



The reactor hall of the Ignalina nuclear power plant in Visaginas, Lithuania. Photo: STRINGER/AFP/Getty Images

# *Baltic states torn between two lovers*

The electricity island formed by the Baltic States appears to be an anachronism in the EU. Although Estonia, Latvia and Lithuania have adopted EU legislation, the three countries have maintained their synchronous relationship with the Russian electricity system. Will they one day be fully integrated into the UCTE and become independent of their large neighbour?

| by *Hughes Belin*

It is tempting to think that the three Baltic States have very similar energy policies and market situations, but that is far from being the case. The differences are significant. The reasons for this are historical. The Baltics were designed as a single energy entity within the Soviet Union that had to fulfil multiple needs. For example,

the Ignalina nuclear power station was built in the South East of Lithuania to provide basic nuclear electricity to the entire region, from Belarus to the Russian enclave of Kaliningrad. Latvia's role, with its hydroelectric power stations, was to balance the region. Estonia, for its part, was supposed to generate high volumes

of cheap electricity from an abundant and cheap source of fossil fuel: oil shale. Today, however, these three countries are separated by geographical borders and different interests. This does not mean that they do not cooperate, quite the opposite. Intergovernmental dialogue is institutionalized and numerous

consultations are held. But of course each country tries to benefit as much as possible from its geographical position and energetic advantages.

With one exception - a project to reinforce the interconnection between Estonia and Lithuania - all interconnection projects currently undertaken in the Baltic countries are aimed at integration with Europe. The Eastlink between Estonia and Finland has been operational since the end of 2006. This 350 MW DC submarine cable enables exports towards the lucrative Scandinavian cheap kilowatt-hours market with a very profitable margin.

'We can expect reasonable profits with sales of €50/MWh on the Nordic market compared to €25 in Estonia and €17 in Russia', explains Sandor Liive, ceo of the national electricity company, Eesti Energia. There are plans for a second 650 MW Eastlink, scheduled for 2013. The three Baltic countries are cooperating closely with these projects via their TSOs. In Latvia, negotiations on the construction of a DC sub-marine cable of 500 to 700 MW interconnection are in progress, under the name of Gotlink. In Lithuania, a feasibility study on a 1,000 MW DC sub-marine cable, to link the country to Sweden, was launched in February 2006. A crucial project under discussion is an interconnection between Lithuania and Poland. This has featured widely in the media because the high political stakes associated with this 400 kV double and 1,000 MW back to back conversion station. The EU has added this project to its list of priority interconnection projects because it will allow the Baltic State electricity island to open up and attach itself to the European continent.

#### A game of dominoes |

If this physical link were established between Lithuania and Poland, Lithuania would be in a position to trade electricity with continental Europe - notably electricity generated by the future Ignalina power station, which is to replace the current one. As a condition of entry into the EU, Lithuania agreed to close the

Ignalina nuclear power plant, which supplies 80% of the country's electricity. The interconnection project is still in its cocoon stage because it will require the reinforcement of 400 km of electricity lines in Poland and an increase in capacity from 225 to 400 kV. It will also require reinforcing the network for the entire length of the former iron curtain - except in Germany where it has already been done.

As long as the link with the EU is asynchronous, i.e. as long as the two systems remain independent, the electricity links between the Baltic countries and Russia will not be questioned. It is clear, however, that the Baltic States, as they announced on 11 June 2007, are keen to join the network of the UCTE (the association of transmission

procure funding, through the EU Trans-European Network, for the feasibility study that needs to be done. Latvian TSOs are working with the French TSO, Réseau de Transport d'Electricité, on market design and Lithuania is soon to follow suit.

Meanwhile, the project to build an electricity bridge between Poland and Lithuania has come to a standstill. There are two main reasons for this. First, as the UCTE grows, its new members will evidently be required to cut ties with their neighbours who are not members of the UCTE. These are not only small countries. In this particular instance it will mean Russia. And here, the major problem is Kaliningrad. Before Lithuania could cut ties with Russia it is essential

### *The Baltic authorities insist that 'unbundling does not concern us'*

system operators in continental Europe). But to do so they will have to follow the strict procedures defined by the UCTE. In order to become a member they must be introduced and sponsored by the country that will be most affected by this change in status, Poland in this instance. For the moment no formal demand has



*The reactor of the Ignalina nuclear power plant in Visaginas, Lithuania. Photo: AFP/Getty Images*

been submitted to the UCTE and the three countries are still in the process of gleaning as much information as possible on the most effective method to establish a synchronous relationship with the UCTE. They are now trying to

that a solution, acceptable to the Russian authorities, be found for the Russian enclave of Kaliningrad.

Until now Kaliningrad has been supplied by transit through the Lithuanian grid or by buying electricity from Ignalina. If the Baltic States are synchronized with UCTE, some investment would be needed to maintain electricity supply to Kaliningrad. According to the European Commission, there are several possibilities. The first one would be to have Kaliningrad integrated within the UCTE grid where, because it has its own production capacity, it could act as both importer and exporter. In fact, this option could benefit the Russians as they could increase capacity in Kaliningrad as a means of generating electricity from gas at Russian internal prices. The other option would be to build a back-to-back station at the Lithuania-Belarus border. This way, electricity could be transited as before. The back-to-back station could also be dimensioned for additional imports/exports between UCTE and Russia through Belarus.

It might also be possible to imagine a synchronized interconnection with Russia or the Western part of Russia which would solve the issue of Kaliningrad's isolation, but that is a different story, and one for the longer term (see box).

*'In terms of balancing, Russian electricity is practically free'*

The second reason for the delays is that Poland has a critical role to play in this affair which it intends to use to its own advantage. Poland's support will come at a high price, notably by linking it to the smooth progress of other dossiers such as the construction of a future reactor at Ignalina. 'Neither we, nor Poland, make a connection between the Ignalina dossier and that of the Lithuania-Poland

interconnection. They are two separate dossiers', reassured Anicetas Ignatas, Lithuania's Under Secretary for the Ministry of Economy recently.

The short term asynchronous link project, with a cost of €257 million 'could

set at €553 million.

The European Commission has appointed a special coordinator, Wladylaw Mielczarski, a Polish professor of electrical engineering at the technical university in Lodz, to help solve the matter.

Ignalina: problem or solution? |

There are many different facets to the Ignalina question. The much debated question of whether operations at the site may be extended past 2009 can be eliminated from the start. 'Even if experts say it is safe, we must stick to the conditions set by primary law of the EU, i.e. the EU-27 ratified accession Treaty and its protocol Nr 4', says the Latvian-born EU Commissioner for energy Andris Piebalgs. 'Lithuanians are misled: there will never be any acceptance from the Commission to extend Ignalina II's life beyond 2009', he adds.

The message from Brussels may be peremptory, but at least it's clear about

start tomorrow, we are ready', confirmed Rymantas Juozaitis, General Director of Lietuvos Energija. But after 36 high-level meetings and 100 encounters between the companies involved, Poland's lack of goodwill is all too evident. Consequently the idea of a sub-marine cable to Sweden, for which the feasibility study was completed at the beginning of 2008, appears to be a more likely option for the Lithuanians. The estimated cost of this is

## EU-Russian interconnection: long way to go

The European organization of transmission system operators UCTE, together with its Baltic counterpart IPS and its Russian counterpart UPS, is doing a study on the technical possibilities of a synchronous interconnection between the UCTE and Russian networks. Its results are scheduled to be published by the end of April 2008.

What are the experts going to advise? In fact, EER has learned that the study will reveal that a synchronous interconnection is not impossible to realize some day, but that the investment required to establish technical compatibility between the two systems will be very high. The study will establish a list of requirements but will not give any time schedule. For one thing, the reserve transmission capacity that would be required would be so high that it would seriously impact the commercial transmission capacity of both networks. Even if the problem of investment was resolved, problems of governance would arise. There is no clear vision as yet of how to establish a mutually compatible system of liability.

What is the alternative? DC links or splitting the enormous Russian grid, which experts describe as "an economic heresy". Lessons learnt from the UCTE-UPS/IPS study, mean that it will be possible to find better ways to move forward with this project. The request for this study was made by Russia, not the UCTE. This means that there is no question of imposing any changes in the West. The ball will once again be in Russia's court but this time the interest in the project has fallen significantly, because in the last five years, conditions in the electricity sector in Russia have changed considerably.

In 2002, Anatoly Chubais, in the hope of attracting investment for Russia's electricity generation sector while at the same time giving a boost to the modernization of the Russian network, asked to study the junction of the two systems 'face to face rather than back to back'. While this formula, at first glance, has a certain charm, it loses most of its charm when upon a closer look. Moreover, the Russians, from the outset, excluded the application of UCTE operational rules, which complicated matters further: the result would be forced cohabitation, or a coupling system in the jargon of the sector.

The Commission meanwhile maintains that there are two more pillars that need to be resolved: equal levels of nuclear safety on both sides (a subject which is totally taboo for the Russians); and equal market conditions (reciprocity). And just to add to the confusion, Ukraine and Moldavia have also requested to be fully integrated into the UCTE grid: a project which is just waiting for the anticipated fiasco caused by the results of the Euro-Russian study before a feasibility study will be started. Conclusion: it is safe to say that the idea of an acceptable synchronous interconnection between the EU and Russian systems is still a long way away.



Ignalina nuclear power plant in Lithuania.

the future of Ignalina, contrary to the deliberately misleading rhetoric of Lithuania's political class desperate to boost national pride as elections approach. The country received, between 1999 and 2006, a total of €529 million in EU support for the closure of Ignalina, and additional funds were donated by individual states through the Ignalina International Decommissioning Support Fund (IIDSF). EU assistance is scheduled to continue until 2013 with an additional €837 million from 2007. 'All efforts have been made, and continue to be made, in order to prevent an energy supply crisis in Lithuania', said Piebalgs, indicating the EU support for upgrading the Lithuanian thermal power plant and the heat supply from Visaginas (currently supplied by Ignalina Nuclear Power Plant).

Losing Ignalina will not be a huge loss for Lithuania, since forecasts predict that Lithuanian non-hydro and non-wind generation capacity in 2010 will reach 2,400 MW (compared to total capacity of 3,640 MW today), which is just above daily demand and just under peak demand. Most increases in generation capacity between today and 2010 should come from wind (+170 MW).

But Ignalina is also the site of the future Baltic nuclear reactor project, in which the three Baltic countries and Poland

will participate. Ukraine's participation, according to the Lithuanian government, is nothing more than a false rumour. While official forecasts predict that this €4 billion power plant will be operational in 2015, specialists claim that 2017 or 2018 is a more realistic target. The French Evolutionary Pressurized Reactor (EPR) from Areva is the preferred option. The Lithuanians have so far refused to be discouraged by the delays of the new EPR-reactor that is being built in Finland. 'We are learning from mistakes at Oikiluto', says Gintautas Klevinskas, technology solutions manager at Lietuvos Energija.

### *After 36 high-level meetings, Poland's lack of goodwill is all too evident*

The official agreement to launch the power station has had to be postponed because Poland is demanding a major share of the electricity generated, approximately 1,000 MW of the total power of approximately 3,000 MW and Lithuania wants to retain a 34% share of the total output, i.e. also 1,000 MW, leaving the two other stakeholders seriously unenthusiastic. With elections looming in both Poland and Lithuania, discussions on this project have taken

a back seat and Estonia has now started talking of developing its own 350 MW mini-reactor as soon as the technology becomes available.

Latvia, the only Baltic country to be a net importer of electricity, will be 700 MW short of establishing total independence by 2016. The national operator, Latvenergo, is looking into several thermal power station options, primarily gas powered but also coal powered although questions about the future of carbon capture and storage (CSS) have meant that this option is fast losing popularity. Ceo of the Latvian electricity company Latvenergo, Karlis Mikelsons, is not particularly concerned by the country's growing dependency on Russian gas in light of the country's enormous storage capacity. 'Everyone is dependent on something', he says ironically. He believes that gas is 'cleaner' than coal and more importantly, given that the country is already 400 MW short, quicker to build. Electricity from the new power station will necessarily be more expensive whereas electricity from Russia is cheap. In terms of balancing, Russian electricity is practically free. 'The market is too small here to invest in generation', bemoans Ilga Preimate, Deputy State Secretary at the Latvian Ministry of Economics.

Yet Preimate can be assured that prices will rise in future. It is one of

the expected consequences of the liberalization of European markets. The European liberalization "dogma" impacts differently on each of the Baltic countries, depending on their own energy situation. One thing is sure, however, the Baltic countries are not interested in the latest edicts from Brussels concerning unbundling. 'It doesn't concern us', chorus the different national authorities – who fail to comprehend why their already complex situation is on the point