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Nuclear Energy in Bulgaria: Strategic Implications for the EU and Russia

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ABSTRACT

This paper aims at understanding the impact of Bulgarian politics and policy in energy relations between the EU and Russia. Chiefly, our case analysis focuses on the prospective construction of new nuclear facilities and its impact on the Black Sea region, within the European Union, and on the relations between Sofia, Brussels, and Moscow.

The first part of this work is dedicated to outlining the most significant direction of the research: nuclear energy in Bulgaria. In the second part, a brief historical context of the Bulgaria-EU negotiations precedes a section that analyses the current Sofia-Brussels energy dialogue, from accession (2007) onward. The last analytical part delineates Bulgaria as a vertex in the framework of Russia-EU relations. The Bulgarian energy complex is seen as a strategic hub for prospective pipelines, but also an important market that could be used to exert influence in the Black Sea region as well. Bulgaria might be considered a strategic centre for regional and international energy cooperation.

KEYWORDS

Bulgaria, Nuclear Energy, Russian Federation, European Union, Energy Security, Two-level game

Introduction

When dealing with energy issues, the degree of academic solidity in case analyses is at stake. Few catch-phrases would surely grant a high return on the circulation of Political Science and Economics papers, though undermining the overall scientific depth of the arguments. In this paper we chose

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to look at the hot topic of "energy security" with respect to the Bulgarian nuclear sector from an institutionalist point of view, with a strong emphasis on the historic relevance of technical and economic data. Through the years, the Bulgarian case has become a paragon for the analysis of EU-Russia energy relations and shows interesting aspects also in Sofia's interaction with Brussels and Moscow. For this reason, the present paper looks at Bulgaria from a detached point of view, trying to tie history, politics, and economics with technical, legal, and environmental concerns. In our opinion, all of these aspects, must be taken seriously to reach a deep understanding of the salience of today's Bulgarian nuclear sector. Nuclear energy in Bulgaria is not just a source of electricity for households in Sofia; it bundles together the European Union's membership (and energy policy) and Russian economic interests. These elements come together on the Bulgarian field to wage an important tug-of-war over energy and beyond.

The analysis is carried through the lens of Neo-Institutionalism. The chief assumption is that institutions matter and they are susceptible to analyze. Energy studies require a cross-sectorial analysis and Historical Instutionalism[2] is the most suitable approach (Pierson, 1993; Hall and Taylor, 1996; Campbell, 2004), especially when taking into consideration the Bulgarian political and economic history not only as a sequence of independent events, but as an explanatory variable. Throughout the paper, energy is considered as a puzzle, in accordance with the definition by Pierson:

> Historical institutionalists *address big, substantive questions that are inherently of interest to broad publics as well as to fellow scholars.* To develop explanatory arguments about important outcomes or puzzles, historical institutionalists *take time seriously,* specifying sequences and tracing transformations and processes of varying scale and temporality. Historical institutionalists likewise *analyze macro contexts and hypothesize about the combined effects of institutions and processes* rather than examining just one institution or process at a time. Taken together, these three features – substantive agendas; temporal arguments; and attention to contexts and configurations -- add up to a recognizable historical institutional approach that makes powerful contributions to our discipline's understandings of government, politics, and public policies.[3]

[2] See also: Immergut (1998); Hall and Taylor (1996); Katzenstein (1976); North (1990); Rothstein (1996); Thelen (1999);

[3] Pierson (1993).

After the introductory overview on the Bulgarian energy mix and the relevance of nuclear energy, which defines the subject of the research, the paper focuses on the historical role of the nuclear sector in Bulgarian energy policy and politics both during the Soviet era and after 1991. The elaboration of the concept of *path dependency* in its declination as *path dependency*[4] offers the theoretical explanation.

The second section is dedicated to the negotiations between Brussels and Sofia. Softening the Neorealist (Waltz, 1976) assumption of State as unitary actors (Keohane, 1986; Vasquez, 1998), the analytical focus shifts to national and international institutions. In this respect, *institutions* are defined as "the formal and informal procedures, routines, norms and conventions embedded in the organizational structure of the polity or political economy" (Hall, 1996)[5].

Taking into account this theoretical choice, the third part investigates the dynamics animating the triangle Moscow-Sofia-Brussels, drawing from the two-level game theory (Putnam, 1989), to study both the international-European pressure and domestic level, considering policy outcomes as the result of *"double edged diplomacy"* (Evans, Jacobson, Putnam 1993).

Bulgarian Energy Overview

The Bulgarian energy mix is based on two interrelated pillars: the scarcity of indigenous resources and the dominance of fossil fuels. Bulgaria imports almost all fossil fuels it consumes[6] and chooses to satisfy domestic energy demand with coal, oil and nuclear energy, using imported gas for exports. The relationship between economic growth and energy demand reveals a great inefficiency. In spite of a low GDP[7] and a decreasing population, energy consumption increases, contrasting with the general rule about the nexus between the two macro-economic indicators. The current economic crisis negatively affects this feature.

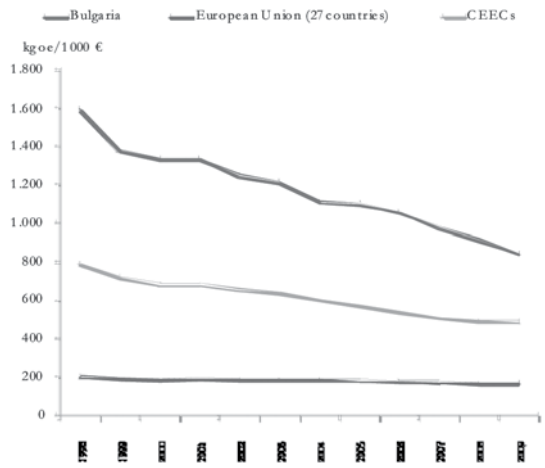
[4] "A process is phat-dependent if the outcome in any period depends on the set of outcomes and opportunities that arose in a history but not upon their order. A phat-dependent process can be written as follows: xt+1 =Gt({ht})" (Sage, 2006).

[5] See also: Ikenberry, 1988; Steinmo, 2008.

[6] Bulgaria imports almost 76,2% of fossil fuels used to satisfy its domestic consumption.(IEA, 2010).

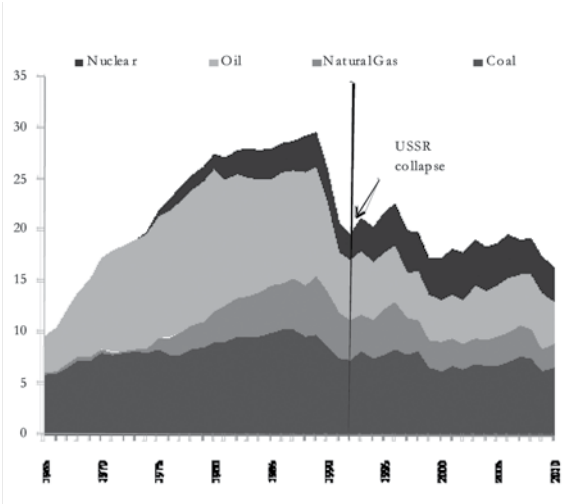
[7] In 2010, Bulgarians had the lowest GDP in the European Union, with 4,800 € per inhabitant against a EU average of 25,786 € per inhabitant (Eurostat, 2011)

Figure 1- Energy intensity, 2010[8]



Source: Elaboration on Eurostat data, 2011

Figure 2- Energy mix, 2010



Source: Elaboration on BP Statistical, 2011.

After the dissolution of the USSR, Bulgaria experienced relevant and cyclical economic crises. The worst one took place in 1996-1997 and it involved the banking sector and currency in particular. It represented a first minor

[8] Energy intensity measures the ratio of energy use to output. Bulgaria has the highest in EU, both compared with the EU average and other CEECs Member States with similar energy systems.

stage towards lowering the degree of energy intensity in the country, which remains higher than Central Eastern European Countries (CEECs) and EU-27 average (see Figure 1). In 2010, the primary energy consumption was satisfied mainly by fossil fuels: coal (36.1%) and oil (22.8%). Nuclear accounts for 19.2%, more than natural gas (12.5%), mainly used to export. The renewable energy sources covers only the 7.2% (see Figure 2).

With such scenario in mind, our next step is to describe in depth the history of the development of nuclear energy in Bulgaria, from its origins in the Thirties onwards. The subsequent paragraph takes on the issue of the two-level game played by Sofia with Brussels and the EU institutions. The last section analyses the policy triangle that connects the decision-making process in Sofia, Moscow, and Brussels whose actions are mutually influenced.

The Soviet and Russian Factor in Bulgaria

1. History and Development of Bulgarian Nuclear Industry

At the beginning of the Cold War, the Soviet Union began introducing economic development programs in the countries that were drawn under its control. In the period between Stalin's death and Khrushchev's speech at the XX Congress of the CPSU, Todor Zhivkov rose to power in Bulgaria[9]. The Soviet establishment would work with Zhivkov until the very last days of existence of the Eastern Bloc.

In this political environment, Bulgaria was eyed by Soviet leaders as a key country for the development of the nuclear energy industry. Planned in Bulgaria's official Energy Strategy documents since 1956, the first research reactors were started in 1961 in Kozloduy[10]. This site by the Danube river on the north-eastern border between Bulgaria and Romania. Based on the agreement between Sofia and Moscow signed in July 1966, the two governments put on the table a detailed development and investment plan for the nuclear industry in Bulgaria (Ginsburgs and Slusser, 1981). Once the feasibility study was completed by a joint team of engineers[11], the building of the plant's four main reactors started in 1969.

[9] In particular, Zhivkov sided with the anti-Stalinist factions and became the Secretary General of the BKP (Bulgarian Communist Party). It is worth noting that Bulgaria was part of the Warsaw Pact, signed in 1955 in response to the birth of NATO.

[10] A Soviet-built standard IRT-2000 reactor with a 2MW nameplate capacity.

[11] The team is jointly coordinated from the research institutes of Moscow, Toploproekt, and Sofia, Energoproekt http://www.aep.ru/en/activity/projects/abroad/kozloduy

The first two units of the Kozloduy NPP were quickly completed by 1974, running on VVER-440 reactors (their capacity was in fact 440 MW), and their commercial delivery began in July 1974 and November 1975 respectively. This was the first stage of the development of the Kozloduy site. It overlapped with the second stage, as the construction of Unit 3 and 4 started in 1973. These reactors were completed by 1980 and 1982 respectively, and had improved safety and efficiency technology by implementing the enhanced V-230 model.

For the third stage of development, two additional units were commissioned in addition to the existing four. The construction was completed in 1988 and 1993 respectively, employing advanced technology for concrete containing – not present in the V-230 model – and envisioning a waste storage facility, to be considered *ad interim,* before waste was shipped abroad. The newer reactors are VVER-1000[12], their model being the V-320[13]. All of the Kozloduy reactors can therefore be considered of second generation, taking into account the various steps that nuclear technology has undergone worldwide.

Uranium mining in Bulgaria has been carried out since the discovery of a few sites by German and Russian ventures in the late-Thirties and early-Forties. The mines were located along the Balkan Mountains (Eleshnitsa, Buhovo) and in Northern Thrace (Asenovgrad and Senokos, Smitli). However, a governmental decision made in 1992 halted all explorations and mining for uranium in Bulgaria. Following the obsolence of the Warsaw Pact, the Russian Federation lost interest in bartering Bulgarian *yellow cake* with enhanced fuel rods.

In the years, remodeling work has been applied to the older reactors at Kozloduy NPP. However, not complying with post-Chernobyl security standards, most of the Soviet-style reactors in Eastern Europe were strictly monitored by the European Union. This is particularly true for countries that submitted their application for becoming a member of the EU. Bulgaria was no exception, as it had to comply with dire requirements during the application process as shown below in chapter 3.

[12] With a capacity of 1,000 MW.

[13] The Vodo-Vodyanoi Energeticheskii Reaktor, VVER, is a type of reactor that represented the Soviet response to Western-designed Pressurized Water Reactors (PWR). VVERs use water for during fuel processing for both cooling and retrieving thermal energy. For this reason, reactors that use "light water" are built near a source of water, typically a river. In Bulgaria, the Danube has been chosen as the ideal stream for the exploitation of hydroresources, especially with regards to nuclear energy. These types of reactors also require the lowest level of uranium enrichment. Through Soviet technology, uranium was produced to yellow cake levels, which made the reactors sustainable in the long term.

2. The Second NPP

Studies for the construction of a second NPP were assigned to Energoproekt in the Seventies. Once these were completed, in 1981 the Bulgarian government headed by Zhivkov decided the construction of a NPP near the town of Belene, 200 km east of Kozloduy, by the Danube banks like the previous one. Construction of the basic features of a nuclear facility were started the same year following the project by Energoproekt. For the construction of the power plant, a joint design by Atomenergoproekt (Ukraine SSR) and its Bulgarian counterpart was laid out. It envisioned the building of a VVER-1000 V-320 reactor, the very same that were being assembled in Kozloduy's fifth and sixth module.

Politics and science wrote together the ill-fated turning point for the completion of Belene NPP. On the one hand, the Communist Party was removed from power in November 1990 and Bulgaria faced the new challenge of transitioning to a more open, transparent, and democratic state. On the other hand, the Bulgarian Academy of Sciences warned the new government on the safety of Belene NPP from all perspectives. Environmental as well as social, as well as economic concerns were raised in the "white book" published by Bulgarian scientists in 1990. The last concern, the economic one, was shared by the Bulgarian government which, facing a hard financial situation and having to deal with a changing world, decided to put the project on hold. Furthermore, the extended six-module project was downsized to a two-module one. The environmentally-concerned groups that were most active, like Ekoglasnost, regarded this as a victory for the new democratic course.

The Nineties were a decade of adjustment for Bulgarian politics and economics, in light of the prospective accession to the European Union. In order to meet EU security standards, Sofia was forced to dismantle older reactors at Kozloduy before membership could be granted. By doing so, Bulgaria's primary energy supply dropped, increasing the country's dependence on foreign resources. This condition prompted the *National Movement Simeon II,* the governing party led by the monarchic figure of Simeon Borisov Sakskoburggotski, to resume the nuclear plan in Belene. Prime Minister Sakskoburggotski and Energy Minister Milko Kovachev announced in 2003 that the project was to be restarted.

The governmental announcement was followed by numerous audits by the EU and some supranational nuclear energy institutions (IEA, IAEA). This,

in turn, prompted new legislation and research on the environmental and economic impact of the construction of the NPP. Among other events, the establishment of the Nuclear Regulatory Agency (NRA) and the implementation of the Act for the Safe Use of Nuclear Energy in 2003-04 were the most significant political provisions.

In 2005, just before parliamentary elections, the National Electric Company (NEK) issued a tender to assign the design and the building tasks to the best bidder. As an indication of the direction taken by the new socialist government, the newly nominated Economy and Energy minister was a character closely connected with the Bulgarian nuclear industry, Ruman Ovcharov. Almost one year and a half after the announcement of the tender, at the end of October 2006, the Russian consortium Atomstroyeksport-Areva NP was assigned the job. At the end of the year, the mandatory deadline for shutting down the third and fourth reactor in Kozloduy was met by Bulgaria, complying with European demands before being admitted to the EU in 2007.

The result of these rounds of political and diplomatic negotiations over the feasibility of the NPP in Belene was an intricate web of financial transactions and declarations that harmed the overall international performance of Bulgarian markets. Russian banks involved in the investment were known for their ties with Gazprom (Gazprombank) and the Kremlin (Sberbank, Vneshekonombank, and VTB); international rating companies were unhappy with the concentration of assets in the hands of the state-owned consortium headed by NEK and downgraded the rank of Bulgarian financial performance and outlook.

In this respect, it is interesting to note that Bulgaria's main partner has been and continues to be Russia. The path to diversification and emancipation from Russian hydrocarbons and nuclear fuel seems long and tortuous, as shown in the next paragraph. To date, the Belene project has been halted and the puzzle is far from being solved14.

3. Bulgaria's Atomic Dependence on Russia

The Russian Federation has had a political and commercial influence in Bulgaria's atomic energy since the collapse of the Soviet Union. By taking on its shoulders advantages and responsibilities as the 'successor state', Russia enjoyed a special relation with the former members of the Warsaw Pact

[14] The first draft of this paper considered updates until the first week of January 2012.

through the supply of primary energy resources. Be it oil, natural gas or nuclear fuel, flows of energy commodities have been shipped to Eastern European countries, which have never been self-sufficient in terms of their energy endowment. Bulgaria is no exception to this trend, which has been enhanced after the turn of the century, with the creation of Russian energy conglomerates directly linked with the Kremlin.

In the nuclear industry, Rosatom is the national company that inherited the role of the Ministry for Atomic Energy (MinAtom), established in 1992 and reorganized in 2004. The then-president Vladimir Putin pushed for the 'state corporation' in late 2007. Since then, Rosatom has been chaired by Abkhazian-born Sergei Kiriyenko[15]. Rosatom controls the stakes of Atomenergoprom, a nuclear power holding that encompasses the whole Russian energy industry, as far as its civilian use is concerned. In the case of Bulgaria, it seems important to take into account the role of two branches of the holding: the subsidiary OKB Gidropress and the partner company TVEL.

Gidropress is a subsidiary of Rosatom providing infrastructural products for the construction of NPPs. Although its historic foundation goes back to 1946[16], it has recently been given the role of subsidiary of Rosatom's activities in the construction and maintenance of several NPPs both in Russia and abroad[17]. The 2006 Russo-Bulgarian deal on the prospective construction of the NPP in Belene envisioned Gidropress as the main contractor for the design, development, and maintenance of the plant. Since then, the Russian company has completed feasibility studies, the investment plan, and the safety provisions for the two VVER-1000 reactors. The project is laid out without a back-up plan in case the plant goes offline. Doubling Kozloduy's 5.5 GW capacity and adding 1 GW from Varna coal and gas plant would put the whole system under stress, as it would be impossible to match any emergency shut down.

In 2002, TVEL won the bid to supply nuclear fuel to Bulgaria (OECD, 2010:151). The tender assigned TVEL with the task of taking care of the entire life-cycle, from purchase to disposal, of the fuel used in Kozloduy power plant. Each year, the quantities and prices are re-negotiated. How-

[15] Kirienko had briefly served as acting Prime Minister, during the economic crisis that prompted Yeltsin's decision to substitute Yevgeni Primakov for Viktor Chernomyrdin. Kiriyenko worked closely with Putin since 2000 and entered the board of the Federal Atomic Energy Agency in 2005

[16] The enterprise implements a complex of design, theoretical, analytical, R&D and production activities in reactor development for nuclear power plants of various purpose with increased safety, reliability and efficiency, competitive both in Russia and abroad.

[17] Notably, the Iranian NPP at Bushehr os among Gidropress' overseas projects.

ever, in order to avoid risk of supply, the Bulgarian government signed an 'insurance' with TVEL, which would avoid interruptions of supply until the expiration of the contract in 2020.

The demand for enriched uranium was substantial, provided that the plant in Kozloduy was still two-thirds operational and that the NPP in Belene was under construction. Bulgaria had an important history in uranium mining since the late Fifties. Mines were found in the Thirties and produced a significant amount of average-quality uranium that was purified in the 'Zvezda' plant and shipped to other Eastern Bloc countries to be processed before entering the industrial production. With the governmental decree Nr. 163 (August 20, 1992), all uranium production and processing activities were abandoned in Bulgaria and the country preferred to rely on foreign supply. The total cost for decommissioning all existing facilities and for the reconversion of the industrial activity was calculated by the Ministry of Finance to be larger than BGN 35 millions in the period spanning from 1992 to 2008.

Since decommissioning the mines, Bulgaria lost its market power in the bartering of uranium for nuclear fuel, a trend that had slowed down after the collapse of the Soviet Union. Nowadays, Bulgaria imports recycled nuclear fuel from Russian NPPs and ships back Kozloduy's spent fuel at an additional cost for disposal. Such practice has triggered economic and environmental concern over the long-term sustainability of the costs and externalities related to Russian recycled fuel rods. All in all, it seems of little consolation for Bulgaria's energy to transfer its dependence on Russian hydrocarbons to Russian nuclear fuel, which defeats the whole purpose of the diversification effort that could lead to the energy emancipation of Sofia.

Nuclear Energy and the Accession of Bulgaria to the EU

1. Meeting Brussels' Requirements

The diplomatic dialogue between Sofia and Brussels began on 30 March 1998, within the process involving all Central and Eastern European countries bidding to access the EU. The formal negotiations for accession were started on 15 February 2000 and were concluded on 15 June 2004. The Treaty of accession was signed on 25 April 2005. Bulgaria joined EU on 1 January 2007, together with Romania. This was the last step of the greater EU enlargement process which involved 12 countries, nine of which for-

merly under the Soviet orbit, thus establishing new Eastern borders for the Union (Smilov, 2006).

The EU approach to the Bulgarian accession was peculiar: membership was delayed and the observer-state status persisted after Sofia's formal accession (Gateva, 2010), as confirmed by the establishment of the Control and Verification Mechanism (CVM). Because of Bulgaria's fiscal and budgetary conditions, the requirements for the accession were stricter than for other CEECs newcomers. It could be considered 'either the last to benefit from the old enlargement policies or the first to experience the novel and more restrictive stance of the EU to the admission of new member States' (Smilov, 2006). Brussels' way reinforces the idea of a Bulgarian specificity among Eastern European countries.

Even if, 'the objective is to welcome Bulgaria and Romania as members of European Union in 2007'[18], as declared at the Copenhagen Summit. The main obstacles to full membership regard the lack of a functioning market economy able to afford European pressure and the difficulties to close all the chapters of the *acquis.* In 2002, the Progress Report stated: 'Bulgaria still needs to make sustained efforts to develop sufficient administrative and judicial capacity to implement and enforce the *acquis*'[19]. For this reason, the EU Commission prepared a detailed roadmap, indicating the 28 chapters of the *acquis* and the actions to take in order to fulfill every requirement.

Energy conditions. The chapter of the *acquis* dedicated to energy distinguishes between short and medium term objectives in order to align Bulgarian energy policy and legislation to EU standards. The short term requests regarded the implementation of necessary reform to liberalise natural gas and electricity markets, following the reform of all EU member States. The nuclear sector was the principal addressee of indications in the 'Roadmap to EU accession'. In fact, recommendations reported in the Council Report on Nuclear Safety (June 2001) and confirmed in the Peer Review Status Report (June 2002) regarded the closure of units 1 and 2 of Kozloduy plant, perceived as urgent measure to adopt. The closure of units 3 and 4 of the same plant and the compliance with Euratom requirements and procedure.

Nuclear issue and two level game. The conditions posed about nuclear issue could be considered as a two-level game (Putnam, 1988), in order to understand the terms of accession negotiations and taking into account both the International/European dimension and the national one.

[18] Presidency Conclusions of the Copenhagen EU Council.

[19] Communication from the Commission to the Council and to the European Parliament

International level. In July 1992, G-7 summit decided Soviet-era nuclear reactor were not safe according to international standards[20]. As consequence, the VVER 440/230 technology was labeled as 'high risk' and 'not upgradable' at reasonable costs. This attitude was a Chernobyl spill-over effect (Kahn, 2007; Panova, 2010). In 1993, Bulgaria signed a Nuclear Safety Account Agreement (NSAA) with European Bank for Reconstruction and Development (EBRD) which assured the closure of units 1-2 by 1997 and 3-4 by 1998. The decommissioning operations were supported by a fund of ECU 24 million[21]. A first crisis about nuclear issues emerged in October 1995, when Bulgarian authorities decided to reconnect Kozloduy unit 1, after the periodical shutdown for maintenance. The international community perceived the decision as a temptation to ignore previous agreements. The first reaction arrived from EC Parliament through a resolution appealing for the immediate closure of unit 1, according to NSA Agreement. In the fall of 1995, the two actors reached an agreement to carry further tests of safety standards. The result was quite contradictory. At first it was decided to restart the unit 1 and the EU allocated additional ECU 10.9 million to finance a further upgrade and the eventual conversion into thermal plant. In May 1996, Kozloduy was shut down to allow new tests. The Kurchatov Institute in Moscow declared the unit to comply with safety standards. In January 1997, the unit was reconnected to the grid. Moreover, in its Short Term Programme, Nek planned the life extension of the units. As confirmed by the State Energy Committee the units 1-4 remained in service until 2004 and 2005, when the modernisation of units 5 and 6 was due to be completed.

European level. Since the beginning of negotiations, nuclear energy entered in EU-Bulgaria dialogue. In July 1997, when *Agenda 2000*[22] was defined, the Commission stressed the need to obtain a realistic programme for Bulgaria to face nuclear safety issue, including the possibility of closing. After the meeting, Bulgaria didn't enter into the group of six countries considered ready to access to EU. In this case, nuclear was only a marginal matter, besides economic and budgetary difficulties.

[20] After the summit, the National representatives declared: 'While we recognize the important role nuclear power plays in global energy supplies, the safety of Soviet design nuclear power plants gives cause for great concern. Each State, through its safety authorities and plant operators, is itself responsible for the safety of its nuclear power plants. The new States concerned of the former Soviet Union and the countries of Central and Eastern Europe must give high priority to eliminating this danger. These efforts should be part of a market-oriented reform of energy policies encouraging commercial financing for the development of the energy sector'.

[21] This fund was added to ECU 11.5 million received within the PHARE programme in 1991.

[22] [COM (97), 2000]. 'Agenda 2000: For a stronger and wider Union' is a Commission Communication which launched a single complete framework offering a clear and coherent vision of European Union, whose aim was to ready the Union for the reinforcement of its policies and the accession of new members, within a strict financial framework.

Despite this, in 1998 nuclear affair officially entered in the negotiations. The EU-Bulgaria Accession Partnership indicated nuclear safety and Kozloduy closure as short term objectives. After ambiguous debates, the final agreement decided the closure of units 1 and 2 by 2003, in exchange of additional financial support and the closure of units 3 and 4 by 2006. From EU side, the importance of nuclear issue was related to energy security, more than environmental worries: nuclear affairs were included in the Chapter 14 of the *acquis*[23]. As officially stated, the main aims of the requirement were to 'ensure the safety for nuclear power plants in order that electricity is produced according to a high level of nuclear safety and . . . [to] ensure that nuclear waste is handled in a responsible manner and prepare for the implementation of Euratom safeguards on nuclear material'. Bulgaria closed the Energy chapter with the other candidates, except Romania[24].

National level. The compliance with international and EU requirements was not easy. Only in November 2002, just before the Copenhagen summit[25], Bulgarian authorities accepted the closure and received the further pre-accession financial aid package of $1.5 billion. However, the acceptance was not total both at European and national level.

The declaration of the Prime Minister, Saxe-Coburg-Gotha[26], provoked a general opposition. At national level, the closure was the object of a referendum request. In early 2002, the fear of economic and energy shutdown pushed to the demand for a referendum about the closure of the units[27].

One of the most challenging issue was the discussion about the closure of units 3 and 4. The Bulgarian government tried to renegotiate it, due to internal opposition and the risk of spreading anti-European feelings. Before the visit of President Parvanov to Brussels, the Parliament approved the proposal by NDSV and DPS to define the date of closure of units 3 and

[23] The chapter concerning the alignment between EU energy policy and legislation for the internal market.

[24] See at: http://ec.europa.eu/enlargement/archives/enlargement_process/future_prospects/negotiations/eu10_bulgaria_romania/chapters/chap_14_en.htm

[25] The historical Summit held in Copenhagen closed the first part of the EU enlargement: ten CEECs closed the negotiations to join European Union by 1 May 2004.

[26] Saxe-Coburg Gotha became Prime Minister on 21 July 2001. His government was supported by NMSII, MRF and BSP. In November 2002, this government coalition survived to two "no confidence" votes promoted by UDF and Coalition for Bulgaria, against the signature of the agreement with EU for the decommissioning of Kozloduy.

[27] In December 2002, the Socialist Party called for a referendum, whose request was deposited in June 2004. In April 2005, also the Kozloduy Civic Committee announced the intention of a referendum. In April 2005, the Treaty to accession was signed in Luxembourg.

4 upon a few conditions: the date of accession to EU, an equal treatment with Lithuania and Slovakia and advantaged economic treatment. Bulgaria requested a new peer review in order to demonstrate the optimal conditions of nuclear safety for units 3 and 4. According to the national position, from a technological perspective, the two units had been upgraded. In 2003 an inquiry carried out by 18 international inspectors demonstrated that the two units meet all necessary international standards. Bulgaria aimed to obtain a delay until 2011 and 2013 for the permanent shutdown, in order to complete the modernization of the remaining units: 5 and 6 (VVER 1000/320) needed for improvement. As underlined by the President of Council, Juncker, the signature closed the possibility of changing the Treaty contents. In May 2005, the Bulgarian Parliament ratified the Accession Treaty with 231 favorable votes and one contrary. While signing the decree, President Parvanov admitted the Kozloduy closure was the most relevant concession the country had had to make to EU, but the ratification of Treaty closed the issue.

2. Nuclear Energy and the Current Situation

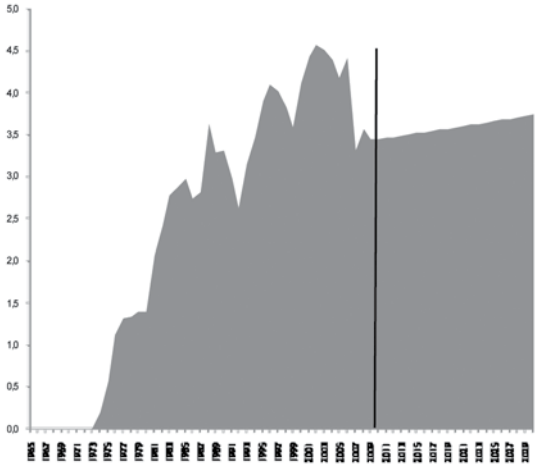
After the Fukushima accident on 11 March 2011, the European Commission has required a re-assessment of all nuclear plants. As decided at the meeting on 23 June 2011 with Energy Commissioner Oettinger all EU countries agreed to undertake voluntary comprehensive risk and safety assessment (stress-test), taking into account the indications released by EC and European Nuclear Safety Regulators Group (ENSREG) on 24 May 2011. Consequently, all nuclear plants have been re-assessed, according to EU wide criteria which consider both natural and man-made hazards. Concretely, the re-assessment consisted in an evaluation of the response of a NPP when facing a set of extreme conditions and in a verification of the preventive and mitigation measures, chosen according a 'defence-in-depth logic': initiating events, consequential loss of safety functions, and severe accident management. The results were submitted to European Commission, whose aim is to check its fulfillment with EU standards by 31 December 2011.

The Bulgarian report covers both Kozloduy and Belene, even if the Technical design documentation of Belene NPP has not been authorized by Nuclear Regulatory Agency. This choice emerges the willingness of confirm the high safety standards of the new plant against the fear of another nay. As specified by Bulgarian authorities, the reactor type selected for the second Bulgarian NPP in Belene is a pressurized water reactor VVER-1000 model B-466B, equipped with reliable third generation safety systems. In addition,

the design has been furnished with unique systems protecting the RPV from significant external influences, including air crash on the building.

In 2010, nuclear energy accounted for 19% in the Bulgarian energy mix. The only operating power plant is located in Kozloduy and only two of the total installed 6 units are still active. The two operating reactors are licensed until 2017 and 2019 respectively, even if their lifetime is to be extended for another 20 years, after to the 2006 upgrade. Originally, nuclear power was to reduce dependency on Moscow hydrocarbon imports. However, as shown in Figure 3, this aim is unlikely to be reached. Despite the fulfillment of international safety standards, the 'Fukushima effect', and the new environmental policy, it is possible to forecast a surge in nuclear energy by 2030.

Figure 3-Nuclear Energy scenario (Mtoe)



Source: Elaboration on BP Statistical Review, IEA and Eurostat, 2011

Bulgaria's Energy in the Wider Black Sea Region: Policy Implications

1. The Policy Triangle: Sofia, Brussels, Moscow

Energy plays a central role in EU-Russia relations. As stated by the Commissioner Ferrero-Waldner 'the equation is simple: we need Russia's energy and Russia need the enormous energy market we provide'. It emerges the interdependence between the two actors which pushed to the official Energy

Dialogue, launched at the summit held in Paris in October 2000. According to initial intentions, the main aim of this official instrument is to create a framework to reinforce energy cooperation through discussion mainly about energy efficiency measures and investments in infrastructures. A realistic Energy Dialogue needs to be supported by a more general framework, like a Partnership Agreement, in order to create a wider common economic space. Moreover, the effectiveness of the Energy Dialogue should be guaranteed by common rules. In this direction an essential issue is the ratification of Energy Chart, signed in 1994 by 51 countries except Russia, because of the acceptance of art. 7 about transit rules. The reluctance to ratify the document is explained by Russian President Medvedev, who affirmed: 'Everyone knows about the so called *Energy Charter*, which was developed to a large extent with a view to protecting the interests of consumers, which is not a bad thing. One should not forget, though, that sellers are equally parties in any contractual relations and their interests should also be protected to the same extent as interests of transit States'. Such stand permits Russia to adopt a *divide et impera* policy towards EU partners. The Sofia- Moscow relation is a typical case study. After the Bulgarian accession to EU, Sofia-Moscow nuclear relations remained unchanged. Furthermore, Bulgaria becomes a new window of opportunity for Russia to enter EU markets, especially due to the unsettled question of the Belene project and the uranium shipments for the Kozloduy plant. As a consequence, after 2007 the EU dependence on Russian energy increased, altering the equation depicted by Ferrero Waldner in favour of Russian interests.

On the one hand, the EU lacks a common energy policy due to the strong national interests of its members. On the other hand, Russia pulls apart its Western customers by enjoying special relations with former Soviet satellites – thanks to the already-in-place pipeline network – and pursuing bilateral negotiations in each energy-related ventures. The resulting scenario with these two distinct poles of attraction is that Bulgaria is the one player with the power to situate itself in the game last. The advantage of the last move allows for a strategic leeway that Sofia could well enjoy amidst such giants pulling her skirt.

Bulgaria lays as a strategic cornerstone between East and West, North and South. Once the Soviet outpost closest to the Balkans, Greece, and Turkey, it now represents a key country in the wider Black Sea region. The accession to the EU has marked an important step towards the positioning of Sofia in the long run within this geopolitical context. The EU membership and the relative communitarian requirements let Bulgaria jump forward in the

context of the Western European bloc. The concept of bloc here is smoother and softer than what has been regarded a secluded and militarized ensemble of sovereign countries prior to the fall of the Berlin wall. The EU bloc sets post-1991 economic, legal, and social norms that aim at creating harmony among member states, possibly building stronger-than-international bonds between a community of sovereign subjects. Bulgaria's choice was ineluctable in that its resistance from a rapprochement with Russia was at the basis of the post-Warsaw Pact world. Unwilling to look East, Sofia chose to come closer to the rising power of Brussels. However, the lack of transparency and the slow socioeconomic transition process rendered the emancipation of Sofia from its strong links to Russia much more problematic. The double-edged connection between Russian and Bulgarian politicians and both countries' corporations, especially in the energy industry, grew just as much as Sofia's declarations of commitment to EU principles. In this last part of the paper, we seek to understand what could be the lesson that history teaches for the Bulgarian energy sector in its implication for the regional and international contexts.

Ameliorating the situation could be easy on Sofia in this desolate environment of energy dependence and inefficiency. However, a necessary effort must be undertaken by the Bulgarian leadership in order to keep decision-making secure against corruption. It is widely felt among Bulgarian and international analysts, environmental activists, members of the academic and research world, that some among the highest ranking figures in the Bulgarian governments are unable to push forward independent actions for the good of the Bulgarian society, without resorting to the pursuit of personal gains in cahoots with Russian peers. To set a distance from the allegations, the best answer from Bulgarian officials would be a shift in policymaking towards more transparent, coherent, and responsible endeavors.

2. Prospects for Bulgaria

The prospective construction of a new nuclear power plant in Belene seems to have little significance in a framework of energy issues that might well yield more stringent implications for Bulgaria. Several pipeline projects are being put in line, built, or studied for both natural gas and oil. Important investments are being channeled to the renewable energy sector, which

is seeing a steady increase in its market share[28]. However, the costly new technologies might not impact the sector significantly for the next decade. Natural gas, be it from the Caspian, from underground shale rocks, or in its liquified form, could be the healing potion for Bulgaria's short term energy needs.

For the reasons stated above, energy in Bulgaria is a very rigid segment of the economy. Long term commitments are needed for developing all the different sources that would satisfy the internal demand and would allay the dependency from Russia. Bulgaria finds herself in the position of having a whole set of opportunities at her reach. Low carbon emissions will not be worsened by the new lignite plants that are being built, and might possibly reach lower levels once older coal-fired plants are replaced by gas-fired ones. Bulgaria's energy intensity is very high, in that every Lev of GDP costs a higher amount of energy than the European average.

However, energy can also be the source of new opportunities for Bulgaria, especially in the regional setting. By exploiting the favorable geopolitical factor, Sofia can become a leading force in the region. Bulgaria is in fact at the cultural, social, and economic centers of the area stretching from the former-Yugoslavian countries, along with Central and Eastern Europe, Greece and Turkey, out to the wider Black Sea region, which includes Slavic and Caucasian former Soviet states. Cooperation in the energy sector can yield favorable results in terms of overall cooperation in the region due to long term binding commitments, a reliable legal frameworks, and the set up of an interdependent web of relations. Such energy spill-over might prove the only compelling force for these countries to come together for a new season of cooperation, especially within the overlapping set of political associations in which the considered countries participate.

Conclusion

The present paper provides an analysis of the Bulgarian nuclear energy sector through an innovative and multidisciplinary path. Utilising the historical institutionalism as theoretical framework, we tried to understand the

[28] In this paper we focused mainly on the nuclear aspect of the 'policy triangle' between Sofia, Moscow, and Brussels. However, we kept in mind the relevance of other aspects of Bulgarian energy that are tough to unbundle. At the end of 2011, the Burgas-Alexandroupoulos oil pipeline project was turned down by the Bulgarian administration, creating a rough diplomatic exchange between Moscow and Sofia to determine who had to pay for the missed opportunity. Furthermore, Russia keeps a strong foothold on Bulgarian oil in that Russian companies – chiefly LUKoil – own all Bulgarian refineries. The little role played by the EU is fundemental in understanding what daily worries policy makers in Sofia.

trend in Bulgaria's policy choices Bulgaria in order to define its current policy options as part of the triangle with the EU and the Russian Federation. The international and European institutions on the one hand and the Russian foreign political and economic pressure on the other are the strongest forces on the Bulgarian stage. Within this context, the issue of nuclear energy puts at stake the sheer independence of Sofia from such forces and its internal and regional legitimacy.

From a methological point of view, data analysis on Bulgarian energy mix is combined with the history of the nuclear sector. Such approach allows us to look at the history of Bulgaria's international relations with Russia and institutional relations with the EU from a more mundane perspective. Through the analysis of Brussels' requirements and Moscow's activity in the Bulgarian nuclear sector we could single out political decisions that were driven by energy constraints – such as the delay in the construction of the planned nuclear power plant in Belene. Once such causal relationships were outlined, we went forward displaying the policy options available to Sofia and the likely consequences that each would trigger.

The analysis leads us to conclude that energy informs the political dynamics among countries to a relevant extent, whose comprehension requires a multidisciplinary endeavour.

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