

74

OSW STUDIES

OSW



# **TROUBLESOME INVESTMENT**

## **THE BELARUSIAN NUCLEAR POWER PLANT IN ASTRAVYETS**

Joanna Hyndle-Hussein, Szymon Kardaś, Kamil Kłysiński

# **TROUBLESOME INVESTMENT**

## **THE BELARUSIAN NUCLEAR POWER PLANT IN ASTRAVYETS**

Joanna Hyndle-Hussein, Szymon Kardaś, Kamil Kłysiński  
Editor: Wojciech Konończuk



**OSW** |

CENTRE FOR EASTERN STUDIES

OŚRODEK STUDIÓW WSCHODNICH im. **Marka Karpia**

© Copyright by Ośrodek Studiów Wschodnich  
im. Marka Karpia / Centre for Eastern Studies

CONTENT EDITOR

Adam Eberhardt, Wojciech Konończuk

EDITOR

Halina Kowalczyk

CO-OPERATION

Katarzyna Kazimierska, Anna Łabuszewska

TRANSLATION

OSW

CO-OPERATION

Nicholas Furnival

GRAPHIC DESIGN

PARA-BUCH

PHOTOGRAPH ON COVER

StepanPopov/Shutterstock.com

DTP

GroupMedia

MAP

Wojciech Mańkowski

PUBLISHER

**Ośrodek Studiów Wschodnich im. Marka Karpia**

Centre for Eastern Studies

ul. Koszykowa 6a, Warsaw, Poland

Phone: + 48 /22/ 525 80 00

Fax: + 48 /22/ 525 80 40

osw.waw.pl

ISBN 978-83-65827-24-1

# Contents

SUMMARY /5

INTRODUCTION /8

**I. NUCLEAR ENERGY IN THE ENERGY POLICY OF BELARUS /10**

**II. CONSTRUCTION OF THE BELARUSIAN NUCLEAR POWER PLANT /13**

**1. Preparations and implementation of the project /13**

**2. Safety issues /18**

**III. THE ASTRAVYETS PLANT AND RUSSIA'S STRATEGY  
IN THE NUCLEAR AND ELECTRICITY SECTORS /20**

**IV. LITHUANIA ON THE BELARUSIAN NUCLEAR POWER PLANT  
IN ASTRAVYETS /25**

**1. Lithuania's arguments against the plant /25**

**2. Lithuania's objections against Rosatom's influence in the region /27**

**3. Steps taken by Vilnius with regard to the Belarusian Nuclear Power Plant /29**

**3.1. Efforts to block trade in Belarusian electricity /31**

**3.2. Synchronising the Baltic energy grids with continental Europe /34**

**3.3. The impact of the Belarusian Nuclear Power Plant on energy policy  
discussions within Lithuania /35**

**V. THE PROBLEM OF UTILISING THE POWER GENERATED  
AT ASTRAVYETS /37**

**VI. CONCLUSION /43**

MAP /46

## SUMMARY

- When Belarus embarked on the construction of its first nuclear power plant in Astravyets in 2012, the official objective was to significantly reduce the share which imported Russian gas plays in the country's electricity production. That, in turn was intended to decrease Belarus's economic and energy dependence on Russia, its sole supplier of energy resources. However, the Belarusian leadership's decision to build the plant in close co-operation with Russian partners defeated that purpose. Even though the project is formally a Belarusian investment, Russia has in fact taken over full control of its implementation as it is financing the US\$ 10 billion project almost entirely. Russia is the project's contractor, is providing the technology and will also provide the nuclear fuel. Given Belarus existing financial, trade, oil, gas and military dependence on Russia, the Astravyets power plant project, in which the Russians play a dominant role, will only perpetuate and deepen Minsk's dependence on Moscow. All that the plant will achieve will be to diversify the fuel mix in electricity production, but not the direction of imports, with Russia remaining the only source.
- Initially Russia intended to carry out two nuclear projects: the Baltic Nuclear Power Plant (BNPP) in the Kaliningrad Oblast, and the Astravyets Power Plant in Belarus (Belarusian NPP). Both were intended to export electricity, although the Belarusian plant was also expected to deliver some electricity to the internal market. When no Polish or Lithuanian partners for the BNPP project could be found, and no export market to sell its electricity was in view, Russia changed its priorities and focused on the Astravyets project while suspending the BNPP. The size of the Belarusian project (two reactors with a total capacity of 2,400 MW) indicates that from the start, the aim was not to meet the demand in the internal Belarusian market, but to export electricity to the EU, and especially to the Baltic states and Poland. As Poland and Lithuania have refused to buy electricity from the plant, Belarus now faces the challenge of utilising the energy surplus that will emerge after the launch of the first reactor (in 2019) and especially after the second one becomes operational (in 2020). The output of the two units would suffice to cover half of Belarus's current energy consumption. Minsk has taken steps to direct all the electricity produced in Astravyets to the internal market, e.g. by expanding grids and making massive plans to replace gas-fired heat and power boilers with electric units. However, the decisions made do not guarantee that the operation will succeed, especially since it seems that there are not enough funds to finance it. There are also

other important unanswered questions about the plant's operation, e.g. the question of reserve capacity, which Lithuania has refused to provide, and balancing the night-time decrease in energy consumption. As a result, Belarus may end up with a surplus of power and be forced to restrict the operation of other power plants once the Astravyets plant is launched.

- There are many indications that – despite the Belarusian leadership's declarations – the price of energy produced at the Astravyets plant will not be low. Due to the financial terms of the loan imposed on it by Russia, Belarus will have to repay around US\$ 1 billion annually in the years 2021–2036. The Belarusian state budget is in a difficult situation and there is a risk that if Minsk is unable to meet its repayment commitments, Russia could then take over a portion of shares in the plant (including a controlling package). Moreover, the reorientation of the Astravyets plant from exports to domestic sales calls into question the project's economic justification.
- Russia and Belarus may be assuming that in future, Central Europe will face a capacity deficit that will push the EU member states to reconsider energy co-operation with Belarus. However, such a scenario does not seem probable in the light of the EU's energy production and consumption projections. It is much more likely that – quite against Moscow's original intentions – the surplus energy generated by the Belarusian plant will end up in the Russian market; Russia's announcements about scrapping some previously planned new nuclear unit projects point in that direction. However, in the current conditions, with Belarus having to repay the loan, the Astravyets plant will not be able to offer its electricity at competitive prices in the Russian market.
- The decision to build the nuclear power plant so close to the Lithuanian border has triggered a conflict between Vilnius and Minsk, engendering a deep crisis in bilateral relations. While the Belarusian side is still interested in developing economic co-operation, and especially in using the Klaipeda port for transit, Lithuania's economic interests in relations with Belarus are currently under threat and Vilnius is no longer acting as an intermediary between Minsk and Brussels. Latvia has taken advantage of the tensions in Belarusian-Lithuanian relations and has been sending political signals that it would be interested in economic co-operation with Belarus. This, in turn, has affected Lithuanian-Latvian relations.
- Lithuania has concerns about the safety of the Astravyets plant. This does not chiefly regard the reactor technology, which technically meets all

international safety standards. The Lithuanians feel unsafe mainly because the Belarusian side does not have full control over the – effectively Russian – project, and factors such as a poor working culture or disregard for safety rules may lead to an accident caused by major negligence. The Lithuanians are also concerned that Minsk will not keep them informed about the situation at the plant, forcing the Lithuanian government to develop its own emergency response plans.

- Government institutions in Lithuania have raised the issue of the Astravyets plant with the Belarusian government, the EU and international organisations capable of influencing the Belarusian project many times. However, they have thus far failed to obtain international backing for their efforts to stop the project. This has forced Lithuania to change its strategy and it is now focused on blocking the trade in Belarusian energy in the Baltic region to undermine the economic case for the Rosatom investment. Stepped up efforts aimed at the desynchronisation of the Baltic electricity grids with the energy system of Russia and Belarus and synchronising them with continental Europe are an important element in Lithuania's strategy. Once this effort is completed, in around 2025, Lithuania will be able to close down its existing transmission links with Belarus.
- Lithuania's opposition to the Astravyets project and to the build-up of Rosatom's influence in the region has resulted in a decline of the Lithuanian public's support for nuclear energy. In 2016, the Lithuanians elected a new government which pledged to scrap the plans to build a new nuclear power plant in Visaginas near the decommissioned Ignalina plant. The Visaginas power plant project has not been included in the draft new National Energy Strategy which prioritises renewable energy sources. This means that the Lithuanian government's energy plans do not currently envisage any projects based on nuclear technology.

# INTRODUCTION

Belarus's first nuclear power plant has been under construction in the city of Astravyets for a decade now. The project was able to start when Belarus signed an intergovernmental agreement with Russia in 2012, under which the Russian side agreed to finance the project almost fully and provide the technology. The nuclear power plant in Astravyets signals the first time that ground has been broken on a nuclear power project in Europe since the 1986 Chernobyl disaster.<sup>1</sup> Although the Belarusian Nuclear Power Plant (Belarusian NPP), as the project is officially called, is being built just 200 km from the Polish border, it rarely appears in Polish or European news and a wider debate about its safety is yet to take place. Lithuania is the only country where the Astravyets project has stirred major controversy. The project is not only debated there – it has become a key issue in Lithuania's relations with its allies in the European Union and NATO. Lithuania is concerned about the plant's location, less than 50 km from Vilnius, while Lithuanian experts believe that the project's execution does not comply with international safety standards. As a result of the efforts made by Vilnius, the Belarusian-Russian investment has now been noticed internationally.

The Belarusian NPP is going to produce 18 TWh of energy a year (which corresponds to half of Belarus's current consumption) and is a strategically important project that will considerably affect the energy and political situation in the region. Especially since it was initially designed primarily as a plant to generate energy for exports to the EU. The purpose of the present report is to comprehensively discuss the key aspects of the construction, the future functioning and the impact of the Astravyets project.

The paper consists of six parts. The initial two discuss the position of nuclear energy in the energy policy of Minsk and present the most important facts about the preparation and implementation of the Belarusian NPP project, including Russia's role in the undertaking and its impact on Belarus's future energy mix. The financial aspects of the project are also discussed, including those related to Belarus's obligation to repay the loans acquired for the project. Part Three focuses on analysing the position of the Astravyets project in Russia's strategy for the nuclear power sector. It emphasises the link between the failed Baltic

<sup>1</sup> After 1986, only two European states built new reactor units at existing power plants: Russia at Rostovskaya AES in 2014 and at Novovoronezh in 2016, with plans to launch a new unit at the Leningradskaya AES in 2019), and Finland (Olkiluoto, to be launched in 2019).



Nuclear Power Plant in the Kaliningrad Oblast and Moscow's financial, technological and political involvement in the Belarusian project.

Part Four of the paper analyses the position of Lithuania, presents the country's arguments against the Astravyets project, and recounts Vilnius's steps to stop it, such as the measures to prevent Belarus from selling its electricity in the Baltic region and the efforts to speed up the desynchronisation of the Baltic grids with the systems of Russia and Belarus and to synchronise them with the continental Europe network. This part also shows how the Belarusian project has affected Lithuania's energy policy and Vilnius's relations with Minsk and Riga.

Key issues concerning the future of the Astravyets plant are discussed in Part Five, which delves into the challenges that Belarus will face trying to use the electricity generated by the Astravyets plant if it does not gain access to the EU energy market. In that case Belarus will need to find alternative markets; and since Belarus can internally consume only part of the plant's output, it will have to sell electricity to Russia.

The final part presents the conclusions, although many important questions concerning the project remain unanswered, mainly because there is very little transparency over the investment and the project is motivated by political considerations much more than by economic ones.

## I. NUCLEAR ENERGY IN THE ENERGY POLICY OF BELARUS

The Belarusian SSR was affected by the 1986 Chernobyl nuclear disaster more than any other former Soviet republic. A large part of the country's territory (mostly the Gomel region) suffered radioactive contamination, the aftermath of which is still felt today. Settling in some areas is prohibited or subject to restrictions, the food produced there contains harmful substances and statistics still show higher morbidity, and the memory of the tragedy is still alive.<sup>2</sup>

Yet despite those negative experiences, the leadership of independent Belarus started to consider nuclear electricity generation already in the 1990s, seeing it as crucial for the development of the Belarusian energy system.<sup>3</sup> This view was reinforced in the following years by the more or less frequent disputes with Russia, related to Belarus's total dependence on Russian gas supplies. In 1993, the concept for the development of nuclear energy, the first in the history of independent Belarus, was drafted, and the subsequent strategy documents on energy invariably listed nuclear energy among the top priorities. In the late 1990s, however, security concerns prevailed and in 1998 a ten-year moratorium on nuclear projects was passed.

It was only in 2008 that the Belarusian Security Council chaired by president Lukashenka finally decided to give the green light to the nuclear power plant project and selected its location. In the Energy Security Concept of the Republic of Belarus, adopted in December 2015, the launch of the nuclear power plant was identified as the most important element of the policy to diversify the energy mix. The initial plan also envisaged diversifying the providers of technology and nuclear fuel suppliers, but with the selection of a Russian contractor for the project it became clear that the nuclear power plant would in fact entrench Belarus's energy dependence on Russia, which has been the country's sole oil and gas supplier for years.

As per the objectives laid down in the document, the main aim of the diversification is to decrease the share of gas in electricity and heat generation from the

<sup>2</sup> For more information, see the website of the Department for the Elimination of the Effects of the Chernobyl Disaster at the Ministry for Emergency Situations: [http://www.chernobyl.gov.by/index.php?id=105&Itemid=54&option=com\\_content&](http://www.chernobyl.gov.by/index.php?id=105&Itemid=54&option=com_content&)

<sup>3</sup> The first attempt at building a nuclear power plant was made in the early 1980s. Back then, preliminary construction work started on a site located around 40 km from Minsk. The Chernobyl accident stopped the project and the plans to build a nuclear power plant in direct vicinity of the capital city never resurfaced, <http://n1.by/news/2016/05/04/645565-kak-segodnya-rabotayut-belorusskie-tets-i-pochem-u-posle-zapuska-aes-tarify-na>

present 90% to 70% in 2020 and below 50% by 2035. Nuclear energy is supposed to make the biggest contribution to the diversification, as it is expected to account for around 20% of total electricity production by 2020 and around 40% by 2025.<sup>4</sup> It should be remembered, however, that those objectives are largely determined by the current policies of the Belarusian leadership which seeks, by any means available, to utilise the electricity surplus that the launch of the nuclear power plant will generate, in the domestic market. Hence the considerable uptick in domestic consumption envisaged in the Belarusian leadership's strategy.

**Table 1.** Expected changes in the electricity generation and energy mix of Belarus in the years 2015–2035 (TWh)

	2015	2020	2025	2030	2035
Annual energy production	34.4	39.9	41.6	42.1	43.8
CHP plants (mostly gas-fired)	34.2	31.8	21.8	22	23.2
Renewables	0.27	0.95	1.8	2.1	2.6
Nuclear	-----	7.1	18	18	18
Annual energy consumption	37.3	39.9	41.6	42.1	43.8
Electricity imports	2.82	0	0	0	0
Share of the dominant fuel (i.e. natural gas in electricity and heat generation (%))	90	70	60	50	<50

**Source:** Energy Security Concept of the Republic of Belarus to 2035

The Belarusian leadership assumes that nuclear electricity generation will considerably contribute to improving the financial efficiency of the Belarusian energy system. According to official estimates, the launch of the nuclear power

<sup>4</sup> The Belarusian government does see a role for renewable energy sources, but they are regarded as a secondary component in the country's energy mix that would merely complement gas and nuclear generation. According to the Energy Security Concept, the share of renewables in electricity and heat generation will not exceed 1% by 2035, <http://www.government.by/upload/docs/file5a034ca617dc35eb.PDF>

plant will allow the country to cut its Russian gas imports from around 23 billion m<sup>3</sup> a year to around 18 billion m<sup>3</sup>. That, in turn, is expected to enable Belarus to reduce the retail price of electricity by around 30%, i.e. from the current 11.3 cents per kWh to 7.8-7.95 cents per kWh by 2020 or, in the worst-case scenario, by the end of 2021.<sup>5</sup> However, it should be remembered that this simulation does not include the cost of the Russian loan granted for the construction of the plant (see below for details), the repayment of which will start when the plant is launched, i.e. as of 2020.

According to the Belarusian Ministry of Energy, the change of Belarus's energy mix and the considerable reduction of the share of gas in favour of nuclear energy will ensure the stability of electricity supplies and shield the country from gas price fluctuations for a period of at least one year (this is how long the Belarusian plant can operate without new supplies of nuclear fuel).<sup>6</sup> Those calculations were presumably the basis on which the Belarusian leadership assumed that the Russian loan together with interest would be repaid within 15 years of the plant's launch when the plant breaks even.<sup>7</sup>

<sup>5</sup> The price cut will mainly concern businesses in Belarus, which account for two thirds of the country's heat consumption and three quarters of electricity consumption. The rate paid by households is currently 5.49 cents per kWh and has been kept artificially low thanks to a cross subsidy mechanism whereby the industrial sector covers a substantial portion of the cost of generating energy for consumption by households. The Belarusian government has been gradually phasing out the mechanism for several years, which has affected the level of housing charges, <https://news.tut.by/economics/502590.html>

<sup>6</sup> Доля ядерной энергетики в энергобалансе Беларуси с пуском АЭС составит около 40%, 12.12.2013, [http://atom.belta.by/ru/belaes\\_ru/view/belaes\\_ru/view/dolja-jadernoj-energetiki-v-energobalans-e-belarusi-s-puskom-aes-sostavit-okolo-40-2003/t\\_id/1](http://atom.belta.by/ru/belaes_ru/view/belaes_ru/view/dolja-jadernoj-energetiki-v-energobalans-e-belarusi-s-puskom-aes-sostavit-okolo-40-2003/t_id/1)

<sup>7</sup> This is part of a business plan for the nuclear power plant, drafted by its management. However, the details of the document have not been communicated to the public, Т. Маненок, *Поможет ли БелАЭС снизить энерготарифы для предприятий на 30%?*, 23.10.2017, <https://www.belry-nok.by/2017/10/23/pomozhet-li-belaes-snizit-energotarify-dlya-predpriyatij-na-30>

## II. CONSTRUCTION OF THE BELARUSIAN NUCLEAR POWER PLANT

### 1. Preparations and implementation of the project

Twenty-eight locations were analysed when the feasibility study for a nuclear project in Belarus was carried out in the early 1990s. On 20 December 2008 the Belarusian leadership finally decided that the plant would be built in the area of Astravyets, a district capital in the Hrodna Region, 20 kilometres from the Lithuanian border and 50 kilometres from Vilnius. The decision raised a lot of controversy, not only among Alyaksandr Lukashenka's political opponents and independent environmental groups,<sup>8</sup> but also among some Belarusian academics who pointed to the seismic activity in the area. They warned that the construction site was located on two tectonic fault lines, which created the risk of local earthquakes. Their argument was based on an expert opinion by Belarusian scientists who had advised against locating a nuclear power plant in a seismically unfavourable place already in 1993. The project's critics concluded that the decision to locate the plant in Astravyets had been political and motivated by the plans to export electricity to the Baltic states and Poland.<sup>9</sup>

In May 2008, international corporations from the nuclear sector were invited to submit bids to build the plant. Atomstroyexport (Russia), AREVA (Germany/France) and Toshiba-Westinghouse (Japan/USA) expressed interest. Talks were also initiated with China's CNGP. However, contrary to the Belarusian government's initial declarations, no open tender procedure was conducted and in May 2009, the Russian company was designated as the contractor. The decision was the result of (or was forced on Belarus because of) the country's deep dependence

<sup>8</sup> The protest against the nuclear power plant has for many years been an important part of the rhetoric of the Belarusian opposition and environmental groups. The topic returns with particular force during the annual commemoration of the Chernobyl disaster – remembered in Belarus as a national tragedy – on 26 April. The Chernobyl March organised on the occasion provides an opportunity for independent organisations to voice their opposition to the project, which is being undertaken without public consultation and bears environmental risks, <http://naviny.by/new/20170131/14858>

<sup>9</sup> The seismic risk is further substantiated by archival sources which contain information about a local earthquake in the area in early 20th century, which reportedly had a dangerously high magnitude of 6-7, <http://naviny.by/article/20160906/1473174695-ostroveckuyuploshchadku-priznali-negodnoy-eshche-v-90-h73043-ucheny-na-ploshchadke-belaes-nichego-bolee-otvetstvennogo-chem> The physics professor Grigory Lepin has been the most active promoter of the science-based criticisms of the Astravyets plant and has lobbied for many years for the project to be discontinued. His arguments are echoed by the Russian atomic physicist and environmental activist Andrei Ozharovsky.

on Russia in terms of economic relations, energy resource supplies, the defence alliance and the participation of Belarus in Russian-initiated integration projects. In the years 2011–2012 the parties concluded a number of agreements to govern their co-operation on the Belarusian Nuclear Power Plant project. The March 2011 agreement establishing Energoconnect, a joint Russian-Belarusian undertaking, which was registered in Minsk on 17 June 2011, is of crucial importance. Its shareholders are the Belarusian company Belenergo and Russia's Inter RAO (each holding a 50% stake). The company's mission is to organise and control exports of electricity produced at the plant and ensure supplies of Russian nuclear fuel for the plant. Moreover, the agreement lays down the terms and conditions under which the investment will be financed from a US\$ 10 billion credit line opened by Russia; this was particularly important for the Belarusian side.

### **Belarus's energy and economic dependence on Russia**

Since regaining independence in 1991, Belarus has depended on co-operation with Russia – its sole provider of energy resources, its main market and main lender. Russia covers 100% of Belarus's gas needs, and the Russian gas company Gazprom has been the sole owner of the Belarusian gas pipeline network and the Yamal transit gas pipeline since 2011. As much as 90% of electricity in Belarus is produced from gas. While power generation could use other energy resources, the Belarusian nitrate and potassium plants would not be able to cut their consumption of imported gas, which is necessary in their production processes. Similarly, 90% of the oil in Belarus comes from Russia. Belarus extracts around 1.6 million tonnes of oil annually from its own deposits, but all that output is exported, mostly to Germany. Thus, the country's two refineries (in Navapolatsk and Mazyr) are completely dependent on oil imports from Russia (18 to 24 million tonnes of oil a year). Still in 2015, as much as a quarter of Belarus's export revenues came from the sale of petroleum products. For this reason, Russian supplies of energy resources are a crucial factor not only for the functioning of a large part of Belarusian industry, but also its profitability. The dependence on Russia is further deepened by the Belarusian economy's heavy orientation towards the Russian market. According to Belarusian statistics, trade with Russia accounted for 40–50% of Belarusian exports and more than 50% of imports in the last dozen or so years. In the case of the agricultural and food sector, as much as 90% of its produce is sold in the Russian market. Belarus's reliance on co-operation with Russia is further reinforced by the credit extended by Russia directly from the state budget and via the Moscow-controlled Eurasian Economic Union and its Eurasian

Fund for Stabilisation and Development. In that situation, it was an absolute priority for Minsk to obtain preferential terms and conditions from Moscow; one of the results of this in practice was the negotiation of the lowest possible oil and gas prices. In this context, in the mid-1990s, after Alyaksandr Lukashenka came to power, Belarus decided to build a union state with Russia. It was the first re-integration project in the post-Soviet area. Since then Minsk has taken part in all Russian integration initiatives, including the Eurasian Economic Union launched in 2015. The two countries also co-operate closely in the areas of defence and security. Minsk's loyalty to Moscow is the price for it pays for at least some of the Russian subsidies, which totalled around US\$ 100 billion between 2005 and 2015 according to the International Monetary Fund's calculations (including official aid such as loans and hidden subsidies in the form of lower prices on imported resources). Despite frequent tension and periodic disagreements, close co-operation with Russia remains the most important priority of Belarus's foreign policy, guiding Minsk's steps also in other spheres.

The signature, on 18 July 2012 in Minsk, of an intergovernmental general contract for the construction of two nuclear units with a capacity of 1,200 MW each closed the opaque process of negotiations with Moscow and triggered the start of construction works.<sup>10</sup> The Russian contractor offered to carry out the project using the AES-2006 new generation power plant technology based on innovative WWER 1200 generation 3+ reactors developed by Russia's Atomenergoproekt, i.e. the most advanced technology available in Russia, which meets international safety standards.<sup>11</sup> The reactors' projected useful life is 60 years. They will operate on low-enriched uranium U-235. Russia was initially expected to deliver the fuel for the power plant in the 4<sup>th</sup> quarter of 2017 but currently the delivery is scheduled to take place in November 2018. The fuel will be delivered from Russia by the Rosatom-controlled TVEL company under a contract concluded in December 2017.<sup>12</sup> Water for the cooling systems is going to be sourced

<sup>10</sup> The construction of auxiliary infrastructure for the plant (such as access roads, a hotel, warehouses) started even before the Russian-Belarusian negotiations were completed.

<sup>11</sup> In parallel to the Belarusian project, the LAES-2 plant near St. Petersburg and the Novovoronezh plant in the Voronezh oblast are being built according to the same designs. For more technical details, see: *Характеристика Белорусской АЭС*, Департамент по ядерной и радиационной безопасности Министерства по чрезвычайным ситуациям Республики Беларусь, 13.07.2012, <http://www.gosatomnadzor.gov.by/index.php/ru/bezopasnost-belorusskoj-aes/obshchaya-informatsiya-o-stroitelstve-belorusskoj-aes>

<sup>12</sup> See: *Беларусь заключила контракт на поставку ядерного топлива для БелАЭС с компанией Росатома*, 29.12.2017, <https://news.tut.by/economics/575024.html>

from the river Neris (a tributary of the Nemunas river) that flows through Lithuania, including Vilnius.

The project is effectively fully financed by the Russian side. Under the bilateral deal made in November 2011, 90% of the project's cost is to be covered from a Russian credit line worth US\$ 10 billion. The Russian state-owned Vnesheconombank (VEB) is in charge of disbursement of the export loan. The loan was made available in October 2014 and its terms and conditions are highly restrictive.<sup>13</sup> It is an export loan, and not a commodity loan, and uses a special reimbursement mechanism based on the so-called documentary letter of credit. After the execution of certain works or delivery of construction materials, the project management signs the corresponding documents and sends them to the VEB. The bank checks the documents and then the Russian finance ministry transfers the funds directly to Atomstroyexport. This mechanism shows how closely Russia, whose confidence in Belarus is limited, controls the project's finances.

Under the contract, Belarus may use the money from the loan until 2020, and loan repayment is expected to start within six months of the plant's commissioning, but not later than 1 April 2021. The loan is to be repaid in 30 instalments, payable every six months, and the US dollar is the currency of repayment.<sup>14</sup> This means that for 15 years (2021-2036) Belarus will have to repay around US\$ 1 billion a year. There is a risk that, should it be unable to meet its repayment commitments, it will have to hand over some of its shares in the plant (including a controlling package) to Russia. If Russia were to take over the Astravyets power plant, the operation would leave Moscow facing economic challenges. However, political considerations usually prevail in Russia's energy policy decisions.

Belarus was expected to cover 10% of the cost of the project, but in practice it did not have the money and obtained an additional loan from Moscow to finance its contribution. On 17 May 2014 in Minsk, the Belarusian government and Russia's VEB bank signed an agreement for an eight-year loan worth US\$ 500 million.<sup>15</sup>

<sup>13</sup> РФ выделит Белоруссии \$10 млрд на строительство АЭС, 3.10.2014, <http://www.vestifinance.ru/articles/47777>

<sup>14</sup> Белорусская АЭС: чья это будет собственность?, 17.03.2014, <http://nmnby.eu/news/analytics/5441.html>

<sup>15</sup> Подписан договор об открытии кредитной линии до \$500 млн на сооружение Белорусской АЭС, 17.05.2014, [https://www.seogan.ru/podpisan-dogovor-ob-otkritii-kreditnoiy-linii-do-\\$500-mln-na-sooruzhenie-belorusskoiy-aes.html](https://www.seogan.ru/podpisan-dogovor-ob-otkritii-kreditnoiy-linii-do-$500-mln-na-sooruzhenie-belorusskoiy-aes.html)



According to a schedule adopted at the onset of the project's implementation, the first 1,200 MW unit was expected to be commissioned in November 2018, and the second one, with the same parameters, in July 2020. However, after the 300-tonne reactor pressure vessel for the first unit was unexpectedly damaged during a trial assembly in July 2016, the contractor, in agreement with the Belarusian leadership, postponed the scheduled launch of the first unit until December 2019 in an atmosphere of deep concern, media speculation and controversy (stirred mostly by pressure from Lithuania which publicised information about the incident internationally). The planned commissioning date for the second unit remained unchanged. The Belarusian authorities admitted in early 2018 that the successive stages of construction and assembly works had been delayed in the last three years, but at the same time they said that the new, modified schedule would be kept.<sup>16</sup> Indeed, despite the delays, assembly works on the first units have reached the peak phase – as shown by the reports, in early April 2017, that the reactor has been installed in keeping with the construction design.<sup>17</sup> Nuclear fuel for the first units is to be delivered from Russia to Astravyets by the end of 2018. The installation of the reactor's fuel unit is expected to take place in the summer of 2019.

Because most of the works carried out in previous years were preparatory in nature and the core investment works were scheduled in the years 2017–2018, only 30% of the allocated US\$ 10 billion had been spent by the 3<sup>rd</sup> quarter of 2017.<sup>18</sup> According to Belarusian figures, 5,000 people have been employed for the project, including 1,400 Russian specialists. Most work is being carried out by Belarusian companies; however, these are mainly auxiliary tasks since Belarus is still struggling to find a sufficient number of specialists with practical experience in building and operating nuclear power plants. To address this problem, already in 2008, the country launched a state programme to train

<sup>16</sup> The Belarusian minister for energy Uladzimir Patupchyk revealed in a press conference on 21 February 2018 that since 2015, on average 20% of work scheduled in any given year was affected by delays. In his view the main reason for that concerned the shortage of qualified specialists and difficulties in delivering construction materials and equipment, *Министр Потупчик недоволен темпами строительства БелАЭС*, 21.02.2018, <http://naviny.by/new/20180221/1519216282-ministr-potupchik-nedovolen-tempami-stroitelstva-belaes>

<sup>17</sup> The website of the Belarusian Nuclear Power Plant has been online since 2010, which presents the official narrative about the project and reports on the progress of work, safety measures and environmental impact in a modern and accessible way (by Belarusian state administration standards), <http://www.dsae.by/ru/>

<sup>18</sup> Information provided by Mikhail Filimonov, director general of the Astravyets nuclear power plant, during a press conference in October 2017, *Строительство Белорусской АЭС обойдется в \$11 миллиардов*, <https://realt.onliner.by/2017/10/12/aes-38>

nuclear energy specialists, whereby the leading Belarusian technological universities opened specialist education programmes. Practical and theoretical internships at existing Russian power plants have also been offered to people working in the Belarusian energy system who will be involved in the operation of the Astravyets plant.<sup>19</sup> Moreover, President Lukashenka has personally invited Lithuanian specialists to come to Belarus.<sup>20</sup> However, due to the fact that the financial conditions are not very attractive, the plant has been struggling to recruit people not only from abroad, but also domestically.

## 2. Safety issues

The Belarusian government has repeatedly and publicly made assurances that the nuclear power plant will be safe and meet the international standards for this kind of project. A special unit of the interior troops (controlled by the Interior Ministry) was created to provide security to the plant; it numbers 300 troops and started its duty in the power plant area in early 2017. Belarus claims that special solutions have been applied with regard to people working on the site, to prevent terror attacks and also stop independent journalists, civil society activists and other unauthorised persons from entering the construction site to obtain information. Those restrictions were considerably stepped up in the autumn of 2016, after highly controversial incidents on the construction site, including the fall of the reactor pressure vessel mentioned above.<sup>21</sup> Independent Belarusian media and the media in Lithuania have published multiple reports about errors, inadequate supervision and implementation problems, which also imply that the plant's security system may be imperfect.

<sup>19</sup> Since last year, Belarusian specialists have been training at the Novovoronezh nuclear power plant built according to the same design (AES-2006). The plan is to train more than 200 future employees of the Astravyets plant at the Novovoronezh plant.

<sup>20</sup> Lithuanian specialists in the field of nuclear power plant operation are involved in the protracted dismantling process of the Ignalina Nuclear Power Plant in Lithuania that stopped operating in 2009; many of them will soon reach retirement age.

<sup>21</sup> According to unofficial information gathered by Belarusian journalists, people working on the construction are not allowed to bring mobile phones to work, face restrictions on movement within the construction site, and are under stepped-up operational control by the KGB. The journalistic investigation also revealed that many of the Belarusian workers are dissatisfied with their low salaries and arduous work patterns (such as twelve-hour shifts for 30 days), especially since they see that the Russian specialist have much better conditions. Many examples of very shoddy execution of construction works, which may cause damage or even collapse of parts of the plant's structure, have also been revealed. <http://naviny.by/article/20161015/1476523783-belorususkaya-aes-zona-sekretnosti-no-1>; [https://gazetaby.com/cont/art.php?sn\\_nid=131055](https://gazetaby.com/cont/art.php?sn_nid=131055)

Meanwhile, the Belarusian government has taken a number of information measures to improve the atmosphere around the project. They have repeatedly pledged to co-operate with the International Atomic Energy Agency (IAEA) whose experts have visited the construction site several times and met with Belarusian officials in charge of the project's implementation and supervision.<sup>22</sup> It should be noted, though, that the IAEA's activities were taken largely under pressure from Vilnius. The visits followed a schedule proposed by the Belarusian side. Minsk has been representing its contacts with the agency as evidence that the project is being implemented in full compliance with international standards, and has dismissed any reservations, including those expressed by the Lithuanian government, as being politically motivated. Responding to criticisms of the project and the way it is being implemented, Belarusian officials have said that they can demonstrate, using technical data, that the plant will be able to withstand all impacts including up to magnitude 8 earthquakes, floods, hurricanes, explosions and impact from a large aircraft.<sup>23</sup>

However, it is the plant's environmental impacts that raise the most controversy. The laconic communiqués of the Belarusian government suggest that design work on the nuclear waste storage facility for the plant have not yet been completed.<sup>24</sup> The plan is to store waste within the plant for the first ten years, and only after that period will it become necessary to store it in another, specially designated place. However, Belarusian environmental groups are already warning about the risks of inadequately storing dangerous nuclear substances and building the projected dump in an inadequate location (e.g. too close to populated areas).<sup>25</sup>

<sup>22</sup> Two IAEA delegations visited the project in recent months. One (IRRS) examined the infrastructure, while the other (SEED) looked at the project itself, with particular emphasis on the external impact, *Беларусь продолжит практику тесного взаимодействия с МАГАТЭ – МИД*, 7.03.2017, <https://www.interfax.by/news/belarus/1221116>

<sup>23</sup> Press conference of Nikolai Grusha, director of the Nuclear Energy Department at the Belarusian Ministry of Energy, *Эксперт: белорусская АЭС способна будет выдержать падение самолета*, <http://www.tc.by/exhibitions/atomexpo2013/news/1628.html>

<sup>24</sup> В Беларуси разрабатывается проект пункта захоронения радиоактивных отходов АЭС, 10.07.2017, [http://atom.belta.by/ru/news\\_ru/view/v-belarusi-razrabatyvaetsja-proekt-punkta-zaxoroneniya-radioaktivnyx-otxodov-aes-9464/](http://atom.belta.by/ru/news_ru/view/v-belarusi-razrabatyvaetsja-proekt-punkta-zaxoroneniya-radioaktivnyx-otxodov-aes-9464/)

<sup>25</sup> Что будет с отходами БелАЭС, 11.07.2017, <http://belsat.eu/ru/programs/chto-budet-s-otxodami-belaes/>

### III. THE ASTRAVYETS PLANT AND RUSSIA'S STRATEGY IN THE NUCLEAR AND ELECTRICITY SECTORS

Nuclear energy is a very important area of Russia's economic activity abroad. The principal form of that activity consists in participating in nuclear power plant projects outside Russia. The state-owned Rosatom company implements Russia's policy in this regard. The company is currently involved in projects for the construction of a total of 21 nuclear units abroad (including in Bangladesh, China, Egypt, Finland, Iran, Jordan, Nigeria and Turkey). Russia is also active in Central and Eastern Europe and participates in nuclear projects in EU member states, including the expansion of the Temelin plant in the Czech Republic and new units at the Paks plant in Hungary. In Central Europe, Russia has been using its competitive advantage based on historical links – as all the nuclear power plants in the region are based on Soviet/Russian technology. Moreover, most of them source their nuclear fuel from Russia (see Table 2 for the basic parameters of foreign nuclear projects implemented by Rosatom).

**Table 2.** Nuclear projects currently pursued by Rosatom outside Russia

Country	Project name	Number of units	Russia's financial involvement	Source of finance	Launch date
<b>Bangladesh</b>	Ruppur	2	US\$ 11.38 billion	loan	2022-2023
<b>Belarus</b>	Astravyets	2	US\$ 10 billion	loan	2018-2020
<b>China</b>	Tianwan 2	2 (block nos. 3 and 4)	-	-	2018
<b>Egypt</b>	Al-Dabbah	4	US\$ 25 billion	loan	2026-2029
<b>Finland</b>	Hanhikivi	1	EUR 2.4 billion	National Welfare Fund	2024
<b>India</b>	Kudankulam	2 (units 3 and 4)	US\$ 3.5 billion	loan	2020s
<b>Iran</b>	Bushehr 2	2 (units 2 and 3)	-	-	2024-2026

Country	Project name	Number of units	Russia's financial involvement	Source of finance	Launch date
Turkey	Akkuyu	4	US\$ 4 billion	state budget	2022 and following years
Hungary	Paks	2	US\$ 10 billion	loan	2020s

**Source:** S. Kardaś, *Rosyjsko-egipska współpraca w sferze energetyki jądrowej*, OSW Analyses, 20.12.2017

The main objective of Russia's activity in the nuclear sector is to use energy projects to strengthen its economic influence and keep or increase the target countries' energy dependence on Russia in order to gain tools of political influence. Moscow's intention is still, irrespective of the changing conditions in Europe, to keep and expand its electricity interconnectors with EU countries to preserve the ability to expand into the European electricity market.

The construction of the Astravyets plant is particularly important in the context of Russia's strategic objectives. Initially, Russia's key objective in relation to the project was to use the new infrastructure to export electricity to EU markets (the same objective was behind the never implemented plans to build a nuclear power plant in the Kaliningrad Oblast (see box).

### **The Baltic Nuclear Power Plant in the Kaliningrad Oblast**

The planned Baltic Nuclear Power Plant (BNPP) in the Kaliningrad Oblast (close to the city of Neman near the Lithuanian border) is an example of a project that was intended to enable Russia to export electricity to European markets. The decision to build two units with a total capacity of 2,300 MW was taken in 2009. In view of the Kaliningrad Oblast's very limited electricity needs, the real aim of the project was to export electricity to countries in the region (mainly Poland and Lithuania, but also Germany). The Russian side made the first proposals to build electricity interconnectors between the Kaliningrad Oblast and Poland back in May 2010. They concerned the construction of a double circuit 400 kV high-voltage power line. In the following years Russia proposed to build modified variants of the interconnectors: as a direct link between the Kaliningrad Oblast and Poland (Mamonovo – Olsztyn), a link using existing Russian-Lithuanian infrastructure (Sovetsk – Bitėnai – Klaipėda), and finally a Polish-Lithuanian interconnection (using the LitPol Link). The Russian side also considered

laying a submarine electricity cable from the Kaliningrad Oblast to Germany. As the potential electricity buyers showed no interest, and because Russia struggled to find interested external investors to fund the Baltic Nuclear Power Plant, the project was suspended in June 2013.

Discussions about a nuclear power plant in the Kaliningrad Oblast recommenced in 2017, but their outcome so far suggests that the debate mainly serves propaganda purposes. On the one hand, the Russian energy minister Alexander Novak said during a visit to Kaliningrad in April 2017 that implementing the project is necessary in view of the projections of rising electricity consumption in Europe. At the same time, Rosatom representatives started to intensively promote the project during open seminars and industry conferences, emphasising that it would generate electricity for export (mainly to the Central European markets), while the media started spreading reports that the reactor pressure vessel damaged during attempted assembly in Astravyets would be moved to Kaliningrad and used on the Baltic Nuclear Power Plant. However, no steps have been taken that would indicate that works on the project are genuinely recommencing. Moreover, in view of the energy strategies of EU member states and the projections of electricity generation and consumption, the EU will not need to import electricity. On top of that, as many Western European countries are abandoning nuclear energy (especially Germany), the prospect of them importing electricity generated at nuclear power plant in the Kaliningrad Oblast or Astravyets does not seem realistic.

Irrespective of the freezing of the BNPP project, Moscow has proceeded to expand the electricity and energy infrastructure in the Kaliningrad Oblast. On 2 March 2018, two large gas-fired power plants were officially commissioned (Mayakovskaya and Talakhovskaya, with a capacity of 156 MW each), and two more are under construction, including the gas-fired Pregolskaya (with a capacity of 440 MW, planned launch in late 2018 or early 2019) and the coal-fired Primorskaya (with a capacity of 195 MW, planned launch in the first half of 2020). The cost of building the four facilities is estimated at RUB 100 billion. The total capacity of power plants currently operating in the Kaliningrad Oblast is 900 MW (2 units of the Kaliningradskaya-2 CHP plant). The future demand for power capacity in the oblast will range, according to Russian estimations, from 250 to 840 MW, and Moscow argues that the expansion of capacity by around 950 MW is justified by the projected increase in electricity consumption in the Kaliningrad Oblast by even up to 100% by 2020. It has also been argued that the new projects are

intended to provide security in the event the existing power plants need to be renovated or go offline for other reasons.

Russia already exports some electricity to the EU market, and EU buyers account for nearly 50% of the country's total electricity exports. Finland is the biggest importer of Russian electricity (5.04 TWh in 2017, with total consumption at 85.5 TWh); and Lithuania ranks third among Russia's trading partners in this sphere (3.13 TWh in 2017, with total consumption at 10.76 TWh). A detailed specification of the directions of Russia's electricity exports is presented in Table 3.

**Table 3.** Russian electricity exports by country (TWh)

	2012	2013	2014	2015	2016	2017
<b>Finland</b>	3.79	4.10	2.99	3.38	5.28	5.04
<b>Lithuania</b>	4.78	3.56	3.21	2.99	3.01	3.13
<b>China</b>	2.63	3.49	3.37	3.29	3.32	3.32
<b>Georgia</b>	0.51	0.46	0.62	0.51	0.40	0.50
<b>Kazakhstan</b>	2.28	1.66	1.64	1.54	1.16	1.29
<b>Belarus</b>	3.69	3.59	1.42	2.81	3.18	2.73
<b>Mongolia</b>	0.39	0.41	0.39	0.28	0.30	0.37
<b>South Ossetia</b>	0.13	0.13	0.14	0.14	0.15	0.15
<b>Ukraine</b>	0.08	0.03	0.17	2.46	0.12	0.09
<b>Azerbaijan</b>	0.06	0.05	0.05	0.05	0.06	0.06
<b>Total</b>	18.36	17.53	14.043	17.49	17.00	16.68

**Source:** <http://www.interrao.ru/activity/>

From Moscow's point of view, the expansion of its – already dominant – economic and political influence in Belarus is also an important objective. The project would not be possible without the Russian side's financial and technological involvement, which implies that it will be operated in a way that will take Russia's interests into account. Given the changing plans concerning the construction of new nuclear units in Russia (Rosatom expects delays and may give up some projects), it is very likely that the profile of the Astravyets plant will

be subordinated to Russia's nuclear strategy in the internal market in the coming years (see chapter V of this paper for more details).

The Russian plans concerning the creation of a common energy market within the Eurasian Economic Union (EEU) also point in that direction. In the autumn of 2017 the Russian media announced that the government of the Russian Federation would extend a proposal to the other EEU members, i.e. Armenia, Belarus, Kazakhstan and Kyrgyzstan, asking them to hand over to Moscow their competences regarding the trade in electricity within the common market of the EEU. Those competences would be vested in the Administrator of the Trading System of the Wholesale Electricity Market, i.e. the institution currently in charge of the organisation and operation of the wholesale electricity market in Russia. The Russian side has announced that the agreement on a common electricity market within the Eurasian Economic Union would be signed by the end of 2019.<sup>26</sup> If those plans materialise on the terms and conditions proposed by Moscow, the Kremlin will tighten its political grip of the EEU member states' energy markets, gain more influence on their energy strategies and, consequently, expand its ability to use the energy infrastructures of the EEU member states.

<sup>26</sup> Москва хочет быть энергостоллицей, <https://www.kommersant.ru/doc/3454638>



## IV. LITHUANIA ON THE BELARUSIAN NUCLEAR POWER PLANT IN ASTRAVYETS

### 1. Lithuania's arguments against the plant

Because Astravyets is in the direct vicinity of the Lithuanian border and Vilnius, Lithuania has been particularly determined and persistent in trying to block the project. Its position is based on the following arguments:

- **The selected location is not suitable for the project.** Lithuania cites the opinion of Belarusian scientists who evaluated the 28 proposed locations back in 1993<sup>27</sup> and concluded that Astravyets was not suitable because of its geological conditions and increased seismic risk. Belarus has not presented any alternative study of the site's geological and tectonic structure.
- **Belarus selected the location prior to conducting an environmental impact assessment,** in violation of the Espoo Convention. The selection of the site was not agreed with Lithuania, in breach of the 1994 Vienna Convention on Nuclear Safety. Since the 2013 Fukushima nuclear disaster, the recommendation of the International Atomic Energy Agency (IAEA) has been that no new plants should be located within 100 km of large cities. Meanwhile, Belarus is carrying out construction works within 50 km of Vilnius, which means that in the event of an accident, the Lithuanian capital and one third of the country's population will be within the zone of radiological contamination.
- **Belarus has ignored civil society protests against the Astravyets plant,** in violation of the 1998 Aarhus Convention on public participation in decisions concerning the natural environment. In 2015, Lithuania filed a complaint with the Aarhus Convention Compliance Committee, claiming that Lithuanian citizens' right to information had been violated in connection with the Astravyets project.
- **Because of the project's location, the Lithuanian government has been forced to take measures to address the effects of a possible incident.** The cost of developing countermeasures in the event of radioactive contamination will be borne by the Lithuanian side. Lithuania has been forced to

<sup>27</sup> Г. Лепин, *Величайшая диверсия или худшая из неблагоприятных*, ОГП, <http://ucpb.org/news/economics/velichajshaya-diversiya-ili-khudshaya-iz-neblagopriyatnykh>

develop evacuation plans for the capital city, to create adequate infrastructures to be able to carry out those plans, and to purchase the necessary means to evacuate and rescue its population. The plans must also make provisions for the possible contamination of the Neris river; and Lithuania has reported the issue of possible contamination to the Implementation Committee of the Helsinki Water Convention. The river is the primary source of drinking water for the Lithuanian capital and, since it is a tributary of the Nemunas, it can potentially contaminate the whole country's water resources. The two countries have not concluded any agreement on the use and protection of water in the Neman tributaries, although Lithuania has been pressing for the signature of a bilateral technical protocol since 2009.

- **Constantly monitoring the situation in Astravyets will pose a challenge to the Lithuanian services.** Minsk habitually reports incidents (for now, related only to construction works) solely under pressure from the independent media in Belarus and from Lithuania. Vilnius is not concerned by the reactor technology but considers itself to **be under major risk due to an inadequate working culture, a disregard for safety standards and poor supervision of the plant's construction.** In the opinion of the Lithuanian authorities, Belarus is not performing sufficient oversight of the plant's safety because the project is controlled by Rosatom. Lithuania's safety assessment is based on an analysis of incidents that occurred in the course of the project's implementation. It shows that in 2016 alone, there were six serious incidents related to the construction. Two of them involved damage to two Rosatom-produced reactor bodies, which are part of the plant's safety arrangement (the first reactor pressure vessel was dropped to the ground on 10 July 2016, and the second one collided with a railway pylon on 26 December 2016 and, despite the damage sustained, was approved for installation at the first unit).
- **No stress tests have been carried out despite Lithuania's demands.** Lithuania has been calling for such tests to be carried out with the participation of international experts and in keeping with international standards for the assessment of risk at nuclear facilities. It has the backing of the European Parliament (resolutions of 16 November 2016 and 5 April 2017 on the need to ensure the highest safety standards).
- **Belarus has been manipulating the SEED (Site and External Events Design) mission of the IAEA.** Since 2013, Lithuania has called on Belarus to accept a full SEED mission to carry out studies of the construction site

(including stress tests) and decide whether it is suitable for a nuclear power plant. In 2014, Lithuania's position was backed by the Bureau of the Espoo Convention and the Nuclear Safety Convention. On 16-20 January 2017, Belarus did accept a partial SEED mission (the composition of the mission is decided by the host, not by IAEA). With regard to the subject matter that Belarus allowed the mission to examine, no reservations concerning the location or the safety measures were reported. For Lithuania, the way the mission was carried out proves that Belarus's approach to safety standards is selective and that Minsk is creating a falsely positive image of the Astravyets project to mislead international public opinion.

- **No adequate security measures at the plant.** While Belarus has created a special military unit to provide security to the plant and has started creating an air defence base for the same purpose, direct security services for the plant are provided by private security contractors, and not the military. Moreover, Belarus has not studied the plant structure's resilience in the event of impact by a large aircraft. As per the 2013 recommendations of the Western European Nuclear Regulators Association (WENRA), all newly built power plants should be able to withstand such an incident. Belarus has refused to conduct such studies.<sup>28</sup>

## 2. Lithuania's objections against Rosatom's influence in the region

Internationally, Lithuania has mainly been raising arguments that concern violations of international conventions in connection with the Astravyets project and Minsk's insufficient supervision of the project. However, its objections are motivated by the belief that Astravyets is a Russian economic-political project and that Rosatom is implementing the Kremlin's policy aimed at preserving Russian political influence by way of economic pressure. According to the Lithuanian leadership, the international institutions' failure to stop the project and other investments in which Rosatom is involved in Europe is as harmful as their failure to stop the Nord Stream gas pipeline.<sup>29</sup>

<sup>28</sup> Lithuania invokes the example of Finland which demonstrated that the structure of its Rosatom-designed plant on the Hanhikivi peninsula could not withstand an aircraft impact, and the Russian company was forced to modify the designs.

<sup>29</sup> R. Masiulis JAV: "Rosatom" *tampa geopolitinio spaudimo įrankiu*, <https://www.delfi.lt/verslas/energetika/rmasiulis-jav-rosatom-tampa-geopolitinio-spaudimo-irankiu.d?id=72436962>

Lithuania occupies a prominent position in Rosatom's strategy towards the Baltic region. The region's only pumped-storage power plant is located in Lithuanian territory in the town of Kruonis. It could provide the necessary reserve capacity and help in balancing the Belarusian grid when the Rosatom nuclear power plant goes online (whether in Astravyets or in the Kaliningrad Oblast). In relation to Rosatom, the Lithuanian leadership is anxious not to repeat mistakes made in the past in the relations with Gazprom, to which Lithuania handed over control of its strategic gas transmission infrastructure in 2004.<sup>30</sup> Gazprom not only failed to ensure low gas prices but also corrupted the Lithuanian political elite while trying to thwart initiatives aimed at the diversification of gas supplies to the Baltic region. It took the Lithuanian leadership ten years to purge the gas sector of Gazprom's political and economic influence, which also involved efforts to convince the European Commission to launch the now ongoing antitrust proceedings against Gazprom.

In 2012, Lithuania rejected Russia's offer to co-operate on the Baltic NPP project in the Kaliningrad Oblast, despite attempts made by Rosatom and the Russian secret services to bribe the Lithuanian political elites.<sup>31</sup> Lithuania's resistance could have been an important factor in Rosatom's decision to freeze the Kaliningrad project and focus on the construction of a nuclear power plant in Belarus. Minsk is an important economic partner for Lithuania because of the Belarusian transit via Lithuania's Baltic ports. For many years, the Klaipeda port has been striving to position itself as the main Baltic port for Belarusian transit. Lithuania has also sought to be active in the Eastern Partnership project and for many years maintained relations with the Belarusian leadership, supporting

<sup>30</sup> In 2004, the Lithuanian government agreed to sell Gazprom a 34% stake in the country's gas monopoly Lietuvos dujos (dealing with transmission, distribution and trade). Together with the stake held by the Russian company Itera Lietuva, Gazprom thus acquired a controlling stake in Lietuvos dujos. The Russian monopoly failed to deliver on the confidential part of the privatisation agreement and did not ensure stable and cheap gas supplies to Lithuania. The rising gas prices prompted Vilnius to carry out a radical reform of the gas sector (in line with the guidelines of the European Union's Third Energy Package), which forced Gazprom to resell its gas transmission and trade assets to the Lithuanian state, as a result of which Lithuania was able to launch the LNG terminal in Klaipeda in late 2014.

<sup>31</sup> Declassified documents of the Lithuanian security service VSD (State Security Department) show that in 2012 Rosatom tried to increase its sway in Lithuania by building relations with Lithuanian entrepreneurs, via whom the Russian side also tried to bribe politicians of the then ruling Social Democratic Party. Former KGB operatives in Lithuania were involved in the execution of Rosatom's plans. One of the aims of the operation was to persuade Vilnius to join the Baltic NPP project or to allow Rosatom to acquire a 25% stake in the Lithuanian nuclear power plant project in Visaginas, <http://www.lrt.lt/naujienos/lietuvoje/2/169550> (accessed on 17.11.2017).

Minsk's rapprochement with the EU. The rapprochement between Lithuania and Belarus in the years 2008–2010 – which followed the lifting of the EU sanctions against Belarus and occurred during Minsk's gas disputes with Russia – was aimed at intensifying the two countries' co-operation in the areas of transit and energy – in keeping with Vilnius's plans and against Russia's economic interests.

The decision to locate the Belarusian Nuclear Power Plant in Astravyets, i.e. like the BNPP, very close to the Lithuanian border, and Rosatom's key role in that project, put an end to the period of co-operation between Vilnius and Minsk. Moreover, the decision has triggered the deepest crisis in Belarusian-Lithuanian relations, which continues to the present, adversely affecting the two countries' political and economic relations and their co-operation within EU programmes.

The weakening of Lithuanian-Belarusian contacts created an opportunity for closer co-operation between Latvia and Belarus. Latvia's prime minister Māris Kučinskis, who has been developing closer contacts with the Belarusian side since the end of 2017, has declared that his country is interested mainly in transit co-operation between Latvia (ports and railways), Belarus and China (the Chinese 'Great Stone' industrial park near Minsk). Unlike the previous efforts of Lithuania, this co-operation is not directly aimed at undermining Belarusian-Russian relations.<sup>32</sup> Moreover, Latvia's involvement in economic co-operation with Belarus has also been negatively affecting the relations between Riga and Vilnius. Most importantly, it has undermined Lithuania's hopes that the Baltic states would adopt a joint position on Astravyets and Rosatom's policy in the EU and promote it in European forums. In other words, it benefits Russia's policy.

### **3. Steps taken by Vilnius with regard to the Belarusian Nuclear Power Plant**

Lithuania has taken two kinds of measures in connection with the Astravyets issue. Firstly, it has striven to block the possibility of Belarus selling the electricity generated at Astravyets in the combined markets of the Baltic states, which

<sup>32</sup> On the occasion of the Latvian PM Māris Kučinskis's visit to Minsk in early February 2018, President Lukashenka made a declaration of loyalty to Russia, saying that his country would never be friends with anyone against Russia; *VSD medžiaga: "Rosatom" per M. Bastį bandė Lietuvą įtraukti į bendro verslo voratinklį*, LRT, 12.04.2017, <https://www.delfi.lt/news/daily/world/lukasenka-baltarusija-niekada-su-niekuo-nedraugaus-pries-rusija.d?id=77122225>

are integrated with the European market. Secondly, in an effort that impacts the Astravyets project, it has sought an as fast as possible desynchronisation of the Baltic states' grids with the grids of Belarus and Russia (their synchronised system operates under the BRELL contract between the Belarusian, Russian, Estonian, Latvian and Lithuanian operators which still remains in force).

### **The Baltic grids - towards synchronisation with continental Europe**

When the Baltic states joined the EU, their energy systems were isolated from the European energy system. In 2004 the development of interconnectors started, and currently the Baltic region can exchange energy with the EU system via four asynchronous interconnections linking Estonia and Finland (Estlink 1, Estlink 2), Lithuania and Sweden (NordBalt), and Lithuania and Poland (LitPol Link). The links to Finland and Sweden connect the Baltic grids with the Nordel grid (comprised of the Nordic states), while the link to Poland connects the Baltic grids to the UCTE grid (spanning continental Europe). Grid operators in the UCTE and Nordel systems work together under the ENTSO-E agreement which brings together European transmission system operators who together make up the EU energy market. Despite the development of interconnections, the Baltic grids are still part of the post-Soviet IPS/UPS synchronous system (under the BRELL agreement on co-operation between the operators in Belarus, Russia, Estonia, Latvia and Lithuania). Currently the three Baltic states intend to desynchronise from the IPS/UPS and synchronise with the continental Europe grid using the Polish-Lithuania interconnection LitPol Link.

The synchronisation of the Baltic grids, supported by the European Commission which provides financing from the CEF, is scheduled to be completed in 2025. The commission agreed with the case made by the Baltic states that while desynchronisation and synchronisation are costly processes, in the current IPS/UPS system the Baltic states do not have full control over the grid system parameters because supervision is exercised by the system headquarters in Moscow. The grid created under the BRELL agreement spans a large territory, and the Russian and Belarusian infrastructures are obsolete and often malfunction. The Baltic states do not have access either to information on the system's current condition, nor to plans regarding its modernisation and development. Another argument for synchronisation refers to the ambitions to build an integrated European electricity market in which EU actors trading in electricity would compete for customers on a level playing field. Harmonising the technical parameters through synchronisation is one of the ways to ensure such a level

playing field. Finally, the Baltic states have also argued that Russia has not signed the Energy Charter, which may render it more difficult for states synchronised with its energy system to function in the European energy market.

### **Where is Lithuania's electricity produced?**

Since the Ignalina NPP was phased out on 31 December 2009, the Elektrėnai power plant (with a reserve capacity unit and a new combined cycle unit operating on gas/mazut), the pumped-storage plant in Kruonis and the Algirdas Brazauskas hydro power plant in Kaunas have been the country's main power generators. All three are owned by the state-owned company Lietuvos Energijos Gamyba which generates and trades in electricity, selling it in the Nord Pool Spot exchange and providing balancing services to energy suppliers. There are also other, smaller power plants that use local and renewable sources (mainly CHP plants running on biomass and wind farms). The Lithuanian power plants are able to fully cover the country's electricity demand, but they use only around 22% of their installed capacity because the price of electricity generated in Lithuania is not competitive due to the need to import fuels (gas and mazut). Because of that, Lithuania imports energy, mainly from Estonia, Latvia, the Nordic states, Poland, Russia and Belarus. Before 2016, around 50% of imported electricity on average came from Estonia and the Nordic states, and another 50% from Russia (with around 2% coming from Belarus). When the NordBalt and LitPol Link interconnections were launched in early 2016, the structure of energy imports changed. The interconnections allowed Lithuania to better diversify its imports and reduced its dependence on providers outside the EU, especially Russia. In 2016, imports from Latvia, Estonia, Sweden and Poland accounted for 70% of Lithuania's total electricity imports. The remaining 30% came from Russia and Belarus.

#### **3.1. Efforts to block trade in Belarusian electricity**

The Lithuanian government is determined to prevent Belarus and Russia from becoming the main exporters of electricity to the Lithuanian market and cashing in the related profits, estimated at EUR 700 million a year. Should that happen, Lithuania's economy would become more closely tied to the Belarusian Nuclear Power Plant in Astravyets. That is why Vilnius decided to take measures which are controversial from a market economy point of view, to block the possibility of Belarus selling the Astravyets-generated electricity in the Baltic region. On 20 April 2017, the Lithuanian parliament adopted a bill 'On the necessary safeguards

against threats from unsafe third-country nuclear power plants'.<sup>33</sup> The bill states that electricity from nuclear power plants deemed by the Lithuanian parliament to be unsafe (and so far, only the Astravyets NPP has been declared unsafe)<sup>34</sup> cannot be traded in the Lithuanian market. The prohibition will enter into force the moment the Belarusian power plant is launched and will apply to commercial flows, without affecting technical flows, i.e. the energy needed to preserve the stability of the energy grids of Lithuania and Belarus. On 13 September 2017, the Lithuanian government approved an action plan to block trade in electricity coming from Astravyets. It also prohibited the Kruonis facility from providing balancing services to Belarus. By the 2<sup>nd</sup> quarter of 2018, agreements are also to be signed with Latvia and Estonia on the imposition of tariffs on energy transmission from third countries, subject to the European Commission's approval. Currently Belarusian and Russian companies selling electricity to Lithuania pay no such tariffs, even though Lithuanian exporters do.

The objective behind the adoption of the Lithuanian action plan is not only to block the export of energy generated at Astravyets, but also to step up the efforts aimed at getting the other countries in the region to align with Lithuania's position on the Astravyets plant. Moreover, Lithuania's strategy also seeks to stimulate closer European and regional energy co-operation. So far, Lithuania's position on the Belarusian Nuclear Power Plant has been supported mainly by Poland.<sup>35</sup> Poland's declarations were particularly important for Lithuania in the context of its relations with Latvia and Estonia. While the governments of the two countries do share Lithuania's view that the Astravyets plant should meet all European and international safety standards, they have made no clear statements as to whether they would take any measures to block Belarusian energy exports. At this stage, when the Belarusian authorities are already announcing the first reactor's launch date, the Lithuanian government

<sup>33</sup> The text of the bill can be consulted at: <https://www.e-tar.lt/portal/lt/legalAct/baeac2202f-3c11e78397ae072f58c508>

<sup>34</sup> The bill provides that 'unsafe plants' are those whose design, construction or operation fails to meet safety standards related to environmental protection and protection against radiation or which breach international agreements and conventions, and those which pose a threat to the safety, the natural environment and human health in the Republic of Lithuania because of their geographic location or technology used. The Lithuanian parliament will declare third-country nuclear power plants as unsafe on a case by case basis through separate legal bills.

<sup>35</sup> On 17 March 2017, Piotr Naimski, the Polish minister and governmental plenipotentiary for strategic energy infrastructure, announced that Poland would not buy electricity from Astravyets and would dismantle the no-longer functioning Ros-Białystok link, <http://www.energetyka24.com/563903,minister-naimski-nie-dla-energii-z-bialorusi>



views blocking energy exports as more effective than attempts at demonstrating that the project violates international safety standards. The Lithuania tactic may succeed in delaying the launch of the second reactor in Astravyets or even preventing its commissioning altogether.

According to Litgrid, the Lithuanian transmission system operator, Lithuania is able to singlehandedly block commercial energy flows from Belarus. To this end, Vilnius intends to use the Nord Pool power market,<sup>36</sup> and thus avoid having to invest in new facilities such as phase shifters and having to bear the additional costs of the measures to block Astravyets's energy exports. Trade in energy with Belarus or the other countries with which Lithuania has interconnections is possible only via the power market. This means that the Lithuanian institutions will be able to control commercial contracts made there and block contracts to be executed via any of the five existing interconnections between Lithuania and Belarus.<sup>37</sup> While the physical transmission of energy will not be blocked, trade will no longer be possible. This not only means that the Astravyets power plant will not be able to offer its electricity in the Lithuanian market, but also that other Belarusian entities which currently trade via Nord Pool will be unable to sell it. Such will be the consequences of the decision to block commercial flows, because it is not possible to determine if the energy offered comes from a nuclear power plant or another source. Those measures may be seen as a way for Lithuania to exert additional economic pressure on Belarus.

Litgrid, the Lithuanian operator, is positive that technical flows that serve to balance the Belarusian and Lithuanian grids will be preserved until the Baltic grids become synchronised with the continental European grids, irrespective of the type of power plant in which such energy is generated. With the currently existing transmission infrastructure in the region, Belarus has practically no technical possibility to export its electricity to the Baltic states other than via Lithuania, i.e. it cannot do this via Latvia or Finland. It would have to develop

<sup>36</sup> <https://www.delfi.lt/verslas/energetika/ar-i-lietuva-pateks-astravo-elektra.d?id=76537663> (accessed on 4.12.2017).

<sup>37</sup> On 10 April Litgrid signed a contract with the Lithuanian company Kauno Tiltai and Sweden's ABB for the reconstruction of two transformer stations in Ignalina and Utena and the dismantling, by the spring 2021, of the first 750 kV ultra high voltage power line between the Ignalina station and Belarus. The remaining power lines between Belarus and Lithuania will also be dismantled as the synchronisation process progresses, *Minister Naimski: „Nie” dla energii z Białorusi*, Energetyka 24, 17.03.2017, <https://www.etaplus.lt/lietuva-ruosiasi-astravo-ae-isigyti-elektros-is-baltarusijos-bus-neimanoma>

new interconnections, e.g. via Latvia, but no such plans have been mentioned to date. This means that since the Lithuanian parliament decided to block trade in Belarusian energy, Lithuania does not need backing in the form of similar decisions by Latvia, Estonia or Finland to prevent Belarusian energy from entering its market via the grids of other countries in the region.

However, the decision to block trade is controversial in view of EU market regulations. Taking such measures in relation to Belarus will have to be approved by the European institutions, which may end up in a dispute between Lithuania and the European Commission. To argue its case to the European institutions, Vilnius has represented **Astravyets as a purely political project inspired by Russia, which Belarus has limited control of, forcing Lithuania to more broadly consider various safety aspects of the project. Lithuania demonstrates that while the HVVER-1200 reactor technology is not controversial, Rosatom has not complied with safety standards while implementing the investment, similar to other projects which it has carried out in Russia and abroad.** Lithuania will therefore have to convince the EU decision makers that the situation concerning the construction and future operation of the Astravyets plant is extraordinary and that the Lithuanian government has to take measures to respond to a wide range of threats, including natural disasters, human error caused by negligent approach to safety standards, incompetent oversight or hostile action, in particular by Russia, such as deliberately causing panic or sabotage using hybrid warfare means.

### 3.2. Synchronising the Baltic energy grids with continental Europe

In the aftermath of Lithuania's decision to block the sale of energy from the Astravyets plant, Vilnius stepped up efforts regarding the synchronisation of the Baltic grids. The Lithuanian government managed to persuade Latvia and Estonia to accept the variant (which is promoted by Lithuania and regarded as most favourable by the European Commission) to synchronise using the Polish-Lithuanian LitPol Link interconnection.<sup>38</sup> According to the management of Litgrid, the Lithuanian grid operator,<sup>39</sup> Russia (along with Belarus) has been preparing for desynchronisation already since 2014. Information obtained

<sup>38</sup> On 22 March 2018, the prime ministers of Poland, Latvia and Estonia and the president of Lithuania reached agreement, in the presence of European Commission President Jean-Claude Juncker, on synchronising their electricity grids with continental Europe via Poland.

<sup>39</sup> A. Jockus, *Lietuva pajėgi viena blokuoti Astravo AE*, 3.10.2017, <https://www.lzinios.lt/lzinios/ekonomika/lietuva-pajegi-viena-blokuoti-astravo-ae/251391>

by Litgrid shows that Russia has also been expanding its own transmission system in recent years, with new lines being built along the borders of Latvia, Estonia and Belarus which form an inner ring alternative to BRELL. According to Litgrid management, the blueprint for grid expansion related to the connection of the Astravyets plant also resembles the creation of another ring along the border with Lithuania, to bypass those elements of the current BRELL ring that are within Lithuanian territory –this clearly points to desynchronisation.

The Lithuanian operator has also monitored the situation in the Kaliningrad Oblast where the program to expand (coal and gas) capacity for the purposes of risk management is underway. Litgrid interprets those measures as preparation of the Kaliningrad grid to operate in isolation (possibly as early as 2020), as the capacity reserve will allow the oblast to remain stable without BRELL. Lithuania and the other Baltic states will also have to trial operation in isolation, as such tests are required before the EU operators can decide to synchronise the Baltic states. The tests are planned to be carried out in June 2019. Meanwhile, there are many indications suggesting that Russia's activities should be interpreted as preparations for a so-called pre-emptive desynchronisation, which may be risky for the Baltic states. However, whether that happens will depend on Moscow's political decision. Russia might treat such a measure as a kind of sanction for Lithuania's unfriendly political course. According to Litgrid representatives, Russia will be able to take steps that would negatively affect the Baltic states' grids. In certain conditions, disconnecting might lead to a blackout, in the event of which the Lithuanian operator says it would need 3 to 5 days to restore system stability, and that would surely render the synchronisation with continental Europe more difficult. According to the Lithuanian security services, Russia has been involved in activities aimed at delaying the Baltic states' synchronisation.<sup>40</sup> It has been lobbying various EU institutions on the topic, including the European Commission.

### **3.3. The impact of the Belarusian Nuclear Power Plant on energy policy discussions within Lithuania**

The Lithuanian Greens, which have been part of the largest grouping in the parliament since the 2016 elections won by the Lithuanian Farmers and Greens Union (LVŽS), have become actively involved in the expert and political debate around the Astravyets project. The LVŽS and their leader Ramūnas Karbauskis

<sup>40</sup> Lietuvos žvalgyba: Rusija siekia paveikti elektros tinklų sinchronizavimo projektą, Delfi, 26.03.2018, <https://www.delfi.lt/spausdinti/?id=77526609>

have been arguing that the previous governments were ineffective in stopping the Astravyets project because the Lithuanian political elites avoided criticising the very idea of using nuclear technology for power generation as that could have harmed the Lithuanian nuclear project in Visaginas,<sup>41</sup> the cornerstone of Lithuania's National Energy Strategy that remains in force.<sup>42</sup>

The current government has been pushing for an amendment of the strategy with a view to radically rebuilding the development concept of Lithuania's power generation sector towards local and renewable energy sources.<sup>43</sup> The amended draft does not mention Visaginas or nuclear energy. A joint position of the Lithuanian parliamentary parties on the Belarusian Nuclear Power Plant may provide a basis for the current government to finally close the question of returning to nuclear energy in Lithuania. If Lithuania becomes an advocate of a nuclear phaseout in the EU, it will also withdraw from other nuclear projects in the European Union, including in Poland.

<sup>41</sup> In 2009, Lithuania signed an agreement with Japan's Hitachi, under which the latter would deliver a Japanese-made reactor for the planned nuclear power plant in Visaginas and co-finance the project with Lithuania, Latvia and Estonia. The Lithuanian government treated the announcements regarding the Russian and Belarusian nuclear projects as attempts at pressuring investors in order to undermine the Visaginas project by implying it would face too much competition in the regional electricity generation market. The pressure of two competing projects increased the investment risk of the Visaginas project. Lithuania was not able to produce convincing evidence to its partners that the Visaginas plant would be competitive, as a result of which the governments of Latvia and Estonia lost much of their initial interest in the project and it failed to get off the ground.

<sup>42</sup> The text of the strategy can be consulted at: <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.291371>

<sup>43</sup> During the last decade, Lithuania's renewable sector developed dynamically thanks to private investments and public subsidies. Investors benefited from the 2010 closure of the old nuclear power plant in Ignalina (near Visaginas) and may be concerned that a return to nuclear energy in Lithuania would undermine the profitability of renewable projects, including onshore wind and, in the future, also offshore wind. The Lithuanian government has been postponing the authorisation of Baltic offshore wind farms, even though there are companies interested in participating in tenders.

## V. THE PROBLEM OF UTILISING THE POWER GENERATED AT ASTRAVYETS

The fact the plant was located near the Lithuanian border, as well as the provisions of the current Energy Security Concept of the Republic of Belarus clearly suggest that one of the main original objectives behind the construction of the Belarusian Nuclear Power Plant was to export energy. However, Lithuania's objections and Poland's refusal to buy energy from Belarus have cut Belarus off from its main potential export markets.<sup>44</sup> In theory, the creation of a common electricity market of the Eurasian Economic Union (EEU), scheduled to take place on 1 July 2019, will open some export possibilities for Belarus. However, according to calculations by the Eurasian Development Bank experts, the EEU member states are reporting declining energy demand and most of them (with the exception of Kyrgyzstan) are experiencing capacity surpluses, not deficits. Moreover, the effective functioning of the common electricity market will be hindered by the Soviet legacy system solutions still in existence, such as the absence of decoupling between power transmission and power generation. In view of this, it is unlikely that Belarus will be able to sell larger volumes of electricity to the EEU in the near future, even after the common market is formally established.<sup>45</sup>

In this situation, the Belarusian leadership will have to change the Astravyets plant's export profile, at least temporarily, and channel all power generated there into the domestic market.<sup>46</sup> As a result Belarus, which currently produces around 33-34 TWh a year and consumes between 37 and 38 TWh a year, will be able to stop importing electricity from Russia (3 TWh in recent years) after the Astravyets plant becomes operational. The Belarusian side often presents

<sup>44</sup> For several years, the Belarusian side lobbied for the modernisation and expansion of the Poland-Belarus grid interconnection (the Ros-Narew powerline) with a view to expanding its capacity (in both directions) to 1,000 MW/8 TWh a year. The power line, which has not been used since 2004, was considered by the Belarusian side as one of the important channels for the future export of electricity from the Astravyets nuclear power plant. In 2017, the line's owner, PSE, decided to dismantle it.

<sup>45</sup> <https://www.belrynok.by/ru/page/economics/4850>

<sup>46</sup> Representatives of the Belarusian government (including Uladzimir Semashko, the deputy prime minister in charge of energy, in an interview for the Belarusian TV on 4 March 2018) still claim that power will be exported, but they are not able to name a specific market, <https://news.tut.by/economics/583699.html>

this phasing out of imports as the first tangible benefit of the Astravyets project.<sup>47</sup> In late 2017, the Belarusian government decided to fully switch to domestic capacity already in 2018, i.e. even before the Astravyets plant is launched, because of the growing prices of Russian energy. Thus, for the first time in its history, Belarus stopped importing electricity.<sup>48</sup> However, if the maximum output of the Astravyets nuclear power plant is 18 TWh a year, that will still leave a surplus of 14 to 15 TWh that needs to be utilised.

The Belarusian government has addressed the problem of the lack of access to external markets and already in September 2015 established a special inter-departmental working group for the integration of the nuclear power plant with the country's energy system. The group developed a comprehensive plan for the development of the electricity sector to 2025 in view of the launch of the Belarusian Nuclear Power Plant; it was approved in March 2016. The measures envisaged in the plan include tasks directly related to preparing the domestic infrastructure to utilise energy not generated from gas. The large-scale installation of electric boilers at CHP plants of the state-owned operator Belenergo with a total capacity of 535 MW, individual boilers with a total capacity of 450 MW and other facilities with a total capacity of 200 MW. The aim is to utilise some of the power generated at Astravyets. The plan also envisages the creation of reserve (peak) capacity of 800 MW, including 400 MW to 2018.<sup>49</sup> However, according to the newest reports, the Belarusian authorities decided not to build a new separate plant to ensure reserve capacity. Instead, existing plants will be expanded, including the CHP plant No 5 in the Minsk Oblast.<sup>50</sup> Moreover, in order to optimise the system, outside the heating season the Astravyets plant will use only 80% of its capacity.<sup>51</sup> The government has also announced that

<sup>47</sup> It should be remembered that Belarus already has sufficient capacity to meet its electricity needs. It imports energy because it is not economically justified to supply electricity to the eastern part of the country from the power plants located in the western oblasts. The launch of the Astravyets plant will solve the problem by making imports no longer economically viable.

<sup>48</sup> *Беларусь впервые отказалась от закупки электроэнергии*, 21.02.2018, <http://naviny.by/new/20180221/1519235858-belarus-vpervye-otkazalas-ot-zakupki-elektroenergii>

<sup>49</sup> This means capacity that ensures adequate generation levels at times of peak energy consumption. In some cases, separate power plants are built to back up the nuclear power plant.

<sup>50</sup> It is the newest CHP plant in Belarus whose construction was completed in 2012, *Пиково-резервный источник планируется ввести на ТЭЦ-5 в Пуховичском районе*, 25.04.2017, [http://atom.belta.by/ru/news\\_ru/view/pik-rezervnogo-istochnika-planiruetsja-vvesti-na-tets-5-v-puxovichskom-rajone-9262](http://atom.belta.by/ru/news_ru/view/pik-rezervnogo-istochnika-planiruetsja-vvesti-na-tets-5-v-puxovichskom-rajone-9262)

<sup>51</sup> See: Министерство энергетики Республики Беларусь, <http://minenergo.gov.by/wp-content/uploads/Комплексный-План.pdf>

it would create incentives for buyers to increase energy consumption at night, where the biggest surpluses occur. Some Belarusian CHP plants are installing electrode boilers that can use the night-time energy surplus to create heat that can be delivered to customers at times of peak demand. All the above investments are to be carried out by 2020 and, according to estimates by the Ministry of Energy, will cost US\$ 500-700 million but, notably, the governmental plan does not specify the sources of financing for this expensive upgrade.<sup>52</sup> It seems that the high cost is due to the fact that the government has selected high-quality, expensive boilers manufactured by renowned Western companies such as Germany's BBS GmbH or Sweden's Zander & Ingeström AB. In August 2016, boilers manufactured by the latter company were installed at the CHP plant in Gomel as part of one of a handful of upgrade projects that have actually been carried out.<sup>53</sup>

However, despite the official statements and the measures taken by the government, it is still far from clear that smooth functioning of the nuclear power plant will be ensured and the risk of malfunction eliminated. Other ways to simulate domestic electricity demand have also been considered. For example, the question of developing infrastructure for electric buses and cars (which are almost entirely unseen in Belarus). The complete electrification of residential buildings, including heating systems, has also been discussed.<sup>54</sup> Finally, the idea to utilise the energy from Astravyets to power the energy-intensive devices performing crypto-currency operations (bitcoin mining) has also been floated and is being officially studied by the Belarusian Academy of Sciences.<sup>55</sup> However, all those concepts are still very vague, making it difficult to estimate how much energy they could utilise.

As regards reserve capacity, in September 2016 the Belarusian side signed an agreement with Germany's Siemens. From the point of view of the energy

<sup>52</sup> See: *Концепции, программы и комплексные планы*, Министерство энергетики Республики Беларусь, [http://minenergo.gov.by/zakonodatelstvo/konceptcii\\_i\\_proframmi](http://minenergo.gov.by/zakonodatelstvo/konceptcii_i_proframmi)

<sup>53</sup> <http://www.belmarket.by/ekonomicheskoe-napryazhenie-aes>; *О ходе реконструкции Гомельской ТЭЦ-2 с установкой электрических котлов*, Министерство энергетики Республики Беларусь, 11.08.2016, <http://minenergo.gov.by/o-hode-rekonstruksii-gomelskoj-te-ts-2-s-ustanovkoj-e-lektricheskikh-kotlov>

<sup>54</sup> А. Шрайбман, *Куда мы денем энергию с АЭС? Мифы и реальность*, 4.09.2017, <https://news.tut.by/economics/558443.html>

<sup>55</sup> Cryptocurrency operations (including mining) were legalised in Belarus under the presidential decree "On the development of the digital economy" which entered into force on 28 March 2018. See: *БелАЭС предложили использовать для майнинга криптовалют*, 29.12.2017, <https://42.tut.by/575038>

system's security and efficiency, the decision seems justified. However, as Belarus has still not ensured financing for the project, choosing such an expensive provider will further increase the risk of delays, which means that it will not be technically possible to distribute the power generated at the Astravyets plant. As the project is mired in controversy, Belarus is unlikely to obtain financing from the EU or from international financial institutions. That leaves the Chinese banks, which are already involved in the implementation of infrastructural projects in Belarus, including the construction and modernisation of transmission grids, as the only potential lenders.

The blueprint for the expansion of transmission infrastructure for the purposes of the Astravyets nuclear power plant envisages the construction of more than 1,000 km of high-voltage power lines (330 kV) and upgrades of more than 600 km of 110-330 kV power lines. As part of those works, in March 2018 the modernisation of the Lida-Hrodna line was completed, which will considerably facilitate the transmission of energy from the Astravyets plant to the Hrodna Oblast. Moreover, a transformer station is going to be built in Pastavy (north-western Belarus) and three existing facilities, in Ros, Smarhon and Stowbtsy, will be upgraded. In total, those investments will cost US\$ 340 million, of which 95% will be financed with a loan granted by China Exim Bank in 2013. In accordance with the investment model applied by China, the Chinese NCPCE corporation will carry out some of the works, for which purpose it will hire or is already hiring several hundred workers from China.<sup>56</sup> In 2016, reports by independent Belarusian media about violations of environmental standards and the poor quality of work carried out by the Chinese investors, leading to infrastructure damage and delays, created a major controversy in Belarus.<sup>57</sup>

It is notable that many of the lines to be built or upgraded clearly lead towards the Lithuanian border, which is indicative of the original export orientation of the Astravyets plant. However, in view of Lithuania's firm objections, the Belarusian government has to opt for an alternative variant and, already in 2015, a Belenergo representative announced that the Belarusian grids were intended to solely serve domestic needs and that – even if export to Lithuania is impossible – no line would be closed down.<sup>58</sup> However, irrespective of the steps dis-

<sup>56</sup> <http://www.belrynok.by/ru/page/economics/2766>

<sup>57</sup> *Белорусская земля «не принимает» ЛЭП Островецкой АЭС*, 14.06.2016, <http://ex-press.by/article.php?id=118246>

<sup>58</sup> Т. Новикова, *Китайская ЛЭП для Белорусской АЭС: незакрученные гайки*, 27.10.2015, <https://news.tut.by/society/470297.html>



cussed above, Belarus can hardly be regarded to be implementing a coherent and comprehensive strategy for the operation of the Astravyets plant. Rather, it has taken a series of poorly considered and uncoordinated measures to minimise the cost of launching and operating the plant. In his annual address to the nation delivered on 24 April 2018, President Lukashenka openly admitted that his ministers have not been able to present a convincing concept for the utilisation of the plant and its integration with the Belarusian economy. In this context, the Belarusian president unequivocally criticised the quality of the work done so far by the people responsible for the implementation of the investment.<sup>59</sup>

Russia hopes that a capacity deficit expected to hit Central Europe (and especially Poland) in the coming years will force decision makers to change tack and enable imports of energy from the Astravyets plant. However, since that scenario does not seem very likely in view of the current energy strategies pursued by the countries in the region (including categorical refusals to import electricity from Belarus or Russia voiced by Poland and Lithuania), it seems more probable that the surplus will be directed to the Russian market. The fact that Rosatom has postponed several nuclear projects in Russia might point in that direction, because the new units launched in recent years have triggered a spike in capacity prices and, as a result, higher prices for individual consumers (other than households).<sup>60</sup> At the same time, power plants with a total capacity of around 50 GW are expected to be decommissioned in Russia between 2020–2025. To date, the Russian government has used the so-called capacity supply contracts (in Russian – договоры о предоставлении мощности) as the main model for investments in the electricity sector. The system, which has been in place since 2011, consists in private electricity companies concluding agreements under which they commit to build plants with a specified capacity within a set period, while the state commits to reimburse the cost of the investment. The peak of such payments is expected to take place in 2021–2022, and in 2026 the mechanism is to be phased out. It is unclear if a similar mechanism will be introduced for the successive years, which calls into question the prospects of new generation capacity being built in Russia.

<sup>59</sup> Лукашенко: большие начальники запили настолько, что на работу не ходили, 24.04.2018, <https://naviny.by/new/20180424/1524560400-lukashenko-o-stroitelstve-aes-bolshie-nachalniki-zapili-nastolko-chto-na>

<sup>60</sup> The plans to postpone the completion of new nuclear units concern the second reactor unit of the Leningradskaya Nuclear Power Plant in particular (initially the 1.2 GW unit was expected to become operational in January 2019). *Мирный атом откладывают в долгий ящик*, <https://www.kommersant.ru/doc/3448572>

Also important here is the systematic increase in energy consumption in Russia – by 1.7% in 2016 and 0.5% in 2017,<sup>61</sup> with projections of 1-1.2% annual growth in the successive year. This trend may produce, around 2026, a deficit of generation capacity in Russia, with electricity imports from third countries partly covering the deficit of electricity production. However, it is extremely unlikely that the price of electricity generated at the Astravyets plan can be competitive in the Russian market.

### **Lithuanian estimates concerning the price of energy generated at the Belarusian NPP**

Arvydas Galinis, the head of the Complex Energy Studies lab at the Lithuanian Energy Institute in Kaunas, has compares the projected price of electricity from Astravyets with prices in the Nordic-Baltic region. In his view, in order for the construction of a nuclear power plant to be economically justified, the price of energy needs to be sufficient in view of the cost borne by the investors. Currently the average global market price of 1 kWh is 8.5 eurocents. In the Lithuanian trading zone at the Nord Pool Spot exchange the price is lower, at around 3.5–4 eurocents per 1 kWh. The average price for the Nordic states at the Nord Pool Spot exchange in 2017 was around 3.2 eurocents per 1 kWh. The price of electricity generated in Belarus from gas is currently 4-5 eurocents per 1 kWh. According to the Belarusian energy minister Uladzimir Patupchyk, the launch of the Astravyets plant will enable Belarus to reduce that price by 15%. The installed capacity of Astravyets can produce 16.4 TWh a year. Even if all of that power was sold at current prices in Belarus, the annual revenues of the plant would reach around EUR 660 million, which means that the Russian loan would not be repaid within 15 years from the plant's revenues alone. Optimistic and pessimistic simulations were conducted by Galinis while taking into account various parameters; they show that the cost of producing electricity ranges between 3.8 eurocents per 1 kWh (in the optimist variant) to 9.3 eurocents per 1 kWh (in the pessimistic model).<sup>62</sup>

<sup>61</sup> Потребление электроэнергии в ЭЭС России в 2017 году увеличилось на 1,3%, 10.01.2018, <https://www.eprussia.ru/news/base/2018/5600395.htm>

<sup>62</sup> E. Naprys, *Viskas, ką žinome apie Astravę kylantį monstrą: ekonominio pagrįstumo nėra – tik politinė ambicija*, 21.10.2017, <https://www.15min.lt/verslas/naujiena/energetika/viskas-ka-zinome-apie-astrave-kylanti-monstra-ekonominio-pagrįstumo-nera-tik-politine-ambicija-664-868428?all#print>

## VI. CONCLUSION

There has been a lot of controversy and a lack of clarity around the construction of the nuclear power plant in Astravyets in recent years, triggering tensions in Belarus's international environment. Since the start of the project, the lack of transparency and clarity about the intentions of the actors involved has been complicating the situation. The crucial question that remains concerns the economic viability of the project, especially in the context of the Russian loan and the absence of realistic opportunities to export electricity from the Astravyets plant to the markets of EU member states neighbouring Belarus, i.e. to achieve one of the project's original key, albeit undeclared objectives.

The current efforts by the Belarusian government to integrate the power plant with the internal energy market can hardly guarantee a successful completion of the investment, especially since there seems to be insufficient money to finance them. Statements by Belarusian officials, including Alyaksandr Lukashenka himself, indirectly suggest that many important issues (such as reserve capacity or ways to utilise the energy during the night-time decline in consumption) are still to be resolved and are being brushed over with general declarations. In this situation, the assumption made by Minsk that the construction of the power plant would be repaid within 15 years seems unrealistic and intended mainly for propaganda purposes. It may also turn out that, because of the capacity surplus, the power plant will not operate at its full capacity, e.g. it will use only one of the two planned units. In an extreme scenario it may even never be activated, despite the fact that construction works are already very advanced.

Because of the lack of transparency, it is not possible to fully assess the environmental safety of the plant during construction and subsequent operation. However, it should be noted that the only aspects about which there is full clarity are evidently unfavourable for Minsk. The launch of the Belarusian Nuclear Power Plant will entrench Belarus's energy dependence on Russia and the loan agreed to finance the project will be a major burden on the Belarusian public finances for many years and will provide the Kremlin with yet another instrument of pressure.

Another important aspect of the Astravyets plant concerns its implications for Belarus's political relations with Lithuania. If the project continues, and especially when the plant starts operations, the investment will continue to generate tensions between Minsk and Vilnius. As a result, the Belarusian side will not

be able to count on Lithuania's support in international forums, including the EU where Lithuania was until recently one of the main advocates for Belarus. Lithuania has been making efforts to keep its position as a leader of the Eastern Partnership to be able to influence the division of funding under the EU's financial instruments for Belarus in the years 2018–2020. It is also possible that other countries may start to actively oppose the plant, especially if sudden incidents occur that may undermine the safety of the people in the region. Because of all those factors it is already safe to say that the nuclear power plant in Astravyets will create more trouble than added value for Belarus and its neighbours.

**JOANNA HYNDLE-HUSSEIN, SZYMON KARDAŚ, KAMIL KŁYSIŃSKI,  
WOJCIECH KONOŃCZUK (EDITOR)**

Mapa. Electric grids in the region



Source: EESTI ENERGIA <https://www.energia.ee>, ENTSOE <https://www.entsoe.eu>, PSE <https://www.pse.pl>

