Energy of the Future?

Nuclear energy in Central and Eastern Europe

Editors: Karel Polanecký, Jan Haverkamp

HEINRICH BÖLL STIFTUNG
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WISE CZ
Energetický Informační Servis

Hnutí DUHA
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PREFACE

Looking at International Atomic Energy Agency statistics, it is not immediately evident that the countries of Central and Eastern Europe would constitute a promised land for nuclear energy. In the European states of the former Eastern Bloc only two reactors are actually being built – in Mochovce, Slovakia. However, no one who follows the public debate, the legislative process or political parties' pre-election programmes would doubt that nuclear energy occupies an exceptionally strong position in the region.

In most of the Central European countries examined, politicians from across the political spectrum support this industrial sector and are working actively to create the conditions for building new nuclear power plants. Public opinion polls show that this does not detract from their popularity; to the contrary. While in Germany the government's decision to extend operations of nuclear power plants triggered mass protests, plans to construct new units in the Czech Republic, Slovakia and Hungary are either passively accepted or considered beneficial – even essential – by a majority of the population.

Journalists and pundits in the mainstream media mostly restrict their reporting to actions taken by governments and energy companies in preparing to build new units, without investigating this issue critically. The debate on the negative aspects and risks of nuclear energy is being supplanted by one-sided assertions about its advantages from the perspective of energy security and the prognosis for electricity prices, which of course do not reflect hidden economic costs and subsidies. While no one knows yet what to do with nuclear waste, this problem is not considered an acute one, and in debates on constructing nuclear power plants this issue is generally set aside on the assumption that the future will bring a solution. The critical view, pointing out the risks of a large-scale accident and the resulting destruction, is often characterised as groundless dissemination of alarmist reports.

An expert debate on whether, when and to what extent nuclear power plants can actually contribute to a reduction in greenhouse gas emissions is supplanted by the assertion that nuclear power is emissions-free. Unlike their colleagues in Western Europe, energy strategists in the Czech Republic, Poland, Hungary, Bulgaria and Slovakia do not address the fundamental question of whether connecting new nuclear power plants to the grid may limit options for developing renewable sources.

The Heinrich-Böll-Stiftung, in cooperation with Hnutí DUHA and the Czech branch of the international organisation WISE, has attempted to describe in greater detail the causes and manifestations of nuclear energy's exceptional position in the countries of Central and Eastern Europe. The result is this publication, which contains contributions by experts from five countries in the region: the Czech Republic, Slovakia, Poland, Hungary and Bulgaria. We leave it to the reader to assess the commonalities and differences in the individual countries, but probably everyone who reads the text attentively will reach one conclusion – nuclear energy's firm position is a historical consequence of the communist era and is currently bolstered by a close interconnection between energy companies and political elites.

We believe the following pages will support the critical view which is presently missing in the debate over Nuclear energy in Central and Eastern Europe and initiate the discussion which its supporters often reject as unnecessary.

Petr Machálek, director of Hnutí DUHA
Eva van de Rakt, director of the Heinrich-Böll-Stiftung Praha
Jan Haverkamp, WISE Czech Republic

SUMMARY

The Czech Republic, Slovakia, Poland, Hungary and Bulgaria have much in common. In the second half of the 20th century they were part of the Socialist Bloc dominated by the Soviet Union and, as members of the Comecon (Council for Mutual Economic Assistance), also a distribution market for Soviet industrial production. In all of these countries – with the exception of Poland – nuclear power plants were built during the 1970s and 1980s using the Soviet technology of the time. Specialists were also trained in the Soviet Union, and upon their return these individuals formed the basis of the nuclear intelligentsia.

In all five countries the electricity sectors were controlled by state monopolies. After the collapse of the socialist system these monopolies were transformed into companies of various kinds, but the governments kept their majority stakes in them. The Czech Republic's ČEZ, Poland's PGE, Hungary's MVM, Bulgaria's NEK and Slovakia's Slovenské elektrárne had no difficulty maintaining their dominant positions, which were not even threatened by the market liberalisation which followed EU accession. Competition could not challenge the transformed monopolies due to their exceptional starting position, and proponents of nuclear energy have maintained significant influence at all of these companies.

Only in Slovakia was the successor company to the socialist monopoly privatised. A majority stake in Slovenské elektrárne was sold to the Enel concern in 2006. However, the Slovak government privatised the company on condition that participants in the tender would continue with nuclear projects.

In all the countries, dominant energy companies were able to establish close cooperation with the ministries responsible for developing the sector. These companies do not adapt their plans to governmental conceptual programmes; to the contrary, ministries often create the conditions for projects proposed by company managers. Thus, in the name of energy security, state officials are actively implementing construction of nuclear power plants based on plans which – in most cases – date from the 1980s.

In constructing nuclear power plants, officials of the individual dominant energy companies see an opportunity to maintain their privileged position on national markets. Coal-fired power plants will face increased costs in the coming years due to the need to purchase emissions allowances, and coal extraction in the region is declining. Not one of these companies has attempted to base a significant portion of its business on decentralised production using renewable energy sources. Building nuclear power plants is the last theoretical possibility for the former monopolies to maintain their predominance over the competition and control of the market.

Nuclear plants over energy plans

In none of the five countries investigated was the decision to build a nuclear power plant made based on an energy plan evaluating the expediency of various alternatives, including non-nuclear ones. In Poland, the government decided to construct a nuclear power plant even though the energy plan did not recommend it. In Bulgaria, the state energy plan is supplanted by an overview of projects proposed by large investors. In Hungary, parliament approved a change to the energy plan which conditioned the construction of new reactors on shutting down old ones, but without requesting that various alternatives be presented and without evaluating the economic aspects of such a plan. The Slovak government adopted a strategic plan to develop the energy sector without a broader expert debate or an assessment of alternatives; rather, it approved the only proposal based on further nuclear development. While in the past the Czech government has included a comparison of various scenarios in the preparation of its energy plan, an elaborated non-nuclear alternative based on energy efficiency and renewable sources was not taken into consideration in its most recent such plan.

The nuclear zeal of political elites

In all the countries of Central and Eastern Europe we find high-level politicians vigorously promoting the development of nuclear energy. The countries differ only in their respective nuclear industries' moti-

vations and the ways in which they win over their proponents. In the Czech Republic it is no surprise to anyone that important ministerial posts are filled by individuals whose past is connected with ČEZ. An influential energy adviser to Slovakia's PM headed a company which profits from the construction of nuclear power plants. Bulgaria's president and ministers in various governments do not conceal their personal contacts with representatives of the Russian nuclear industry. In Hungary, MVM managed to win the favour of both key political parties, and parliament approved the construction of new units at the Paks Nuclear Power Plant according to a submission from this company without any economic estimates or costing information. The region lacks a strong political party advocating a non-nuclear alternative for developing the energy sector, although public opinion polls indicate that there is presently no public demand for such a programme.

Strong words will not pay for a reactor

The strong political support which nuclear energy enjoys in post-socialist Central Europe does not guarantee, however, that planned reactors will be built. High investment costs lead to unwillingness among investors – even strong state-owned companies – to take on all the economic risk. In the 1990s, Central European states still indemnified the construction of nuclear power plants – government guarantees were provided on the loans which financed construction of the first units at Temelín and Mochovce. Since EU accession, however, this approach is no longer possible as it would constitute a violation of the rules for economic competition.

On the EU electricity market, rules must be respected which prohibit the state giving an advantage to individual producers. Governments cannot provide any benefits to energy companies (state-owned or private) or selected technologies which could inhibit competition. Accordingly, not even partially state-owned companies can count on subsidies or government loan guarantees for building reactors.

Nevertheless, the examples of the completion of the Mochovce plant in Slovakia and the suspended Belene project in Bulgaria demonstrate that governments are still attempting to provide indirect support to nuclear power plants even on the European market. Reducing payments into the fund for the disposal of spent fuel or increasing the equity of a state-owned company (with the goal of improving access to loans), however, cannot fundamentally influence projects' balance sheets. The construction of new nuclear units in Central and Eastern European countries will depend on whether suppliers submit an offer that is economically advantageous for ČEZ, MVM or PGE. In view of the results of nuclear tenders in various parts of the world and the continuously rising costs of the two European plants under construction, this is not at all certain.

PART I

Political Support for Nuclear Energy: a Study of Five Countries in Central and Eastern Europe

THE CZECH REPUBLIC – ČEZ, NUCLEAR POWER AND POLITICAL ELITES

Karel Polanecký (Hnutí Duha)

The pro-nuclear political scene

Ahead of parliamentary elections held in the Czech Republic in May 2010, citizens witnessed highly contentious pre-election campaigns. The main parties' key representatives presented opposing plans for education, health care and the state budget. Views on how to address economic, social and tax problems were diametrically opposed and the parties criticised their adversaries' proposals vociferously. At first sight it may have seemed that the candidates were contradicting each other out of principle without regard to the nature of the problem. On a closer reading of the election programmes, however, the voter encountered a notable exception. Parties from both the right and left wings of the political spectrum agreed on the need to develop nuclear energy.

The conservative Civic Democratic Party (ODS), which ultimately formed a governing coalition based on the election results, states in its election programme:[1] "In the area of nuclear energy we are promoting an acceleration of works on preparations for the completion of the Temelín Nuclear Power Plant, so that the realisation phase will begin at the end of the legislative period. We also want to accelerate the assessment of options for expanding the nuclear power plant in Dukovany and for further extraction of uranium ore as the only long-term energy source available on the territory of the Czech Republic in sufficient quantities." In the section on the environment, it designates nuclear energy as clean, adding that: "We consider the resolution of the end of the fuel cycle and the use of spent fuel as fuel for a new generation of nuclear reactors to be a great challenge for European research and development."

The Czech Social Democratic Party (ČSSD), the main opposition party, declares that it supports "the completion of the two units at the Temelín Nuclear Power Plant and the modernisation of the Dukovany Nuclear Power Plant".[2] No reasons for supporting these projects are provided in the election programme.

The right-wing parties which formed the governing coalition did not promise support for specific projects ahead of the elections, but they regard nuclear energy positively. TOP 09 states in its pre-election declaration: "...for many decades to come we will not get by without producing electricity from nuclear power. Nuclear energy is an environmentally sensitive source which is very effective and at present cannot be replaced by other sources."[3] Public Affairs (VV) declares its support for "extending the lifetimes and increasing the capacities of existing nuclear power plants."[4]

The last political party represented in parliament is the far-left Communist Party of Bohemia and Moravia (KSČM), which in its election programme promises to implement:[5] "... a unified state energy plan and to ensure the Czech Republic's energy security through a decisive share of energy production from nuclear power (promote construction of the third and fourth units at the Temelín Nuclear Power Plant, modernisation of the Dukovany Nuclear Power Plant)."

1 Řešení, která pomáhají [Solutions that are helping]. Detailed ODS programme for the 2010 elections to the Chamber of Deputies, http://www.ods.cz/volby2010/programove-dokumenty.html.

2 Program změny a naděje, lepší budoucnost pro obyčejné lidi [A programme of change and hope: a better future for ordinary people]. ČSSD's election programme for the 2010 elections to the Chamber of Deputies, http://www.cssd.cz/dokumenty/programove-dokumenty/.

3 TOP 09's election programme for the 2010 elections to the Chamber of Deputies, http://www.top09.cz/proc-nas-volit/volebni-program/volebni-program-2010/.

4 Public Affairs, political programme, http://www.veciverejne.cz/program-vv-energetika.html.

5 KSČM's election programme for the 2010 elections to the Chamber of Deputies, http://www.kscm.cz/index.asp?thema=4393&category=.

The only political force of any significance which does not support nuclear energy is the Green Party (SZ). Its position is summarised in a sentence from its election programme: "Until we exhaust the entire potential of renewable energy sources, in particular the possibility of increasing energy efficiency and conservation, we will not support the construction of new nuclear units."[6] The Greens, however, did not receive enough votes to be represented in parliament.

What are the causes of this strong consensus on the complex issue of nuclear energy? A significant factor is the undoubtedly strong influence of the company ČEZ – the investor in the eventual construction of nuclear units – on political elites. Also the strength of industrial enterprises which are suppliers for the construction of nuclear power plants plays its role. Politicians also pay close attention to public opinion polls, which show that most voters do not have a serious problem with the development of nuclear energy. For example, according to a Eurobarometer poll organised by the European Commission, 59% of the Czech Republic's residents believe the benefits of nuclear energy outweigh the risks arising from the operation of reactors. In this respect nuclear energy enjoys greater support in the Czech Republic than in any other EU member state.[7] We will analyse the reasons why Czech political leaders are so favourably disposed towards nuclear energy in the following paragraphs.

ČEZ management in agreement with the government: the completion of Temelín is a priority

The ČEZ Group, a majority state-owned energy giant, has designated the construction of nuclear power plants as a strategic priority. In a report for shareholders, the company proposed verbatim "development of nuclear energy projects everywhere where it is possible."[8] Here it is assuming that – thanks to a greater share of electricity from nuclear energy – it will not have to purchase allowances for carbon dioxide emissions. In 2009 ČEZ issued a call for tenders for the construction of two new reactors at Temelín and three more elsewhere in Europe. This is a mammoth contract even by world standards – France and Finland are presently each building a single reactor, at a cost of more than EUR 5 billion each.

Why are the ČEZ managers so optimistic? The answer seems to be simple at first sight. After launching two reactors at Temelín between 2000 and 2002 while simultaneously exporting electricity from coal-fired plants, the company's profits grew significantly. At the time ČEZ built Temelín, however, it did not have to comply with the rules of the unified European electricity market. This allowed it to take advantage of state guarantees to obtain loans on favourable terms, but ČEZ will not be able to rely on state guarantees for its future investments. Another important factor which helped ČEZ significantly in achieving high profits was the rise in electricity prices on the European market after 2001. There is no guarantee, however, that the prices will continue to develop in the coming years in a manner favourable for ČEZ.

ČEZ's bet on investments in new nuclear reactors can also be interpreted differently, however. The company wants to maintain its dominant position and sees that in future it will not be able to avoid purchasing allowances for its coal-fired plants, which will endanger the cost-effectiveness of their production. Instead of shifting investments to the area of renewable sources – with which the company has minimal experience – ČEZ intends to develop nuclear energy despite the existing risks. The explanation could be that the company's current management did not experience the protractions and cost overruns involved in the construction of Temelín personally, and thus is not sufficiently circumspect.

Striking, however, is the position of the government as ČEZ's majority shareholder. At the time the call for tenders was issued for construction of the Temelín reactors, a provisional caretaker government was in power in the Czech Republic. Its ministers, however, did not have any independent assessment prepared of the risks connected with ČEZ's project. Only in June 2010 – almost a year after issuing the call for tenders – did the government appoint its representative for the Temelín project, the preparations for which until that time had been executed exclusively at the direction of ČEZ. The representative was current Ambassador-at-Large for Energy Security Václav Bartuška, who in an interview for the magazine Respekt stated:

6 The Green Party's election programme for the 2010 elections to the Chamber of Deputies, http://www.zeleni.cz/program/.
7 Europeans and Nuclear Safety, Special Eurobarometer 324, March 2010.
8 CEZ GROUP: THE LEADER IN POWER MARKETS OF CENTRAL AND SOUTHEASTERN EUROPE, investment story, May 2010, http://www.cez.cz/cs/pro-investory.html.

"A situation has arisen where a company in which the state has a 70% stake has issued a tender worth several hundred billion crowns and the government did not even know about it officially."[9]

Insufficient information presented no obstacle to members of the Cabinet, however, and they automatically supported construction of the new units. For example, Finance Minister Eduard Janota responded to a journalist's question on the possibility of using ČEZ's profits to balance the deficit in public finances as follows: "Fine. And how would ČEZ then finance its further development? How would it pay the 500 billion in the event that the third and fourth units at the Temelín plant are to be built?"[10]

Nor can a substantially different approach be expected from the current government, in which, among other reasons, the post of Minister of Industry and Trade was filled by Martin Kocourek, who hitherto had chaired ČEZ's supervisory board. Experts from all three governing parties have agreed that the government will support the construction of new units at Temelín.[11] Thus far, the government has not made public the form of support, but – in view of the fact that EU rules permit neither direct subsidies nor state guarantees on private loans – it is not difficult to guess. The ministers will likely approve the use of CZK 150 billion (EUR 6 billion) of ČEZ's retained earnings from previous years; the original intent was to use these funds to start the pension reform. The interest in expanding Temelín will clearly also dominate decisions on dividend payouts in the coming years. For each of the last two years, ČEZ paid the state a sum of c. CZK 20 billion (EUR 800 million) in dividends. The amount of dividends to be paid out is decided by the company's general meeting, in which the state holds a majority of votes. It will depend on whether the new government gives priority to paying out dividends (and strengthening public budgets) or leaves the money with ČEZ for investment into a gigantic nuclear project.

The government decides in favour of ČEZ – a little history

Probably the most significant decision on the part of the Czech government to the benefit of ČEZ occurred in 2003 when ministers decided to sell the state's stake in five distribution companies to ČEZ. The core of today's giant was thus formed through a series of foreign acquisitions in the area of electricity production and distribution.

In view of its support for nuclear energy, it is worth mentioning the government's intervention into disputes between suppliers and consumers in the case of Temelín's first two units. In 2002, the general technology supplier, Škoda Praha, requested that ČEZ pay CZK 500 million (EUR 20 million) for supplemental works on the two units; ČEZ's management rejected the request.[12] At the time, both companies were majority-owned by the state, which allowed the dispute to be resolved. In 2004, the ČEZ Group became the majority shareholder in Škoda Praha.

Recent government decisions advancing ČEZ's interests include the approval of an excessive allocation for CO_2 emission allowances trading (unlike the majority of European electricity suppliers, ČEZ actually earns money on its allowances), and the approval of a legislative regulation which ensures ČEZ a portion of its allowances free of charge even after 2013. Although these steps do not relate directly to nuclear energy, they contribute to the creation of profits which the company intends to use for purposes of financing new reactors.

How ČEZ influences politicians

How can a state-owned company convince politicians to act in its business interests? How is it possible that even representatives of parties for whom reducing state debt is a key priority do not endeavour to

9 Stát se probudil [The state has awakened], Respekt 26/27, 28 June 2010.
10 http://www.e15.cz/nazory/rozhovory/janota-nechci-psat-dva-rozpocty-levicovy-a-pravicovy.
11 http://ekonomika.ihned.cz/c1-44297780-vinety-odlozime-a-temelin-se-dostavi-dohodli-se-experti-vznikajici-vlady.
12 Škoda Praha chce zdražit Temelín [Škoda Praha wants to raise the price for Temelín], Hospodářské noviny, 25 October 2002.

secure tens of billions of crowns for the state budget and instead pass it into ČEZ's coffers? The company's management cannot be accused of not knowing how to work with politicians.

ČEZ's so-called motivation programme played a significant role in establishing unusual relationships with leading politicians. This programme allowed managers to purchase shares in the company at the price at which shares were trading at the time they assumed their posts. Until 2005, this also applied to members of the supervisory board, which is occupied by leading politicians and high officials. Many members of the supervisory board took advantage of the opportunity to purchase shares at a previous low price and immediately sell them at the current, substantially higher, price. The share price rose sharply during this period, primarily as a result of political decisions. Especially after turning over the distribution companies to ČEZ, a rise in the company's share price was to be expected as officials had ensured it an easy profit.

Thus, thanks to his position on ČEZ's supervisory board, long-time Civic Democratic MP Oldřich Vojíř came into roughly CZK 15 million (EUR 600,000), which he does not consider to have been improper: "I always say that if anyone else had been in my position, they would have in all likelihood made use of the opportunity as well. Otherwise I would consider such a person to be a little crazy."[13] Václav Srba, deputy to former Social Democratic Minister of Industry and Trade Milan Urban, received CZK 24 million (EUR 1 million) for his shares.[14] Zdeněk Hrubý, a former deputy to Finance Minister Bohuslav Sobotka who sat repeatedly on the supervisory board and is still a member today, even earned CZK 165 million (EUR 4.5 million) thanks to a favourable trade in shares.[15]

The other benefits to which members of the supervisory board were automatically entitled cannot be compared to the introduction of the motivation programme. Nevertheless, they came into sums in the millions. The company paid capital life insurance premiums for members of the supervisory board, spending nearly CZK 30 million (EUR 1.2 million) between 2001 and 2006.[16] Officials and politicians who earned millions thanks to ČEZ are naturally open to promoting the company's interests.

Another method of obtaining influence in high politics is to engage a suitable individual in one's own ranks. ČEZ used this method in the case of Vladimír Johanes. The former adviser to Industry and Trade Minister Milan Urban works for ČEZ as an adviser for foreign acquisitions, is chairman of the supervisory board at Škoda Praha (a member of the ČEZ Group), and is a former member of the supervisory board at another of ČEZ's major subsidiaries – Severočeské doly. The important thing, of course, is that he continues to enjoy excellent contacts with leading politicians.

It is also possible to influence state policy using the opposite approach – with the help of former employees in key positions. It is no wonder that the draft state energy plan supports the massive development of nuclear energy, as it was prepared under the direction of Industry and Trade Minister Vladimír Tošovský and Deputy Minister for Energy Tomáš Hüner, both former ČEZ employees.

The so-called Tuscan Affair also reveals much about informal contacts between ČEZ and political elites. In the summer of 2009, the tabloid daily Aha! published images from a summer resort in Tuscany, at which members of ČEZ's management were photographed in the company of top politicians. Despite subsequent assurances that this was a chance meeting, ČEZ's CEO Martin Roman admitted that he had borrowed a yacht from former Transport Minister Aleš Řebíček and had purposefully met there with former PM and then Civic Democratic Party Chairman Mirek Topolánek.[17] At the same resort and at the same time, Vladimír Johanes and Social Democratic Shadow Trade Minister Milan Urban also crossed paths. Another photograph shows Vladimír Johanes and Mirek Topolánek together.

13 Poslanec Vojíř vydělal v politice 15 milionů [MP Vojíř earned 15 million in politics], http://zpravy.idnes.cz/domaci.asp?r=domaci&c=A050524_114824_domaci_klu.

14 Policie stíhá úředníky za odměny v ČEZ [Police investigate officials over compensation at ČEZ], http://ekonomika.idnes.cz/policie-stiha-urednicky-za-odmeny-v-cez-dx9-/ekonomika.asp?c=A070105_657895_ekonomika_ven.

15 Nový systém odměňování šéfů státních firem s opcemi ČEZ nepočítá [New system of compensating mamagers of state-owned companies does not include ČEZ options], http://ekonomika.idnes.cz/ekonomika.asp?c=A100224_204904_ekonomika_iky.

16 Dozorčí rada ČEZ vydělala 126 miliónů [ČEZ's supervisory board earned 126 million], http://www.lidovky.cz/tiskni.asp?r=moje-penize&c=A060506_134454_ln_ekonomika_znk.

17 ČEZ ujišťuje: Šéf nikomu nic neplatil [The boss didn't pay anything to anyone, ČEZ insists], http://www.novinky.cz/ekonomika/175156-cez-ujistuje-sef-nikomu-nic-neplatil.html.

These approaches partially explain the ease with which the management of state-owned ČEZ obtains politicians' approval for its plans. This was even noticed by The Economist, which characterised ČEZ as "unusually powerful, even by the standards of former monopolies such as EDF in France".[18]

The enticement of contracts

Another significant factor motivating some politicians to support nuclear energy is undoubtedly the promise of contracts for Czech engineering companies. Although the company Škoda JS – which specialises in supplies for nuclear power plants – belongs to Russian concern OMZ, it is continuously playing the card of contracts for Czech industry. Škoda JS supplemented its participation in the tender to build the new units (in a consortium with Russian companies Atomstroyexport and Gidropress) with the following assurance:[19] "In the bid, extraordinary attention is devoted to ensuring that at least 70% of supplies of equipment, works and services come from the Czech Republic. During preparations for the tender alone, the consortium has concluded preliminary agreements with more than 20 major Czech and European companies." This is an unenforceable declaration, but is nevertheless audible to politicians.

A pro-nuclear society

Politicians are understandably interested in voters' views on various topics and often adapt their statements to these views. Public opinion surveys in the Czech Republic have long come out in favour of nuclear energy. According to a poll by the STEM agency from March 2009, for example, 70% of Czech citizens expressed support for building new nuclear reactors.[20]

The reasons for why the Czech public trusts nuclear energy substantially more than in other countries is deserving of special sociological analysis. One factor is undoubtedly ČEZ's longstanding investment in community activities and educational programmes (it offers lectures and instructional materials to secondary schools, and organises events such as the "Jaderná maturita", a multi-day programme for secondary-school students on the site of a nuclear facility).[21] This can hardly explain the pro-nuclear disposition of the vast majority of the media, however. A major factor here is the activity of nuclear experts, whose viewpoints – due to the complexity of the issue – are given great credence by journalists. It is also worth mentioning that the Nuclear Research Institute is majority-owned by ČEZ.

18 CEZ and Czech energy: No, minister, http://www.economist.com/node/15869464.

19 Mezinárodní projekt pro Temelín [International project for Temelín], Škoda JS press release, 30 April 2010, http://www.skoda-js.cz/cs/aktuality/aktualni-sdeleni/62-tiskova-zprava-mezinarodni-projekt-pro-temelin.shtml.

20 Rozvoj jaderné energetiky podporuje 70% Čechů [Development of nuclear energy supported by 70% of Czechs], http://dumfinanci.cz/zajimavosti/rozvoj-jaderne-energetiky-podporuje-70-cechu.

21 An overview of ČEZ's educational activities is available on: http://www.cez.cz/cs/veda-a-vzdelavani.html.

POLITICAL PRESSURE TO DEVELOP NUCLEAR ENERGY IN SLOVAKIA

Pavol Široký (Za Matku Zem)

Nuclear energy has always enjoyed strong political support in Slovakia. Communist elites decided to develop the sector during the 1950s and all subsequent Slovak governments have continued with it even after the collapse of the communist regime. Without political support, the nuclear sector could never have attained its current position in the Slovak economy. There are now two nuclear power plants in the country: Jaslovské Bohunice and Mochovce.

Jaslovské Bohunice – a brief look at history

A1 – an unsuccessful experiment ending in an accident

The project to build the first nuclear power plant on the territory of the former Czechoslovakia was launched in Jaslovské Bohunice in 1956. The A1 heavy water reactor was put into operation in 1972, but it was definitively shut down in the aftermath of two serious accidents, in 1976 and 1977. The second accident resulted in a partial meltdown of the reactor's active zone; this has complicated its decommissioning, which is still ongoing to this day.

V1 – reactors shut down after EU accession

Another two Soviet type VVER 440/230 reactors, each with an installed capacity of 440 MW, were built in Jaslovské Bohunice during the 1970s and came online in 1980. This type of first-generation reactor does not meet current safety requirements – it is not equipped with a protective envelope (a so-called containment structure) or a compliant emergency cooling system. EU experts have concluded that VVER 440/230 reactors cannot be structurally upgraded to meet current safety standards. In the pre-accession talks with the EU, candidate countries including Slovakia had to undertake to shut down non-compliant reactors.[22] Accordingly, the two reactors of the V1 power plant were taken out of operation at the end of 2006 and 2008, respectively (we discuss the affair surrounding a plan to restart a reactor during the 2009 natural gas crisis in a box on page 19).

V2 – the legacy of Czechoslovak-Soviet cooperation

In 1985, two Soviet type VVER 440/213 units with the same installed capacity but with certain safety improvements over the previous model were put into operation in Jaslovské Bohunice. Their lifetime was originally planned to run until 2015, but – following modifications performed by the operator – the Slovak government under Robert Fico (see the "Atomic Prime Minister" box) approved an extension of their operation until 2025.

Mochovce – how to build a power plant in a market environment

Mochovce 1, 2 – reactors with a state guarantee

The Mochovce Nuclear Power Plant project was part of the communist-era plan to build a nuclear power plant in every region of then Czechoslovakia. Construction of two VVER 440/213 units was launched in 1982, but after the collapse of communism the project was threatened by insufficient financing – total costs climbed to SKK 52 billion (EUR 1.72 billion), although the original estimate was half this figure. Loans were only secured due to efforts on the part of the Slovak government, and thanks mainly to state guarantees. Vladimír Mečiar's government even guaranteed high-risk loans, and public funds subsequently had to cover obligations amounting to SKK 10.9 billion (EUR 360 million).[23]

22 An appeal was made to Slovak officials to shut down the antiquated units already in 1992 at a meeting of the G7 in Munich.

23 Informácia o poskytovaní štátnych záruk v rokoch 1996–2002 a ich vplyve na deficit verejných financií [Information on the provision of state guarantees between 1996 and 2002 and their influence of the public finances deficit], Ministry of Finance of the Republic of Slovakia, Bratislava 2005.

Without the political decision to provide state guarantees on high-risk loans, the first two units at the Mochovce Nuclear Power Plant, which have been in operation since 1998 and 1999, respectively, could not have been completed.

Mochovce 3, 4 – how to convince the investor

Construction of another two VVER 440/213 units at the Mochovce Nuclear Power Plant was launched in 1987, but the works were suspended after five years, as they could no longer be financed. The investor, Slovenské elektrárne, estimated that at the time construction was suspended, 70% of necessary works in the area of construction, 30% of necessary works in the area of technology and 1% of necessary works in the area of direction and control systems had been completed. A total of roughly SKK 19 billion (EUR 630 million[24]) had been invested.

During the preparation of the state energy plan in 2000, the then right-wing government requested an economic assessment of the possible completion of the two units. Completion was designated as an economically unfavourable undertaking, even if all electricity produced could be sold at an above-market price. The government concluded that investing in the completion of the third and fourth unit at Mochovce could lead to a loss despite the "exaggeratedly optimistic" input parameters of the economic calculations.[25]

The same government decided on the privatisation of Slovenské elektrárne, however, which meant a new opportunity for the Mochovce 3, 4 project. The government set completion of the reactors as one of the conditions for participants in the privatisation tender, thus transferring the economic risks of the project to them. As late as 2005, Italian company Enel – which ultimately acquired a majority stake in Slovenské elektrárne – stated in its investment plan that completion, the cost of which it estimated at EUR 2 billion, would not be cost-effective and conditioned the project on tax relief and a limit on payments into the nuclear fund.[26] The privatisation contract, which respected Enel's requirements entirely, was signed in April 2006 and one year later Enel, based on a feasibility study (financed by the government), decided to complete the plant. The feasibility study was never published in full and the published summary does not contain even a single economic figure. It is thus not possible to assess the extent to which the economic calculations reflected the increase in the estimated budget for completion to EUR 2.78 billion, which occurred in November 2008.[27] The government incentives which most likely led Enel to change its mind on the plant's completion were then vigorously implemented by Robert Fico's government between 2006 and 2010. These incentives to Enel can be summarised in the following points:

- Limit on payments into the nuclear fund
  The money which will be used to finance the decommissioning of nuclear power plants after their useful life and for disposing of spent nuclear fuel are deposited by reactor operators in Slovakia into the National Nuclear Fund. In view of the fact that payments were initiated only after the reactors had been operating for several years and that the decommissioning work for the post-accident A1 reactor at Jaslovské Bohunice is being financed from the same fund, there is a serious danger that the accumulated finances will be insufficient to cover the necessary expenses. In the strategy for the back end nuclear fuel cycle approved by the Slovak government in 2008, there is a historic deficit in the nuclear fund in the amount of SKK 71.4 billion (EUR 2.37 billion).

  One of the incentives to persuade Enel to complete the third and fourth units at Mochovce was to limit the payments into the nuclear fund, which of course will lead to a further deepening of its deficit. According to a clause in the privatisation contract, "annual payments by nuclear reactor operators into the fund designated for the facilities' decommissioning shall not exceed EUR 86 million." As a result, according to calculations based on official estimates, the deficit in the nuclear fund will increase annually by EUR 26.4-60.9 million. Enel will save this money, but the lack of finances in

24 Using the exchange rate of EUR 1 = SKK 30.126.
25 State Energy Plan of the Slovak Republic, approved by the government in 2000.
26 TREND, 24 August 2005.
27 Minister of Economy L. Jahnátek at a press conference on 3 November 2008.

the nuclear fund will ultimately fall to future taxpayers. The promise in the privatisation contract was soon reflected in a legislative change. Already in 2006, the variable component of the payment was reduced from 6.8% of the price of electricity sold to 5.95%.[28]

- Cessation of dividend payments in the 2006-2012 period
  In 2006, the Slovak government, which retains a 34% stake in Slovenské elektrárne, approved a resolution not to pay out dividends from profits. Then PM Robert Fico did not directly state that the decision meant a contribution on the part of the Slovak government to the completion of the units at Mochovce. Thus, shareholders including the Slovak government did not receive one cent of the company's net profit – which in 2009 amounted to EUR 280 million.

- Compensation for losses resulting from long-term contracts
  In January 2006 in an article entitled "Government provides Enel benefits worth half a billion",[29] the Slovak media reported on the support which Enel, as an incoming investor, would receive from the Slovak government. The Ministry of Economy decided that 10% of the loss resulting from a long-term contract between Slovenské elektrárne and aluminium producer Slovalco would be covered by state-owned company SEPS – an electric power transmission operator. Under the 1994 contract, Slovenské elektrárne must provide electricity to Slovalco for a very low price, which does not even cover production costs. Thanks to this government decision, Enel as the owner of Slovenské elektrárne will save SKK 500 million (EUR 15 million). In 2005 alone, Slovenské elektrárne spent SKK 2.3 billion (EUR 69 million) on deliveries to Slovalco.[30] The approval of this compensation was even criticised by Enel's competitors in the privatisation tender, as their bids had been based on an unavoidable loss resulting from the contract between SE and Slovalco.

- Tax holiday for Mochovce 3, 4
  During the privatisation negotiations, Enel conditioned investments into completing the third and fourth units at Mochovce on a tax holiday for electricity production. This condition was part of the detailed July 2005 investment plan[31] as well as its summary,[32] which the government debated in August of the same year. To date, however, the government has not approved an official resolution on a tax holiday for Mochovce; according to available information, it last debated the matter in January 2006.[33] Figures prepared by economic experts and cited in the government materials estimate that a 10-year tax holiday for Mochovce would save Enel SKK 5 billion (EUR 150 million).

- Accelerated depreciation of investments in the Mochovce units
  Another incentive to improve the economic balance sheet of the completion of the third and fourth units at the Mochovce plant is to be accelerated depreciation of the investment. Instead of the usual 30-year term, Enel requested to depreciate the power plant over just 10 years.[34] If it reflected accelerated depreciation in its expenses, Enel would save SKK 3 billion (EUR 90 million) in taxes.

28 Law No. 560/2001 on the State Fund for Decommissioning Nuclear Energy Facilities and Disposal of Spent Nuclear Fuel and Law No. 238/2006 on the National Nuclear Fund.
29 Vláda poskytla Enelu výhody v hodnotě půl miliardy [Government grants Enel benefits worth half a million], Pravda, 17 January 2006.
30 SME, 23 June 2010.
31 Pravda, 4 September 2005.
32 Pravda, 15 October 2005.
33 Pravda, 16 January 2006.
34 Pravda, 13 September 2005.

Table: Basic points of Enel's investment plan in Slovakia for 2007-2013

Project	Amount of Investment [millions of SKK]	Amount of Investment [millions of EUR]	Installed Capacity	Share of Total Investment	Share of Total Capacity
Mochovce 3, 4	63,000	1,880	880 MWe	60 %	35 %
Capacity increase, Mochovce 1, 2 and Bohunice V2	2,700	80	161 MWe	2.5 %	6.5 %
Natural gas plant	7,300	218	385 MWe	7 %	15.5 %
Coal-fired plant	10,800	324	236 MWe	10 %	9.5 %
Reconstruction of the Nováky coal-fired plant	1,100	33	98 MWe	1 %	4 %
Pumped-storage hydro-electric plant on the Ipel River	9,400	280	600 MWe	9 %	24 %
Small hydroelectric plants	4,550	136	43 MWe	4 %	1.5 %
Wind park	4,750	142	100 MWe	4.5 %	4 %
Total	105,000	3,100	2,503 MWe		

Source: Pravda, 24 February 2007

- Disputed environmental impact assessment of completion of the Mochovce Nuclear Power Plant
  The environmental impact assessment of the completion of the third and fourth units at the Mochovce plant conducted according to EIA procedure remains a point of contention. The responsible authorities long maintained the position that the project had a valid building permit and did not need an EIA. The building permit, however, was issued under the communist regime in 1986. It was extended several times by the regional construction office (most recently in 2008 with validity through 2012), but the main approval process took place in the 1980s without public participation. The non-governmental organisations Greenpeace and ZA MATKU ZEM submitted several complaints on the absence of an EIA, arguing that the project had been changed fundamentally from the original proposal. Thanks to the efforts of non-governmental organisations, the EIA process was launched in the autumn of 2008. Its fundamental flaw, however, was that it was conducted as a mere formality and, moreover, at a time when construction was already fully underway. The standard procedure, where the EIA assessment serves as a basis for issuing a building permit, was not observed.

  During the entire EIA process, it was obvious that the responsible authorities were not interested in a high-quality assessment of the project, but in its rapid implementation. The Environment Ministry did not accept even a single comment from the public and refused to require supplementary documentation on even such a basic issue as the handling of nuclear waste. The EIA report was then prepared by Ján Timulák, CEO of the company Decom, a subsidiary of VUJE, which is a major building supplier of the Mochovce project. As the author of the report, he thus had a clear conflict of interests.

New reactor in Jaslovské Bohunice

Another decisive step taken by Robert Fico's government towards preserving the privileged position of nuclear energy in Slovakia was the establishment of a company for the construction of a new reactor in Jaslovské Bohunice. At the end of 2008 the government, without a public tender, decided that the strategic partner would be Czech half state-owned giant ČEZ. In May 2009 a contract was concluded establishing a company owned 51% by Slovak state-owned company JAVYS and 49% by ČEZ. To date, representatives of the company have not made public information on the technical parameters and price of the reactor, pointing out that a feasibility study is underway. It is no secret, however, that the supplier and type of reactor will be determined by the results of the tender which ČEZ issued for the supply of five reactors in various European countries.

It is worth noting that state-owned company JAVYS was established primarily for decommissioning nuclear facilities and disposing of spent fuel. Thus, the risks of this business venture are borne by an entity financed from the under-funded National Nuclear Fund.

The new Slovak government and nuclear energy

Strong political pressure to complete the third and fourth units at Mochovce and vigorous steps to build a new reactor at Jaslovské Bohunice are connected mainly with the government of PM Robert Fico. In elections held in June 2010, Fico's party, Smer, garnered 35% of votes but was unable to form a governing coalition. The government was thus formed by centre-right parties led by the Slovak Democratic and Christian Union (SDKU) and Iveta Radičová, who became the new PM. From a look at the election programmes of the coalition parties, however, it is evident that a marked departure from nuclear energy cannot be expected.

SDKU's election programme states, among other things, that: "We will construct new nuclear facilities only for the essential purpose of covering our domestic consumption."[36] Coalition partner Freedom and Solidarity declares that: "Slovakia's energy independence can only be achieved by completing the third and fourth units of the Mochovce Nuclear Power Plant."[37] Another governing party, the Christian Democratic Movement (KDH), states that:[38] "We support the use of nuclear energy on condition of strict adherence to safety measures and resolving the long-term storage of spent fuel. Nuclear energy is among the least expensive energy sources which can ensure Slovakia's competitiveness. Nuclear energy contributes decisively to limiting greenhouse gas emissions and to a safe supply of electricity."

The last coalition partner, Slovak-Hungarian party Most–Híd, expresses no opinion on the development of nuclear energy in its election programme. In its programme agenda, the government makes no mention of the problems surrounding the completion of the Mochovce Nuclear Power Plant; we find only a position on the construction of a new reactor at Jaslovské Bohunice: "We support the construction of a new unit at the Bohunice Nuclear Power Plant only if the investment costs are covered by private sources without state participation."[39]

Atomic Prime Minister

Probably no high political figure has become so personally involved in the cause of nuclear energy as former Slovak PM Robert Fico. The need to develop nuclear energy has been one of the most frequent topics of his media appearances, and he made the completion of the third and fourth units of the Mochovce Nuclear Power Plant a key priority of his government. He never came to terms with the

35 Na Slovensku vyroste nová jaderná elektrárna, postaví ji ČEZ [There will be a new nuclear power plant in Slovakia, built by ČEZ], http://www.euractiv.cz/energetika/clanek/na-slovensku-vyroste-nova-jaderna-elektrarna-postavi-ji-cez-006059.
36 SDKU's election programme, 2010.
37 Responses from the Freedom and Solidarity party, May 2010.
38 KDH's election programme, 2010.
39 See note 34.

shutdown of the antiquated reactors at Jaslovské Bohunice.

At the Prague meeting of the European Nuclear Forum in 2008, Fico told participants that he watched the shutdown of the first unit at Jaslovské Bohunice – which Slovakia committed to in the EU accession treaty – with tears in his eyes. Later, in his speech, he did not conceal his intent to postpone the shutdown of the second non-compliant unit at Jaslovské Bohunice:[40] "I am not for anyone violating the fundamental principle of international law that treaties must be respected. This principle can be violated only by agreement. Thus, we will open the topic of "how do you want to help us?" We are to be relegated to importing 20% of our electricity, and you are presently postponing the assessment which should allow us to complete the third and fourth units [of the Mochovce Nuclear Power Plant]. So if you don't want us to complete the third and fourth units at Mochovce, then offer us another solution. Another solution could be, for example, to extend the operation of the unit which is to be shut down at Jaslovské Bohunice by one or two years." He did not hesitate to characterise the shutdown of antiquated reactors as an international conspiracy:[41] "I am convinced that Slovakia was deprived of energy independence intentionally, because they had to know what it would mean for Slovakia. [...] Today in Europe, being strong no longer means having lots of tanks and lots of rockets; being strong means having one's own energy sources as well as energy sources on the territory of foreign countries. It's like the issue of weapons in 1990 when it was asserted that we had to stop weapons production because it was at odds with human rights – and today, those countries who insisted the most have taken over all of Czechoslovakia's [weapons] markets."

In January 2009, just days after the second unit at Jaslovské Bohunice was shut down, Russia suspended deliveries of natural gas to Europe and the "natural gas crisis" erupted, lasting several days. Robert Fico's government instinctively proposed restarting the Bohunice unit as an anti-crisis measure, even though electricity production from natural gas in Slovakia is marginal. PM Fico defended this position with the words: "Do we want winter and darkness or do we want to be lauded somewhere abroad for complying with the accession treaty?"[42] The Slovak government only backed down from its intent to restart the Bohunice reactor under pressure from the European Commission, which had threatened Slovakia with restricting its access to EU structural funds.[43] Moreover, the European Commission, in reaction to the PM's dramatic statements, soberly noted that it was not possible to transform electricity from a nuclear power plant into natural gas and thus restarting the Bohunice unit would in no way affect supplies of this raw material.

According to the Slovak media, however, PM Robert Fico's support for nuclear energy was neither accidental nor altruistic. Fico began to take positions on energy during the Smer party's swift ascendance in 2000. According to the daily SME, a major sponsor of the party at the time was businessman Lubomír Blaško, who sat on the supervisory board at Slovenské elektrárne, from which he also received contracts.[44] The PM's main adviser for energy was Vladimír Práznovský, chairman of the board at Enesco, which was among the main suppliers for construction of the first units at the Mochovce plant. Enesco was also awarded contracts for completing the third and fourth units despite the conflict of interests of the company's leading representative.[45]

In preparing this section, the author drew on Jan Beránek's study "Economy of Mochovce 3 & 4 Reactors in Slovakia - In the Light of Potential State-Aid and Other Benefits", Bratislava, April 2007 as well as annual reports of the National Nuclear Fund and of the companies Slovenské elektrárne and SEPS, among other sources.

40 Fico žiada od únie pomoc po odstavení Jaslovských Bohuníc [Fico requests EU help after shutting down Jaslovské Bohunice], http://dnes.atlas.sk/ekonomika/statna-sprava/198435/fico-ziada-od-unie-pomoc-po-odstaveni-jaslovskych-bohunic.

41 Ibid.

42 Ficosisjadrovoulobydobrerozumie[Ficogetsonwellwiththenuclearlobby],http://ekonomika.sme.sk/c/4261457/fico-si-s-jadrovou-loby-dobre-rozumie.html.

43 Štart atómky si Fico rozmyslel, Brusel by vzal miliardy [Fico changes his mind on starting reactor, Brussels would take billions], http://spravy.pravda.sk/start-atomky-si-fico-rozmyslel-brusel-by-vzal-miliardy-pik-/sk_domace.asp?c=A090113_204439_sk_domace_p23.

44 Fico má slabosť pre jadro [Fico has a weakness for nuclear energy], http://www.sme.sk/c/5392492/fico-ma-slabost-pre-jadro.html.

45 Superbiznis pre Ficovho poradcu. Ide o Mochovce [Super-business for Fico's adviser, it's about Mochovce], http://hn.hnonline.sk/c1-23614230-superbiznis-pre-ficovho-poradcu-ide-o-mochovce.

POLAND'S NUCLEAR PLANS

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Introduction

The first attempt to construct a nuclear facility in Poland dates from the 1980s. After the Chernobyl disaster, however, public opinion turned unequivocally against the project and after 1989 it was abandoned.

In the 1990s and the first several years of the 21st century there were no official proposals for developing nuclear energy. While its supporters – in particular leading nuclear researchers – lobbied in this area, political will and public support were lacking. In a government declaration in July 2006, however, PM Jarosław Kaczyński suggested that Poland should consider the possibility of constructing nuclear power plants. His speech was in accordance with Poland's energy policy at the time, under which there was to be a debate on this issue.[46] No large projects were launched, however, as public opinion remained sceptical towards this energy source (see the tables on page 23).

PM Kaczyński's declaration did have one consequence, however: it led to the launch of a pro-nuclear promotional campaign. Scientists specialising in nuclear research began to emphasise the role of nuclear energy in Poland's energy security. They were joined by representatives of major electricity producers, whose dominant position could be further consolidated by a nuclear plant project. With increasing frequency, messages appeared in the media lauding the benefits of developing nuclear energy in Poland.

Then, in December 2008, PM Donald Tusk unexpectedly announced that at least one nuclear power plant would be built in Poland by 2020. This decision was not preceded by any expert studies and, moreover, the draft Government Energy Plan for Poland until 2030, published three months earlier, did not contemplate the construction of any energy facilities of this type, mentioning only that their development "should be considered". Evidently, project preparations for Poland's first nuclear plant were decided by the PM and his advisers alone.

Does Poland need nuclear energy?

Poland's energy industry has long been in a complicated situation. For many years it has been evident that a reduction in greenhouse gas emissions and a general modernisation of the energy sector should be among the country's priorities. Polish politicians, however, have maintained that this is not necessary – Poland has in fact reduced its carbon dioxide emissions as compared to the reference year (1988) by nearly 30%, primarily due to a decline in industrial production following the collapse of numerous inefficient socialist operations.[47] Poland's energy system, however, is almost completely dependent on fossil fuels; 93% of electricity is produced from coal, and carbon dioxide emissions from this sector are thus very high.

Moreover, approximately 40% of existing plant units are more than 40 years old, and 10% are more than 50 years old.[48] This means that a significant portion of Poland's energy-producing facilities should be shut down, as they have reached the end of their technical lifetimes. According to experts,[49] an energy shortage on the Polish market will appear (even if electricity imports are used) by 2013 and a lack of capacity in the system (with a risk of interrupted deliveries to certain customers) will appear in 2015.[50]

46 Decree of the Minister of Economy and Labour on 1 July 2005, on national energy policy until 2025, Monitor Polski, 22 July 2005.

47 Between 1989 and 1991 the emissions reduction was caused in particular by a decline in heavy industry, whereas from the mid 1990s a reduction in emissions was brought about by rapid economic development marked by increased efficiency. It is important to keep in mind that while the reduction in emissions between 1989 and 1991 was not the result of implementing instruments of climate policy, the public and the state bore its high costs – slowed economic growth and very high unemployment.

48 Żmijewski, K., Kassenberg, A, Pasierb, S., 2008: Polska polityka energetyczna. Deklaracje i rzeczywistość. [Polish energy policy: declarations and reality], Institute for Sustainable Development, Warsaw.

49 Ibid.

50 In view of the decline in the economy and lower energy consumption, however, the effects of the crisis may be postponed, although unless decisive action is taken they will appear.

The electric power transmission system is in very poor condition,[51] resulting in local blackouts. In the winter of 2010, certain villages and areas in Poland were not supplied with electricity for a period of several weeks. The low-voltage distribution network is in the worst condition,[52] with more than 55% of energy lines of this type not meeting basic standards concerning the level of voltage.

At the same time, the production and use of energy is inefficient:[53]

- energy consumption per unit of GDP in Poland is 2.67 times higher than in the EU-15;
- the net efficiency of power plants in Poland is 32.5% while in the EU it is 41.5%;
- the efficiency of heat sources and heating systems in Poland is substantially lower than in the EU-15 – only 20% of heating networks have pre-insulated pipe;
- annual heat consumption in flats in Poland is 150÷350 kWh/m^2/year while in the EU-15 it is 40÷90 kWh/m^2/year (up to 15 kWh/m2/year is technically possible).

The development of nuclear energy cannot resolve any of the above-mentioned problems in Poland's energy sector. It will not prevent a shortage of electricity sources in the second decade of the 21st century, it will not improve energy efficiency, it will not reduce the risk of delivery interruptions for residents and it cannot influence fulfilment of the goals of the EU 2020 climate and energy package. Nor would one or two operational reactors have a decisive impact on reducing carbon dioxide emissions from the point of view of Poland's emissions balance. If Poland wants to meet its requirements under the climate and energy package, it must increase energy efficiency by at least 20% and heavily support the development of renewable energy sources in order to achieve their 15% share of final energy consumption. Meeting the requirements of the package – in contrast to building a nuclear power plant – will contribute significantly to covering demand for energy in 2020. Even in the following decade, Poland can continue with an energy policy oriented towards renewable sources, accommodate their integration into a network and build transmission capacities. Poland must decide between a decentralised (renewable) and a centralised (nuclear-fossil fuel) direction in energy policy.

Poland's decision to embark on a nuclear programme is based exclusively on political factors and stems from an attempt by the current government to maintain the support of the influential energy sector, not from rational economic considerations.

Debate or promotion?

Poland's new Draft Energy Policy until 2030, published in September 2008, does not contain a specific proposal for developing nuclear energy in Poland.[54] This is not surprising; since 1989, despite attempts by the pro-nuclear lobby, there has not been a favourable environment in Poland for constructing a nuclear power plant. Public resistance was so great that politicians did not venture into the issue.[55]

When it assumed power in 2007, not even the government of PM Donald Tusk showed interest in nuclear energy; then Environment Minister Maciej Nowicki expressed a very sceptical view on the idea of developing this form of energy in Poland, stating that the country should first make use of the existing potential of energy efficiency.[56]

51 Żmijewski, K., 2009: Polska polityka energetyczna do 2030 roku [Polish energy policy until 2030]. Presentation prepared at the request of the Institute for Sustainable Development, Warsaw, as part of the "EkoHerkules" project.

52 Institute for Sustainable Development, 2009: Materials prepared for the needs of "Poland's Alternative Energy Policy until 2030", a programme realised within the "EkoHerkules" project.

53 Climate Coalition, 2009: Protecting the global climate – future challenges, present need. "Climate Tour" presentation prepared as part of the SOS Climate project.

54 Ministry of Economy, 2008: Poland's Energy Policy unitl 2030, September 2008 version.

55 According to a 2010 survey by GFK Polonia, 50% of respondents opposed the construction of a nuclear power plant in Poland while 42% supported it. The level of support for this form of energy is not stable, however (see below). Information from Mniej niż połowa Polaków za energetyką jądrową [Less than half of Poles support nuclear energy], Rzeczpospolita, 8 February 2010.

56 Minister środowiska nie chce atomu [Environment minister does not want nuclear energy], Gazeta Wyborcza, 7 December 2007, available on: http://wyborcza.pl/1,76842,4742817.html.

In December 2008, after meeting with the French president on the EU climate and energy package, PM Tusk unexpectedly announced a plan to construct the country's first nuclear power plant. His declaration was not preceded by any detailed technical or economic study and the reasons for taking this step were not even published.[57] None of the strong opposition parties actively opposed the plan.

Only a few days later, on 13 January 2009, the government adopted a resolution on preparing a programme for Poland's nuclear sector.[58] The new government office of Government Commissioner for Nuclear Energy was created. This post was filled by Hanna Trojanowska, a former director of the nuclear energy division at the company Polska Grupa Energetyczna (a majority state-owned company and Poland's largest electricity producer). For work in this area in 2009 – during the height of the financial crisis – the government allocated almost PLN 5 million (c. EUR 1.2 million) from budget reserves; for 2010, the figure was more than PLN 40 million (EUR 10 million).

In November 2009, Polska Grupa Energetyczna (PGE), which is to build the first nuclear power plant, signed a memorandum on cooperation in the area of nuclear energy with Electricité de France.[59] Since both parties assume that Poland will purchase new reactors in France and that the Polish experts who will ultimately work in the newly built facilities will also be trained there, it is France who has the most to gain from Poland's programme to develop nuclear energy.[60] PM Tusk announced his intent to launch the nuclear programme almost immediately after a meeting with President Nicolas Sarkozy, where a compromise had been worked out concerning Poland's implementation of the EU climate and energy package. Thus, all indications are that the Polish government negotiated an unofficial and secret agreement on this matter with France. Only later did PGE sign a joint declaration on nuclear cooperation with Westinghouse and General Electric as well.

The government completely omitted public discussion. During a session of the Parliamentary Committee for Environmental Protection in response to a question on whether funds intended for advancing nuclear energy would also be made available to environmental organisations which take a sceptical view of the project, Hanna Trojanowska stated directly that she could not imagine that the government would "hand out money to all the opponents [of nuclear energy]. I'm sorry, but I don't anticipate this ..."[61] Moreover, the government purposefully uses the opinions of selected experts who defend nuclear energy, pointing to the low costs of energy produced at nuclear plants or the safety of third-generation and later reactors, among other things.[62] It thus does not intend to conduct an informational campaign, but rather a promotional one.

In January 2009, the Climate Coalition of Polish non-governmental organisations presented a position paper to the Economy and Environment Ministers on the development of nuclear energy.[63] It requested the retraction of the adopted government decision and the drafting of a widely discussed new state energy policy until 2030. This did not happen, however, and a publicly funded one-sided media campaign is underway with the objective of raising broad support for the construction of nuclear power plants in Poland.

Public opinion polls indicate that Poles' views on nuclear energy are not stable and a large percentage of respondents do not have a clear opinion on the issue (Table 1). Opinions are formed primarily through continuous reports in the media.

57 Only later, after Tusk had adopted the decision and after its publication, were arguments presented to justify it.

58 Government resolution No. 4 of 13 January 2009, on measures adopted in the area of developing nuclear energy.

59 PGE S.A.: Signing of a Memorandum on Initiating Cooperation in the Area of Nuclear Energy with EDF. http://gielda.onet.pl/pge-polska-grupa-energetyczna-s-a-podpisanie-memorandum-w-sprawie-rozpoczecia-wspolpracy-w-zakresie-energii-jadrowej-z-edf,18886,20667,1,komunikaty-detal.

60 Ibid.; speech by the Polish ambassador at a conference entitled "Nuclear Energy in Greater Poland: A Chance for Development?", held 2 February 2009 in Poznań, http://www.ambafrance-pl.org/france_pologne/spip.php?article3106, as well as information on the website of the Polish Embassy in Paris, http://www.paris.polemb.net/index.php?documentName=events.

61 Report from the 113th session of the Parliamentary Committee for Environmental Protection, 7 January 2010. Available on: http://orka.sejm.gov.pl/Biuletyn.nsf/fkskr6?OpenForm&OSZ.

62 Ibid., speech by A. Strupczewski.

63 Position of the Climate Coalition on developing nuclear energy in Poland. January 2009. Available on: http://www.koalicjaklimatyczna.pl.

Table 1. Change of preference in relation to the development of nuclear energy in Poland from 1987 to 2010

Opinion on developing nuclear energy	Date of survey					
	11.1987[a]	11.1989[a]	6.2006[a]	7.2008[a]	3.2009[b]	2.2009[c]
Proponents of construction	30	20	25	38	47	42
Opponents of construction	39	46	58	45	38	50
Persons without an opinion	31	34	17	17	7	8

a – according to a CBOS poll[64]

b – according to a Pentor RI poll[65]

c – according to a GFK Polonia poll[66]

A significant majority of Poland's residents, however, do not wish to live near a nuclear power plant (Table 2).

Table 2. Opinion of Poles on the construction of a nuclear power plant in the vicinity of one's home[67]

Opinion on the construction of a nuclear power plant in the vicinity of one's home	Date of survey	
	6/2006	7/2008
Proponents of construction	17	25
Opponents of construction	72	63
Persons without an opinion	11	12

Conclusion

The decision to build the country's first nuclear power plant will not resolve essentially any of the problems facing the Polish energy sector. In view of the poor condition of the transmission networks and antiquated production capacities, it will be necessary in the coming years to reckon with interruptions in the supply of electricity, failures in energy systems and excessively low voltage in rural networks. Nuclear energy will not even contribute to a significant reduction in carbon dioxide emissions. Such a reduction in the long term would require the construction of more than ten power plants, and no one is considering such massive development of the nuclear sector. It can therefore be concluded that the plan to construct a Polish nuclear power plant was pushed through by the energy industry lobby and/or a secret agreement between Poland and France.

The government is anticipating that its promotional campaign will succeed in bringing a majority of the Polish public around to its position, but nuclear energy is not a path that would allow for the selection of the most effective and optimal method for modernising the Polish energy system and developing an active policy of climate protection.

64 CBOS, 2008: O problemach energetyki. Raport z badań [On energy issues: report on polls]. CBOS. Warsaw.
65 The opinion of Poles on nuclear energy, Rzeczpospolita. 10 March 2009.
66 Mniej niż połowa Polaków za energetyką jądrową [Less than half of Poles support nuclear energy]. Rzeczpospolita, 8 February 2010.
67 CBOS, 2008.... ibid.

TRACES OF THE SOVIET NUCLEAR INDUSTRY IN HUNGARY

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Compared to the other countries of Central Europe, Hungary has the best options for making use of renewable sources. The potential for generating energy from wind, solar, biomass and geothermal sources is high thanks to the country's geography. Hungary was also the first country in the region to begin large-scale construction of wind farms. The direction of energy policy, however, is still determined in practice by the operators of coal-fired and nuclear power plants, which hold firm positions established during the period of centrally planned economic development. The strings are pulled mainly by state-owned company MVM, the successor to the socialist energy monopoly. Due to its elite engineers – educated and trained in the Soviet Union – and its ownership of four reactors on the Danube bank, MVM's management has become one of the most influential nuclear lobbies in the region. The revolving door between MVM and state authorities responsible for energy policy only strengthens the company's influence.

The history of the nuclear programme stretches back to the 1960s. The result was the construction of a nuclear power plant with four Soviet-designed reactors on the Danube's western bank near the city of Paks.[68] It was put into operation gradually between 1982 and 1987. As a result of modifications and an increase in capacity, Paks now covers 37% of Hungary's electricity demand.

Nuclear oversight under pressure

As in all European countries using nuclear energy, the Hungarian operators declare that maintaining a high level of safety is their main priority. The independence of nuclear oversight in Hungary remains questionable, however, as was the case in socialist times.

Until 2003, nuclear oversight was administered by the Ministry of Energy, Transport and Telecommunications, which of course is also responsible for producing electricity. During accession talks between Hungary and the European Union, the resolution of this conflict of interest was among the EU's requirements. For a time, nuclear oversight was administered by other ministries, but in 2008 the government returned to the original model. After the elections in 2010, the newly created Ministry for National Development – the exact priorities of which cannot be assessed as yet – assumed control of nuclear oversight.

How to handle radioactive waste

In 1996, the responsibility for disposing of spent fuel and decommissioning plants shifted from the operator to the state. At the same time, a fund was established – the CNFF (Central Nuclear Financial Fund) – to cover the costs of disposing of nuclear waste in future.[69] The originators of radioactive waste contribute to the fund, 99% of which should be paid by the nuclear power plant. However, the fund was established already in the 16th year of the plant's operation, and thus only a relatively short time frame remains to accumulate the necessary sums. In 1998, the state organisation PURAM (Public Agency for Radioactive Waste Management) was established to technically secure the disposal of nuclear waste.[70]

Until 1997, spent fuel from the Paks plant was shipped to Russia. Now nuclear waste is deposited in a dry cask interim storage facility at the plant, where it can remain for the next 50 years. According to official documents, the Hungarian government is still considering two options for dealing with spent fuel in the long term: constructing an underground repository or renewing transports to Russia. A preliminary survey of a potential site for building the repository was launched in the vicinity of a former uranium mine in the area of Boda, although thus far there have been no specific results. Considerations on renewing nuclear waste exports to Russia are based on a general agreement which does not

68 2nd-generation VVER-440/213 Soviet reactors.
69 http://www.rhk.hu/en/about-us/mandates/financing-the-work/.
70 http://www.rhk.hu/en/.

exclude this possibility in future. The agreement was signed shortly before Hungary's accession to the EU (according to EU principles, member states are to dispose of nuclear waste on their own territory).

If the Hungarian government decides to build an underground repository on its own territory, it will certainly draw on its experience searching for a site to deposit low and intermediate level waste in the 1990s. The basic observation can be summarised succinctly: in addition to geological work, it is also necessary to invest in promotion and in "buying" the affected residents. Due to the inflow of money into the municipal budget, for example, the mayor and most residents of the village of Bátaapáti consider themselves "fortunate" that the repository will be located near them. In 2009, the affected municipalities received EUR 10 million which was originally to be used for informing citizens about the repository's operations. The money was spent on improving municipal infrastructure, however – to the general satisfaction of all concerned. This method of utilising the central fund's resources was used by the PURAM agency even at a time when such practices were at odds with valid legislation. After the control authority pointed out the mismanagement of the fund's resources in 2001 and 2005, the law was changed to allow for support of investments in affected municipalities.[71] [72]

Extension of reactor lifetimes without an approved energy plan

The Hungarian government presented its first draft energy plan after EU accession in 2004. Following justified criticism that the draft did not reflect changes necessary under a liberalised energy market, it was returned for revisions. The revised plan was not yet on the table in September 2005, but at an 80-minute meeting the government approved a resolution to extend the lifetime of the Paks Nuclear Power Plant. Two months later even the Hungarian parliament took note of the government's decision to extend the reactors' operation by 20 years when MPs of all parties voted in exceptional consensus. A protest by non-governmental organisations citing the absence of a public discussion on such an important decision and supported by a petition from 80 leading figures in public life remained without repercussions.

That there are issues for discussion in the matter of the extension of the Paks Nuclear Power Plant is best demonstrated by a serious incident (level 3 on the International Nuclear Events Scale – INES), which occurred in the plant's second unit in April 2003. In the course of a scheduled shutdown, fuel rods were seriously damaged during cleaning (30 fuel rods were damaged as a result of defective cleaning equipment). Fuel pellets from the damaged rods remained in the tank where the cleaning took place. The reactor was taken out of operation for a year and a half, and as a result of the accident the manipulation of new and spent fuel became significantly more complicated.[73]

Even though the experience of the accident was still relatively fresh when parliament deliberated the extension of the plant's lifetime, this did not raise doubts for MPs. Despite its 1970s-era Soviet design, MPs declared that the Paks plant must remain part of Hungary's energy system and decided to extend its lifetime by 20 years.

Parliament decides in favour of MVM

In 2007, Hungary's parliament debated a new energy law aimed at introducing European electricity market rules. The government proposal, which would have meant the end of MVM's monopoly on electricity supplies to end customers, did not pass; instead, parliament approved a version which preserved MVM's privileged position. The current model gives MVM room to shift costs connected with investments directly onto electricity customers. Two main political forces were responsible in equal measure for parliament's decision – the post-communist Socialist Party and the right-wing Fidesz union, although they do not agree even in principle on resolving the vast majority of other issues.

71 http://www.asz.hu/ASZ/jeltar.nsf/0/6B072806E791A98FC1256CB10043AB2D/$File/0102j000.pdf (2001 report) and http://www.asz.hu/ASZ/jeltar.nsf/0/A069854A94B02687C1256FD40043B052/$File/0509J000.pdf (2005 report).

72 Report of the Supreme Audit Office on a control of the Central Nuclear Fund, March 2005, p. 9.

73 WISE/NIRS Nuclear Monitor, 25 April 2003, Serious incident at Hungarian Paks-2 reactor, http://www10.antenna.nl/wise/index.html?http://www10.antenna.nl/wise/586/5507.html.

An energy plan as an opportunity for new reactors

In 2007, the Ministry of Energy, Transport and Telecommunications again attempted to create an energy plan. A new development was the partial involvement of the public in commenting the document, although not at the desirable level of openness. One of the issues about which there was no public discussion was the possible construction of new nuclear reactors in Hungary.

In the final version of the plan, which the Ministry presented to the parliament's economic committee, the construction of new reactors was conditioned on the shutdown of the existing units at the Paks plant. Members of the committee and representatives of the energy industry who had been invited to this session objected strongly to this condition and had it removed.[74] The document was fundamentally altered in parliament, and the discussion resulted in the approval of a parliamentary resolution on the energy plan.[75] The passage on new reactors in the resolution is written only in general terms; however, parliament directs the government to examine the possibility of building one or more reactor units and to present its findings.[76]

Decision on new reactors – fast and unspecific

Despite the economic crisis in the autumn of 2008, which impacted Hungary more severely than other countries, the nuclear lobby recorded unexpected victories in promoting new reactors. In February 2009, Socialist PM Ferenc Gyurcsány gave a parliamentary speech on overcoming the economic crisis in which he mentioned, for example, that two new reactors would be built at the Paks Nuclear Power Plant by 2020 with a capacity of 2,000 MW. Prior to the speech, Gyurcsány had mentioned the issue of new reactors publicly only once – declaring that their construction must be preceded by a referendum.

The government sent a draft resolution on constructing new reactors to parliament in mid-March and one week later PM Gyurcsány resigned. Without regard for the government crisis and early elections, parliament quickly debated and approved the resolution. Deliberations in committee took one hour, and the construction of new reactors was approved on the floor within ten minutes with a 95% majority of votes.

While the results of the vote gave a clear picture of the strong support for nuclear energy in Hungary's parliament, the approved one-and-a-half-page document provides only one piece of information about the new reactors: they are to be located in Paks. It does not tell us the criteria according to which the reactors will be selected, who will build and operate them, or even who will pay for them, not to mention solutions to the technical problems arising from an excess of sources for base load demand in the transmission system.

Despite the fact that decision-making on extensive projects without public participation is at odds with normal democratic mechanisms, under Hungarian law it is not possible to challenge a parliamentary resolution in court. The only institution which can help citizens if there rights are violated by state authorities is the Ombudsman. Accordingly, the non-governmental organisation Energia Klub appealed to the Office of the Ombudsman to examine the decision to construct new reactors.[77] The results of the Ombudsman's investigation are expected to be made public by the end of 2010.

Energia Klub also requested, under freedom of information legislation, that MVM make basic information about the project public. After the request was refused, which in Energia Klub's view is illegal, the organisation filed suit against MVM.

MVM's nuclear plans limit development of renewable sources

Hungary has relatively good options for making use of renewable sources of energy, and successful projects have been implemented with increasing frequency in recent years. Electricity production from renewable sources is officially restricted, however, due to the limited capacity of the transmission system. For example, investors constructing wind farms can obtain building permits only as long as the

74 Minutes from the committee meeting, available upon request at the secretariat.
75 Parlamentary resolution 40/2008.
76 http://www.nfm.gov.hu/data/cms1859873/energiapolitika.pdf.
77 Energia Klub is a non-governmental organisation specalising in energy policy issues.

total installed capacity of these sources does not exceed 330 MW. In 2010, this limit was raised by 410 MW on condition that wind farm owners limit production when instructed to do so by the operator of the transmission system. The operator of the transmission system, however, is owned by MVM, and therefore it is not possible to prevent the unauthorised favouring of MVM sources over competing sources.

According to unofficial information, MVM plans to construct new reactor units with a capacity of 2,000 MW. This would result in a significant rise in installed capacity of inflexible sources in electricity production, which would make it more difficult to integrate renewable sources into the system.

Energy policy is determined by ties from socialist times

For the duration of its existence, MVM has been a significant power structure. Already in 1987, MVM's power was brought to bear on the nuclear inspectorate, whose staff insisted on conducting pressure tests on one of the reactors, resulting in a delay in fuelling. Over objections from plant representatives, the inspectorate had the tests carried out. Subsequently, nine staff members at the inspectorate – which was under the Ministry of Industry – were dismissed for "insufficient cooperation" with plant management. As a result of the staffing reduction, the number of inspections was curtailed as well.[78]

On the other hand, István Kocsis, a longstanding member of the MVM elite, was not in danger of losing his position as director of the Paks plant even in the aftermath of the April 2003 incident mentioned above. To the contrary, two years later he was promoted to executive director of MVM. He left this position after a scandal in 2009 when it was discovered that EUR 50 million from MVM's budget had been transferred to the accounts of offshore companies.[79] Immediately after his resignation, however, Kocsis became head of Budapest transport company BKV.

Hungary's energy policy has long been determined by an elusive group of politicians personally connected to leading representatives of former state-owned companies from the socialist period who occupy key posts even in the transformed energy sector. This influential group – which includes MVM management as well as important functionaries of political parties – is in agreement on the need to maintain the model of centralised energy; it promotes the construction of nuclear power plants and impedes the development of renewable sources. Major projects are decided on in a non-transparent manner and to the exclusion of public debate. The decision to build new reactors in Paks will be made based on political considerations rather than expert assessments.

Not even the overwhelming election victory by Fidesz – which won a constitutional majority in parliament in spring 2010 – and the subsequent replacement of MVM's management is likely to lead to a change in the circumstances of Hungary's energy sector. The new head of MVM, Csaba Baji, ran the Paks plant in 2001 and 2002, and at the key Ministry for National Development another Soviet-trained former Paks manager is responsible for energy. Nor is hope offered by the statements of PM Viktor Orbán, who after a November 2009 meeting with Vladimír Putin declared that "Paks is a Russian plant; the extension of its lifetime and the construction of new units cannot be accomplished without the Russians."[80]

The development of nuclear energy is even recommended in the government's long-term development plan, which is to serve as a resource material for preparing new strategies, including an energy strategy. In view of the composition of the working group which prepared this part of the plan, one cannot expect otherwise. At present it remains unclear whether the feasibility of individual projects will be discussed during the approval process.[81]

Not even after a change of the ruling garniture in Hungary is there a visible effort to correct the situation on the energy market. State representatives have repeatedly declared their intent to make use of their position as MVM's owner and build an oversized and inflexible energy source – new reactors at Paks. This is unfortunate news not only for investors in renewable sources but also for the development of Hungary's dependence on imports.

78 http://nol.hu/archivum/archiv-110245.
79 http://index.hu/gazdasag/magyar/2009/06/29/az_mvm_a_vezer_felesegetol_berelt_szallodat/.
80 http://www.alternativenergia.hu/orban-az-oroszok-segiteni-fognak-az-energiafuggetlenseg-eleresben/10215.
81 According to members of Energia Klub who attended the deliberations of the working groups.

ENERGY POLICY AND POLITICS IN BULGARIA

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1. The energy supply in Bulgaria

Bulgaria is the poorest country in the EU. Its economic output was weak even before the global financial crisis. The so-called "boom" after the revolution in 1989 and strengthening at the time of EU accession were based on the sectors that suffered the most in the crisis: real estate, construction and the development of shopping centres. Certain services which attracted investment, such as tourism, also declined.

With gross electricity production of 42,789 TWh in 2009, Bulgaria represents only a small part of the European electricity market. More than 18.1% (7,735 TWh) of this production was exported to neighbouring countries (Macedonia, Greece, Serbia and Romania). The energy situation in Bulgaria is relatively stable and based on established utility companies, although external events and difficulties may endanger the energy supply. This occurred in January 2006 and January 2009 when the supply of natural gas from Russia was blocked and deliveries were decreased to the central heating system in Sofia and other cities, as well as to the chemical industry.

On the other hand, there are a variety of problems which complicate Bulgaria's situation. According to a 2009 report from the Bulgarian Academy of Sciences[82] analysing the electricity sector in Bulgaria, one of the worst problems the country is facing is that "Bulgaria is heavily dependent on the import of energy resources and at the same time uses the most electricity relative to GDP [in the EU]."[83]

Bulgaria imports almost 100% of its oil and gas, 100% of its nuclear fuel and about 35-40% of the coal used in the country. As a result, the entire electricity sector is highly dependent on imports of primary energy, mainly from Russia. Surprisingly (in view of Eurostat methodology), the Bulgarian National Statistical Institute refers to nuclear power as a domestic source of energy even though Bulgaria does not produce a single unit of uranium and imports all its fuel from Russia. Moreover, nuclear and hydro-energy are often counted together. According to the Bulgarian Academy of Sciences,[84] this approach has three negative impacts:

- It is not possible to get exact data on the real amount of imported nuclear fuel, and therefore it is not possible to see the real proportion of nuclear energy in the country's energy use.
- It is also impossible to perform a complete analysis of the energy balance. Since official statistics count nuclear fuel as a "domestic source", the resulting dependence on imports is 48%; if the nuclear fuel is counted as an import, the figure increases to 70.3%.
- This methodology also makes it difficult to assess the impact of hydro-energy production on the overall balance of energy use, thus providing incorrect information for developing energy policy.

The sector suffers from scandals and accusations of corruption and political manipulation. Energy Minister Traycho Traykov indicated in early 2010 that of the EUR 500 million invested thus far into the Belene nuclear power project in northern Bulgaria, EUR 250 million is unaccounted for. While it is almost impossible to determine whether these consisted of bribes or "commissions", it became clear that politicians were "hired as consultants" for energy projects and compensated with disproportionately large sums of money.[85] Unfortunately, no cases have been investigated to date by the public

82 "Електроенергетиката на България – развитие и обществена цена", БАН, 2009 [Electro-energy of Bulgaria – development and public price], Balgarska Akadeniya na Naukite, 2009, http://eap-save.eu/uploads/files/Book%20%20Elektricity%20power%20generation_koreg%20pech%20gr_%20BG1.pdf.

83 See also European Environmental Agency, http://www.eea.europa.eu/data-and-maps/figures/total-energy-intensity-1995-2007.

84 "Електроенергетиката на България – развитие и обществена цена", БАН 2009 [Electro-energy of Bulgaria – development and public price], Balgarska Akadeniya na Naukite, 2009, http://eap-save.eu/uploads/files/Book%20%20Elektricity%20power%20generation_koreg%20pech%20gr_%20BG1.pdf.

85 Доган е получил 1.5 млн. лева като консултант за „Цанков камък" [Dogan has received 1.5 million Euro as a consultant for "Tsankov Stone"], Dnevnik, 21 March 2010, http://www.dnevnik.bg/bulgaria/2010/03/21/876383_dogan_e_poluchil_15_mln_leva_kato_konsultant_za_cankov/.

prosecutor or brought to court. Investigations were launched against three former ministers in the spring of 2010.[86]

There are no stable medium-term forecasts or action plans on how the sector will develop. It is long-standing practice that only state-owned utility NEK and its consultants present so-called "forecasts" or programmes, created for purposes of justifying their own needs and funding requests for large fossil fuel and nuclear projects. Due to a complete lack of transparency concerning data and assumptions on economic forecasts, demography, regional planning, etc., it is impossible to perform an independent audit of these energy development scenarios.

It is often impossible to trace who initiates certain proposals or evaluate whether these would indeed improve the energy situation or, rather, are merely fuelled by narrow corporate interests. The sector is not policy-driven but instead depends on the interests of various companies, e.g. state-owned utility NEK, Bulgargaz, large municipal utilities, and regional distribution companies ČEZ, EVN and E.On. With some exceptions, politicians are generally secondary-level players who agree and approve what comes from the business sector.

In conclusion, while the energy situation in Bulgaria is stable, processes and trends suggest that the system could be endangered or even collapse at any moment due to a lack of strategic vision and adequate mid and long-term planning on how to develop the sector in a sustainable manner.

2. Nuclear energy in Bulgaria

The Kozloduy plant

Currently, Bulgaria operates two reactors at the Kozloduy Nuclear Power Plant. These are Soviet-designed VVER-1000/320 pressurised water reactors. Unit 5 was put into operation in 1987 and unit 6 in 1993. Since that time, Bulgaria has become a net exporter of electricity. The four small and dangerous units at Kozloduy plant were shut down after a 1992 decision by the G7 in Munich, which was implemented in the EU accession treaty. Units 1 and 2 were disconnected from the grid in 2002 and units 3 and 4 followed on 31 December 2006.

Kozloduy currently produces c. 15 TWh per year, 34-37% of Bulgaria's total electricity production.[87] In 2002, the last year with 6 units operating, it produced 20.2 TWh, the absolute record for the plant (47.3% of total electricity production). In 2006 with 4 units operating, its production was 19.49 TWh (42.6% of the total). Production in 2009 was 15.256 TWh and represented 36% of total national electricity production.[88]

While the old units at Kozloduy were declared dangerous and non-upgradable at a reasonable cost, the remaining two were renovated, at a cost of some EUR 347 million and USD 156 million. Financing was made possible by a loan from EURATOM (EUR 212 million) as well as loans from the US Export-Import Bank and Citibank (USD 76 million) and Russia's Rosexim bank (USD 80 million).[89] Despite the fact that the renovation programme was reported "successfully completed",[90] sources available to the authors under condition of anonymity have expressed concerns about the quality of its implementation by Russian suppliers and subcontractors, possibly increasing the risk of accidents. One infamous case

86 Трима бивши енергийни министри разследвани заради сделка на НЕК – Прокуратурата подозира компанията във фалшифициране на документи [Three former ministers investigated in energy deal for NEK – Prosecutors suspect the company of falsifying documents], Mediapool, 21 March 2010, http://www.mediapool.bg/show/?storyid=163348; Разследването за износа на български ток не е първото за EFT - Компанията на сръбски олигарх проверявана и в Белград и Лондон [Investigation into Bulgarian electricity exports is not the first for EFT – Serbian company oligarch investigated in Belgrade and London], Mediapool, 27 March 2010, http://www.mediapool.bg/show/?storyid=163536.

87 Kozloduy Nuclear Power Plant, Annual Generation of the Kozloduy NPP, http://www.kznpp.org/index.php?lang=en&p=production&p1=electrical_reports.

88 Kozloduy Nuclear Power Plant, ПЪРВА АТОМНА, Vol. 1, 2010, 20th year, January – February, http://www.kznpp.org/uf//pa/2010/PA_01_2010.pdf.

89 Wenisch, Antonia and Markus Meissner, Set 3 - PLEX Case Studies, Vienna (no date), Austrian Institute for Applied Ecology, http://www.nuclear-waste-watch.org/files/Set03-casestudies.pdf; Government Newsletter – ПРАВИТЕЛСТВЕН БЮЛЕТИН, Vol. 410, 11 Nov. 1999, Министерски съвет - Правителството иска мандат от парламента да подпише гаранционни споразумения за заеми, които ще се използват за финансиране на модернизацията на 5 и 6 блок на АЕЦ "Козлодуй" [Ministerial mandate - Government wants parliament to sign agreements to guarantee loans that will be used to finance the modernisation of units 5 and 6 of the Kozloduy NPP], http://sun450.government.bg/old/bg/gis/buletin/november/bul_11_11.html.

90 http://www.kznpp.org/index.php?lang=en&p=about_aec&p1=company_modernization.

was the supply of a faulty regulation rod system which was not tested and led to an incident in unit 5 on 1 March 2006 where one third of the regulation rods appeared not to function. In an emergency, this could have led to a loss of control over the reactor, possibly resulting in a meltdown. The event, first categorised as an INES 0 incident, had to be upgraded to INES 2 after pressure was exerted by the EU and the IAEA on the Bulgarian nuclear regulator. The incident was kept silent for two months until a whistleblower informed a former colleague, ex-chief of the Bulgarian nuclear regulatory agency Georghi Kashschiev, who brought the issue to the attention of the authorities and the media.

Plans to build the Belene plant

In 2002, the government re-opened the controversial nuclear project at Belene in northern Bulgaria. The project had commenced in 1981 and construction began in 1985. In 1991, it was stopped after more than two years of campaigning and mass protests. Following an attempt by Russia to revive the project in 1996, it was halted again in 1997. After 2002, the two governments pushed the project forward as essential for Bulgaria's energy future. In 2006, Russian company Atomstroyexport was awarded a EUR 4 billion contract for construction of an AES-92 nuclear power plant with two VVER 1000/416B reactors. The new centre-right government which assumed office in July 2006, however, ordered a complete audit of the project and halted construction. This audit unearthed uncertainties which made the project very controversial and challenged its financial and economic viability. According to initial and very optimistic estimates in 2002, the first unit at Belene would be operational in 2010 and construction costs would amount to USD 2 billion. Today's still-optimistic scenarios suggest that the two projected units will not go online before 2015 and 2016. The audit estimated liabilities for the Bulgarian state at as much as EUR 10 billion.

Between the end of October 2009 and January 2010, two key foreign players left the project. German energy company RWE and French bank BNP Paribas had been selected as the strategic investor and the leading organising bank for the project, respectively. With their departure, the project stalled, resulting in frantic activity on the part of Atomstroyexport's Russian parent company, Rosatom, with support from the Russian government, to secure the continuation of the project. Russia offered between EUR 2 and 3.8 billion in loans with Rosatom undertaking to take over up to 80% of the project if no strategic investor could be found, irrespective of its economic viability. This open Russian pressure led to increasing internal opposition as well as concern on the part of the European Commission, and the current government turned down the Russian offer.

On close observation a question arises as to whether the new Bulgarian government – elected in July 2009 – truly understands nuclear economics and the trends in European energy policies in general. The new Minister of Economy, Energy and Tourism, Traycho Traykov, stated in early 2010 that a strategic partner for Belene would be selected by mid-April, that construction would start by 2011 and that the first electricity would be produced in 2014.[91] According to media reports, Traykov sought new investors for Belene on a recent visit to the United States.[92] On the other hand, Italian utility Enel, of which the Italian state is the largest shareholder, actively denied interest in Belene after PM Silvio Berlusconi had announced its possible participation during a visit by Bulgarian PM Borisov to Rome.[93] This indicates that Belene has become an undesirable project.

The history of the Belene nuclear power project[94] shows that the problems are structural and cannot be remedied. Current estimates show that around EUR 1 billion has been spent on the project so far, and its cancellation could result in compensation claims of another billion euros. It is unlikely, however,

91 Партньор в "Белене" можело да има в средата на април [Belene partner could be found in mid-April], Mediapool, 6 April 2010, http://www.mediapool.bg/show/?storyid=163808.

92 България иска съдействие от САЩ за инвеститор на АЕЦ „Белене" [Bulgaria seeks assistance from the U.S. for finding investor in NPP "Belene"], Dnevnik, 7 April 2010, http://www.dnevnik.bg/bulgaria/2010/04/07/883943_bulgariia_iska_sudeistvie_ot_sasht_za_investitor_na/; Bulgaria Economy Minister Seeks US Help for Belene NPP, Sofia News Agency, 7 April 2010, http://www.novinite.com/view_news.php?id=114992.

93 Italy's Enel Denies Interest in Bulgaira's Belene Nuclear Plant Energy, Sofia News Agency, 25 May 2010, http://www.novinite.com/view_news.php?id=116520.

94 Haverkamp, Jan and Denitza Petrova, A Belene chronology – 26 October 2009, Greenpeace (2009), http://bankwatch.org/documents/BeleneChronology_26Oct09.pdf.

that investors can be found for a nuclear project with investment expenses of up to EUR 5,000/kW of installed capacity, which would be viable only at electricity prices of double the current ones. Mothballing the project or pressing on with it would result in additional expenditures of hundreds of millions, or even billions of euros with only minimal chances of Belene ever becoming operational. In order to cut its losses, the wisest option for Bulgaria would be to halt the project immediately.[95]

3. The nuclear lobby

The core of Bulgaria's nuclear lobby consists of individuals personally involved and interested in the current nuclear projects: nuclear businesspeople, individuals from institutions such as the Bulgarian Nuclear Regulatory Agency (NRA), foreign consultants working in Bulgaria, certain politicians (including President Georgi Parvanov and former Energy Ministers Petar Dimitrov, Roumen Ovcharov, and Milko Kovachev, who have close relations with the Russian nuclear industry), scientists, journalists and intellectuals. Some of these individuals are very active in the media while others work behind the scenes.

The second tier includes politicians, scientists, intellectuals, etc., who are not and do not wish to be familiar with the nuclear sector's real problems but are proud to have nuclear power in Bulgaria. Most of them have no personal interest in delivering nuclear propaganda, but are active because "Bulgaria should have this advanced technology".

There are also politicians and intellectuals who oppose construction of the Belene nuclear power station, but are in favour of nuclear power as such. This position is often based on their understanding that the way the Belene project has been conceived would serve to advance mainly Russian geopolitical objectives in Bulgaria and south-eastern Europe; they would support the project if an entity from the EU or the US were to take control of it.

When discussing the nuclear and energy lobby, probably the most revealing description comes from Bulgarian ex-MP Borislav Tzekov: "There are examples, linked especially to the energy sector when otherwise heterogeneous political groups – red, yellow and blue MPs – become amazingly homogeneous when certain concrete decisions were to be realised in the energy sector." Tzekov is the author of the first ever proposal for legislation regulating lobbying (2002), which has so far been ignored by parliament.[96]

The nuclear lobby has been quite active and organised a broad political campaign against the closure of units 1-4 at the Kozloduy Nuclear Power Plant. Because the issue was directly linked to Bulgaria's accession to the EU, there was strong political resistance against this initiative. Today, the traditional nuclear lobby actively promotes Russian participation in the Belene nuclear power project. In light of the fact that the Belene project is becoming increasingly unlikely, part of the lobby is shifting its focus to plans for building one or two new units at the Kozloduy plant.

4. Making energy policy

Under EU rules, Bulgaria is supposed to update its energy policy once every three years. Policy proposals usually come from the government. Parliament votes on energy laws and approves the energy strategy. The practical work is organised under the Ministry of Economy, Energy and Tourism, which initiates new regulations and modifications to existing regulations, new energy strategies, action plans, etc. To date, updates to the energy strategy have not been subjected to a Strategic Environmental Assessment (SEA), as prescribed by the Aarhus Convention and the SEA directive. Energy strategies are not based on a comparison of various policy scenarios based on different options and objectives, but on a forecasting of developments based more or less on wish lists from important stakeholders in the energy industry, adjusted to meet EU requirements.

95 Ivan Kotev, Jan Ondrich, Кто кого? - Why Bulgaria should abandon NPP Belene, Sofia (2010), Candole Research, http://www.candole.com/research/Why%20Bulgaria%20should%20abandon%20NPP%20Belene.pdf.

96 В битката за Козлодуй се роди едно ново лоби [In the battle for the NPP a new lobby grows], Mediapool, Sofia (no date), http://www.mediapool.bg/site/project/files/loby.shtml.

The Bulgarian Nuclear Regulatory Agency (NRA) is charged with: "... regulation of the safe use of nuclear energy and ionising radiation, the safety of radioactive waste management and the safety of spent fuel management". The NRA issues licences for the construction and operation of nuclear facilities, including power plants. On 2 October 2009, the NRA renewed the licences for units 5 and 6 at the Kozloduy plant, which are now valid until 5 November 2017 and 2 October 2019, respectively.[98]

The State Commission on Energy and Water Regulation (SCEWR)[99] is the body which issues licences for energy operators (production, distribution, trade, etc.). It also regulates and oversees energy prices. There are two kinds of electricity prices in Bulgaria: regulated prices for citizens, and agreed prices between producers and large industrial companies. The SCEWR issues licences for various activities such as production, transmission, distribution and trade of electricity, distribution of gas, as well as various permits for the construction of power installations, loan contracts in the energy sector, etc.

The Commission on Economy, Energy and Tourism in parliament is responsible for energy legislation, and recommends changes and the acceptance or non-acceptance of specific wording in legislation. It may also organise public hearings on energy issues with various stakeholders. To date, the Commission has organised two hearings in this legislative period – on the Belene Nuclear Power Plant and on Bulgaria's energy strategy.[100]

The Office of the President has no formal role in the energy sector, although current President Georgi Parvanov – the former head of the ex-communist Bulgarian Socialist Party – is very involved in promoting Russian energy projects in Bulgaria. He also promotes such projects in south-eastern Europe in general and lobbies for investment in the Belene plant and other projects from neighbouring countries. The Socialist Party has close ties to Russia, and Parvanov studied in Moscow prior to the revolution. He is therefore regularly accused by independent analysts,[101] the media,[102] and right and centre-right parties[103] of promoting Russian interests in Bulgaria.

Bulgaria has the basic infrastructure and institutions for fair and transparent governance. This does not automatically mean, however, that decision-making in Bulgaria's energy sector is open and transparent. More so than in western European countries or even the northern countries of Central Europe, hidden personal, political and business ties predetermine the decisions of authorised bodies. Unpublished internal documents serve as the basis for selecting large and inefficient energy projects while strategic vision is distilled into slogans such as "Bulgaria – the energy hub of the Balkans" and "Nuclear means energy independence". Moreover, the role of private business in the energy sector – consultants, investors, etc., some of whom come from the former state security circles – is quite significant.[104]

The planning of the Belene project was not based on strategic documents, forecasts or action plans for the energy sector. NGOs have always been told that such strategic forecasts exist but that they are the internal confidential documents of state utility NEK.

Bulgaria started to develop energy strategies in 1995. So far there have been three. They all:

- lacked a comparison of alternative energy policy scenarios;
- focused on the support and maintenance of large centralised generation capacity (coal, nuclear and large hydro);
- promoted new large centralised power projects;
- neglected renewable energy sources, energy efficiency and improved services for private and industrial consumers;

97 Nuclear Regulatory Agency, Role and responsibilities, http://www.bnsa.bas.bg/en/about-us/roles?set_language=en.

98 Nuclear Regulatory Agency, Unit 5, http://www.bnsa.bas.bg/en/nuclear-facilitie/kozloduy/unit5; Nuclear Regulatory Agency, Unit 6, http://www.bnsa.bas.bg/en/nuclear-facilitie/kozloduy/unit6; Удължиха лицензиите на 5 и 6 блок на АЕЦ Козлодуй, [Licences of unit 5 and 6 of Kozloduy NPP prolonged], Darik News, http://dariknews.bg/view_article.php?article_id=413264.

99 http://www.dker.bg/.

100 http://www.parliament.bg/?page=ns&lng=bg&nsid=5&action=show&Type=docs&gid=224.

101 http://www.svobodata.com/page.php?pid=1229&rid=154; http://www.borbabg.com/?action=news&news=4315; http://www.iris-bg.org/files/Parvanov%20in%20Moscowpdf.pdf.

102 http://www.glasove.com/article.php?aid=7429&page=3.

103 http://www.vsekiden.com/?p=69017; http://www.capital.bg/politika_i_ikonomika/bulgaria/2010/03/31/881665_iane_ianev_spasi_prezidenta_ot_impiichmunt/.

104 http://www.temanews.com/index.php?p=tema&iid=230&aid=5661; http://all.actualno.com/news_215266.html.

- provided forecasts based on non-transparent data as a basis for extreme demand growth scenarios to justify the need for new power capacity;
- promoted the concept of Bulgaria as the energy hub of south-eastern Europe – establishing it as a main transit route for gas, oil and electricity as well as a major energy generator with an important electricity export function;
- were passed without public participation in the planning and without a Strategic Environmental Assessment.

Bulgaria's most recent energy strategy was adopted in 2002. According to a 2009 analysis by the Bulgarian Academy of Sciences, it "does not include a quantitative vision for [long-term] development and actually is a four-year plan for market reform and privatisation in the energy sector without any indicative targets."[105] The only project mentioned in the strategy is the Belene nuclear power station. Positive elements in the 2002 energy strategy include:

- the establishment of a regulatory body (SCEWR);
- a decrease in price subsidies;
- the introduction of rules for pricing in electricity, heating and gas supply;
- a four-stage programme for price increases, which have become a de facto stimulus for energy efficiency;
- socially-oriented tariffs during the reform;
- better energy legislation, oriented towards EU directives and requirements.

Nevertheless, large sums still go to capital investments, while efficiency measures are under-financed and organisational problems have not been addressed. Also, the privatisation process lacks transparency. Very recently, the public prosecutor has launched investigations against three former energy ministers regarding the privatisation of electricity distribution companies and the export of electricity.[106] Social measures accompanying the privatisation and aimed at buffering price increases in electricity and district heating for those with the lowest incomes were insufficient, leading to increased energy poverty.

Various attempts to reorganise the energy sector have introduced new problems. This includes a lack of transparency in privatisation operations, a lack of renovations at district heating plants including increased combined heat and power (CHP) cogeneration which could increase efficiency, slow progress in household gasification and the restructuring of state-owned utility NEK.

In 2008, the Socialist-led government set up the Bulgarian Energy Holding, lumping together all large state energy assets, including NEK (along with the Belene project), the Kozloduy Nuclear Power Plant, the Maritza East II lignite power station as well as the lignite mines of Maritza East, Bulgargaz and several others, in an attempt to bundle sufficient assets to become eligible for loans to finance Bulgaria's 51% stake in the Belene project. The total value of the assets was c. EUR 4 billion, still insufficient as collateral for the amounts needed for the Bulgarian nuclear giant. The extra layer of governance, however, led to increased overhead and in spring 2010 the new centre-right government decided to dismantle this structure again. This was supposed to be finalised in June 2010 but to date has not been carried out. During the two years of its existence, however, the Bulgarian Energy Holding strengthened the state focus on large unsustainable centralised energy projects in the coal, nuclear and large hydro sectors.

The previous government (2005-2009) started to develop a new energy strategy for Bulgaria with a time horizon to 2020. A draft was published in November 2008 on the website of the then Ministry of Economy and Energy but has since been removed. There was again no plan for public participation or implementation of a Strategic Environmental Assessment. After several questions and public comment from NGOs (e.g. the Green Policy Institute, Za Zemiata, the NO to Belene Coalition, etc.), the public

105 See note 82.
106 Щели да арестуват Милко Ковачев заради енергото, http://www.24chasa.bg/Article.asp?ArticleId=472037.

was merely invited to submit comments to the respective unit at the new Ministry of Economy, Energy and Tourism. No explicit path to an SEA was developed.[107]

The document itself follows the same methodology of "strategising" in the energy sector as its predecessors. All the main concerns remain and are even worsening in some cases – from high-level structural and conceptual issues, including its basis on specific wish lists rather than a long-term comparison of various policy scenarios, down to the inclusion of individual pet-projects like the Belene plant, continuation of low-efficiency lignite use in Maritza East, large hydro projects, the environmentally risky Bourgas-Alexandroupolis oil pipeline and the competing (Russian) South Stream and (EU) Nabucco gas pipelines. The present government has already declared that a new energy strategy is needed. Minister Traykov suggested important improvements at a meeting of the parliamentary Economic Policy, Energy and Tourism Committee.

Although the 2009 deadline for adopting a new strategy has already passed, no draft has been released for comment. Some of the large, problematic projects envisaged in the previous draft document have entered the implementation phase (e.g. the Belene Nuclear Power Plant and two large hydro energy projects on the Danube), while new restrictions on the development of renewables have recently been adopted by the government.[108]

Two other key documents announced during the above-mentioned meeting in the parliamentary committee – a new law on renewables and an action plan for energy efficiency – are also overdue and unavailable for preliminary discussions.

The overall conclusion is that the decision-making process in the Bulgarian energy sector is still not transparent. There is a lack of planning for decentralisation. Political and business lobbies are struggling for control of the sector rather than working towards its sustainable development. Players often mix their roles and obligations, and private interests are pursued without any public scrutiny. It is difficult to imagine how the present government will be able to significantly improve decision-making in this area.

5. Media and the role of civil society

Surprisingly, Bulgaria's media today are less free than during the first decade of the transition. Various players (politicians, advertisers, etc., often linked to the former state security services) have gained control over the vast majority of the media. National radio and television are under pressure from the political parties in power and have not been reformed. Certain other free media have collapsed due to a combination of political manoeuvring and economic pressure. Freedom of expression and openness is moving in the direction of Internet media and the blogs of critical journalists. Also certain regional and local media – still not controlled by political or economic interests – have developed a degree of objectivity.

In this situation it is hard to expect critical views to be covered by most of the newspapers or electronic media. There are open-minded journalists interested in energy issues and projects, including nuclear ones, but they are often under pressure not to cover "negative" aspects of or critical views on nuclear issues. Nevertheless, with open pressure from Russia for further development of the nuclear sector as well as oil and gas pipelines, a critical discussion has emerged even in the mainstream media.

Civil society is split on the issue of nuclear energy. There is an active coalition of two dozen organisations successfully campaigning against the Belene Nuclear Power Plant as well as non-transparent plans for nuclear waste storage and uranium mining, with strong grassroots support in the affected regions. This movement receives occasional support from a broader but less vocal group of NGOs, experts and individual citizens.

On the other side there are civic organisations which support nuclear power for various reasons. These include certain environmental protection activists who believe nuclear energy is more acceptable than wind and solar energy due to possible impacts on birds, mammals and habitats. In an important

107 http://www.parliament.bg/?page=ns&lng=bg&nsid=5&action=show&Type=docs&gid=224.

108 Отнемат от местната власт правото да променя предназначението на земеделски земи [Local government deprived of the right to change the designation of agricultural lands], Vseki Den, http://www.vsekiden.com/?p=67772; Bulgaria bans clean energy projects on arable land, Dnevnik, 8 April 2010, http://news.dnevnik.bg/?y=2010&m=4&d=8.

development, however, Bulgaria's member organisation of BirdLife International is cooperating with the authorities on finding constructive ways to develop wind energy in Bulgaria.

Unfortunately, there are no targeted opinion polls which could track public opinion on energy issues. Eurobarometer outcomes give a sketchy picture of strong but slowly declining public support for nuclear energy. However, further analysis of data from specific NGO projects, including those of the Green Policy Institute, show an interesting trend. Despite strong pro-nuclear messaging in the media and occasionally confused messages on the part of civil society, critical opinion against some energy projects, especially those with strong links to Russia, has increased over the past five years. The main drivers of this trend are political (Russian influence on Bulgaria) and economic (higher electricity prices in the case of Belene). The specific case of the Bourgas-Alexandroupolis oil pipeline focused public opinion with a range of environmental, social, regional development and political arguments.

Overall acceptance of nuclear energy, however, remains high in Bulgaria.[109] The popular view is that the country is poor and lacks sufficient energy resources, which keeps the population focused on nuclear as "the solution".

6. The role of Russia in Bulgarian energy policy

Since the dissolution of the Soviet Union, Russia has been Bulgaria's main partner in the energy sector. Almost all primary sources are imported from Russia: 100% of nuclear fuel and gas, the majority of oil and a considerable proportion of coal. Moreover, all major nuclear and gas technology is Russian. Many of the high-level administrators and experts in the sector hold degrees from the Soviet Union or Russia.

There is another dimension to the Bulgarian-Russian energy relationship, however. Through its energy dominance, Russia is attempting to re-establish its strategic and geopolitical position in south-eastern Europe and to establish a foothold in the EU. Russia's EU ambassador, Vladimir Chizhov, expressed it as follows:[110] "Due to traditionally good relations, Bulgaria is interesting for us as a member of the EU as well, and this interest is not only an economic one. Bulgaria is in a good position to contribute to relations between the EU and Russia, and we consider you our special partner, a kind of Trojan horse in the EU, outside the negative meaning of this metaphor, of course. The foreign policy decisions in the EU are taken by consensus and here your country could play a very positive role: to calm down hot-heads, to turn indecisive people into enthusiastic ones."

Some publications in Russia show that the idea for developing the Belene Nuclear Power Plant was boosted during direct talks between then President Vladimir Putin and his Bulgarian counterpart, Georgi Parvanov. As noted before, neither the Bulgarian constitution nor legislation gives a role to the Bulgarian president in the development or implementation of energy policy. Nevertheless, he has managed to position himself at the centre of discussions and negotiations with Russia for the Belene nuclear power project, the South Stream gas pipeline and the Bourgas-Alexandroupolis oil pipeline.

The latest developments in the Belene project illustrate how fast Russian political wishes can become a significant factor for new politicians in Bulgaria. When Citizens for European Development of Bulgaria (GERB), the political party currently in power, won the elections in July 2009, it promised a strict review of the "Russian deals" – the Belene Nuclear Power Plant and the two pipelines mentioned above. Soon thereafter the situation began to change, however. On 1 September 2009, PM Boyko Borisov, a former policeman, fire-fighter and bodyguard, visited Gdansk and met with Vladimir Putin. After this meeting, GERB changed its course and began to emphasise the projects' economic viability, stressing their importance. Borisov vowed to press ahead with the Bourgas-Alexandroupolis oil pipeline if the environmental impact assessment conclusions were positive, despite the fact that three local referendums rejected it.

109 European Commission, Attitudes on Issues related to EU Energy Policy, Brussels (2007), http://ec.europa.eu/energy/energy_policy/doc/eurobarometer/2007_eu_energy_policy_eurobarometer_slides_presentation_en.pdf.

110 Посланикът на Русия в Европейския съюз Владимир Чижов: Вие сте нашият троянски кон в ЕС в добрия смисъл [Russian European Union Ambassador Vladimir Chizhov: You are our Trojan horse in the EU in the good sense], Kapital, 10 November 2006, http://capital.bg/politika_i_ikonomika/bulgaria/2006/11/10/293214_vladimir_chijov_vie_ste_nashiiat_troianski_kon_v_es_v/; Commentary: Russia Versus NATO in the CIS, Radio Free Europe / Radio Liberty, 14 May 2008, http://www.rferl.org/content/article/1117479.html; Trojan Alert, Sofia News Agency, 18 January 2008, http://www.novinite.com/view_news.php?id=89526.

Energy Minister Traykov met several times with his Russian counterpart, Sergei Shmatko, representatives of Rosatom and other Russian energy officials between November 2009 and February 2010.

The greatest pressure from Russia is focused on the South Stream and Belene projects. When RWE left Belene and the agreement with BNP Paribas expired, Russian Energy Minister Sergei Shmatko and Rosatom's director, Sergey Kiriyenko, presented a proposal for a EUR 2 billion loan to enable construction to continue in 2010 and 2011. In return, Rosatom would receive up to a 25% stake in the project. Kiriyenko also announced that Russia could assume up to an 80% stake in the project if Bulgaria does not find a replacement for RWE after this two year term ends.

In reaction to these developments, US Ambassador to Bulgaria James Warlick openly called for Bulgaria to distance itself from Russian influence in the energy sector.[111] Also European Energy Commissioner Günther Oettinger expressed concern over the closeness of Russian-Bulgarian energy ties.[112] Borisov promptly rejected the Russian loan offer and the Belene project is now on hold, waiting for a new financial consultant to work out an economic model under which the EUR 10 billion plant could be completed. This is to be followed by a search for European and/or American strategic investors. A large part of the Bulgarian nuclear lobby has seen the writing on the wall and is now shifting its attention towards a new nuclear project in Kozloduy.

7. Conclusions

The energy sector in Bulgaria lacks a strategic vision, while existing and drafted strategic documents are oriented towards perpetuating the status quo. The energy and political spheres continue to be tightly interwoven, especially in the nuclear sector. Business lobbyists are working closely with politicians to forestall dramatic changes in the sector, sometimes against national interests and European energy policy trends. For various reasons, public opinion is still strongly in favour of large fossil fuel projects and nuclear energy. Civil society and the media are beginning to play a more critical role, however.

A significant aspect of Bulgaria's energy sector is the strong influence of Russia. Russian aspirations to acquire a foothold in the EU market can be seen in energy projects like the South Stream gas pipeline, the Bourgas-Alexandroupolis oil pipeline, and the Belene Nuclear Power Plant. This conflicts with EU policy goals of energy security and diversification because of the large dependence of Bulgaria and the broader Central European region on Russian primary energy sources and technology. Moscow is seeking loyal partners in a bid to maintain and expand its dominant position in the energy sector in Europe, and Bulgaria seems to be the focus of efforts to gain a Russian mouthpiece in Brussels. There is a chance that the new GERB government – which came into power on a pro-European and anti-corruption platform – will break with the role Bulgaria has played in recent years, although this would require a targeted campaign from the European Commission and other influential EU member states. Even if this does happen, however, it does not guarantee that Bulgaria will abandon its nuclear ambitions; it is more likely in this scenario that the Bulgarian nuclear lobby will re-focus its attention on EU and US-based nuclear companies and projects.

111 US Ambassador Urges Bulgaria to Shake off Dependence on Russian Energy, Sofia News Agency, 25 February 2010, http://www.novinite.com/view_news.php?id=113590.

112 Oettinger tells Sofia to be 'wiser' with energy projects, EurActive, 6 April 2010, http://www.euractiv.com/en/energy/oettinger-tells-sofia-be-wiser-energy-projects-news-406505.

PART II

FINANCING THE CONSTRUCTION OF NUCLEAR REACTORS AND FORMS OF STATE SUPPORT

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The construction of new nuclear units enjoys significant political support in the countries of Central and Eastern Europe. This does not mean, however, that the plans of the nuclear industry will be realised. Reactors require greater investment than other sources, and the usual protractions and construction cost overruns can result in economic difficulties even for strong companies. Banks behave relatively carefully when providing loans for such projects.

At the turn of the century in Eastern Europe, nuclear power plants were still being built with direct support from the state budget – Cernavodă in Romania received a subsidy worth EUR 60 million in 2000.[113] In the case of the Temelín and Mochovce Nuclear Power Plants in the Czech Republic and Slovakia, respectively, governments in the 1990s provided loan guarantees. Since their accession to the European Union, Eastern European countries have had to respect the rules of the liberalised electricity market, which do not permit direct subsidies or government loan guarantees (see the box on page 41 for details). As a result, the actual construction of new power plants will be decided according to economic considerations.

Investment costs for new reactors

The cost of building new nuclear units has been the subject of various studies recently, and cost estimates for projects currently underway are also available. In order to compare the cost of nuclear power plants with that of other technologies, we will first introduce an estimate of the technology programme prepared by the International Energy Agency. This document estimates that in the case of the nuclear power plants scheduled to start operation by 2015 costs will range from USD 1,600 to USD 5,900 per kilowatt of installed capacity including costs for the disposal of spent fuel and decommissioning of the plants. This does not include interest on loans. As the table shows, the costs of constructing natural gas and coal-fired plants are lower and more predictable. Investments into biomass cogeneration are slightly higher on average.

Table: Comparison of current investment costs for various electricity sources

Type of Plant	Investment Costs (USD/kWe)
Nuclear	1,600 – 5,900
Natural gas – combined cycle	1,100
Supercritical cool	2,200
Biomass cogeneration up to 50 MWe	3,000 – 6,000

Source: Technology Essentials, Energy Technology Systems Analysis Programme, www.etsap.org

Other studies provide a more detailed overview of estimates of the resulting cost of reactors and experience with projects currently underway than the broad interval of the International Energy Agency. Professor Stephen Thomas of the University of Greenwich collected the bids sent by companies to recent

113 Nuclear power in Romania, http://www.world-nuclear.org/info/inf93.html.

public tenders for supplying reactors in various parts of the world. In the Republic of South Africa there was no bid under USD 6,000/kWe; in Canada the lowest was close to USD 6,600/kW. Both tenders were ultimately cancelled as a result of the high costs. By contrast, a tender was completed successfully in the United Arab Emirates, where Korean KEPCO submitted a bid in the amount of USD 3,700/kW (costs for building the reactor without including interest from loans).[114]

From the perspective of Central Europe it is worth noting the costs of reactors supplied by companies which are active in the region. For example, the companies Areva, Westinghouse and Atomstroyexport placed bids in a tender to build two reactors in the Czech Republic. Current costs of the reactor supplied by Areva in Finland are estimated at USD 4,500/kW (in contrast to the estimate of USD 2,500/kW at the start of construction in 2005); a second reactor, in France, is expected to cost USD 3,300/kW.[115] According to estimates from the United States, Westinghouse should be capable of building a new nuclear power plant at a cost ranging from USD 2,500/kW to USD 4,900/kW; current estimates for a reactor presently under construction in China are close to USD 3,500/kW.[116] [117] It is more difficult to estimate the capabilities of Atomstroyexport, which in the case of the Belene plant has declared costs of USD 3,700/kW.[118] According to Bulgarian government estimates, however, construction costs for the two reactors supplied by the Russian company came to EUR 9 billion, or USD 5,600/kW.

State support – a path to reducing investment risks

Despite the differences in the cost estimates for new plants, it is evident that the high initial investment poses a significant business risk and requires that large loans be secured. Energy companies considering investing in new reactors endeavour to eliminate these risks to the greatest extent possible. Support through public finances is naturally a suitable solution. In addition to direct subsidies and government loan guarantees, they also make use of other forms of public support: inexpensive loans from state banks and export agencies or tax relief for investors.

Statements by economic experts attest to the importance of subsidies for investors in nuclear power plants. An analysis by Citigroup evaluates the possibility of constructing new reactors in Great Britain as follows:[119] "Government policy remains that the private sector takes full exposure to the three main risks; Construction, Power Price and Operational. Nowhere in the world have nuclear power stations been built on this basis. [...] We see little if any prospect that new nuclear stations will be built in the UK by the private sector unless developers can lay off substantial elements of the three major risks. Financing guarantees, minimum power prices, and/or government-backed power off-take agreements may all be needed if stations are to be built." In addition, even British Energy, which operates eight nuclear power plants, has reached the conclus-ion that without state subsidies the construction of new reactors is not feasible for economic reasons.[120]

Nuclear development's dependence on public support is also well-documented by recent experience from the United States. In early 2002, the Bush administration presented a programme called Nuclear Power 2010, the goal of which was to put a third-generation reactor into operation by 2010. The American government offered investors a streamlined approval process and cooperation from the Department of Energy. The programme floundered, however, due to lack of interest on the part of energy companies, which only began to prepare projects when the programme was supplemented with tax relief and loan guarantees for the first six reactors (on the assumption that subsequent projects would no longer need subsidies). According to the Department of Energy, the promised tax relief would cost

114 Steve Thomas, The Economics of Nuclear Power: An Update, Heinrich Böll Foundation, 2010.
115 Ibid.
116 Ibid.
117 New Nuclear – The Economics Say No, Citigroup Global Market, 2009, https://www.citigroupgeo.com/pdf/SEU27102.pdf.
118 Bulgaria may give Belene nuke project a chance, Dnevnik, 16 September 2009, http://news.dnevnik.bg/?y=2009&m=9&d=16.
119 See note 117.
120 Steve Thomas, The economics of nuclear power: analysis of recent studies, University of Greenwich Business School Public Services International Research Unit, Greenwich, 2005.

taxpayers USD 5.7 billion by 2025. State loan guarantees would cost between USD 14 and 16 billion, according to a Congressional committee.[121]

How to circumvent EU rules

Although State aid and market distortion are excluded under EU law, nuclear operators and pro-nuclear governments, especially in Central Europe, continue to explore the boundaries.[122]

- State guarantees for nuclear investments. To date, these have not been accepted by the European Commission. Romania planned to provide a loan guarantee in the amount of EUR 220 million for the Cernavodă 3, 4 project,[123] but withdrew this option after the European Commission received complaints from Romanian NGOs and Greenpeace. The only state guarantees that would be acceptable under EU law are those which are obligatory for loans under the Euratom Loan Facility and related loans from the European Investment Bank (EIB). In the last two decades, no EU member state has used the Euratom Loan Facility for new nuclear reactors. Bulgaria reserved funds for a EUR 600 million guarantee for a Euratom and EIB loan,[124] but withdrew them in 2009 when its financial situation no longer not allowed for such a large risk.[125]

- Export credit guarantees for nuclear investments. These can constitute a market distortion in cases where they are provided by state export credit agencies within the EU and the credits are intended for projects within the EU, unless the credit guarantees are provided under market conditions. This means that the interest rates for the loans should reflect market interest rates for similar projects, and the fees paid for the guarantee should reflect market fees for private guarantees under similar circumstances. Currently, credit guarantees provided by French credit agency COFACE and by Swedish export credit agency SEK for the Olkiluoto 3 project in Finland are before the European Court. While the European Commission maintains that these guarantees were provided under market conditions,[126] the European Renewable Energy Federation (EREF), supported by Greenpeace, argues that they led to excessively low interest rates not conforming to the market and therefore were market-distorting vis-à-vis other operators in the electricity sector, including EREF members in the renewable energy branch.[127]

- Use of state funds for investments. Funds that are part of the state budget, such as infrastructure funds and development funds, cannot be used for investments in the electricity sector unless they are provided under normal private market conditions. Romania attempted to use resources from the National Development Fund for the construction of the Cernavodă 3, 4 nuclear project.[128]

- In-kind investments. In-kind participation in nuclear power projects must occur under market conditions, meaning that when a country wants to participate in a nuclear project with already existing infrastructure or material, it must be remunerated for it or receive a stake in the project equivalent to the value of the in-kind contribution. It if receives less, the contribution is illegal state aid. The Romani-

121 See note 120.

122 Where no web-address is given, the documents are available from jan.haverkamp@greenpeace.org.

123 HOTĂRÂRE Nr. 643 din 20 iunie 2007; privind aprobarea Strategiei de selectare a investitorilor pentru realizarea unităţilor 3 şi 4 de la CNE Cernavodă - Text în vigoare începând cu data de 7 august 2008; Act de bază – Hotărârea Guvernului nr. 643/2007; Acte modificatoare – Hotărârea Guvernului nr. 691/2008.

124 Bulgarian state issues guarantees 600 million euros for Belene nuke plant, Sofia Echo, 18 October 2007, http://www.sofiaecho.com/article/bulgarian-state-issues-guarantees-600-million-euros-for-belene-nuke-plant/id_25563/catid_67.

125 Bulgaria Government ‚Won't Spend Any Money' on Belene NPP, Sofia News Agency, 26 February 2010, http://www.novinite.com/view_news.php?id=113622.

126 Decision de la Commission du 25.ix.2007 concernant la mesure no. C 45/2006 (ex NN 62/A/2006) mise it execution par la France dans le cadre de la construction par AREV ANP (ex Framatome ANP) d'une centrale nucleaire pour Teollisuuden Voima Oy.

127 Letter of Kuhbier Rechtsanwälte, Hamburg, to the European Commission, Directorate-General for Competition, State Aid Registry, 01.03.2007State Aid C 45/2006 (ex NN 62/A/2006) Coface guarantee - construction by Framatome ANP of a nuclear power station for Teollisuuden Voima Oy (TVO), Comment pursuant to Article 88(2) of the EC Treaty following invitation, published in the Official Journal of the European Union C 23/11 of 1 February 2007.

128 See note 123.

an government intended to put EUR 350 million worth of heavy water into the Cernavodă 3, 4 nuclear project financed from the state budget. For this reason it would have constituted a direct subsidy.[129]

- Equity input under non-market conditions. When the former Bulgarian government learned that its state utility, NEK, had run out of funds to cover costs in preparing the Belene nuclear power project, it injected EUR 300 million of equity (money in exchange for shares) into NEK earmarked for the Belene project.[130] The determinative question for the European Commission is whether any market operator would have done the same under the circumstances, which means that it needs to ascertain whether there was a reasonable expectation of a return on the investment.[131] If there is reasonable doubt with regard to the project's economic viability, the injection of state money into the utility constitutes illegal state aid.

- Capping of compulsory fees. In order to sweeten the deal for the construction of the Mochovce 3, 4 nuclear reactors in Slovakia, the government capped the fees which operator Slovenské elektrárne must pay into the fund for disposal of spent fuel and decommissioning.[132] The European Commission is currently observing whether the cap is adjusted in the coming years. If no such correction is made, the fund may have insufficient resources to cover the future costs of decommissioning and waste processing, and if the deficit is ultimately covered by public funds then the cap constitutes illegal state aid.[133]

- Dividend holidays. Slovakia granted Slovenské elektrárne (SE) a 10-year suspension of dividend payments. Because the suspension applies not only to the state's 33% stake in SE, but also to that of the other owner, Italian utility Enel, the European Commission did not view this as state aid.[134]

- Non-tendering. Permitting a company to participate in a project or contracting a company for a construction project without it having to go through a transparent public tender allows for the possibility of that company receiving an excessive profit, as it is not compelled to minimise its profit in order to win the tender. For this reason, non-tendering is seen as a way to provide an advantage to the detriment of consumers. Slovak state-owned utility JAVYS chose its former parent company, ČEZ, without a tender as its strategic partner for the construction of the new Bohunice Nuclear Power Plant.[135] The European Commission is currently investigating the deal.

Disposal costs of nuclear waste – how big a debt will we leave to our great-grandchildren?

One of the factors influencing the economics of nuclear power plants is the method of creating reserves for their decommissioning after terminating operation and for handling nuclear waste. The operator must pay into this fund during the plant's operation, while the form and amount of these payments are determined by the national legislation of individual countries. Understandably, plant operators try to minimise the amount of the payments. In the interest of the state, payments should be set at such a level so as to completely cover the future costs of plant decommissioning and nuclear waste disposal. Otherwise, the missing funds will have to come from public budgets.

129 Ibid.

130 Министерски съвет Постановление № 259 от 27 октомври 2008 г. за предоставяне на средства от републиканския бюджет за закупуване на акции от държавата във връзка с увеличението на капитала на търговско дружество – Council of Ministers decree 259 of 27 October 2008 for granting funds from the state budget for purchasing shares by the state for increase of capital of a trade company.

131 Letter from the European Commission, DG Competition, 19/03/2010*D/6276, B.2/MML/PLQ/id D/(2010) 125 to Greenpeace, Jan Haverkamp, Subject: CP 64/2009 - Constructing of a new nuclear power plant at the site ‚Belene'.

132 Peter Mihók, Národnýjadrový fond; genéza, problémy, modelovanie príjmov a výdavkov, odhad potrebnej výšky príjmov a odhad aktuálneho deficitu vo fonde, Zvolen (2007), Centrum pre trvaloudržateľné alternatívy, http://www.cepta.sk/documents/jadro/studia_ver1.pdf.

133 Oral communication – Dominique Ristori, European Commission DG Energy, 6 April 2010.

134 Letter from the European Commission, DG Competition, 05/05/08*D/51777, B2/ME/JD/mkl (2008) D/149 to Greenpeace, Jan Haverkamp and Jan Beránek, Subject: CP 95/2008, Alleged aid to ENEL for nuclear decommissioning – Slovakia.

135 Letter from the Ministry of Economy of Slovakia, 25 February 2009, info147/2009-1010 to Greenpeace, Andrea Zlatnanska, Vec: Vybavenie žiadosti o informácie podľa zákona č. 211/2000 Z.z. o príprave výstavby nového jadrového zdroja v Jaslovských Bohuniciach [Subject: Processing of request for information under Act No. 211/2000 Z.z. on preparing the construction of a new nuclear source in Jaslovské Bohunice].

The basic problem of setting the level of payments is the fact that the decommissioning of a large nuclear power plant has not yet been completed anywhere, and, likewise, there exist no permanent disposal sites for nuclear waste to date. Payments are thus set according to estimates. In Great Britain, for example, this financial calculation is a much more topical question than in the Eastern European countries, as a number of reactors have already been shut down there. The most expensive stage of their decommissioning, however, will be launched only several decades hence, and thus costs are not presently known. This is a major problem from the British government's point of view, since the responsibility for decommissioning nuclear sites lies with governmental Nuclear Decommissioning Agency (NDA) and the reactors' operators did not create the needed reserves.[136] At the same time, cost estimates for decommissioning Britain's nuclear sites are rising sharply; a 2008 NDA report cites a figure of GBP 73 billion, which of course is not the final amount.[137]

In Central and Eastern Europe, the issue of payments into a fund for decommissioning nuclear sites has been discussed most in recent years in Slovakia. The operator of Slovakia's reactors, Slovenské elektrárne, began making payments into the nuclear fund only in the 1990s. For this reason, in combination with necessary amounts for the ongoing decommissioning of the post-accident A1 reactor at Jaslovské Bohunice, there is a deficit in the nuclear fund estimated at EUR 2-2.5 billion.[138] During the privatisation of Slovenské elektrárne, however, the new owner, Italy's Enel, pushed through limits on payments into the nuclear fund as a condition of investing in to the completion of units 3 and 4 at Mochovce, which the Slovak government insisted on. In 2008, a law on the nuclear fund was passed which reduced the variable component of the payment from 6.8% to 5.95% of the price of electricity sold (the fixed component remained the same).[139] If this situation persists, the deficit in Slovakia's nuclear fund will grow, and will ultimately have to be covered by future taxpayers. Another possibility with which the law on the nuclear fund reckons is to settle the deficit with the help of a supplementary charge on the price of electricity. If the Slovak government opts for this approach, customers will pay for the decommissioning of nuclear sites even when purchasing electricity produced at hydroelectric or natural gas plants.

EU rules and financing nuclear projects

Within the European Union, the electricity market has been fully liberalised. This means that governments are not allowed to give non-market-conforming advantages to specific technologies or to energy utilities, state-owned or private. If governments are involved in any way in such projects, they must act in the same way as a normal private market operator would.

For nuclear projects, this means that in principle no government subsidies, credit guarantees or shifts of liabilities to the state are allowed, with the exception of liabilities regulated under the Vienna or Paris Conventions. This ban on market distortion applies to any government action in the entire nuclear chain of operation. Any advantage provided anywhere along the fuel chain, during construction, operation or dismantling of nuclear power stations, or the management of nuclear waste, would lead to market distortion and a disadvantage for other operators on the market.

This market liberalisation is regulated under the following European laws:

- The Treaty of the European Union[140]

136 For details see Polanecký K., Kotecký V., Veřejné podpory jaderné energetice, Hnutí DUHA, Brno 2006.

137 NDA beaten up over budget, again, http://www.neimagazine.com/story.asp?storyCode=2049012.

138 P. Mihók, Jadrové otázky. A odpovede? [Nuclear questions. And answers?], http://ekonomika.etrend.sk/ekonomika-slovensko/jadrove-otazky-a-odpovede-2.html.

139 Návrh zákona o Národnom Jadrovom účte na vyraďovanie jadrových zariadení a na nakladanie s vyhoretým jadrovým palivom a rádioaktívnymi odpadmi [Draft law on the National Nuclear Fund for decommissioning nuclear sites and disposal of spent nuclear fuel and radioactive waste], Ministry of Economy of the Slovak Republic, Bratislava 2005.

140 Consolidated Versions of the Treaty on the European Union and the Treaty on the Functioning of the European Union, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:115:0047:0199:EN:PDF.

- Article 101 and 102 – rules on competition
- Article 106 – rules for state-owned companies
- Article 107 – rules for state aid

- Directive 2009/72/EC concerning common rules for the internal market in electricity[141] sets rules for:
  - protection of the consumer against the effects of market distortion in the electricity sector;
  - regulation and calculation of tariffs;
  - access to the grid;
  - priority in dispatching on the basis of economic factors;
  - exception of renewables and combined heat and power (CHP) installations;
  - obligation to notify the European Commission of possible state aid.

- Directive 2004/17/EC coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors[142] imposes:
  - water, energy, transport and postal services sectors imposes:
  - an obligation on state entities and public companies (including companies with majority state participation) to tender or use other competitive means to acquire services, including construction of nuclear power stations, acquisition of material and fuel, management of nuclear waste, etc.;
  - an obligation on all companies which provide electricity to the grid to tender the above-mentioned services;
  - non-discriminatory contracting (e.g. no advantages for certain companies or countries);
  - rules for tendering.

It is important to notice that there exists an exception for renewable energy sources, energy from waste and CHP (combined heat and power). These are new ("infant") technologies, which are disadvantaged by the fact that other energy sources (fossil sources like coal, oil, gas, but above all nuclear energy) received vast incentives and subsidies prior to market liberalisation. Most nuclear power stations, for instance, were built with full government guarantees or were indeed funded directly from the state budget, received extensive direct subsidies, could sell their electricity on a regulated market at inflated prices and often reserved insufficient or no funds at all for decommissioning and waste disposal. When these markets were liberalised, the power stations were already written off and currently only the operational costs and reserves for decommissioning and waste disposal are carried by the operators. As a result, existing nuclear power stations have become extremely profitable. To be able to compete with these stations and to ensure that the 2020 targets for Renewable Energy Directive implementation are met, the European Union accepts certain well-defined forms of support for renewable energy sources, CHP and energy from waste.

141 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0055:0093:EN:PDF.
142 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:134:0001:0113:en:PDF.

Case study: the Bulgarian government's efforts to rescue the economically questionable Belene Nuclear Power Plant project

The Belene Nuclear Power Plant – basic information

The Belene site, in northern Bulgaria on the bank of the Danube, was selected for construction of a nuclear power plant by the country's communist government in the 1980s. The original intent was to build at least four large reactors with a capacity of 1,000 MW. Construction works were launched in 1987 but in 1991 the project was discontinued due to insufficient finances.

In 2002, then Prime Minister (and former Bulgarian King) Simeon of Saxe-Coburg-Gotha announced plans to revive the project, at least to a limited extent. From this moment until the present, however, it has never been clear how the project is to be financed. What steps has the Bulgarian government taken to realise the project?

Optimistic cost estimates

The first step towards making the project attractive was to come with low cost estimates. Parliament was told the two planned reactors would cost around EUR 2.5 billion, with even lower estimates of EUR 1.5 billion mentioned.[143] This would allow for an electricity price well below the current market price. After dropping the idea of completing the outdated VVER 1000/213 reactors on which construction had been suspended, the more expensive option of building two new modern reactors was chosen. Rumours of a budget of around EUR 2 billion persisted for a long time,[144] but when a contract was finally signed with Atomstroyexport, the value was EUR 3.997 billion.[145] Following elections in July 2009, however, the new Bulgarian government learned that the real construction costs were estimated at around EUR 9 billion, and that total liability for the Bulgarian state's 51% stake in the project could run as high as EUR 10 billion. Atomstroyexport conceded that its part of construction costs would amount to at least EUR 6 billion.[146]

This is a recognisable structural phenomenon in the nuclear sector: Prices are advertised and set low at the start, and later, during preparation and construction when it is difficult to cancel the project, they are elevated to a more realistic level.

Find a strategic partner (based on vague promises)

The former Bulgarian government tendered a 49% stake in the Belene project to strategic investors. It used the EUR 4 billion figure as its estimate of construction costs, and in October 2008 selected German utility RWE as the winner.[147] During the following year, however, RWE became aware of the true financial picture and withdrew from the project in October 2009, citing economic reasons.[148]

Find banks to take on the risk

The same government sought financing for its 51% stake at various Western banks. In the early stages, it floated new names almost every month. These banks received information not only from the Bulgarian government, however, but also from NGOs such as BankTrack, Bankwatch, urgewald, Friends of the Earth and Greenpeace. In the end, all twelve banks mentioned as having expressed interest withdrew

143 Gov official: Belene project better off without Kozloduy units, Dnevnik, 16 January 2006, http://news.dnevnik.bg/print.php?id=6579.
144 11 Banks Bid to Finance Bulgaria's Belene Power Plant – Report, Sofia News Agency, 7 March 2007, http://www.novinite.com/view_news.php?id=77566.
145 Reuters: Bulgarian nuclear plant Belene to cost under 4 bln euro, Dnevnik, 1 November 2006, http://news.dnevnik.bg/?y=2006&m=11&d=1.
146 Bulgaria may give Belene nuke project a chance, Dnevnik, 16 September 2009, http://news.dnevnik.bg/?y=2009&m=9&d=16.
147 RWE wins 49 pct stake in Bulgaria nuclear plant, Reuters, 3 October 2008, http://www.afxnews.com/about488/index.php?lg=en&c=00.00&story=2618964.
148 RWE quits Bulgaria's nuclear project due to funding, Reuters, 28 October 2009, http://www.reuters.com/article/rbssIndustrialConglomerates/idUSLS68847920091028.

publicly from the project.[149] This included BNP Paribas Bank, the world's leading bank in financing nuclear projects.[150] BNP Paribas did provide EUR 250 million in start-up financing to Bulgarian state-owned utility NEK, the investor in the Belene project,[151] but when NEK's financial position worsened in 2009, it called the loan in early because of NEK's low reserves.[152] BNP Paribas was also the project's financial adviser. Its contract ended on 31 December 2009, without it having been able to structure the project's finances in such a way so as to attract any investor.[153]

In November 2010, HSBC won a tender to become the project's new financial adviser.[154] Talks in December 2010 between HSBC and a coalition of NGOs including BankTrack, CEE Bankwatch, urgewald and Greenpeace showed that – in this case as well – the bank had received an unrealistically rosy scenario of the project from the Bulgarian side.

Get a low-interest loan from the EU

From its decision to restart the project, the Bulgarian government attempted to secure a loan from the Euratom Loan Facility in the amount of EUR 300 million,[155] as well as a second loan in the same amount from the European Investment Bank (EIB).[156] Both loans would be provided at low interest rates, but would require a full government loan guarantee, for which the Bulgarian government set aside funds in its 2008 and 2009 budgets.[157] [158] Ultimately it did not request the loans, however, as the project was never formulated sufficiently in order to submit a loan request and meet the requirements of the EIB, which does the due diligence for its own loans as well as Euratom's. The new Bulgarian government elected in the summer of 2009 discovered large financial discrepancies in the project and decided that government guarantees would not be provided,[159] thereby eliminating the possibility of a Euratom or EIB loan.

Create a larger basis of assets to attract loans

The holder of Bulgaria's 51% stake in Belene was to be state utility NEK. In trying to secure loans, however, it became clear that no bank would to take on the risk of providing a EUR 4 billion loan to a company with less than EUR 2 billion in assets. The government thus decided to broaden the asset base by merging its large energy companies into a single holding. The newly established Bulgarian Energy Holding EAD (BEH EAD) comprised NEK (the Belene project, the national grid, several thermal and hydroelectric power stations), the Kozloduy Nuclear Power Plant, the Maritza East II thermal power station, a company providing heating in Sofia and gas company Bulgargaz.[160] The new holding had twice the assets of NEK, but needed to finance other large projects as well – in addition to Belene, there was South Stream, the Bourgas-Alexandropoulis oil pipeline and Nabucco. Faced with meagre profits but increased administrative and management costs, the new government decided to dismantle BEH EAD in 2010.[161]

149 In December 2006 it became clear from an inventory by urgewald and Greenpeace that the following banks had no interest in the Belene project, even though they all were mentioned by Bulgarian government sources as interested: Bayerische Landesbank, KBC / ČSOB, Societé Générale / Komerční Banka, Commerzbank, CitiGroup, HVB / UniCredit, Deutsche Bank, JP Morgan Chase, Credit Suisse / First Boston, Lehman Brothers, Merill Lynch & Co. BNP Paribas later declared it was no longer interested in the project and distanced itself completely from Belene after its contract as financial adviser ended on 31 December 2009.

150 See www.nuclearbanks.org.

151 10 banks to syndicate 250 mln euro loan for Bulgarian nuke plant, Dnevnik, 23 July 2007, http://news.dnevnik.bg/?y=2007&m=7&d=23.

152 Bulgarian nuke plant loan becomes callable, Reuters, 25 August 2009, http://uk.reuters.com/article/idUKLP23546320090825.

153 BNP Paribas ditches Belene, Dnevnik, 29 January 2010, http://news.dnevnik.bg/?y=2010&m=1&d=29.

154 Bulgaria Picks HSBC for Belene Nuclear Plant Consultant, Sofia News Agency, http://www.novinite.com/view_news.php?id=122210.

155 BULGARIA: Euratom to Have Say on State Guarantees for Belene Project, SEE Europe Net, http://www.seeurope.net/?q=node/716.

156 FORATOM, 24 October 2007, http://www.foratom.org/index.php?option=com_content&task=view&id=466&Itemid=927;
EC Gives Green Light to Bulgaria's Belene Nuke, Sofia News Agency, 7 December 2007, http://www.novinite.com/view_news.php?id=88284.

157 Belene Nuclear Power Plant will cost 4 bln Euro, New Europe, 20 January 2008, http://www.neurope.eu/articles/82132.php; Bulgaria Company NEK Signs Deal with BNP Paribas for Financing Belene NPP, Sofia News Agency, 5 June 2008, http://www.novinite.com/view_news.php?id=93850.

158 Bulgaria Minister: RWE Shies from Commitment to Belene Nuclear Plant, Sofia News Agency, 23 October 2009, http://www.novinite.com/view_news.php?id=109211.

159 Ibid.

160 Bulgaria Energy Holding to Be the Largest in the Region, Sofia News Agency, 20 February 2008, http://www.novinite.com/view_news.php?id=90596.

161 Bulgaria to dismantle energy holding by end-June – minister, Sofia Echo, 12 April 2010, http://sofiaecho.com/2010/04/12/885951_bulgaria-to-dismantle-energy-holding-by-end-june-minister.

Use public funds to increase state equity

When it became clear in 2007 that the project would not receive sufficient cash from bank loans or strategic investors to guarantee cash flow, and the EUR 250 million borrowed from BNP Paribas had already been spent on consultants, sometimes under unclear circumstances, the Bulgarian government decided to increase NEK's equity by injecting EUR 300 million into the company, earmarked for the Belene project.[162] This money was made available in early 2009 and spent in the same year. The European Commission is currently investigating whether this approach was in accordance with EU market rules.[163]

Sell the project to Russia?

Atomstroyexport – the export-wing of Russian nuclear giant Rosatom – won the construction contract, valued at almost EUR 4 billion.[164] In 2007 it became clear that the Belene project was not running optimally and then Russian President Vladimir Putin offered Bulgaria a loan of EUR 3.8 billion in order to enable Atomstroyexport to continue.[165] He demanded a full government guarantee, which Bulgaria had to refuse due to EU rules.

When the new government learned of the project's catastrophic financial situation in 2009, Russia offered several proposals to save Belene, including a short-term loan of EUR 2 billion to cover the costs of construction (and payments to Atomstroyexport) for the next two years. This bridge loan would give Bulgaria time to find another strategic investor. Bulgaria rejected the offer, however, mainly due to the risk that it would not find a strong investor within two years. Representatives of the Russian government then returned with another offer – Atomstroyexport itself would enter the project as an investor. In the first phase Atomstroyexport would take a 30% stake, and if the Bulgarian government did not find a strategic investor within two years (i.e. by the time the Russian loan was exhausted), it would also transfer its 49% stake to Atomstroyexport. In this case the entire project would belong to Russia – its first large-scale energy project within the borders of the EU.[166]

Put Belene on ice

Due to concerns over deepening its energy and economic dependence on Russia, however, Bulgaria did not accept these proposals to sell the Belene project to Atomstroyexport. Construction was suspended indefinitely and will not be resumed until the government finds a new adviser to come up with a new financing model and, above all, a strong European strategic partner.[167]

Limited operator liability for damage caused by a nuclear accident

A form of public support without which the construction of nuclear power plants would be practically unthinkable is a cap on liability for the operator in the event of an accident. As a result of this

162 Министерски съвет Постановление № 259 от 27 октомври 2008 г. за предоставяне на средства от републиканския бюджет за закупуване на акции от държавата във връзка с увеличението на капитала на търговско дружество – Council of Ministers decree 259 of 27 October 2008 for granting funds from the state budget for purchasing shares by the State for increase of capital of a trade company.

163 Letter from the European Commission to Greenpeace European Unit, Jan Haverkamp, 19 March 2010, 19/03/2010*D/6276 B.2/MML/PLQ/id D/(2010) 125, Subject: CP 64/2009 - Constructing of a new nuclear power plant at the site ‚Belene'.

164 Billions for nuke deal in Bulgaria, Sofia Echo, 6 November 2006, http://sofiaecho.com/2006/11/06/642073_billions-for-nuke-deal-in-bulgaria; Belene contract signed between Bulgaria's NEC and Russia's Atomstroyexport, Sofia Echo, 18 January 2008, http://sofiaecho.com/2008/01/18/658470_belene-contract-signed-between-bulgarias-nec-and-russias-atomstroyexport.

165 Bulgaria in talks for Russian funding for Belene nuclear station, Sofia Echo, 22 March 2009, http://sofiaecho.com/2009/03/22/693595_bulgaria-in-talks-for-russian-funding-for-belene-nuclear-station.

166 Russia may gain 80% control in Belene NPP, Focus Information Agency, 25 February 2010, http://www.focus-fen.net/index.php?id=l9292&PHPSESSID=jjb2brsl8as8cu78cgbulq0gb0.

167 Bulgaria halts nuclear plant construction, UPI, 7 April 2010, http://www.upi.com/Top_News/International/2010/04/07/Bulgaria-halts-nuclear-plant-construction/UPI-63481270655476/.

hidden subsidy, nuclear plant operators can negotiate significantly more favourable insurance contracts than if they were liable for damages caused by a possible accident to their full extent.

Capping nuclear plant operators' liability for damages caused is a form of public support of the sector which EU rules regulating the electricity market allow. In Central and Eastern European countries, rules on the liability of nuclear power plant operators are governed by the Vienna Convention, which sets the minimum amount that an operator is required to pay in damages at EUR 50 million. Estimates of damages resulting from a serious nuclear accident, however, range in the tens of billions.[168] Detailed information on the limited liability of nuclear plant operators for damages caused can be found in a specialised publication.[169]

168 Savage, M., Baruya, P., and Cunningham, J., Energy subsidies in the European Union: a brief overview. EEA Technical Report 1, European Environment Agency, Copenhagen 2004.

169 Sedlák, M.: Jaderná energetika s ručením omezeným, Hnutí DUHA, Brno 2008, http://hnutiduha.cz/publikace/detail-publikace/browse/1/select_category/21/article/jaderna-energetika-s-rucenim-omezenym-pravidla-odpovednosti-za-skody-pri-pripadne-havari/.

PART III

BASIC DATA ON THE ROLE OF NUCLEAR POWER PLANTS IN ENERGY SUPPLY, PLANS AND POLITICAL VISIONS IN FIVE STATES IN THE REGION

The following brief overview provides basic data on the energy sector in the countries of Central and Eastern Europe, as well as an approximation of the superior position enjoyed by nuclear energy.

CZECH REPUBLIC

Basic characteristics of the electrical energy sector in 2008

Gross electricity production: 83.5 TWh (nuclear power plants 31.7%, renewable sources 4.4%, fossil fuel plants 63.8%)
Gross electricity consumption: 72 TWh
Net electricity exports: 11.5 TWh
Installed capacity: 17,724 MW (total installed capacity of nuclear power plants 3,760 MW – Dukovany: four Soviet-designed VVER 440/213 units put into operation between 1985 and 1987; Temelín: two VVER 1000 units put into operation between 2000 and 2002)

The role of nuclear energy in official energy plans

Autumn 2009 draft update of the state energy plan

In October 2009, the Ministry of Industry and Trade published a draft update of the state energy plan. Support for the development of nuclear energy and an expansion of brown coal mining are among the main features of this strategic document. The assertion by Ministry officials in the 1990s that society must choose between developing nuclear energy and the devastation of northern Bohemia's surface mines has been brushed under the table.

The plan includes an extension of the lifetime of current nuclear units to 50 or 60 years; significantly, however, it also contains support for accelerated construction of new units. Support is to go to third and fourth-generation reactors (the Ministry assumes the successful completion of their development). The Ministry does not specify the number of new units, but it assumes roughly a doubling of production by nuclear power plants over present levels by 2050. The plan also contemplates the construction of nuclear power plants at new sites (Blahutovice and Tetov). Under the plan, nuclear energy is to become the dominant source of electricity in the Czech Republic by 2030.

The nuclear development aspirations of the Czech Republic's Ministry of Industry and Trade do not end with support for new reactors, however. The plan also proposes opening new uranium mines and building uranium enrichment facilities, as well as facilities for reprocessing spent fuel. In the area of research and development, priorities include nuclear fusion and transmutation technologies. In a 20-year horizon, it contemplates developing small nuclear sources for use in heat production.

This strongly pro-nuclear draft was presented by the Ministry at a time when a technocratic cabinet was in power which lacked a mandate to approve it, so the Ministry's new leadership in the current post-election political government will develop its own plan. There are not likely to be fundamental changes in policy on nuclear energy, however; following the 2010 elections the post of Minister of Industry and Trade was filled by Martin Kocourek, who hitherto had chaired the supervisory board of half-state-owned energy monopoly ČEZ, where he – together with the company's management – was a

strong advocate of building new nuclear units. The main features of the conceptual proposal for rapid nuclear development emerged prior to the fall of the centre-right government in 2008 when the minister was Martin Říman – currently chief counsellor to the Prime Minister.

Current energy plans

The current state energy plan, approved in 2004, assumes the development of nuclear energy as well, although on a significantly more modest scale than the 2009 proposal. The recommended scenario anticipates an increase by 2030 in electricity production from nuclear power plants of 50% as compared to the current level, which corresponds roughly to an increase in installed capacity of 1,200 MW. On the other hand, the plan anticipates reductions in the uranium industry.

Older energy plans were drafted prior to the first two units at the Temelín plant coming online. In the sections addressing nuclear energy, they recommended completing construction and putting these reactors into operation, but did not mention the possibility of building new units.

Presented non-nuclear scenarios

In the spring of 2010 a coalition of non-governmental organisations (Hnutí DUHA, Greenpeace, Calla, Veronica and the Centre for Transport and Energy) presented a development plan for the Czech energy sector entitled "Smart Energy". In its progressive scenario, the plan anticipates a significant reduction in greenhouse gas emissions and the gradual shutdown of all current nuclear reactors after their planned lifetimes (without constructing new ones).

Smart Energy is based primarily on making thorough use of the potential of renewable sources and energy efficiency. In the case of electricity production, it estimates the domestic potential of renewable sources at 50 TWh based on the results of background studies. It also anticipates integrating the Czech Republic into international projects making use of renewable sources. A portion of electricity consumption (c. 10 TWh) is to be covered by imports (offshore wind farms and, later, solar power plants in North Africa). In order to achieve the progressive scenario it will also be necessary to implement legislation on obligatory reductions of greenhouse gas emissions, environmental tax reform or rules for trading emissions allowances.

Positions of key officials

Czech politicians' positions on nuclear energy can be demonstrated with quotes from their programme documents. The programme declaration of the right-wing government formed in summer 2010 states: "The government will support construction of new units at the Temelín Nuclear Power Plant and modernisation of the Dukovany Nuclear Power Plant." The same declaration is contained in the pre-election programme of the strongest opposition party. Of the major political parties, only the non-parliamentary Green Party takes a critical stance towards nuclear energy at the present time. Between 2006 and 2009, the Green Party – as a member of the governing coalition – slowed the development of nuclear projects.

Certain leading political representatives are even personally involved in promoting nuclear energy. This was exemplified during the tenure of PM Mirek Topolánek at meetings of the European Nuclear Forum, organised by the Czech Republic and Slovakia, where the PM asserted, for example, that the problem of nuclear waste had been technically solved.[170] Particularly amusing was a 2010 initiative by then Environment Minister Pavel Drobil to propose to the EU Council of Ministers that nuclear energy be declared a renewable source.[171]

170 http://ec.europa.eu/energy/nuclear/forum/meetings/2008_may_en.htm.

171 Drobil vzkazuje do Bruselu: jádro je obnovitelný zdroj [Drobil tells Brussels: Nuclear is a renewable source], http://hn.ihned.cz/c1-46394170-drobil-vzkazuje-do-bruselu-jadro-je-obnovitelny-zdroj.

Influence of the nuclear industry

ČEZ – the Czech Republic's dominant and majority state-owned energy company (the government controls 70% of voting rights) – strongly favours construction of new nuclear power plants. Since 2005, the ČEZ Group has included the company Škoda Praha – the general technology supplier for the construction of Temelín during the 1990s, and ČEZ's current CEO came to the company from Plzeň-based Škoda Holding, a major supplier of non-nuclear equipment for Temelín. In 2009, ČEZ issued a call for tenders for the construction of two new reactors at Temelín with an option for three more units at other European plants. The companies Areva, Westinghouse and Atomstroyexport were qualified to advance to the bidding phase.[172]

Škoda JS is a strong industrial enterprise oriented towards nuclear energy and specialising in the production of equipment for nuclear power plants. The company is owned by Russian concern OMZ, although thus far it has been run by Czech managers. Škoda JS is participating – in a consortium with Atomstroyexport – in the above-mentioned tender issued by ČEZ for construction of two new nuclear units at Temelín, and has declared that, if successful, it will ensure that 70% of supplies for the construction will be contracted to Czech companies.

A major scholarly authority in the field is Nuclear Research Institute Řež. It is worth mentioning that ČEZ owns a majority (52.4%) of the institute's stock. Other major shareholders include Slovenské elektrárne and Škoda JS.

SLOVAKIA

Basic characteristics of the electrical energy sector in 2009 (after shutting down two units at the Jaslovské Bohunice Nuclear Power Plant in accordance with the EU accession treaty)

Gross electricity production: 26.1 TWh (nuclear power plants 54%, renewable sources 18%, fossil fuel power plants 28%)
Gross electricity consumption: 27.4 TWh
Net electricity imports: 1.3 TWh
Installed capacity: 7,101 MW (total installed capacity of nuclear power plants 1,820 MW – Jaslovské Bohunice: two Soviet-designed VVER 440/213 units put into operation in 1984 and 1985; Mochovce: two VVER 440/213 units with installed capacity increased to 470 MW put into operation between 1998 and 2000)

The role of nuclear energy in official energy plans

The most recent governmental strategic document is the Energy Security Strategy of the Slovak Republic prepared by the Ministry of Economy and approved by Robert Fico's government in 2008. The passages on nuclear energy reflect the strongly pro-nuclear stance of the PM and the responsible minister: "Nuclear power plants will continue to constitute the foundation in the balance of Slovakia's electric power system as a significant element in ensuring a secure energy supply and sustainable development. A basic prerequisite for securing sufficient electricity in the long term is the completion of the third and fourth units at the Mochovce Nuclear Power Plant. Completing the nuclear power plant at Mochovce represents the minimal expenditure for securing the supply of electricity with only minor impacts on [human] health and the environment."

172 For more information on the Temelín tender and its participants, see Hnutí DUHA's infolist on http://chytraenergie.info/images/stories/drahy_atom_www-1.pdf.

The assertion that completion of the third and fourth units at Mochovce is indeed the least expensive option for achieving the target installed capacity is not supported by a comparison of costs, however (for more details, see page 15 of Pavol Široký's text). Among the Strategy's priorities are constructing a new unit with 1,200 MW of installed capacity at Jaslovské Bohunice and evaluating options for building a new nuclear power plant in eastern Slovakia near the municipality of Kecerovce.

Positions of key officials

For ex-PM and current opposition leader Robert Fico, development of nuclear energy was a key government priority which he was personally involved in promoting. In the new government coalition formed after the 2010 elections, there is consensus on the need to complete construction of the third and fourth units at Mochovce with construction of a new unit conditional on investment costs being covered from private funds.

Influence of the nuclear industry

Italian company Enel is the majority owner of Slovenské elektrárne, and nuclear power plants do not represent a determinative component of its portfolio. During the privatisation, it viewed completion of the third and fourth units at Mochovce critically, acceding to the project only when the Slovak government agreed to take on part of the economic risk (for more details, see page 15 of Pavol Široký's text).

Nuclear suppliers have significant influence on political decision-making. For example, Vladimír Práznovský, board chairman at Enesco – a building supplier for the Mochovce plant, worked as the main energy adviser to PM Fico. The EIA report on construction of the third and fourth units at Mochovce was prepared by Ján Timulák, CEO at Decom, a subsidiary of VUJE, which is a major building supplier for the Mochovce project.

HUNGARY

Basic characteristics of the electrical energy sector in 2008

Gross electricity production: 39.1 TWh (nuclear power plants 37%, renewable sources 6.5%, fossil fuel plants 56.5%)
Gross electricity consumption: 43.0 TWh
Net electricity imports: 3.9 TWh
Installed capacity of the Paks Nuclear Power Plant: 2,000 MW (four Soviet-designed VVER 440/213 units put into operation between 1982 and 1987)

The role of nuclear energy in official energy plans

According to the 2008 energy plan, nuclear energy will continue to play a major role in Hungary's energy supply. Work is to continue on extending the lifetime of the reactors at Paks, and the government expects to prepare analyses of options for building a new nuclear power plant. Preparations for a nuclear waste repository are to be accelerated as well, and the government recommends integrating Hungary into international research programmes which test the use of spent fuel for energy.

Presented non-nuclear scenarios

The 2007 Sustainable Energy Strategy prepared by the Energia Klub organisation,[173] as well as the Hungarian version of Energy (R)evolution Greenpeace,[174] anticipate shutting down all nuclear power plants in the country after 2020. Both works present scenarios for developing renewable sources and energy efficiency which ensure the necessary reduction in greenhouse gas emissions by 2050.

Positions of key officials

Three of the four parliamentary parties openly support the use of nuclear energy. The pro-environmental party Politics Can Be Different (LMP) accepts an extension of the Paks plant's lifetime on condition that safety requirements are observed, but opposes construction of new units. The governing party supports nuclear development, although its Environment Minister has made statements critical of nuclear energy.

Following a meeting with Vladimir Putin in November 2009, PM Viktor Orbán announced that Russian companies should secure key supplies for extending the lifetime of the Paks plant and potentially also for the construction of new units.

Influence of the nuclear industry

Nuclear plans are being actively promoted mainly by representatives of the Paks plant and its owner – state-owned energy company MVM, as well as the staff of the Institute of Nuclear Research. Their influence on governmental and parliamentary decision-making is undisputed, and they also participate in drafting state concept documents in the area of energy.

POLAND

Basic characteristics of the electrical energy sector in 2007

Gross electricity production: 159.3 TWh (coal-fired plants 93%, renewable sources 3.7%, other fossil fuel plants 3.3%)
Gross electricity consumption: 154.0 TWh
Net electricity exports: 5.3 TWh
Poland does not operate a nuclear reactor.

The role of nuclear energy in official energy plans

The draft energy plan submitted to the Ministry of Economy in 2008 did not contain a plan to develop nuclear energy.

Presented non-nuclear scenarios

In December 2009, the Institute for Sustainable Development (Instytut na rzecz ekorozwoju) presented a study entitled "Poland's alternative energy policy until 2030". This study compares scenarios under which Poland would achieve a 50% reduction in greenhouse gas emissions by 2030. Costs for the non-nuclear scenario, which is based primarily on greater efficiency and the development of renewable

173 The complete text in Hungarian can be downloaded on http://www.energiaklub.hu/dl/kiadvanyok/fes.pdf.
174 Energia (forradalom), www.greenpeace.hu.

sources, are estimated by the authors as comparable to those of replacing coal-fired plants with nuclear power stations.

Positions of key officials

Current PM Donald Tusk is personally involved in promoting the construction of a nuclear power plant, and preparatory work was launched on his initiative. Efforts on the part of the government and the energy industry to build a nuclear power plant are not supported in concept documents, however.

Certain parts of the political spectrum do not support the development of nuclear energy but are not actively involved in opposing the project (Polish People's Party) or lack significant influence (Greens).

Influence of the nuclear industry

The media activities of nuclear researchers exert significant influence in forming the pro-nuclear posture of Poland's political elites. Poland's dominant energy company, PGE, is very interested in building a nuclear power plant, as this would consolidate its monopoly position. The post of Government Commissioner for Nuclear Energy was filled by Hanna Trojanowska, a former director of the nuclear energy division at PGE.

BULGARIA

Basic characteristics of the electrical energy sector in 2009

Gross electricity production: 42.8 TWh (nuclear power plants 34%, renewable sources 8%, fossil fuel plants 58%)
Gross electricity consumption: 35.1 TWh
Net electricity exports: 7.7 TWh
Installed capacity of the Kozloduy nuclear power plant: 1,906 MW (two VVER 1000/320 units put into operation in 1987 and 1991)

The role of nuclear energy in official energy plans

Bulgaria does not have an energy plan in the usual sense. Parliament approves an overview of energy projects submitted by the government, and construction of new reactors is always on the list. In 2010, however, the Bulgarian government began work on a national energy strategy which is to undergo a Strategic Environmental Assessment (SEA) in 2011.

Positions of key officials

The development of nuclear energy enjoys significant support across the political spectrum. Although the current government revealed the economic risks of completing the Belene Nuclear Power Plant, it is making significant efforts to secure foreign capital for the project's completion. PM Bojko Borisov is motivated to support the project by the need for good relations with Russia and pressure from strong fractions of his party (GERB – Citizens for European Development of Bulgaria). In particular the groups surrounding National Assembly Chairwoman Tsetska Tsacheva and MEP Vladimir Uruchev strongly advocate building reactors. On the other hand, PM Borisov does not doubt the critical analysis of Finance Minister Simeon Djankov, who points to the negative impacts of the Belene project on Bulgaria's economy. The project is also criticised by the right-wing Blue Coalition, on whose support the government is currently dependent.

It is also worth mentioning the personal activities of President Georgi Parvanov, who is an active supporter of nuclear energy. It was the president himself, along with other representatives of the Social Democratic Party (formerly the Communist Party) – which nominated him to the office, who initiated the renewal of the Belene project in 2002. Leading Social Democrats such as former PM Sergei Stanishev and Energy Ministers Dimitrov and Ovcharov are among Belene's main supporters. The interconnection of Bulgaria's Social Democratic Party with Russian political elites also plays an important role.

Influence of the nuclear industry

The operator of Bulgaria's nuclear reactors, the company NEK, is the de facto decision-maker on the direction of Bulgaria's energy policy. Strategic information and decisions made by managers are accepted by the government without reservation.

Russian company Atomstroyexport, the main supplier for the Belene project, is contractually obligated to assign 30% of contracts to Bulgarian subcontractors, which means an opportunity for politically influential companies such as Enemona and Eurobuild. Good relations with Bulgarian politicians are also enjoyed by the company Worley-Parsons Bulgaria, which would provide technical consulting for Belene. The endangerment of lucrative contracts was evidently one of the reasons behind threats made against opponents of the project in 2005 and 2008.

Rosatom, Atomstroyexport's parent company, also uses other Russian companies, e.g. LukOil, to pressure the Bulgarian government to resume the Belene project. Completion of the Belene plant thus comes up in negotiations on natural gas deliveries, construction of the South Stream gas pipeline, and construction of the Burgas-Alexandropolis oil pipeline.

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Energy of the Future?

Nuclear energy in Central and Eastern Europe

Editors: Karel Polanecký, Jan Haverkamp

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The Heinrich-Böll-Stiftung, in cooperation with Hnutí DUHA and the Czech branch of the international organisation WISE, has attempted to describe in greater detail the causes and manifestations of nuclear energy's exceptional position in the countries of Central and Eastern Europe. The result is this publication, which contains contributions by experts from five countries in the region: the Czech Republic, Slovakia, Poland, Hungary and Bulgaria.

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