

The Nuclear Debate within the EU - EU Member States For or Against - A Status Report*

Colour Key

Pro Nuclear Power
Divided
Against Nuclear Power

Country (Reactors = TWh) % of electricity	Current or Planned Construction Y/N	In Favour of NPP	Against NPP	Comment
<i>Czech Republic</i> (6 = 26.7 TWh) 26.7%	Y Temelin 2 reactors	<input checked="" type="checkbox"/>		In July 2008, CEZ announced a plan to build two more reactors at Temelín, with construction to start in 2013 and commissioning of the first unit in 2020. In March 2010, CEZ announced that discussions had begun with three vendor groups prior to the bid submission: a consortium led by Westinghouse; a consortium of Škoda JS, Atomstroyexport, and OKB Gidropress; and France's AREVA. In February 2011, the final delivery date was shifted to 2025. In October 2011 CEZ asked for tenders from three companies (AREVA, Westinghouse and Atomstroyexport with Skoda) for a turnkey contract for the construction of two units plus nine years' worth of fuel. The bids were due in July 2012, with contracts to be signed in late 2013. CEZ is reported to be considering seeking an outside investor, for \$10 billion, for the project. CEZ stated in May 2012, that "the partnership will probably be formed after the contract with the selected supplier is signed, which is expected to happen in 2013".
<i>Finland</i> (4 = 22.3 TWh) 31.6%	Y Olkiluoto-3 & 4 2 reactors Loviisa-3	<input checked="" type="checkbox"/>		The Olkiluoto 3 (OL3) project (AREVA) is about five years behind schedule and 100% over budget. The problems produced by the OL3 project have not prevented TVO from filing an application, in April 2008, for a decision-in-principle to develop "OL4", a 1-1.8 GW reactor to start construction in 2012 and enter operation "in the late 2010s". The decision was ratified by the Finnish Parliament on July 1, 2010. But already delays have emerged. In late March 2012, TVO invited five reactor vendors (AREVA, GE Hitachi (GEH), Korea Hydro and

	1 reactor		<p>Nuclear Power (KHNP), Mitsubishi and Toshiba) to submit bids, which are expected in early 2013. A license application is planned for mid- 2015 “at the latest” and start-up “around 2020”.</p> <p>In parallel, Fortum Power is planning a similar project, known as Loviisa-3. In January 2009, the company Fennovoima Oy submitted an application to the Ministry of Employment and the Economy for a decision-in-principle on a new plant at one of three locations Ruotsinpyhtää, Simo or Pyhäjoki, —which has since been narrowed down to the latter site and to being either an EPR or ABWR. Start-up is planned for 2020. Bids were received on January 31, 2012 from AREVA and Toshiba. The plant supplier should be selected in 2013.</p>
<i>Hungary</i> (4 = 14.7 TWh) 43.2%	Y Paks 5 & 6	<input checked="" type="checkbox"/>	<p>In March 2009, the Hungarian parliament approved a government decision-in-principle to build additional reactors at Paks. In January 2011, national media reported that the operation of existing units, after plant life extension, would cease between 2030 and 2040. The proposed additional units (5 and 6) “will not generate extra power but make up for the output of the phased-out blocks.” Russian assistance seems to be the preferred option, and Hungary’s foreign minister has indicated that expansion of the Paks plant would be part of a “package deal” on outstanding economic issues with Russia. Prime Minister Viktor Orban said in December 2011 that the goal is to have nuclear power provide 60% of the country’s electricity needs, compared with around 40% now. In May 2012, the government announced it plans a “two block” extension to the Paks plant.</p> <p>Meanwhile, according to a post-Fukushima survey, a 62% majority of Hungarians opposes new build and a surprising 80% consider nuclear’s viability “limited and soon obsolete”.</p>
<i>Poland</i>	Y	<input checked="" type="checkbox"/>	<p>Work is under way at locating the best site for what will be the country’s first nuclear power plant. state owned Polska Grupa Energetyczna SA (PGE) through its PGE EJ1 subsidiary, has awarded the site characterisation, licensing and permitting services contract for the plant to a WorleyParsons consortium, comprising WorleyParsons Nuclear Services JSC, WorleyParsons International Inc, WorleyParsons Group Inc. The contract is valued at \$81.5m and will run for more than two years. In December 2011, PGE announced three possible sites for the first NPP at Choczewo, Gaski and Zarnowiec. All three sites will undergo simultaneous surveys and site characterisation work. The Polish government intends</p>

			to eventually generate 3000 MW of electricity through nuclear power.
<i>Romania</i> (2 = 10.8 TWh) 19%	Y <u>Cernavoda 3</u> & 4 2 reactors	<input checked="" type="checkbox"/>	In November 2008, an investment agreement was signed between SNN and ENEL of Italy, CEZ of the Czech Republic, GDF Suez of France, and RWE Power of Germany (with each having 9.15%) as well as Iberdrola of Spain and Arcelor Mittal Galati of Romania (with both having 6.2%). <i>Commissioning of unit 3 was due initially in October 2014 and unit 4 in mid-2015; however, this has since been revised, with the first unit not expected to be completed until 2016 at the earliest.</i> In January 2011, CEZ sold its shares to Nuclearelectrica, and GDF Suez, RWE, and Iberdrola also withdrew from the project, explaining that “economic and market uncertainties surrounding this project, related for the most part to the present financial crisis, are not reconcilable now with the capital requirements of a new nuclear power project. In January 2011, Nuclearelectrica announced nevertheless that its tender for construction of Cernavoda 3 and 4 had received three bids: from U.S./Canadian engineering giant Bechtel, from a consortium led by Canada’s SNC Lavalin and including Italy’s Ansaldo and Romania’s Elcomex, and from a full Russian consortium led by Atomtechnoprom. In April 2012, the head of the energy department in the Economy Ministry indicated that potential investors were awaiting a price evaluation that would be “closer to reality”, while the government is considering the option of “going solo” on the Cernavoda extension and downsize the project to only one additional unit.
<i>Slovak Republic</i> (4 = 14.3 TWh) 54%	Y Mochovce 2 reactors	<input checked="" type="checkbox"/>	The 3 rd and 4 th units of Mochovce NPP are currently under construction, however on February 1, 2013, the Slovak Government announced that finalisation of the units had suffered severe delays and final completion of this project is now not expected until sometime in 2015 (initial completion schedule was end 2013).
<i>United Kingdom</i> (16 = 63 TWh) 18%	Y Hinkley Point & Sizewell 4 reactors Oldbury & Wylfa 2/3 reactors	<input checked="" type="checkbox"/>	15 out of the current 16 reactors are expected to be shut down by the end of 2023. The government assumes there will be a requirement of 60 GWe of net new generating capacity by 2025, of which 35 GWe is to come from renewables. The <i>Draft National Policy Statement for Nuclear Power Generation</i> states that the expectation is for "a significant proportion" of the remaining 25 GWe to come from nuclear, although the government has not set a fixed target for nuclear capacity. An overview of new NPP projects is provided below: <u>EDF Energy - Hinkley Point and Sizewell</u> EDF successfully bid for British Energy, completing the £12.5 billion acquisition in January

	<p>Moorside (N/A)</p>		<p>2009. Later in 2009, Centrica bought a 20% stake in British Energy for £2.3 billion. Conditions attached to the acquisition of British Energy included the sale of land at Wylfa, Bradwell and either Dungeness or Heysham, as well as to relinquish one of the three grid connection agreements it held for Hinkley Point. Present plans are for four EPR nuclear reactors to be built by EDF Energy at Sizewell in Suffolk and Hinkley Point in Somerset. The company applied for consent to construct and operate the first two (3260 MWe) at Hinkley Point in October 2011, though the Generic Design Assessment (GDA) process on reactor designs was not concluded. EDF plans to start up the first of these new reactors by the end of 2017 and have it grid-connected early in 2018. By mid-September 2010 EDF Energy had let £50 million in contracts for site works at Hinkley Point, and by February 2013 pre-development costs there had reached almost £1 billion. In May 2012 EDF Energy said that it "remain[s] committed" to building the Hinkley Point reactors and was working toward a final investment decision by the end of the year, which would depend on having "the correct market framework [to] allow an appropriate return on the massive investment required." A £1.2 billion civil engineering contract was deferred. It now appears that the decision will be in April 2013. <i>In February 2013 Centrica said it would not proceed to invest in the new units, citing uncertainty re project costs and schedule. (It remains a 20% shareholder in EDF Energy's current nuclear generation capacity).</i></p> <p><u>Horizon – Oldbury and Wylfa</u> Early in 2009, a 50:50 new-build joint venture of RWE npower with E.ON UK was established: Horizon Nuclear Power. Horizon bid for NDA land alongside old Magnox plants at Oldbury, Wylfa and Bradwell. Other bidders included EDF Energy and Vattenfall. The winning bids for Oldbury and Wylfa were from Horizon. Including bids from EDF and NuGeneration, the auction raised £387 million for the NDA. By 2025, Horizon planned to have around 6000 MWe of new nuclear capacity in operation. For its site at Wylfa in Wales, Horizon was proposing constructing up to four AP1000 reactors or three EPR units. For its Oldbury site, it was considering either three AP1000 reactors or two EPRs. The planning application for Wylfa was envisaged in early 2012, that for Oldbury in 2014. But early in 2012 German-based RWE and EOn announced that they wanted to withdraw from Horizon, following which there were several expressions of interest in buying it. In October 2012 the</p>
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<p><i>Bulgaria</i> (2 = 15.3 TWh) 35%</p>	<p>Y Belene 2 reactors Kozloduy 1 reactor</p>	<p>☒</p>	<p>☒</p>	<p><u>Belene</u> As in many countries within the EU who are planning to build an NPP there is a split down political lines. The Referendum on Belene, held on January 27, 2013, came out in favour of the project (61% in favour), due to the low turnout (20%), the result is not binding (60% turnout was required). For the result to have been binding a 60% turnout would have been necessary. <i>The uncertainty therefore continues regarding the re-launch of the project</i>, as the Governing party led by Prime Minister Boiko Borisov, is against the project due to mainly budget and costs rationale. The main opposition party, the social Democrats, on the other hand are in favour of the continuation of construction of Belene. <i>The Parliamentary elections in July 2013 should shed some light on the situation.</i></p> <p><u>Kozloduy</u> In April 2012 the Bulgarian Council of Ministers approved in principle the construction of new capacity at Kozloduy. The Minister for Finance announced that “The government decided to open up for investment the project for a new reactor 7 at the Kozloduy nuclear power plant. It will be built on market principles, that is, without government money or state guarantees.” A third-party investor is being sought for the project as licensing procedures get under way, and Kozloduy NPP-New Build plc was set up as the project company, a</p>

				<p>subsidiary of Kozloduy NPP plc, but with 49% available to a strategic investor following site licensing. A request for proposals in June elicited responses from Areva, Areva/Mitsubishi, Bulgaria's Risk Engineering Ltd, Westinghouse and WorleyParsons. In August 2012 the project company KNPP-New Build plc awarded a contract to Westinghouse Spain to assess the feasibility of two options: a VVER unit using Russian equipment already procured, but with instrumentation and control systems and fuel from Westinghouse, and a turbine-generator from Toshiba; and construction and operation of a western 1000-1200 MWe PWR, essentially Westinghouse's AP1000. The study will evaluate the site, radioactive waste and used fuel management, use of existing infrastructure and facilities, licensing, local economic aspects, and the economics of the alternative reactor options. Proposals for an Environment Impact Assessment were invited in September 2012. A contract for site selection studies was awarded to Risk Engineering Ltd. <i>In May 2013 the results of studies and assessments are to be presented to the Council of Ministers for decision on the technology, the number of units, the capacity, and construction schedule.</i></p>
<p><i>France</i> (58 = 423.5 TWh) 77.7%</p>	<p>Y Flamenville-3 1 reactor</p>	<p><input checked="" type="checkbox"/></p>	<p><input checked="" type="checkbox"/></p>	<p><i>The incoming government under President Hollande constitutes without any doubt a major rupture not only with previous President Nicolas Sarkozy, but also with previous administrations. For the first time since 1974, a French government announced plans for the closure of the oldest operating reactors (Fessenheim-1 and -2, connected to the grid in 1977 and 1978), the abandoning of a new build project (Penly-3) and the systematic reduction of the share of nuclear generated electricity (from about 75% to 50% by 2025).</i></p>
<p><i>Lithuania</i></p>	<p>Y Visaginas 1 reactor</p>	<p><input checked="" type="checkbox"/></p>	<p><input checked="" type="checkbox"/></p>	<p>In February 2007, the governments of the three Baltic States and Poland agreed to build a new nuclear power plant at Ignalina. Lithuania passed a parliamentary bill that July calling for construction and completion by 2015. During the following two years, various permutations of ownership structures and sizes of the proposed reactor(s) were put forward. <i>In April 2010 formal proposals from five selected strategic investors were submitted to the government, with bids subsequently sought. The Lithuanian government then announced that it would instead conduct direct negotiations with potential investors and that it hoped to begin operation of the new plant in 2020. This led to exclusive negotiations with Korean utility KEPCO, which turned down cooperation in early December 2010, two weeks after submitting a bid. In 2011 Poland withdrew from the project. The Lithuanian government, along with its partners in Estonia and Latvia, are in talks with Hitachi Ltd. to build a</i></p>

				<p><i>nuclear power plant. Lithuania has picked Hitachi together with its Hitachi-GE Nuclear Energy Ltd. unit as a strategic investor and technology supplier to construct a nuclear plant in the Baltic country by the end of 2020.</i> In May 2012, the government adopted a concession agreement aiming for a 20% share for reactor vendor Hitachi in a \$6.5 billion 1,350 MW Hitachi Advanced Boiling Water Reactor, with Lithuania taking up 38%, Estonia 22% and Latvia 20%.</p> <p>However, a non-binding referendum held in conjunction with a national election in October 2012 has clouded the prospects for the Visaginas project. The referendum question asked if voters wanted new nuclear power capacity built, and 63% said no. The Social Democrats had forced the referendum in order to make Visaginas an election issue. The New Social Democratic led Government has since said that it wishes to respect the result of the referendum and cancel the Visaginas project. <i>However, due to pressure from the EU Commission and its project partners Estonia and Latvia, the new Lithuanian Government has <u>set up</u> a Parliamentary committee to evaluate in full the viability and desirability of continuing the Visaginas project, with a final decision on whether to go ahead or cancel the project expected by the end of April or May 2013. Also in early January of 2013, the new Energy Minister, Jaroslav Neverovic, <u>stated</u> that Lithuania may still go ahead with the Visaginas project.</i></p>
<p>Netherlands (1 = 3.9 TWh) 3.6%</p>	N	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>In February 2011 the Dutch government presented the parliament with a 17-page document outlining the conditions for new nuclear construction, including safety requirements and financial guarantees. The government wished to accelerate the decision making process to provide a construction license before the end of its term in 2015, and to see plant commissioning by 2019. On January 23, 2012, DELTA the co-owner of Borssele-1 announced it was putting off decision “for a few years” and that there would be “no second nuclear reactor at Borssele for the time being”. The company provided the following reasons for its decision: “The financial crisis, combined with the substantial investment needed for a second nuclear power plant, current investment conditions, overcapacity in the electricity market and low energy prices.</p>

<p><i>Slovenia</i> (1 = 5.9 TWh) 41.7%</p>	<p>Y Krsko-2 1 reactor</p>	<p><input checked="" type="checkbox"/></p>	<p><input checked="" type="checkbox"/></p>	<p>The Krsko nuclear power plant was the world’s first reactor to be owned jointly by two countries, Croatia and Slovenia. Discussions remain on-going for the construction of a second reactor at the site; a decision has been delayed several times in Slovenia and has been pushed back to 2013 in Croatia. In early 2013, the lifetime of KRSKO-1 was extended by a further 20 years (initially expected to be shut down by 2021).</p>
<p><i>Spain</i> (8 = 55.1 TWh) 19.5%</p>	<p>N</p>	<p><input checked="" type="checkbox"/></p>	<p><input checked="" type="checkbox"/></p>	<p>There has been a moratorium in place on NPPs for several years now. Spain is, however, implementing both uprating and lifetime extensions for existing facilities. Licenses for the operating units would have run out between 2010 and 2018; however, in 2009 the government extended the operating license of the 40-year old Garoña plant to 2013, and in 2010 it granted the 30-year old Almaraz-1 plant a 10-year extension and a capacity increase of 7%. The 28-year old Almaraz-2 plant also will be uprated. In February 2011, the Spanish parliament amended the Sustainable Energy Law, deleting from the text a reference to a 40-year lifetime limitation and leaving nuclear share and lifetime to be determined by the government.</p>
<p><i>Sweden</i> (10 = 58.1 TWh) 39.6 %</p>	<p>N</p>	<p><input checked="" type="checkbox"/></p>	<p><input checked="" type="checkbox"/></p>	<p>Sweden decided in a 1980 referendum to phase out nuclear power by 2010. Sweden retained the 2010 phase-out date until the middle of the 1990s, but an active debate on the country’s nuclear future continued and led to a new inter-party deal to start the phase-out earlier but abandon the 2010 deadline. The first reactor (Barsebäck-1) was shut down in 1999 and the second one (Barsebäck-2) went off line in 2005. <i>On February 5, 2009, the parties of Sweden’s conservative coalition government signed an agreement on energy and climate policy that defines ambitious renewable energy and energy efficiency targets and calls for the scrapping of the Nuclear Phase-Out Act. In June 2010, the parliament voted by a tight margin (174/172) to abandon the phase-out legislation. As a result, new plants could again be built—but only if an existing plant is shut down, meaning that the maximum number of operating units will not exceed the current ten. This puts Sweden many years away from potential new construction.</i></p> <p>While Swedish public opinion is split over general nuclear power acceptance, an IPSOS poll has indicated a majority of 57% against new build and 91% (the largest share in anyone of the 24 countries studied) that consider nuclear power as “not a viable long term option” and “soon obsolete”.</p>

Austria	N		☒	<p>Austria is probably the strongest opponent of NPPs within the EU, and it has amongst other things campaigned vigorously against both the continuation and expansion of the Temelin NPP, which is close to the Austrian border.</p> <p>In April 2012, the Austrian government <u>resolved</u> to stop imports of nuclear power by the end of 2014. Though the country has never had a nuclear plant after resolving in 1986 to remain nuclear-free, it has nevertheless continued to import power – especially from the Czech Republic and Germany – without specifying the origin of that electricity. Starting on January 1, 2015, Austrian utilities will have to produce certificates of origin for imports of power – and they will be banned from purchasing electricity with nuclear certificates. That year, Austria will implement a "nuclear-free quality" label for electricity to demonstrate to power consumers that they are not consuming any nuclear power.</p>
Belgium (7 = 48.2 TWh) 54%	N		☒	<p>In 2002, the country passed nuclear phase-out legislation that required the shutdown of nuclear plants after 40 years of operation, meaning that (based on their start-up dates) plants would be shut down between 2015 and 2025. On October 13, 2009, the government issued a 10-page general policy statement that included one reference to nuclear power: “The government has decided to postpone by 10 years the first sequence of the phase-out of nuclear power.” However, that government was voted out in June 2010 before being able to vote this legislation into law. Following Fukushima and the establishment of a new Government the still existing phase-out legislation was left in place and no legislative initiative has been taken to overturn it, even if the operator GDF-Suez is lobbying hard to postpone for an extension of “at least 10 years”. In July 2012 Belgium's Council of Ministers announced that Doel 1 and 2 were to close in 2015 after 40 years of operation. However, Tihange 1, which will also celebrate its 40th anniversary in 2015, is to be permitted to operate to 2025 to avoid the risk of blackouts.</p> <p><i>In June and September 2012 during maintenance and testing on Doel-3 and Tihange-2 the reactors were <u>found</u> to have fissure in their cores and were immediately shut down. A <u>decision</u> on whether to restart the reactors was postponed in January 2013, due to continued uncertainties regarding the reactors. This latest development does not bode well for the survival of NPPs in the medium to long term.</i></p>

<i>Denmark</i>	N		<input checked="" type="checkbox"/>	Denmark was once at the forefront of nuclear research and had planned on building nuclear power plants. However, in 1985, the Danish parliament passed a resolution that nuclear power plants would not be built in the country and there is currently no move to reverse this situation. About 10% of its domestic electricity consumption is from nuclear power (from Sweden and Germany).
<i>Germany</i> (9 = 108 TWh) 17.6%	N		<input checked="" type="checkbox"/>	Four days after the Fukushima disaster, Germany's government decided to shut down 8 of its fleet of 17 reactors. Originally for a three-month period, however, the closure of almost half of the German reactors turned out to be permanent. Total Phase-out has been decided upon by the Merkel Government post Fukushima. All NPPs will be shut down by 2022. They have an 80% renewables target by 2050.
<i>Italy</i>	N		<input checked="" type="checkbox"/>	The government intended to have 25% of electricity supplied by nuclear power by 2030, but this prospect was rejected at a referendum in June 2011. Some 10% of its electricity is now from nuclear power – all imported.

*This Table and Summary has used a number of sources. The key sources are listed below:

[The World Nuclear Industry Report 2012](#)

[World Nuclear Association](#)