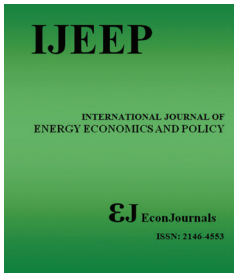

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Behavioral Determinants of Russian Nuclear State-Owned Enterprises in Central and Eastern European Region

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ABSTRACT

Rosatom State Nuclear Corporation play a substantial role in the energy sector of the Central and Eastern European (CEE) region and the behavioral characteristics of the company forms the basis of this article. Rosatom is positioned as the dominant provider of nuclear technology and fuel supplies to the region, in large part stemming from the Soviet legacy in CEE countries. Compounding this challenge, nuclear energy is one of the major sources of power generation in CEE. Given the long-time, near monopoly of Russian nuclear technology/design in the region and plans to expand further the nuclear capacity of select CEE countries, the sector requires careful monitoring from both a technical and security-minded perspective.

Keywords: Power Generation, Nuclear Energy, Central and Eastern Europe, Russian Federation, Rosatom State Nuclear Corporation
JEL Classifications: H760, Q310, Q380, Q400, Q410, Q480, Q490

1. RESEARCH AIM AND METHODOLOGY

The goal of the research was to identify the behavioral determinants of these Russian nuclear state-owned enterprises (SOEs), how they differ according to various environments in the Central and Eastern European (CEE) region and most importantly whether there are common features in Russian nuclear SOEs operation in the mentioned environment. The CEE countries examined were as follows: The Czech Republic, Slovakia, Poland, Hungary, Bulgaria, Romania, Latvia, Lithuania, Estonia, Ukraine, Belarus and Moldova. These countries offer an extensive, heterogeneous population of countries bound by a common history under the yoke of the Soviet Union and in a geographical area that Russia stubbornly, and sometimes maliciously, perceives as its sphere of influence. These countries have different characteristics in terms of the internal structure of their economies, energy mixes, foreign policy priorities, import dependence and membership in international organizations. This rather wide spectrum of characteristics enabled the research team to gather enough evidence to describe Rosatom's behavior in various energy and political environments.

The nuclear energy sector has a number of structural differences when compared to crude oil, natural gas or coal; most typically it is not dependent on certain infrastructure and the uninterrupted flow of energy supplies. There is thus no logic for any efforts to control transit routes as there are no transit routes. Other structural differences are also predominantly the strong regulation, highly advanced technology and consequent existence of only a few contractors, high up-front costs and also non-technical hurdles like public resistance, dependence on public policy discourse, etc. There are many other more immediate issues that need to be addressed. The capital cost of a nuclear reactor is high and must be financed; the operation of a plant is a complex affair and must be managed with regard to output efficiency, cost effectiveness and safety; fuel must be manufactured and security of supply needs to be assured; waste needs to be disposed of carefully. Furthermore all this needs to be controlled by an experienced management team, which may not be available in a country new to nuclear sector.

These wide differences, including safety and other technical concerns, alter the behavior of commercial actors in this space and make it somewhat more difficult to detect strategically motivated

behavior. The nuclear energy sector issues are usually and ideally divided into the so called nuclear fuel cycle. Within the cycle they can be divided into three parts, the front end, the service period and the back end. These three parts cover the entire uranium cycle from exploration and mining to the final disposition of used nuclear fuel. The front end of the cycle consists of exploration, mining, milling, processing, enrichment, fuel fabrication and fuel assembly. The service period is basically the use of the fuel in the nuclear reactor, and the back end consists of storing, reprocessing and final disposition of the used fuel. Besides these parts one has to consider also two more stages, namely the initial stage when the plant is being planned and financing is being secured, and the decommissioning phase.

The research team thus developed a specific approach to assess the potential risks associated with three different stages of the nuclear plant life-cycle: (1) The initial stage when the plant is being planned and financing is being secured; (2) the three sub-stages of the nuclear fuel cycle; and (3) the final stage which is the decommissioning of the facility. In the case of nuclear fuel, its origin, supply sources, usage and waste management were taken into account. Table 1 summarizes the key points within each examined stage.

Data used in this study were gathered from open sources and information provided within in-depth interviews conducted with consultants and insiders from examined countries.

Although the research was aimed at the operations of Rosatom State Atomic Energy Corporation (Федеральное агентство по атомной энергии России, РосАтом), the evidence shows Rosatom operating directly in only three countries (Bulgaria, Hungary and Slovakia). Rosatom is the contractor of a new nuclear power plant (NPP) only in Hungary. However, Rosatom's network of subsidiaries is extensive and the bulk of the Russian Federation's nuclear portfolio is executed through these subsidiaries which include, ZAO AtomStroyExport, OAO OKB Gidropress, OAO TVEL and others. Table 2 illuminates the network of companies that ultimately reports to Rosatom.

All the companies JSC NIAEP, JSC Atomenergoprom, OAO TVEL, OJSC Atomenergomash are fully controlled by Rosatom and therefore we can use the expression "Rosatom" even when speaking about these companies. In 1992-2008 Rosatom existed as the MinAtom - Ministry for Atomic Energy of the Russian Federation (МинАтом, Министерство по атомной энергии Российской Федерации). According to the law adopted by the Russian parliament and signed by Vladimir Putin in 2007 the MinAtom was transformed to one of six current Russian state corporations. The company was renamed to Rosatom State Atomic Energy Corporation and is subordinated only and directly to the Government of Russian Federation.

2. BEHAVIOURAL DETERMINANTS OF RUSSIAN NUCLEAR SOES IN CEE REGION

2.1. Path Dependency and Business Environment

Evidence of relatively strong path dependency was found in the nuclear sectors of the CEE countries. Of the 12 countries analyzed, six house a NPP on their soil and all plan to expand current capacity or construct new NPPs. The six countries referenced are Bulgaria, the Czech Republic, Hungary, Romania, Slovakia and Ukraine. Bulgaria proved to be an anomaly in that it has two water-water energetic reactor (VVER)-1000 units in operation and yet awarded Westinghouse Electric Company LLC the contract for the construction of Kozloduy 7, despite previous experience with only Russian technology. All of the other countries referenced have followed the path dependency related to previously implemented nuclear technology.

Table 1: Assessment criteria for the nuclear cycle

Questions	Stage of the nuclear cycle
Is there a nuclear production capacity present in the country?	Fuel cycle – service period
Is there a project to expand capacity? What is the status of the project?	Initial stage
How was the project procured?	Initial stage
Which contractor is in charge of the project?	Initial stage
How was the financing secured?	Initial stage
Who is the operator of the facility?	Fuel cycle – service period
Are there enough domestic experts to run the facility safely?	Fuel cycle – service period
Who will be in charge of decommissioning the facility?	Decommissioning stage
Who provides nuclear fuel and under what conditions?	Fuel cycle – front end
What is the experience with the fuel being currently used?	Fuel cycle – service period
Is there any rationale or path-dependency behind the current contract?	
Is there any part of the nuclear fuel industry present in the country? If so, how does it contribute to the country's nuclear fuel cycle?	Fuel cycle – front end
How is used fuel treated and disposed of and by who?	Fuel cycle – back end

Source and compilation: Authors

Even though Czech Republic cancelled its tender in 2014, the consortium of the companies SKODA JS, a. s. (Czech company), Atomstrojexport, a. s., and OKB Gidropress, a. s. (Czech daughters of Russian mother companies) made it to the narrower selection and competed only against Westinghouse Electric Company LLC (Vlcek and Cernoch, 2013, p. 146-147). Czech Republic has a portfolio of 6 units of Russian VVER design. Hungary with its fleet of four VVER-440 units has chosen the Rosatom State Nuclear Energy Corporation to be the contractor of Paks II units 5 and 6 without any procurement process. Slovakia with four operating units of Russian VVER-440 design has chosen ZAO AtomStroyExport to be one of the companies finishing Mochovce NPP and direct negotiations with strategic investor for the new Jaslovske Bohunice NPP project involve Rosatom State Nuclear Energy Corporation. Ukraine with large fleet of 15 VVER units of different type has chosen OAO OKB Gidropress in the public

Table 2: The ownership structure of Russian nuclear energy companies

Company	Shareholders	Share (%)
Rosatom State Atomic Energy Corporation	Government of Russian Federation	100
ZAO AtomStroyExport	Rosatom State Atomic Energy Corporation	78.5362
	AO VPO Zarubezhatomenergostroy	9.4346
	OAO TVEL	1.3303
	OAO Gazprombank	10.6989
OAO OKB Gidropress Experimental Design Bureau	OJSC Atomenergomash	100
OAO TVEL	OJSC Atomic Energy Power Corporation Atomenergoprom	100
JSC NIAEP	OJSC Atomic Energy Power Corporation Atomenergoprom	100
JSC Atomic Energy Power Corporation Atomenergoprom	Rosatom State Atomic Energy Corporation	100
JSC Inter RAO UES	Rosneftegaz Group	27.63
	FGC UES Group	18.57
	Minorities*	16.65*
	INTER RAO Capital	13.93
	Norilsk Nickel Group	13.21
	VEB	5.11
	RusHydro Group	4.92
OJSC Atomenergomash	OJSC Atomic Energy Power Corporation Atomenergoprom	80.6296
	CJSC AEM Leasing	2.3673
	INTERNEXCO GMBH	9.0896
	OFEJSC Techsnabexport	2.8481
	LLC Energomashkompleks	0.0453

*Minority shareholdings include ZAO AtomStroyExport, OJSC Rosenergoatom Concern, Rosatom Securities Limited. All these companies are part of the Rosatom which owns a 13.42% stake in JSC Inter RAO UES through these minorities. Source: Compiled from open sources by authors

procurement procedure for Khmelnitsky 3 and 4 units. Even though the project was cancelled due to the Crimea crisis and other Western options are investigated, especially with Westinghouse Electric Company LLC, the argument is not lost. At the moment however, according to the words of the president of Ukrainian DP NNEGC Energoatom, a "completely new attitude" towards nuclear power is adopted in Ukraine and he supports the idea of building new reactors using technology of Western design ("Украина решила," 2014; "Ukraine to sign," 2014). Last but not least, Romania has two Canadian CANDU six type reactors at Cernavoda and plans the construction of two more of this kind. Russian technology was not considered as the project is actually completion of Cernavoda CANDU 6 units 3 and 4 with building foundations from 1980s.

Historical experience in the construction, commissioning and operation of reactors as well as downstream industries, education and training systems factor heavily in tender decisions. These past experiences are all tied to specific technologies and infrastructure, a powerful lever for Moscow. The predominance of a specific (Russian) technology, designs and fuel formed a strong path-dependence that is extremely hard and costly to change. While it is generally the case that Rosatom is strongly advantaged in these tender scenarios, historical experience can also have the opposite effect as stated below.

The contracts in nuclear energy sectors are long-term by their very nature. In general the construction of a NPP is a complex project that typically takes 5-7 years, not counting the procurement and permitting procedures. The project itself is constructed with the life-cycle of 30-60 years (Vlcek et al., 2015. p. 482-483). In nuclear sector, the choice of a particular design/contractor usually lays a foundation for bilateral relation with particular contractor for many years to come since the NPP typically requires service infrastructure, training and educational centers and other related facilities to be built so that the country would be able to secure the service period of the plant. Nevertheless the limitations of multilateral regimes must be taken into account as they may affect operation and behavior of contractors.

The operating phase is also dependent on a sufficient number of well-trained staff able to operate the facility. The uninterrupted development of a country's nuclear sector can greatly assist in maintaining this vital know-how. From this perspective, securing operation of nuclear units within a country is often key to Rosatom's future business development for the contractor as well as the customer country's preferences.

Historical ties and traditional policies play an important role in the operational framework of Russian state-controlled companies. The research indicates three categories of "nuclear energy" states in the region. First is the Western-leaning countries of Bulgaria, the Czech Republic, Romania and Slovakia. These countries are enmeshed in European Union (EU) structures, policies and procedures, making it more difficult for Russia to cut "sweetheart" deals of the type on display in Hungary. The interconnection with EU legislation also reduces the space for shadowy undertakings. EU procurement procedures and related documentation is formulated quite precisely, according to respective regulations and laws, especially those related to promoting fair competition. These positive features of EU integration and involvement in other western political structures however, is accompanied by a tedious and complicated bureaucracy.

The second category is non-nuclear states that seek to enter the nuclear club, but have more negative relationships with the Russian Federation. These countries include Poland and the Baltic states. For example, the Lithuanian government explicitly excluded a Russian design in its tender for the Visaginas NPP. Rosatom, through its subsidiary JSC Inter RAO UES, sought to oppose the project by offering its own alternative in Kaliningrad's Neman

NPP announced in 2008. This effort however, was unsuccessful. The actual tender in Poland has not yet been opened, but it is also likely that there will be no Russian contractor or subcontractor allowed to bid on the project.

The third category consists of CEE nuclear countries that are still close to the Russian Federation from political, historical or economical reasons. These are Belarus, Hungary and Ukraine even though since the Crimea crisis and its effect on Russian-Ukrainian nuclear business it is doubtful to categorize Ukraine exactly here. Anyway, countries in this category are willing to favor Russian companies and offers due to their specific relations. The business environment here is more favorable for Russian Federation. Speaking about Belarus, four proposals have been received in 2008 by the Republic of Belarus from AtomStroyExport, Westinghouse-Toshiba, Areva and China Guangdong Nuclear Power Corporation. For different reasons the letter three were scrapped; e.g., Areva's EPR was noted too big for the first power plant and US offer would have been too complicated and slow as intergovernmental agreement was needed (World Nuclear Association, 2014a). Russia's AtomStroyExport therefore emerged as the most likely supplier with the offer of two VVER-1200/V-491 units of combined capacity 2400 MWe. On October 11, 2011, the ZAO AtomStroyExport affiliated with Rosatom, and the Belarusian Directorate for NPP construction signed the contractual agreement for the construction of power units 1 and 2 of the NPP in Belarus ("Belarusian Nuclear," 2014). The JSC AtomStroyExport is the general contractor, with Russian and Belarus subcontractors and the state enterprise "Directorate for NPP Construction" is the customer of preparatory, design and survey works on the construction of the NPP.

One also has to mention the specific case of Hungary. Hungary is an EU member state, but we have to categorize it in this category for being a sort of rogue state in the EU. Hungary may be accused of breaching EU rules by omitting to carry out a proper procurement process ("Russia, Hungary sign," 2014), and the EU could also object to the state subsidies being granted to MVM Group, both of which could obviously lead to a long-term political and legal dispute. Indeed unofficial sources suggest that European Commission already started an initial investigation against the Paks NPP. The decision to grant the project to the Russians was made by the Prime Minister and his closest collaborators without any official procurement procedure or even consultations with other interested parties, industry experts or the public at large (Field, 2014). The deal was negotiated by the Hungarian prime minister and was granted to Rosatom State Nuclear Energy Corporation without any official procurement procedure caused great outrage among the opposition parties in the parliament (Nolan, 2014).

Given the information, Hungary now fits in this third category, despite its EU membership, for ignoring proper procurement procedures and including state subsidies being granted to MVM Group. The EU has so far not sought to unwind the Rosatom contract for the Paks NPP, despite every necessary justification to do so, and instead concentrated on reducing Rosatom's monopoly on nuclear fuel supplies from 20 to 10 years.

In sum, Rosatom is most often forced to operate within specific local, political, economic and regulatory frameworks, which means the business and political environment has a great deal to do with determining tender winners and losers and the operations of these facilities. In this regard, the importance of multilateral regimes, especially the EU, is as clear as it is necessary to discipline's Rosatom's behavior, which is often more strategic, under Kremlin oversight, than it is commercial.

2.2. Adaptation to Specific Needs and Conditions of the Operating Country

The enormous cost of every NPP construction project makes such business extremely attractive for contractors given the limited number of such projects worldwide. The financial burden of such projects, however, often requires contractors to offer large-scale, low-cost financing packages in order to win tenders or be selected on a sole-source basis (i.e., with no tender process – A standard Russian sales goal). Smaller countries such as Slovakia, the Czech Republic and Hungary (not to mention the Baltic States) cannot hope to shoulder these multi-billion-dollar price-tags on their own. Quite understandably, in such situations contractors try to decrease the risk of financial loss or at least to secure their position in terms of future revenues by employing various financing schemes. In certain cases, they are also obliged to secure financing of the project appropriate to their share in the joint-venture as, for instance, in the case of Bulgaria.

Rosatom State Nuclear Energy Corporation is a very flexible and adaptive entity when it comes to addressing the exact needs and conditions of the prospective sovereign client. Sales techniques and options that are widely accepted – and are also used by Russia – include: Vendor investments (favored in the Czech Republic); strategic investment in the project itself (e.g., sharing the financial burden in exchange for a stake in the project and future (as took place for the Czech Temelin NPP and Romanian Cernavoda NPP); providing financial loans through national and/or private banks (as in the cases of the Bulgarian Kozloduy NPP, Ukrainian Khmelnitsky NPP and Hungarian Paks NPP); and the turnkey option (exercised for the Belarusian Ostrovets NPP and the Slovakian Jaslovské Bohunice NPP). Indeed, Rosatom was the first contractor to arrange payment for the entire construction phase of an NPP project.

Quite recently a new type of contract has been introduced to the nuclear industry, namely the "Build-Own-Operate" (BOO) model or "BOO-Transfer." Rosatom presents this type of contract as an "approach to support newcomers" that are not experienced in the field to enter the nuclear industry (Sokolov, 2013). This sales model was applied in the case of Turkey's Akkuyu NPP, which will be that country´s first nuclear power generating facility (World Nuclear News, 2010). In the BOO model, the contractor builds the plant and also operates it, while serving as the principal owner. Although it defies logic at some level, in effect, to turn over a strategically-sensitive national asset like a nuclear power complex to another country – particularly one like Russia – some states are content, via the BOO model, to exchange favorable financing for merely hosting the facility on its soil[1].

1 Under the "BOOT" variant the facility is transferred to the state after certain, previously agreed, period of time.

Among the several potential dangers of this scheme include the sovereign client becoming a "hostage" of the contractor who will be operating the facility. The popular view, however, is that the contractor would never abuse its position, as it could estrange potential future clients. This is especially true given the fact that Russians claim the BOO scheme is the best way to attract newcomers to the nuclear club (Sokolov, 2013).

The problem here is that the prospect of future business does not always deter Moscow from taking geopolitical action in the nuclear sector. For example, on March 5, 2014, both Russian Deputy Prime Minister Rogozin and President Putin publicly threatened Ukraine with a cut-off of Russian nuclear fuel if it continued down the path toward an EU Association Agreement. Even though the President of Rosatom, Sergei Kiriyenko, later refuted this possibility, it proved that such nuclear disruption was on the Kremlin's mind as a way to bludgeon Kiev into capitulation (Digges, 2014).

As mentioned above, Rosatom operates through many different subsidiaries, in part to blur its identity. Although some of these subsidiaries were, no doubt, formed as a consequence of commercial circumstances, others were established to assist with Rosatom's reputational challenges.

Generally speaking however, the nuclear sector offers limited opportunities to exert influence because of the specific nature of the sector itself which shapes the behavior of respective actors and provides a framework for operational interaction. In fact, it is primarily the economics of a nuclear power project, driven by extraordinarily high costs of construction and the longevity of the projects (e.g., as many as 30 years or more), that provides Russia, in particular, with substantial advantage in the bidding process. Few, if any, countries and/or companies are able to build and finance an entire NPP. This makes the initial stage, where financing and identifying a strategic partner takes place, crucial and simultaneously the most sensitive in terms of the potential influence that can be exerted by an external actor.

Given the limited amount of contracts in the nuclear sector and the revenue implications of each one, any attempt to use a nuclear contract as leverage on a particular country would cause substantial damage to any contractor's reputation. This fact diminishes the possibility of a nuclear contractor exerting political pressure over a sovereign client, as contractors with damaged reputations would find themselves in a difficult situation regarding future business prospects worldwide. Rosatom probably calculates that it cannot afford to be found guilty of abusing a particular project to advance its political/strategic goals.

The scale of NPPs often requires head of state attention and bargaining for some of the reasons mentioned above. Financing is the key issue of every project to ensure that initial costs are repaid during a reasonable period of time (i.e., before the life-cycle of the plant comes to an end). This very much depends on the electricity price in the client country, which has been an issue for some time in Europe due to relatively low and unpredictable prices that have undermined the commercial viability of certain nuclear projects. Obviously, this is an overarching concern, not exclusively related to the operations of Russian SOEs. On the other hand, Russian SOEs operating in the sector often come with a model that gives them a sizeable advantage over Western competitors in the sector as described in the following section.

2.3. Attractive Offers in Investment Environment

There are five countries in which public procurements have taken place or are underway where Rosatom is a player. These are Belarus, Bulgaria, the Czech Republic, Slovakia and Ukraine. Russia has selected financing as its "tip of the spear" in these competitive circumstances, some of which are referenced below.

In the case of Belarus, Russia's Vnesheconombank, provided the Belarusian commercial bank Belvnesheconombank a subsidized USD 6 billion loan for the construction of the Ostrovets NPP site in a remote area in the north of the country. This loan was renegotiated in 2009 and 2011 to end up at USD 10 billion, including investment in new infrastructure to accommodate the remoteness of Ostrovets in northern Belarus (Scheinder and Froggat, 2014, p. 26). The loan has a term of 25 years and will finance 90% of the total contract cost between AtomStroyExport and the Belarus Directorate for NPP construction.

The Bulgarian Belene project, which was originally set to utilize the Russian VVER-1000 design, has been offered a large-scale Russian loan several times to support the AtomStroyExport-led consortium. These offers have, thus far, been rejected for primarily political and security-related reasons. The project was eventually scrapped and attention shifted to a new unit at the Kozloduy site where Westinghouse Electric Company LLC was selected to be the contractor.

In the Czech Republic, two vendor financial offers were made towards the end of the public procurement process for Temelin's 3 and 4 units. Rosatom offered 100% coverage of project costs (through its JSC Rusatom Overseas subsidiary). Westinghouse, in turn, arranged a U.S. Exim Bank credit covering 50% of project costs. This one example speaks volumes about the respective levels of financial competitiveness of the two sides. In the end, no agreements were concluded and CEZ, a.s. cancelled the whole procurement procedure in April 2014 stating "while originally the project was fully economically feasible given the market price of electricity and other factors, today all investments into power plants, which revenues depend on sales of electricity in the free market, are threatened." ("CEZ zrusil tendr," 2014) A major reason for the cancellation was the Czech government's announcement that it will not provide any electricity price guarantees for construction of the NPP. A less public reason could be that Rosatom was set to win the tender, but it was judged too controversial for the Czech government to award Moscow the tender in the midst of the Ukraine crisis.

In the case of Slovakia's Jaslovske Bohunice project, Rosatom expressed the willingness to purchase a 51% stake in the project company Jadrova energeticka spolocnost Slovenska, a. s., thus making it both the technology provider and strategic investor. Rosatom sought a guaranteed long-term electricity price of EUR 60-70/MWh and possibly a BOO arrangement. As the Slovak

Minister of Economy, Tomas Malatinsky, was unwilling to meet these conditions, the offer was rejected (Mitev, 2013). The Slovaks eventually ended negotiations with the Russians at the end of 2013, as Rosatom continued to insist on guaranteed electricity prices. Shortly thereafter, at the beginning of 2014, Rosatom changed course abruptly and stopped insisting on a price guarantee. Indeed, it is now prepared to consider any form of support from the Slovak side, which will ensure that the project is economically viable for investors as well as for creditors (Holes, 2014a). Moreover, the new Minister of Economy of Slovakia, Pavol Pavlis, who entered office in July 2014, is inclined to offer such electricity price guarantees.

Concerning Ukraine, in February 2011 Russia's ZAO AtomStroyExport and Ukrainian SE AtomProektInzhiniring (a subdivision of DP NNEGC Energoatom) signed an agreement to complete reactor units 3 and 4 at the Khmelnitsky site. The following year, the Ukrainian Parliament adopted legislation to create a framework to finance the project, which included a plan to attract 80% of the necessary funds from Russia (Scheinder and Froggat, 2014. p. 138; "Contract agreement," 2011). The terms of the agreement were that Russia would provide a loan for 80-85% of total project cost (estimated at EUR 3.7 billion) and the remainder would be financed by Ukraine. To date, Ukraine and Russia have not agreed on a government guarantee for this loan or on the interest rate. One of the principal conditions for the loan was a Ukrainian government guarantee that has not been granted to the necessary extent. As a result, Sberbank offered Energoatom a credit to implement the project on commercial terms, to which the Ukrainian side has not agreed ("Russia to credit," 2012; "Further construction," 2011). There has been generally no progress in the case since 2012, and current Russia-Ukraine relations do not bode well for the deal being concluded.

Hungary is a rather special case. Rosatom was victorious in providing an expansion of the Paks NPP complex with no public tender whatsoever. It was rather a classic "backroom" deal concluded by the two heads of state in a highly secret framework. In fact, the Hungarian Parliament was pressured by the Hungarian Prime Minister to pass legislation making it a crime to reveal the terms and conditions for a 30-year period. A EUR 10 billion loan was offered by the Russian Federation to co-finance the project[2] and the deal was eventually cemented in January 2014 when Hungary entered into an international agreement with the government of the Russian Federation on the cooperation in peaceful use of nuclear energy (Balogh, 2014). The deal will reportedly involve the Russian Federation granting Hungary an interest-only loan at an annual rate of 3.9%, starting in 2014. Once construction is completed in 2026 (the expected operational date), the principal balance will be amortized over 21 years, with an interest rate of 4.5% for the first 7 years, 4.8% for the next 7 years, and 4.95% for the final 7 years ("A Brief Summary," 2014; "Kiderultek a reszletek," 2014).

Romania stands aside as they plan to construct new units and the public procurement process took place in Romania. However, the process was without Russian bid due to the nature of the project. The project is actually a completion of Cernavoda units 3 and 4 on building foundations from 1980s. Analogical is the situation in Lithuania and Poland where the public procurement process have been without Russian bid, too. Russian bids are not allowed in the public procurement process in these countries, which is related to the business environment.

In the end one has to say that whenever Rosatom or his subsidiary took part in a public procurement procedure, sooner or later Rosatom came with investment or loan offer. This feature is unique to other nuclear companies as Rosatom is usually the first to offer financial support and other companies are usually reacting to Rosatom´s offers during a public procurement procedure.

3. CONCLUSIONS

The goal of this research was to identify the behavioral determinants of the Russian Nuclear SOEs, how they differ according to various environments in the CEE region and most importantly whether there are common features in Russian Nuclear SOEs operation in the mentioned environment.

Given the information we can say that Russian nuclear SOEs do not behave differently than any other Western nuclear companies. This is because of the fact that projects in nuclear sector are treated as strategic by every government (and enterprise) in the world. Russian companies carefully analyze the environment they are operating in and adjust their behavior accordingly. In other words, Rosatom State Nuclear Corporation and other Russian nuclear SOEs does not really follow the same pattern or strategy in every single operating country, but rather follow specific features of individual environments that are always set by every country and by the inherent regulation of this rather specific sector. Russian nuclear SOEs do not really break rules or laws, but they employ every opportunity, they use every single door left open, to achieve their economical targets. Contrary to popular view, this is not a behavior that could be exclusively ascribed to Russian SOEs and western companies do behave similarly. As said before, it is primarily the economics of a nuclear power project, driven by extraordinarily high initial costs and the longevity of the projects (e.g., as many as 30 years or more in total including construction and actual operating time), that provides Russia, in particular, with substantial advantage in the bidding process due to path dependency patterns and Russian financial strategies in CEE region.

However, given the limited amount of contracts in the nuclear sector and the revenue implications of each one, no one could deny that no political pressure may take place during the bidding and procurement processes. The rather scarce contracts, especially in CEE, are usually worth several billions and it is thus natural that contractors give each potential contract high priority and are often supported by their home governments by various means (rhetorically, formally by officials during state visits, by case-specific foundations and partnership programs, state guarantees, offset projects, etc.). Given the aforementioned specific nature of the sector, contractors need to proceed very carefully in order to

2 The Russian side was reportedly the only party prepared to offer financing to support the project. The loan would equal 80% of the total costs of the project (see "A Brief Summary, n.d.").

protect their chances of winning future projects. In this sense, any attempt to use a nuclear contract as leverage on a particular country would cause substantial damage to any contractor's reputation, and would make it very unlikely that it would ever get any further contracts. Although there have been some rumors about unusual delays, in particular with reference to Russian projects, we believe that all of the examples offer clear alternative explanations for any problems that occurred[3]. Clearly, no contractor, including Rosatom, can afford to be to be found to be misusing a particular project to assist the political goals of its domestic government, as it would mean a substantial damage to its reputation and also its immediate market capitalization (Vlcek et al., 2015. p. 483-484).

To sum up, Rosatom State Nuclear Energy Corporation operates within a specific environment shaped by various political, economical and cultural factors setting the operational framework and Rosatom has no other choice than to adjust its behavior accordingly. Additionally, one can see the importance of multilateral regimes and regulations, especially the EU, which influence the operation and behavior of Rosatom by setting a certain framework for operation. Naturally, the sector itself is also specific for its strict rules and regulations (e.g., IAEA) related to the very nature of the nuclear technology that must be followed.

As an addition to this text, we may consider the way how a country could defend against potential political pressures from the bidder's side. A key tactic for any contracting party, as it naturally seeks to avoid unforeseen delays or hidden cost increases, is to ensure that the procurement procedure and its related documentation is formulated very precisely, leaving no room for further "behind-the-scenes" negotiations. The above-mentioned example of Hungary's Paks NPP can serve as a negative example as the state (i.e., the contracting party) left itself extremely vulnerable due to a lack of expert supervision in what is a very complex negotiation, with the lack of transparency only adding to the sense of an improper deal being concluded.

In the end, it is not a specific Russian SOEs' strategy, code of conduct or behavioral pattern that is risky and that any country should defend against. It is rather the business environment that an operating country should set as precisely as it could to avoid any misuse by (not only) Russian nuclear SOEs. Additionally, every country should always make sure that any deal will be conducted carefully and transparently. The greatest risks therefore do not lie abroad, but rather at home.

3 Examples of these alleged non-standard delays are for instance the construction of the Iranian Bushehr NPP and situation of the Czech Temelin NPP in early 1990s. The Iranian Bushehr NPP built by Russian companies was subject to major delays that prolonged the original construction time to more than three times its original length. It is rumoured that Russians used this opportunity for consolidation and capitalization of their nuclear industry after it was seriously harmed by the collapse of the Soviet Union. Although this may be partially true the major reason for those delays was the vast complexity of this project that was originally built by Germans, then abandoned and damaged during the war between Iran and Iraq (Khlopkov and Lutkova, 2010). The Czech example relates to the situation when Russian engineers were forced to leave the Temelin NPP project due to political changes following the fall of communist regimes in CEE countries. The hand-over of the project documentation was in this case slower than it should have been. But again, this was rather caused by the financial situation and the fact that Russian companies were losing their position in the FSU economies. Even if the delays were financially motivated it's not clear that politics was also involved, as this would have caused lasting damage to the contractor's reputation.

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