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THE VOICE OF THE EUROPEAN NUCLEAR INDUSTRY

Nuclear policies in Europe

* Source: IAEA PRIS website

Country	Number of reactors*	Net nuclear generating Capacity* MWe	Nuclear share in electricity*	Nuclear policy
European Union	129 in operation 4 under construction	117.788	27 %	EC Proposal for a Strategic Framework for the Energy Union (February 2015) + State of the Energy Union (Nov. 2015) + Clean Energy package (Nov. 2016). 2020 Energy Strategy (February 2011) + 2050 Climate Change Roadmap (June 2011) + (2050 Energy Roadmap (June 2012) + (2030 Climate and Energy Policy Framework (October 2014). Nuclear Safety Directive (adoption 2009, transposition by Member States by July 2011) + (Revision of Safety Directive (June 2014). Radioactive Waste Directive (adoption June 2011, transposition by August 2013, National Programmes- NAPRO- by August 2015). Risk and safety assessments, "stress tests": ENSREG peer review report published in April 2012, final EC report published in October 2012, ENSREG's peer-review on implementation of action plans in April 2013, follow-up in April 2015.
Belgium	7 in operation	5.913	38%	In July 2012, the Belgian government agreed on a revised phase-out plan. The plan provides that the reactor 1 of the Tihange nuclear power plant (NPP) will operate for 10 more years until 2025. Doel 1 and 2 were supposed to shut down in 2015 (when they would have reached 40 years of operation) in accordance with the 2003 phase-out law. However, in October 2014, a new Belgian government came into office. The new government reached an agreement, which provides that Doel 1 and 2 reactors will be granted a 10 year extension of their operational duration. This decision was confirmed in December 2014. The two reactors will not operate beyond 2025. Doel 1 reactor was shut down in February 2015 in conformity with the 2003 law. The bill was ratified by the Parliament in June 2015 and an agreement was struck between the operator, Electrabel, and the Belgian government in July 2015. In early October 2015, the Belgian nuclear regulator, the Federal Agency for Nuclear Control (FANC), approved an action plan submitted by Electrabel in April, which outlines the actions to be taken over the next decade to ensure the continued safe operation of Doel 1 and 2. In November 2015, Engie (parent company of Electrabel) signed an agreement with the Belgian government for the ten-year extension of the operational duration of units 1 and 2 of Doel NPP.The current Minister for Energy, Environment and Durable Development (Marie-Christine Marghem) is in favour of nuclear energy and is considering extending the operational duration of Belgian NPPs beyond 2025. The parliament adopted in June 2016 a law providing for the conditions under which the reactors' operational duration will be extended. Another text regarding the nuclear fuel tax was adopted in November 2015.
Bulgaria	2 in operation	1.926	31%	Bulgaria had to shut down four of its VVER type nuclear reactors at Kozloduy in 2002 and 2006 as a precondition to joining the EU. The "stress tests" report on Kozloduy and Belene completed in January 2012 found that they both could withstand the strongest earthquake in the region. In March 2012, the Bulgarian government decided to abandon the construction of the Belene NPP on financial grounds. A seventh reactor at the existing Kozloduy NPP is under consideration. The reactors 5 and 6 of Kozloduy are being upgraded and their lifetime extended. The current government is committed to the future of nuclear energy, but there is a lack of financing. In December 2016, Bulgaria's state owned National Electric Company paid €600 million in compensation to Russia's Atomstroyexport for the reactor equipment manufactured for the cancelled Belene NPP. Bulgaria has announced it could revive Belene as a private investment project on the condition that no state involvement or long term electricity contracts will be required. Alternatively, Bulgarian officials have said the reactor equipment received from Russia for Belene in exchange for the compensation payment could be sold to a third country.
Czech Republic	6 in operation 2 units planned	3.930	32%	In August 2009, an open tender process was launched for the construction of two additional reactors at Temelin NPP. However, the procedure was cancelled by CEZ in April 2014. In May 2015, the Czech government published its national energy policy that foresees an increase of the country's nuclear generation from about 35% currently to between 46% and 58% by 2040. The energy policy also indicates that the share of lignite in electricity production is expected to decrease to between 11% and 21%. Renewable energies on the other hand should rise to up to 25% and natural gas to between 5% and 15%. In June 2015, the National Action Plan for Nuclear was adopted. The government plans to build one new nuclear reactor at Dukovany in addition to the two at Temelin.

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Finland	4 in operation 1 under construction 1 unit planned	2.752	34%	A new European Pressurised Water Reactor (EPR) reactor, Olkiluoto 3, is under construction but due to extensive delays will not be completed until 2018. TVO will submit an application to extend the operational duration of Olkiluoto 1 and 2 at the end of 2017 (the current licence is valid until the end of 2018). In April 2010, the Finnish government gave its "preliminary permission" (decision-in-principle) to the Finnish utility TVO and to Fennovoima to build two more nuclear reactors (decision ratified by the Finnish parliament in July 2010). TVO plans to build a fourth reactor at Olkiluoto. In October 2011, Fennovoima selected the site, Puhajöki for the construction of its reactor (Hanhikivi 1). In September 2014, TVO's request to extend the validity period of the Olkiluoto 4 decision-in-principle was rejected by the government and in May 2015 the company decided not to submit a construction licence application. In December 2014, an amendment to Fennovoima's decision-in-principle was ratified by the Finnish parliament taking into account the changes in ownership and reactor design. The Hanhikivi 1 project has now entered the infrastructure-building phase and the workforce has increased. The construction licence is expected to be granted at the end of 2017 and construction should start in 2018. The reactor is expected to enter into commercial operation in 2024. In November 2016, The Finnish government published the new Energy and Climate Strategy. Although the strategy relies heavily on renewables, nuclear is expected to be a crucial part of Finland's energy strategy in the future. Finland is one of the most advanced countries in the world in the field of radioactive waste management. Its final deep geological repository for long-lived waste is expected to start operation at Olkiluoto in the 2020's. It will be operated by Posiva, Finland's radioactive waste management agency.
France	58 in operation 1 under construction	60.640	76%	A European Pressurised Reactor (EPR) unit is currently under construction at a site near Flamanville, in Normandy, and is expected to be completed by the end of 2018. In July 2014, the French government adopted a bill on the "energy transition" in France. The bill pledges to increase the share of renewables in electricity production to 40 % by 2030, and, therefore, to reduce the share of nuclear in the electricity mix to 50 % (from 76 % currently) by 2025 by imposing a cap on nuclear capacity. The bill was adopted by the Parliament in July 2015. At the moment, there have been no specific reactor closure announcements and the French Ecology, Sustainable Development and Energy Minister, Ségolène Royal, said in January 2015 that France should build a new generation of nuclear reactors to replace the country's ageing plants. The next presidential elections will take place in May 2017. François Fillon has been elected to run for president on behalf of the main right-wing party, Les Républicains. He has clearly expressed support for nuclear power in his political programme. A public debate on the deep geological repository (DGR) project (Cigéo) in Eastern France took place from May to December 2013. The independent commission (CNDP) in charge of the debate presented its conclusions in February 2014. Further investigations regarding the safety of the DGR are required, which could delay its construction. Recently the issue focused on the final cost of the installation. A ministerial "arrêté" published a target cost of 25 billion euros for a period up to 140 years. The disposal facility should be completed by 2025.
Germany	8 in operation	10.799	14%	Chancellor, Angela Merkel, announced in March 2011 the immediate closure at least until June 2011 of seven nuclear power reactors that started operation before 1980. In August 2011, eight reactors were declared permanently shut down. In May 2011, the government adopted the decision to phase out nuclear by 2022 (ratified by the Parliament in June 2011) and in June 2011, amendments were made to the country's Atomic Energy Act. The cost of attempting to replace nuclear power with renewables is estimated by the government to amount to some €1000 billion without any assurance of a reliable outcome, and with increasing reliance on coal, especially lignite. In June 2015, the European Court of Justice ruled that the German nuclear fuel tax complies with EU legislation. In December 2016 the German Federal Constitutional Court ordered the government to compensate energy companies for losses incurred because of its phasing out of nuclear power. However, it ruled also that the decision was "essentially constitutional" A law on the site selection for a high-level waste (HLW) repository entered into force in July 2013. The commission on the storage of high level radioactive waste submitted its final report to the country's government in July 2016. The report provides a recommended method for the disposal of the waste in a geological repository. The commission will recommend a repository site to the Parliament by 2031 and the repository is planned to be operational by 2040. In May 2015, the EU Waste Directive was transposed into national law. It required Germany to draw up a national waste management programme (NaPro) by the end of August 2015.

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Hungary	4 in operation	1.889	53%	The government published in February 2009 a Proposal to double the capacity of the country's sole NPP at Paks (ratified by the parliament in March 2009). The new reactors aim to replace the current NPP that is due to shut down by 2037. The first new reactor is expected to start operation in 2025. In January 2014, the government signed an agreement with Rosatom to build two reactors at Paks, with Russia providing 80% of the finance. In 2015, the European Commission launched investigations on the project. In November 2016, the European Commission closed the infringement procedure against Hungary regarding the public procurement procedure for the Paks II nuclear project. However, the state aid case is still pending. The national safety regulator granted a licence to the operator to extend the operational duration by 20 years of Paks NPP reactor 1 in December 2012 and of reactor 2 in November 2014. Unit 3 was given a 20 year licence extension in December 2016. Paks operator also applied for a similar licence for unit 4 until 2037,
Italy	0	0	0%	The government approved in March 2011 a one-year moratorium on the construction of a new NPP. In April 2011, an amendment was tabled that indefinitely puts on hold new build plans. In June 2011, Italian citizens voted against nuclear power in a referendum. New build plans were abandoned.
Lithuania	0	0	0%	Nuclear energy used to generate around 70% of the country's total electricity production. However, in 2009, Lithuania was required to shut down Ignalina NPP as a prerequisite for its entry in the EU. The government is now planning to build a new NPP at Visaginas. In November 2007, the environmental impact assessment programme was approved. In July 2011, the government selected GE Hitachi as strategic investor. In October 2011, the government formally notified the EC of plans to build the NPP at Visaginas in collaboration with Estonia, Latvia and Poland. However, in December 2011, Poland withdrew from the project and in October 2012 voters rejected the project during a non-binding referendum. In March 2014, the Ukrainian crisis prompted Lithuania and other Baltic and Nordic States to reaffirm their commitment to the project. In July 2014, The Lithuanian Energy Ministry and GE Hitachi signed a Memorandum of Understanding. They agreed to jointly perform preparatory work for setting up an interim project company. In November 2016, the goverment released the National Energy Strategy and announced it was delaying the 3400 Mwe project until it either becomes cost effective under market conditions or is needed for increasing energy security.
The Netherlands	1 in operation	482	4%	In January 2006, the Dutch government decided to prolong the life of the country's sole NPP, Borssele, for another twenty years, to 2033. In January 2012, Delta, the Dutch energy utility, decided mainly on financial grounds to postpone its new build plan. The stress tests report of the Netherlands concluded that Borssele NPP meets all the safety requirements.
Poland	0	0	0%	In January 2009, the Polish government adopted a Resolution on nuclear energy that indicates that in the 2020's electricity should be generated by one or two NPPs. In January 2014, the government adopted the Nuclear Power Programme. In October 2016, the government approved the report on execution of the Nuclear Power Programme for Poland in the years 2014-2015. An updated version of this document is planned to be published in 2017. PGE EJ 1, the state-owned company that will build Poland's first NPP, is currently working on a new time schedule regarding investment's process. Environmental impact assessments and preparatory works are carried out at two potential locations: Lubiatowo-Kopalino and Żarnowiec.
Romania	2 in operation	1.300	17%	The second reactor of Cernavoda NPP was inaugurated in October 2007. Plans to complete Cernavoda 3 and 4 are also under way and the government intends to build a second NPP. In August 2014, a call for tender was launched to find a majority investor to finance and complete Cernavoda 3 and 4. In November 2015, Nuclearelectrica signed an investment agreement with China General Nuclear Corporation for the development, construction, operation and decommissioning of Cernavoda 3 & 4. The Romanian government is expected to formally notify the project to the European Commission. Preparatory works are also being carried out to extend the operational duration of Cernavoda 1.

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Slovakia	4 in operation 2 under construction	1.814	56%	In November 2008, the government announced that the construction of units 3 & 4 at Mochovce NPP had begun. In December 2008, the Slovak government chose Czech utility, CEZ, as its strategic partner in proposals to construct the fifth reactor of the Bohunice NPP by 2020. Mochovce 3 & 4 are still under construction. Their completion has been delayed and they are now expected to be connected to the grid by 2017 and 2018 respectively. Although ENEL, the Italian energy company, sold 66% of its stake in Slovenske Elektrarne to Czech EPH Company, ENEL remains responsible for the completion of Mochovce 3&4. The construction of Bohunice 5 is still in the pipeline, although preliminary works on the project are proceeding. A new Act on Civil Liability for Nuclear Damages approved by the Parliament entered into force in January 2016.
Slovenia	1 in operation	688	38%	In November 2009, the Economy Minister, Matej Lahovnik, announced that the planned second reactor at the Krško NPP (NEK) would be completed between 2020 and 2025. In January 2010, the Slovenian utility, GEN-Energija, sent an application to the Economy Ministry for a permit to build a second unit at the Krsko NPP. The construction of the second reactor at Krško NPP is part of the National Energy Plan of Slovenia. A new national energy strategy is expected to be published by the end of 2017 and should include nuclear energy, already recognized as a sustainable energy source in the latest Development Strategy adopted in 2013. In May 2015, Slovenian and Croatian state-owned energy companies, GEN Energija and HEP, which manage the Krško NPP, decided to extend its operational duration by 20 years until 2043, providing that the plant passes a safety review every 10 years. The next ones are due in 2023 and 2033.
Spain	7 in operation	7.121	20%	In February 2011, the Spanish Congress ratified a Sustainable Economy Law, in which the reference to a maximum operational duration of 40 years for NPPs was removed. On October 2016, Mariano Rajoy, the leader of the Popular Party was sworn in as President of the Spanish government. This closed the longest period of instability in Spanish democracy: 315 days of no government in office. The position of the main political parties regarding nuclear energy is very much split between maintaining nuclear power plants and closing them after 40 years of operation. To date, no decision has been made regarding the future of the Santa María de Garoña nuclear power plant. The Spanish regulatory authority (CSN) continues to evaluate it. The regulatory authority had announced it would issue its report in November, but we are still waiting for it. This site has already received authorization for the construction of a centralized individual storage facility (ATI). Construction has already begun.
Sweden	10 in operation	9.651	34%	In February 2010, the Swedish government put forward a draft law that would allow the construction of a maximum of 10 new nuclear reactors in the country to replace existing units as they are shut down. This law was ratified by the Parliament in June 2010. It brings to an end the nuclear phase-out policy that was first introduced in 1980. In August 2012, the Swedish state-owned energy company Vattenfall submitted an application to the Swedish Radiation Safety Authority (SSM) to build and operate one or two new nuclear reactors. In May 2013, Vattenfall announced its intention to extend the operational duration of Forsmark 1, 2 & 3, and Ringhals 3 & 4 for 10 more years to 60 years. Following elections, a new government made up of the Social Democrats and the Greens took office in September 2014. The government announced that it would form an energy commission with representatives from all the political parties and the stakeholders in the energy field. The purpose of the energy commission is to reach a long-term energy agreement. The energy commission started its work in spring 2015 for a period of around 2 years. During this period, Vattenfall has been requested to suspend its nuclear new build plan. In June 2016, the government decided to lift its moratorium on nuclear new build. The replacement of nuclear reactors will be allowed at existing nuclear sites as they reach the end of their operational duration with a maximum of ten reactors. This will help secure electricity supply until the country switches to 100% renewables in 2040. Moreover the government decided to abolish the nuclear tax by 2019, which will give breathing pace for nuclear companies to invest in nuclear new build and long-term operation. Sweden has indeed a heavy tax on nuclear power (about 0.67 Euro cents/kWh), which accounts for about one-third of the operating cost of nuclear power. In 2009, the radioactive waste management agency, SKB, selected Forsmark as the site for the final deep geological repository for spent fuel and they submitted the applications to build the repository. SKB plans to start construction of the repository as soon as the governement issues a permit, based on assessments of both the SSM and the Land and Environment Court.It is expected to become operational in the early 2020's.

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Switzerland	5 in operation	3.333	33 %	In May 2011, The Swiss government proposed not to replace its nuclear fleet once it comes to the end of its operational lifetime. In September 2012, the government published its "Energy Strategy 2050" and presented a first package that includes an explicit ban on nuclear new-build and the recycling of used fuel. The Proposal was the subject of public consultations until January 2013 and was submitted to the Parliament in September 2013. The Swiss Parliament's lower house (the National Council) adopted the "Energy Strategy 2050" in December 2014. The house also endorsed a Proposal of its Energy Committee to introduce an obligation for operators to request a license renewal for every reactor reaching 40 years of operation. This license will then have to be reviewed every ten years. In September 2015, the lower house of the Parliament, the Council of States ("Senate"), adopted the first package of measures of the new energy strategy made previously. In October 2015, the government published the second package of its "Energy Strategy 2050", including incentive energy taxes, which still needs to be approved by the Parliament. In November 2016, Swiss citizens voted by 54% against the Green Party's initiative to close nuclear power plants after 45 years of operation. Under the Swiss Energy Strategy 2050, nuclear reactors should continue to operate as long as they are deemed safe by the independent safety regulator (IFSN). A debate on the costs of decommissioning and waste disposal is ongoing too.
United Kingdom	15 in operation	8.883	19%	On 10 January 2008, the British government published a Nuclear White Paper, which announced that a new generation of nuclear power plants would be built in the UK. The new coalition government adopted National Policy Statements on energy, which recognize the essential role that nuclear has to play in ensuring energy supply along with other low-carbon energy sources by 2025 and confirm eight sites as suitable locations for nuclear new build. In November 2012, the UK's Office for Nuclear Regulation (ONR) granted a site licence to EDF Energy for the building of the first new NPP to be built in the country in over 20 years, Hinkley Point C (HPC), Somerset. In November 2012, the British government published an Energy Bill aimed at mitigating CO2 emissions, securing electricity supply and maintaining energy independence. The subsequent Energy Act 2013 received Royal Assent in December 2013. In March 2013, the Secretary of State for Energy and Climate Change, Edward Davey MP, gave planning permission for the construction of HPC. In October 2013, the British government and EDF Energy reached an agreement on electricity trading terms for HPC. In December 2013, the EC (DG Competition) launched an in-depth investigation into the HPC deal. In October 2014, the EC announced that the Hinkley Point C investment deal conforms to EU competition law. In July 2015, Austria launched a legal action in the European Court of Justice against this decision. In December 2013, Horizon Nuclear Power Wylfa Ltd owned by Hitachi signed a co-operation agreement with the UK government that will enable access of investors to the UK Guarantee Scheme for the Wylfa Newydd NPP. In January 2014, Toshiba and GDF SUEZ signed a partnership agreement according to which they will take a 60 % and a 40% share respectively in NuGeneration Ltd (NuGen was created to develop an NPP at Moorside, on the West Cumbria coast in England). In October 2015, EDF Energy reached a Strategic Investment Agreement with its Chinese partners for Hinkley Point C. The agreement paves the way for a Final Investment Decision, and outlines the two organisation's plans for HPC as well as Sizewell C and Bradwell. In July 2016, EDF Energy made a final investment decision regarding the HPC project, but shortly afterwards the new government, which came into office after the Brexit referendum, announced it would take some time to review the project. In September 2016, the UK government gave its final approval to the construction of two EPR reactors at Hinkley Point C (HPC) in the south-west of England. Since Theresa May took over as Prime Minister in July 2016, the cabinet and Government has been reshuffled. The Department for Business, Innovation and Skills and the Department of Energy and Climate Change have been merged to create the Department for Business, Energy and Industrial Strategy (BEIS). A new Department for Exiting the EU (DExEU) has also been created, which will look at the various items which need to be considered ahead of triggering Article 50. This includes energy related issues, as well as nuclear specific issues, such as whether the UK will remain in Euratom. After generating electricity for 44 years, the last operating Magnox station in the world, at the Wylfa site in North Wales, closed in December 2015. From April 2016 new management arrangements will come into force which will see Sellafield Ltd become a wholly owned subsidiary of the Nuclear Decommissioning Authority.
Ukraine	15 in operation 2 under construction	13.107	56%	Ukrainian nuclear energy policy focuses on the diversification of fuel supply to reduce its dependence on Russia. As a consequence, in December 2014, the Ukrainian energy company, Energatom and Westinghouse agreed to extend their nuclear fuel supply contract for Ukrainian NPPs until 2020 and a contract was signed in April 2015 with AREVA for the supply of enriched uranium. The government plans to maintain nuclear share in electricity production to 2030, which will involve substantial new build. The government plans to complete Khmelnitski 3 & 4. In February 2011, a framework contract was signed with Atomstroyexport to build the reactors. Some 85% of the project was to be financed through a Russian loan, with 15% funding coming from Ukraine. However in December 2014 due to the political situation, the government decided to cancel the contract and look for a Western-European investor. Skoda was meant to take over the contract, but this decision was blocked due to Skoda being owned by Russia's OMZ, and Energoatom. Plans to complete the new NPP are still pending although the government reaffirmed the need for a nuclear new build.