

Countries in Eastern Europe are facing a variety of serious energy problems: shortages, rising prices, rising CO₂ emissions and heavy dependency on Russia. Nuclear power will solve all these problems at one stroke. Or so many governments believe. Critics charge that simpler options are being ignored.

Spring comes to East Europe again



Photo by: Shepard Sherbell/Corbis Saba



| by Anke Truijen

The border town of Belene in northern Bulgaria, where the Danube separates Romania from Russia, is looking forward to their nuclear power station. The council is rather proud that Europe's largest nuclear project is being built in their backyard. A large sign in the central park shouts 'Energy for the future', promising a future for the green and rich energy centre of Bulgaria. The half-built installations visible today, are the heirlooms of the first part of this nuclear project, which was shut down in the early 1990s due to a lack of funds.

'This nuclear power station is good for us; many people will benefit financially,' says an old man while unhooking his donkey from his wooden cart. The inhabitants of this poor region with high unemployment, which has forced many to emigrate, mainly wanted employment guarantees. They have every confidence that nuclear power stations are safe, says a bottle-blonde woman pushing a pram. 'We are used to nuclear energy in Bulgaria; we have lived off it for years.' The only thing they fear is that Russian developer AtomStroyExport will award most jobs to Russian builders.

Thanks to the Ukraine crisis in January, which caused many countries to be stuck without gas, the development of nuclear power is once again a priority on the political agenda in Eastern Europe. 'After a very long winter spring has finally come,' says Luis Echávarri over the phone from Paris. He is head of NEA (Nuclear Energy Agency), the nuclear division of the OECD (Organisation for Economic Cooperation and Development). He sounds pleased with the current nuclear revival in Eastern Europe. 'The 1986 disaster in Chernobyl in Ukraine evoked a lot of resistance against the use of nuclear energy in this region,' says Echávarri. 'We now see new opportunities. Most of these countries want to expand or replace their nuclear power stations. Nuclear energy is very appealing to them from a financial perspective, especially in the long term, to secure their energy supply, to produce

cheaper energy and to develop a cleaner energy policy – within the framework of strict safety regulations, of course.'

Safety requirements |

The EU has demanded strict safety requirements for the new member states since the Chernobyl disaster. Countries such as Bulgaria, Slovakia, the Czech Republic and Lithuania had to close or markedly improve their Soviet-type, first-generation reactors, such as the VVER-440 and RBMK, as a precondition to join the EU. The governments accepted

like Slovakia and Bulgaria. 'They are economically and politically dependent on their nuclear power stations. They must stick to EU regulations, however. Safety comes first. The best thing they can do is to modernise their reactors or to implement new projects.'

'It is mainly in the interest of the nuclear lobby to close the old reactors. They can then develop their industry and build new power stations,' says nuclear physicist Georgi Kaschiev. He works at the University in Vienna. Before that

A large sign in the central park shouts 'Energy for the future'

the closures, but complain it hits them hard financially. Slovakia and Bulgaria had to give up their position as regional exporters. They hope that nuclear expansion will reinstate them at their old level and even expand their production. They feel that the financial compensation provided by the EU (€423 million for Slovakia and €210 million Bulgaria) is not enough.

'That closure had nothing to do with safety,' says Yavor Kuiuudjiev, deputy minister of the Bulgarian Ministry of Economics and Energy. 'Our Kozloduy power station is safe and we simply need that electricity. It was a purely political decision fuelled by the negative feelings around nuclear energy. We wanted to become a member state, and thus agreed to the closure.' Kuiuudjiev, who has a background in the nuclear industry, says that Bulgaria is only allowed to open the old power station with EU approval in times of economic need, something which almost happened in Bulgaria as well as Slovakia during the gas crisis in January.

Echávarri confirms that the closures were a political decision. He has some sympathy for the plight of countries

he chaired Bulgaria's commission for the safe use of nuclear energy. Kaschiev adds that this is not necessarily a bad thing and that it is understandable, since the nuclear industry must continue to develop.

'Many western and Russian companies are seeing opportunities to implement new nuclear developments in the "new Europe". Eastern European countries with nuclear power stations want to hold onto their own nuclear industry so it is important for those governments to keep their nuclear power stations open and to find investors for new projects,' says Olexi Pasyuk, an energy expert from the NGO Bankwatch, which keeps a close eye on the progress of nuclear energy projects in Central and Eastern Europe. In his view, some of these projects are neither transparent, nor economically viable and a concern for the environment and for the safety of people living in the vicinity.

Energy security is the main reason for most Eastern European countries to embrace nuclear energy. They feel they can no longer rely on Russia since the gas crisis. These countries are highly dependent on Russia for their energy supply. They

are therefore looking to collaborate with western partners. This does not apply to all countries. Bulgaria, for instance, is again becoming dependent on Russia with its Belene plans. AtomStroyExport is one of the parties to build the power station, which will be fuelled with Russian uranium. Russia will also be responsible for waste treatment.

'This pro-Russia government has turned Belene into a corruption project,' says Kaschiev. 'Various reports show that agreements were entered into in return for money in the highest circles, to let this project proceed.' Many Bulgarians fear that their energy sector will be used as a political plaything as a result of their government's dependent attitude toward Russia.

Kaschiev wonders whether the project is cost-effective. 'Companies, neighbouring

countries and banks participate in nuclear energy projects in other countries, because they need the electricity. This is not the case for the Belene project, which costs billions. And it will produce so much energy that they are probably unable to transport and sell it all.'

Pasyuk of Bankwatch confirms that cost-effectiveness of the projects is a problem. 'It is questionable, especially for the large nuclear projects, whether the costs will be recovered. If they all increase their capacity, they will all have to dispose of the energy as well. Partly as a result of the financial crisis, some Eastern European governments want to show that they are growing and are creating jobs with these projects, whereas they should start cutting down on energy consumption and increasing their energy efficiency.'

Many governments guarantee any losses the projects may incur. Bankwatch is afraid that the bill will end up with the tax payer.

Emissions |

The reduction of CO₂ emissions is an important additional argument for Eastern European countries to embrace nuclear energy. Poland, for example, introduced legislation at the start of this year to clear the way for building its first nuclear power station. Poland is the largest electricity producer and consumer in Eastern Europe and depends on thermal power stations, particularly coal-fired power stations, for more than 90% of its energy. 'The use of nuclear energy will continue to increase, because it emits little or no CO₂. It is environmentally friendly, more economical in the long

BULGARIA (EU member since 2007)

Nuclear power stations: One nuclear power station in Kozloduy since 1974: four VVER 440-230 reactors and two VVER-1000 reactors. The VVER-440-230 reactors were shut down by order of the EU at the beginning of 2007.

Capacity: 3760 MW

Nuclear electricity production: Close to 40% of total power production

Developments: Construction of a new nuclear power station in Belene with a capacity of 2000 MW. Planned for 2013. Developer is Russian AtomStroyExport in collaboration with French Areva and Siemens. German electricity supplier RWE (Rheinisch-Westfälischen Elektrizitätswerks AG) owns 49% of the shares. Bulgarian power company NEK has a majority share of 51%. The nuclear power station in Belene will have the first new Russian reactors in the EU.

ROMANIA (EU member since 2007)

Nuclear power stations: One nuclear power station in Cernavoda since 1996 with two Canadian CANDU reactors.

Capacity: 1310 MW

Nuclear electricity production: 13% of total electricity production.

Developments: Last November Romania signed a nuclear deal to expand the Cernavoda reactors with two additional 720 MW CANDU units. Romanian state-owned nuclear cooperative and electricity company SNN (Societatea Nationala Nuclearelectrica) jointly own 51%; GDF Suez, RWE, Enel, CEZ 9.15% each; Iberdrola and ArcelorMittal 6.2% each.

Remarks: Romania hopes to build a second nuclear power station with a capacity of 2000 to 2400 MW before 2020. Investors and location unidentified as yet.

HUNGARY (EU member since 2004)

Nuclear power stations: One nuclear power station in Paks since 1982. Four (modernised) Russian VVER-440 pressurised water reactors.

Owned by: Hungarian power company MVM.

Capacity: 1860 MW

Nuclear electricity production: 30% of total electricity production.

Developments: A large majority of the Hungarian parliament voted in favour of expanding the Paks nuclear power station with two reactors last March. There is a possibility of a new nuclear power station in the future. All major political parties agreed to extend the operations of the nuclear power station 100 kilometres south of Budapest for another 20 years in 2004, instead of closing it down as planned in 2012. Developer AtomStroyExport plans to improve and increase the capacity of the 440 MW reactors to 500-510 MW. Hungary is considering reopening the Hungarian mines in cooperation with Australian Wildhorse Energy Ltd in order to extract its own uranium.

SLOVAKIA (EU member since 2004)

Nuclear power station: Two nuclear power stations in Bohunice (since 1972) and Mochovce (since 1998). Bohunice used to have four and currently only has two 408 MW reactors. These V213 installations were built by Russian Atomenergoexport and Skoda. In 2006 and 2008 two old Soviet reactors in Bohunice were closed upon joining the EU. Mochovce has two VVER 440 reactors built by Skoda.

Capacity: 1688 MW

Nuclear electricity production: 50% of total electricity production.

Developments: Expansion of the Mochove nuclear power station with two additional installations. Italian Enel, which owns a majority of



term and it provides a lot of energy,' says Kuiumdjiev.

Many critics believe, however, that it would be cheaper and quicker if some ex-communist countries would consider other options for their growing energy demand, such as the development of a more efficient energy policy and a sustainable and cleaner energy production. Most Eastern European countries have a lot of catching up to do in that respect. Bankwatch states that many coal- and gas-fired power stations as well as the electricity grid are over 30 years old and in need of replacement in many ex-communist countries.

Critics also draw attention to safety risks and the nuclear waste problem. Most Eastern European countries (the Czech

Republic, Slovakia and Hungary) used to take their nuclear waste to Russia, but stopped doing so when Russia increased its prices and Ukraine increased its transition costs in the 1990s. Only Bulgaria, which claims to have closed a good deal, still sends its radioactive waste to Russia.

Bankwatch is concerned that many governments do not have a solution for their nuclear waste. 'We are warning banks that they are going to lose money', comments Pasyuk. 'Apart from rising construction and development costs, the solution for the nuclear waste will be an extra expense.'

But Echávarri points out that most Eastern European countries have a lot of experience with nuclear energy. 'This sector carries the same development risks as any other industrial sector. It

is important that these projects have a political and social basis that changing governments can work with. There are sufficient guidelines, international checks, new technologies and exploration reports to prevent mistakes and guarantee safety. Safety will always come first.' He does consider it a problem that there is still no proper nuclear waste debate in Eastern Europe. 'Few countries know what to do with it and sometimes have not even identified a site. Finding a waste location is usually a problem that governments keep putting off.'

Echávarri thinks that it will not deter the development of nuclear power stations. 'As long as governments are making sure nuclear energy can be discussed and are demonstrating sincere engagement, a solution will be found for their nuclear waste.' ■

Slovakian power company SE, plans to build two 440 MW reactors by 2013. The government is also looking into possibilities for a new nuclear power station (1200 MW) in conjunction with Czech power company CEZ. Canadian based Tournigan Energy Ltd is currently investigating the possibility of extracting uranium from the Slovakian Kuriskova mine.

CZECH REPUBLIC (EU member since 2004)

Nuclear power stations: Two nuclear power stations since 1985: Dukovany has four operational (modernised) VVER 440-213 reactors and the power station in Temelin has two VVER 1000 reactors.

Capacity: 3000 MW

Nuclear electricity production: Approximately 30%

Developments: Two additional reactors at the Temelin location with a total capacity of 3400 MW by 2020. The Czech Republic has been considered a pioneer in nuclear developments and construction in Central Europe for years. Czech company Skoda which is owned by the Russian OMZ group (Uralmash-Izhora Group) and now operating under the flag of Pilsen Steel, is, as a steel producer, responsible for the construction of various Soviet reactors in Eastern Europe. It has a pro-nuclear government but a small and critical Green coalition party. The Czech Republic has its own uranium, which is processed by Russian TVEL, who then supplies to Dukovany. Westinghouse supplies the uranium for the Temelin nuclear power station.

LITHUANIA (EU member since 2004)

Nuclear power station: One nuclear power station in Ignalina with the largest RMBK 1500 Russian reactors since 1983. After the collapse of the Soviet Union, the power station was handed over to Lithuania by Russia in 1991.

Capacity: 1185 MW

Nuclear electricity production: Approximately 70%

Developments: Lithuania must shut down its power station by order of the EU by the end of 2009. Plans are in place to build a new 3400 MW nuclear power station by 2018. Lithuanian power company LEO LT will develop the nuclear power station under the name Visagino Atomine Elektrine (VAE) in conjunction with electricity companies from Poland, Estonia and Latvia (Polska Grupa Energetyczna, Eesti Energia, Latvenergo). The project has been delayed due to disagreements concerning the capacity of the power station and the distribution of shares and electricity production.

POLAND (EU member since 2004)

Nuclear power stations: None

Capacity: 0 MW

Nuclear electricity production: 0

Developments: The Polish government signed an agreement to initiate an exploratory study into the construction of one and perhaps two 2000 MW power station/stations at the beginning of this year. The northern town of Zarnowiec seems the most obvious site. Investors is the Polska Grupa Energetyczna. France will most likely help to develop the nuclear power station.

SLOVENIA (EU member since 2004)

Nuclear power station: One nuclear power station in Krsko since 1983, together with neighbouring country Croatia (50%-50% shared management).

Capacity: 700 MW

Nuclear electricity production: 46% of Slovenia's electricity and 15% of Croatia's electricity is generated by the nuclear power station.

Developments: Plans are in place to expand the power station with an additional installation (1000 MW) by 2017.