



Prospects for New Nuclear Power Capacity in the EU

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Recent work

Comparing nuclear power in several countries from around the world:

EPRG Working Paper Ref 07/09

Alexandre Bredimas and William J. Nuttall (2007)

Title: A Comparison of International Regulatory Organizations and Licensing Procedures for New Nuclear Power Plants

One aspect of the work discusses the relatively unusual safety regulation approach of the UK with its emphasis on the non-prescriptive approach known as “ALARP” – *As Low As Reasonable Practicable*



For CESSA the focus moves to the EU

50 Years of Nuclear Power in the EU:

In April 1956, following the 1954 failure of the European Defence Community, an international committee, under the Presidency of P.H. Spaak, the Belgian Minister for Foreign Affairs proposed:

- the creation of a general common market;
- the creation of an atomic energy community.

These became the "Treaties of Rome" signed in March 1957.

The first Treaty established the European Economic Community (EEC) and the second the European Atomic Energy Community , better known as "Euratom". These two Treaties entered into force on 1 January 1958. The EEC Treaty has been modified numerous times whereas the Euratom Treaty remains unaltered.

Ref: EU - http://europa.eu/scadplus/treaties/eec_en.htm



Can Europe speak with one voice?

However, the absence of amendments to the Euratom Treaty is not a sign of a European consensus on nuclear power.

The EEC treaty has moved towards its aim of “ever closer union”, while in the area of nuclear power there has been a European divergence.

Climate change is a global threat. The whole European Union faces growing fossil fuel import dependency and near total uranium import dependency. Despite these pan-European drivers, policy for the electricity generation mix remains a national prerogative. Interestingly those states which are usually most strongly Euro-Federalist are the first to defend **subsidiarity on matters relating to nuclear power.**

See: European Energy Forum, *Green Paper on a European Strategy for Sustainable, Competitive and Secure, Energy*, 8 March 2006, ID:COM(2006)105



Nuclear Stations in EU-25 (2005)

Country	Operating	Building	Closed	First kWh	GWh 2005	% supply
Belgium	7	0	1	1962	45335	55.6
Czech	6	0	0	1985	23225	30.5
Finland	4	1	0	1977	22334	32.9
France	59	0	11	1959	430899	78.5
Germany	17	0	19	1961	154612	30.1
Hungary	4	0	0	1982	13020	37.1
Italy	0	0	4	1963	0	0
Lithuania	1	0	1	1983	10300	69.6
NL	1	0	1	1968	3772	3.9
Slovakia	6	0	1	1972	12335	56.1
Slovenia	1	0	0	1981	5614	42.4
Spain	8	0	2	1968	54895	19.6
Sweden	10	0	3	1964	70000	46.6
UK	23	0	22	1957	75179	19.9





Official Attitudes EU-15

Finland	UK	Luxembourg	Germany	Ireland
France	Netherlands	Denmark	Belgium	Austria
	Portugal	Greece	Italy	
	Spain		Sweden	

The EU-15 are almost equally divided on nuclear power.

Looking to the future of nuclear power in the European Union it is important to note that the EU-27 is not the EU-15.



Official Attitudes EU-27 minus EU-15

Lithuania

Poland

Malta

Romania

Latvia

Cyprus

Bulgaria

Estonia

Czech Republic

Slovakia

Hungary

Slovenia

The balance of attitude in the new member states is very different to that in the EU-15

An examination of the future of nuclear power in the EU prompts us to centre our gaze towards the east. In building our understanding of these issues for CESSA we are studying the following examples:



Romania

Cernavoda 1-5

In the 1980s the government of Nicolae Ceaușescu initiated plans to build a set of five heavy water reactors using Canadian (AECL CANDU-6) technology and Italian project management (ANSALDO). Following the Revolution of 1989 Cernavoda 1 (706MWe) entered service 2 December 1996. Unit 2 is expected to become operational later this year and plans are underway to complete units three and four.

Ref: <http://www.aecl.ca/>



Lithuania

Background: Ignalina 1 & 2

RBMK 1500 MWe units. Same reactor technology as Chernobyl. Project started 1974. Commissioning 1983 and 1987. Original RBMK unit 3 plan construction cancelled 1989.

See: <http://www.iaea.it/default.asp>



Lithuania

Ignalina 3 – proposal for an entirely new plant

To be a “commercial” plant driven originally by a three country agreement: Lithuania, Latvia and Estonia with Poland having joined later. Based on a new bill submitted to Lithuanian parliament. Three biggest Lithuanian energy companies to be investors.

Lithuanian state will have a 51% share. Lithuania has the most liberalised electricity industry of the four partners.

Lithuania wants a power bridge to Sweden and Poland this will increase the commercial attractiveness of Ignalina 3.

Ref: Gediminas Kirkilas, Lithuanian Prime
Minister, RUSI, London, 21 May 2007



Czech Republic and Slovakia

Czech Republic:

Dukovany 1-4 VVER 213 units, 412 MWe each. First power 1985-1987

Temelin 1&2 VVER 320 units, 912 MWe each. First power 2000 & 2003

Temelin – the most controversial NPP in Europe, slightly more than 50km from the **Austrian** border. March 2007 Czech Prime Minister Mirek Topolanek and Austrian Chancellor Alfred Gusenbauer agree to set up an inter-parliamentary commission to try and sort out the disagreements. Source: Energy Daily 17 April 2007

“The 2004 [Czech] state energy policy envisages building two or more large reactors, probably at Temelin, eventually to replace Dukovany after 2020. Plans announced in June 2006 envisage one 1500 MWe unit at Temelin after 2020, and a second to follow.”

Source: World Nuclear Association country briefing February 2007



Czech Republic and Slovakia

Slovakia:

Five operating plants:

Bohunice 2-4 VVER 213, 408 MWe per unit, First power 1980-1985

Mochovce 1&2 VVER 213, 420 MWe per unit, First power 1998 and 1999

Unlike Czech Republic, Slovakia (and Bulgaria) were pressured to accept nuclear shut downs for accession to the EU. In Slovakia this forces the shutdown of thoroughly upgraded (\$300M) plant at Bohunice. Bohunice 1 closed December 2006 eliminating 9% of Slovak supply. A step described as “Energy Treason” by Slovak PM.

Source: World Nuclear Association country brief



Slovakia continued

An upgrade program on Bohunice units 3 & 4 is under way to extend operational life to 40 years (2025). January 2006 new government energy strategy incorporating plant power upratings

October 2004, approval of ENEL's bid to acquire 66% of Slovak Electric - a EUR 1.88 billion investment including EUR 1.6 billion for completion of Mochovce units 3 & 4 (942 MWe) by 2011-12. In February 2007 SE announces plans to construct Mochovce 3 & 4, using EUR 1.8B from ENEL for operations 2012-13. The Slovak government has raised the prospect of building a fifth unit at Mochovce, and also possibly new units at Bohunice or at a new site in the east of the country: Kecerovce.

In March 2007 the German utility E-ON notified its interest in building new reactors at Bohunice.

In the lead up to EU accession in 2004, nuclear industry representatives from eastern Europe called for the introduction of transparent and rational EU safety standards rather than punitive closures of reactors which had been substantially upgraded. Source: World Nuclear Association country brief



Recent news from the UK

May 2007 New Planning and Energy White Papers Propose:

- National Justification Process for New NPPs
- National Site Non-Specific Design Approval
- Reduced Scope Planning Enquiries for Major Items of National Critical Infrastructure

Also

- New Build Nuclear Power in the UK will be on the basis of a “once through” fuel cycle – no new reprocessing!
- Five Month Consultation on Key Nuclear Issues
- Publication of previously secret consultant’s report on siting



Conclusions

Do not forget that much of the European nuclear renaissance lies in “New Europe”

There is no chance of a single European voice on new nuclear build. But there is a consensus that the generation mix for electricity is a matter for each member state individually, as long as sensitivity is shown to the concerns of neighbouring states.

The UK White Papers explain how nuclear power has improved its relative position with respect to issues of environment, security of supply and economics. The UK government is now recommending a return to the possibility of new nuclear power. For the UK new build nuclear must be achieved via the liberalised market.

The UK has a unique safety regulation culture. The UK safety regulator opposes rapid moves to pan-European safety regulation. Eastern European countries would welcome European safety regulation.