008, the Energy Ministry signed a technological service contract with the U.S.'s Bechtel on construction of an NPP. ● Nuclear agreements have been concluded with Russia, China and others.
	Libya	● In 2006, Libya concluded a nuclear agreement with France. In mid-2007, the parties signed a memorandum on construction of an NPP for desalination of seawater.
	Algeria	● In Jan. 2007, Algeria signed an agreement with Russia on an investigation into building an NPP. (It has also signed nuclear agreements with the U.S., France and China.)
	Tunisia	● In Dec. 2006, Tunisia signed a nuclear memorandum with France on nuclear generation and desalination of seawater.
	Morocco	● Russia, China and France have approached Morocco regarding desalination of seawater and NPP construction.
Africa	**Nigeria**	● In 2008, the Federal Ministry of Science and Technology reconfirmed promotion of a nuclear development program (aiming at development of 5,000 MW by 2017).
	Ghana	● In May 2008, Ghana announced a nuclear development plan (developing 400 MW by 2018).
	Namibia	● Namibia possesses about 7% of the world's uranium deposits. The government has committed itself to a power supply policy incorporating nuclear generation.
Central & South America	**Venezuela**	● At the end of 2008, President Hugo Chavez announced development of nuclear power generation with assistance from Russia (a nuclear agreement with Russia was concluded in Nov. 2008).
	Chili	● In Feb. 2007, the energy ministry announced a start of an investigation into nuclear development. (Discussions with the French Areva had already taken place.) ● In Nov. 2007, the president ordered an investigation into nuclear options (whether or not to introduce nuclear generation will be decided by the next government).

(End)