2. THE LARGE ENERGY INFRASTRUCTURE PROJECTS: EXAMPLES OF MANAGEMENT DEFICIENCIES

The construction of new energy generating capacities is among the areas most affected by corruption worldwide.[26] A major reason for this is the high complexity of contracts for the construction of new infrastructure, which leaves more opportunities for corrupt behavior. Several **notable problems in the management of large energy infrastructure projects** need to be pointed out:[27]

- Such projects involve a number of contractors, subcontractors, suppliers, consultants, and other participants, each of whom may engage in corrupt practices. In some instances the main contractor may not even be aware of ongoing corruption practices and find out only in the event of project failure;

- **Poor performance and output quality is easily covered up** in the mesh of multiple contracts – a typical practice, for example, is to deliver lower than contracted quantities of a raw material, with the buyer and supplier sharing the proceeds from the remainder;

- Big energy companies are used to operating in **countries with high levels of corruption**, thus being under no pressure to adhere to ethical standards. This is particularly the case in countries where anti-corruption legislation is weak, or with companies that are unlikely to be scrutinized at home;

The Bulgarian energy sector and the planned infrastructure projects are fully exposed to all of the above corruption risks. The Bulgarian economy is characterized by high corruption, and the rate of corruption among private contractors is comparable to that in public procurement.[28] There are a number of governance deficiencies and inefficient and wasteful use of resources across all segments of the sector – electricity, thermal power, and fuels. **The instability of the energy sector places Bulgaria among the countries with the lowest energy indicators in the European Union.**[29] This multitude of problems is due not only to the shortage of financial resources or to technical constraints, such as outdated technical capacity and/or infrastructure, but is also related to other factors like economically unsound planning, corruption,[30] lobbying, gray economy, and

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[26] Ruth, M., Corruption and the Energy Sector, MSI, USAID, November 2002.

[27] The Future of Global Infrastructure, Unweaving a Tangled Web, Michael Peel, Financial Times, June 8, 2010.

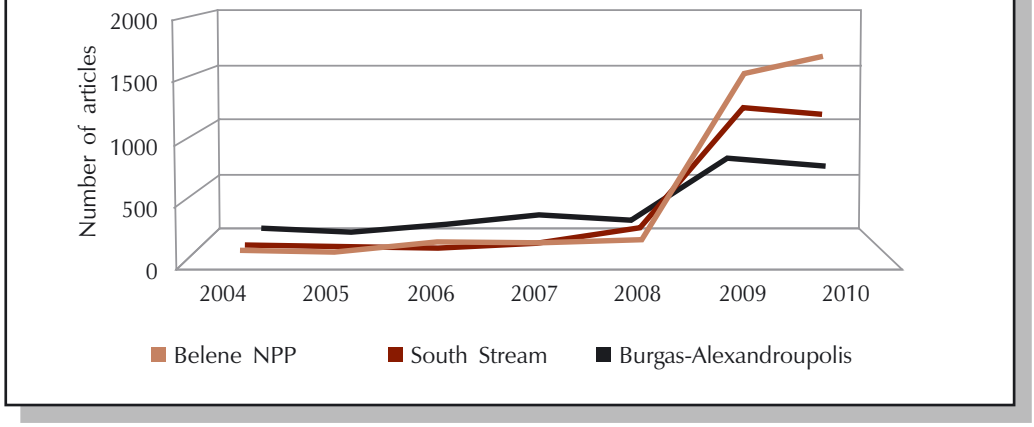
[28] Anti-corruption reforms in Bulgaria, Center for the Study of Democracy, Sofia, 2004.

[29] For a more detailed overview of the condition and challenges before the Bulgarian energy sector, see Bulgaria's Energy Sector, Policy Brief No 22, Center for the Study of Democracy, Atlantic Council of the United States, May 2010.

[30] For a detailed analysis of corrupt practices and government resource management, see Crime Without Punishment and Countering Corruption and Organized Crime in Bulgaria, Center for the Study of Democracy, 2009; Organized Crime Threat Assessment: Methodological Issues and Global Experience, Center for the Study of Democracy, 2010; Examining the Links between Organized Crime and Corruption, Center for the Study of Democracy, 2010.

misappropriation of resources. The lack of broad and active public debate concerning large-scale energy infrastructure projects allows significant government spending without adequate public awareness.

Figure 6. Number of Articles on Large Infrastructure Projects in the Bulgarian Press by Year and Topic



Note: Data are as of 16th of November, 2010.
Source: Ciela.net, 2010.

Analyzing the process of implementation of large-scale energy infrastructure projects is of great importance for the long-term sustainability and security of the sector and of the economy as a whole. The scope of the projects allows for a holistic overview of the structure, activities, and processes in the energy sector.[31] The current report reviews the Belene NPP project in greater detail, as it is the largest undertaking of all energy infrastructure projects and involves all levels of governance. Furthermore, the report provides a brief overview of the South Stream, Burgas-Alexandroupolis, and Nabucco projects. All of these projects share similar characteristics and problems:

- The projects **exceed the country's economic and technical capacity** for infrastructure management. The financial scope of Belene NPP exceeded the volume of the entire public procurement market in Bulgaria in 2006;[32]

- The projects involve **excessive consultancy fees** paid out prior to the actual project launch. As a general rule consultancy fees are poorly accounted for, and are the most commonly used instrument of political corruption. These fees have spawned a sizeable expert lobby, which has overwhelmed public debates with biased assessments, while not disclosing their conflicts of interest. The lobby has poisoned public debate and has obstructed any independent and objective analysis of problematic issues related to project implementation;

[31] For a more detailed overview of the Bulgarian energy sector, see The Energy Sector in Bulgaria: Major Governance Issues, Center for the Study of Democracy, 2010.
[32] Corruption in Public Procurement: Risks and Counteraction, Center for the Study of Democracy, Sofia, 2007.

Table 3. Corruption Vulnerability of the Different Stages of Project Development

Activity	Areas vulnerable to corruption	Red flags
Project formulation	Techno-economic studies to establish feasibility and viability Surveys and site investigations Estimation of costs and implementation schedules Statutory and other clearances Land acquisition for the plant Rights-of-way for transmission lines Rehabilitation of persons affected by the project	A perfunctory study (or no study at all) Omitting surveys and site investigations or leaving them to be done later by the contractor Estimation of costs Vagueness about procedure for obtaining clearances Not allocating sufficient resources for paying compensation to project-affected persons
Project implementation	Procedure for selection of contractor Type of contract (works, labor, turn-key) and contract documents Monitoring and supervision of contractor's work Purchase and supply of plant, machinery, and materials Stage payments to contractors Completion and commissioning	Procedure not spelled out in bid documents Lack of specificity in the contracts Failure to designate supervisors with clear responsibilities Not allocating sufficient funds for payment, leading to disputes and claims of escalation of costs
Project operation	Performance of plant and machinery during initial guarantee stage Execution of operations and maintenance (in-house or outsourced) Emergency repairs Purchase and use of materials, stores, and consumables Emergency purchases Payments to contractors, suppliers, and vendors Employee-related issues, such as promotion, transfer, payment of employees' dues such as provident funds, various allowances, and reimbursement of expenses Adherence to relevant codes and licensing conditions	Failure to specify the performance parameters and methodology of verification Failure to spell out clear procedures for routine as well as emergency purchases Requiring multiple certifications (thus diluting individual responsibility) before payments can be made Absence of codified and transparent procedures Failure to specify responsibilities of individual officers to ensure compliance with license conditions

Source: Gulati, Mohinder and Rao, M.Y. Corruption in the Electricity Sector: A Pervasive Scourge, in The Many Faces of Corruption: Tackling Vulnerabilities at the Sector Level Washington, The World Bank, 2007.

- Contracts for large infrastructure projects have been concluded on a bilateral basis with **countries where the corruption risk is higher than in Bulgaria**[33] or with companies that adhere to no international ethical standards.[34]

2.1. THE BELENE NPP PROJECT

The growing concerns over climate change, the decline in fossil fuel reserves, and the related increase in their prices, have led to the **resurgence of nuclear energy worldwide, but in particular in emerging markets**. Additional factors include the ever-increasing energy consumption needs of major emerging economies, such as China and India, and the approaching ends of the production lifecycles of a number of nuclear reactors in developed countries. Most long-term forecasts project an increase in the demand for all types of energy. In the process the estimated share of nuclear energy may reach 8 % by 2035 from 6 % in 2010.[35] Nevertheless, the reasons for halting the construction of new nuclear reactors in the developed countries in the 1980s remain unresolved and continue to polarize public opinion – namely, **the enormous potential negative consequences of nuclear accidents and the lack of viable solutions for long-term storage of nuclear waste**. In Europe, there is a clear division of public opinion into a pro-nuclear (France, Czech Republic, Great Britain, Sweden, Bulgaria) and an anti-nuclear camp (Austria, Germany, Slovenia).[36] In this relation, debates in Germany have attracted the most attention. In 2010, contrary to the prevailing public opinion, the German government extended the lives of its nuclear reactors by an average of twelve years beyond the originally set phase-out date of 2022.

Bulgaria is one of the countries in the European Union with relatively large share of nuclear energy in final energy consumption. The long-term viability of this segment of the energy sector is an **important cornerstone for ensuring the country's energy security**. There is a **strong nuclear lobby** in the country, bringing together energy experts, politicians, and a number of private companies. The Bulgarian nuclear program development has been characterized by lack of transparency and accountability masked by claims of technical complexity. As a result, though the majority of the population is in favor of nuclear energy, **Bulgarians are among the least informed citizens in the EU about nuclear energy facts and risks.** At the same time, the liability fund for nuclear damage in Bulgaria is limited to BGN 96 million (EUR 49 million), which is among the lowest in Europe.[37]

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[33] According to the Corruption Perception Index, Russia has a score of 2.1 versus 3.6 for Bulgaria. A higer score denotes less corruption.

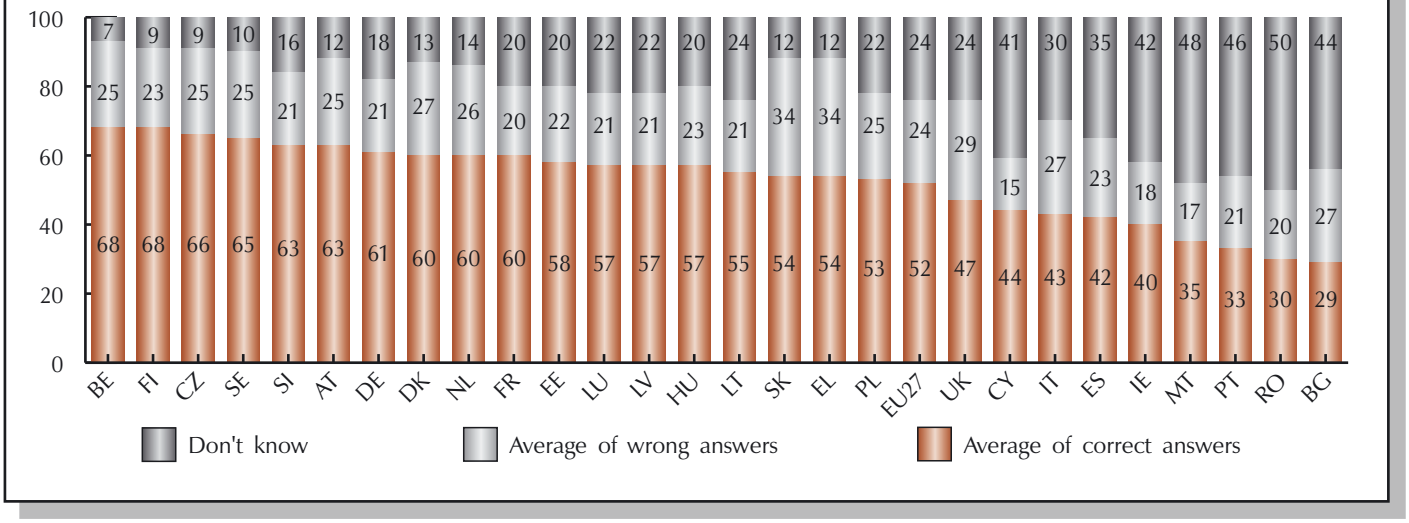
[34] Anticorruption Reforms in Bulgaria: Main Outcomes and Risks, Center for the Study of Democracy, Sofia, 2008.

[35] World Energy Outlook 2020, International Energy Agency, November 2010.

[36] Europeans and Nuclear Safety, Special Eurobarometer 324, European Commission, March 2010.

[37] The Vienna Convention on Civil Liability for Nuclear Damage (2004).

Figure 7. Level of Awareness of Nuclear Energy Issues among Europeans (responses to nuclear energy questions)



Source: Europeans and Nuclear Safety, Special Eurobarometer 324, 2010.

Nuclear energy management is one of the most difficult tasks in the sector due to a number of specific characteristics of this particular type of energy, such as: the large initial investment; the high level of technical expertise needed; the very long operation and post-operation periods; the high environmental cost with potentially catastrophic consequences in cases of accidents; and the lack of long-term solutions for the storage of spent nuclear fuel. Due to these factors, nuclear energy policy is extremely complex and the withdrawal of the government from the sector and adherence to solely market principles is impractical.[38] In this context **the restart of the construction of Belene NPP after 2002 has been marked by all of the bad practices observed in the energy sector and in the management of state-owned enterprises in Bulgaria over the past 20 years**, such as:

- **Manipulated expression of interest procedure**, which has restricted technological and market choices and has increased costs and the long-term dependency on the selected manufacturer**;**

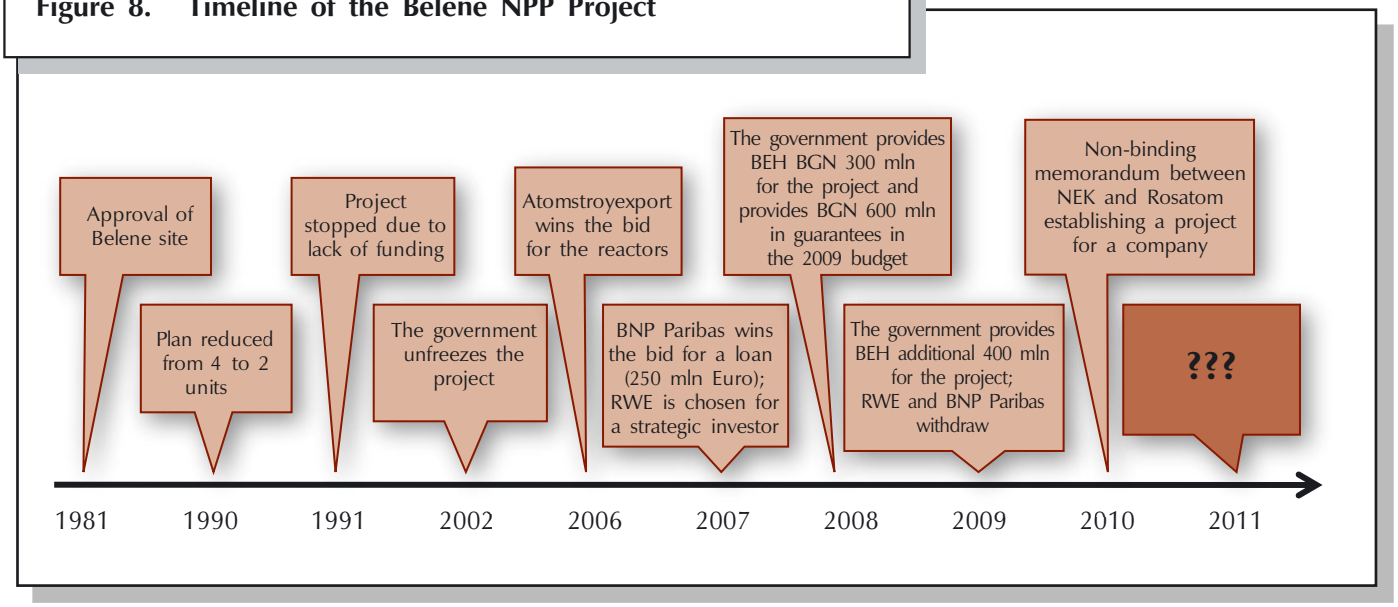
- **Poor project management** after choosing the contractor, with ambiguous responsibilities and obligations regarding state guarantees, unclear budget and private sources of financing, unjustified increases in consultancy fees, and, ultimately, the withdrawal of the selected financing bank and strategic investor. Additionally, independent control and monitoring by government institutions and the public have been restricted, regulations have been only formally met, and referring to trade secrets has been used as an excuse for not disclosing information to which the general public should have had access;

[38] Nuclear Power's Role in Generating Electricity, Congressional Budget Office Study, May 2008.

- Although funds from the national budget earmarked for the project have been spent, the **declared objectives have not been met** as regards the establishment of a joint venture company with a strategic investor. Moreover, the project's implementation was suspended in 2009. So far, EUR 396 million have been spent on project implementation. In addition, contractual obligations on equipment orders and project management fees amount to at least another EUR 674 million, thus adding to a total of approximately EUR 1,070 million (or 27 % of the total value of the main contract, of EUR 3,997 million).

Following an interruption of more than a year, negotiations on the implementation of Belene NPP were resumed in late 2010. The initial steps – the signing of a memorandum on the establishment of a joint venture company, which is to implement the project, seem promising in terms of improving project management. Nevertheless, building Belene NPP will only entrench the energy dependence of Bulgaria on a single source. This concerns the delivery of nuclear fuel, but also the provision of spare parts and engineering services, the long-term storage of the spent nuclear fuel, and extending the life of nuclear reactors in Kozloduy NPP (Units 5 and 6). Essentially, the **project is in disagreement with the highest priority** laid out in EU and national strategic documents: namely, **energy security though diversification**. Poor management at the outset of the project and the lack of any pressing economic or energy-related need for its implementation make its successful continuation extremely difficult.

Figure 8. Timeline of the Belene NPP Project



Source: Center for the Study of Democracy, 2010.

The Belene NPP Project from an Energy Perspective: the Missing Rationale

In order to convince the general public of the need to construct Belene NPP during the 2003-2005 period various official figures in the energy sector advanced the argument that without the project, the country would experience a shortage of electricity as early as 2009-2010. In 2003, NEK developed a *Plan for the Development of the Electric Energy Sector of the Republic of Bulgaria*, using minimum

cost estimates, for the 2004-2020 period.[39] According to the Plan, without Belene NPP, there would be a shortage of at least 1,000 MW in Bulgaria by 2010. The architect-engineer of the project also presented overstated forecasts in support of the need to implement the project.

The optimistic (from the point of view of project development) **forecasts have been misleading** because, due to negligence or intentionally, they have failed to take into account the following factors:

- Declining household electricity consumption due to the country's gasification and, in the long run, because of Bulgaria's negative population growth;
- Energy efficiency and energy saving solutions – Bulgaria is the most energy intensive economy in the EU;
- Electricity generated from RES: Bulgaria has committed to 16 % of gross final energy consumption from renewable energy sources (RES) by 2020;[40]
- The construction of thermal power plant generation capacities. By 2003 AES already had plans to build two 670 MW units at the site of Maritsa Iztok 1; this plant is scheduled to start operation in 2011;
- No cost-benefit analysis of the project has been conducted;
- Possibilities for importing electricity, the effects of market liberalization and Bulgaria's inclusion in the EU energy system.

As of 2010, the country does not suffer from any shortages of electricity. On the contrary – it has surplus capacity allowing for substantial energy exports.[41] In July 2004, NEK forecasted that in 2020 the total final energy consumption in Bulgaria would range between 48.9 and 54.2 billion kWh. The State Energy and Water Regulatory Commission upheld this optimistic anticipation of growing demand in the National Energy Report to the European Commission as recently as the summer of 2009.[42] By the end of 2009, the forecasts[43] were revised down to an expected consumption of 43.8 – 46.7 billion kWh, and an independent team[44] estimated the maximum level of consumption at 43.4 billion kWh. In 2010, the Electricity System Operator (ESO) calculated the range of estimated gross electricity consumption over a ten-year period to be between 36,617 GWh (min) and 42,090 GWh (max).[45] These data suggest that the **construction of Belene NPP cannot be justified by arguments of dynamic rise in the domestic demand for electricity**. The elaboration and presentation of NEK forecasts

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39 Technical and economic analysis in support of the construction of Belene NPP, July 2004.

40 Directive 2009/28/EC.

41 Electric energy market analysis in the Balkan Region, SEWRC, September 2009.

42 National Report to the European Commission, July 2009, State Energy and Water Regulatory Commission, Bulgaria. Accessible through the website of European Energy Regulators on 19.11.2010 <http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202009>.

43 Projected Balance Sheets of Generating Capacities in the Electric-Energy System, NEK, September 2009.

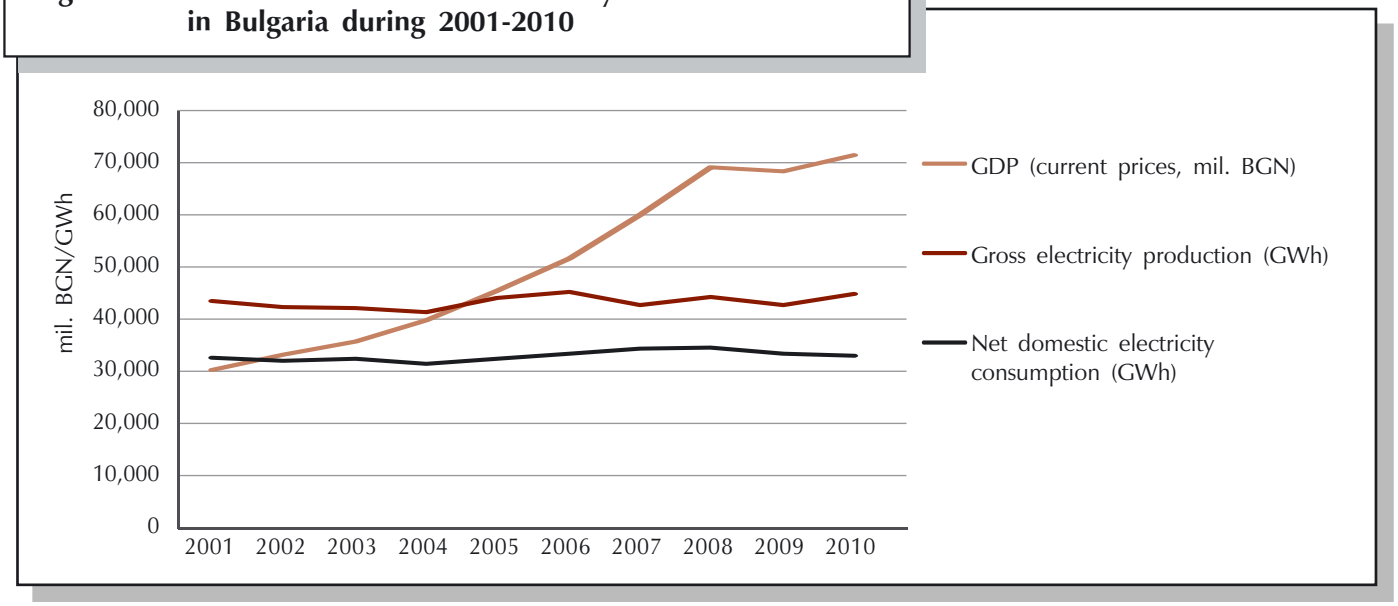
44 Project No 518294 SES6, CASES Cost Assessment of Sustainable Energy Systems, Electricity scenario for Bulgaria, 2007 <http://www.feem-project.net/cases/downloads_deliverables.php>.

45 Ten-year development plan for the national electric-energy system, ESO, Bulgarian Energy Sector Day, June 17-18, 2010.

appears to ignore the principles of market supply and demand and is not based on the available data.

Over the past decade, Bulgaria's GDP in current prices has doubled and real GDP has increased by about 44 %, whereas net domestic electricity consumption increased by a mere 1.5 % during the same period. In view of the financial and economic crisis of 2009-2010 and the shrinking industrial production, as well as the accelerated efforts to improve energy efficiency in the context of rising electricity prices, there is hardly any reason to expect notable increases in electricity consumption over the next decade. ESO estimates that by 2015 Bulgaria will have lost about 1,000 MW of its current generation capacity, as a result of the decommissioning of some existing facilities. However, these estimates do not take into account the energy generated from RES, which is posed to more than offset decommissioned capacity.

Figure 9. Economic Growth and Electricity Demand in Bulgaria during 2001-2010



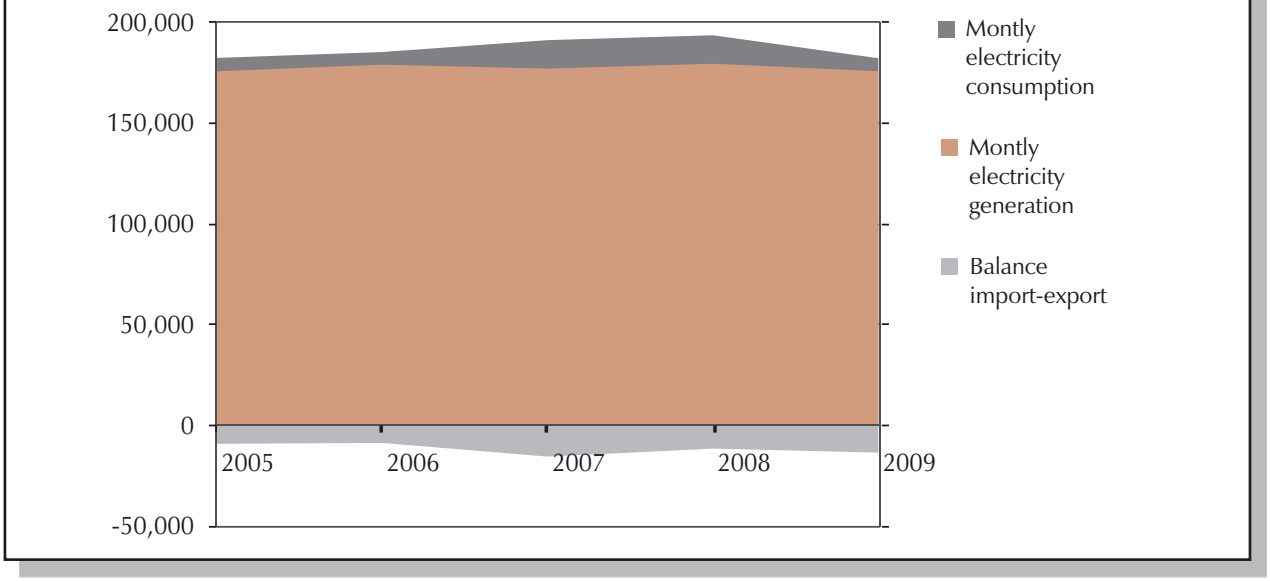
Source: Center for the Study of Democracy, based on NSI data, 2010.

The Export of Electricity Fallacy

One often cited alternative use for the electricity generated by Belene NPP and rationale for its construction has been the export to neighboring countries. However, using base load nuclear capacity to satisfy potential needs on the regional electricity market is debatable. The possible devastating environmental consequences of a nuclear plant accident, however unlikely, would affect primarily Bulgaria and Romania, whereas the demand for electricity is expected to be highest in Serbia, Greece, and Turkey. It would hardly be a sign of good environmental governance to meet the potential demand of neighboring countries while bearing all risks at home. The region is experiencing electricity shortages, and is likely to do so in the future, yet forecasts of regional market development are very uncertain. All countries in Southeast Europe are building new generating capacities, and there is serious potential for competition form producers in

Russia and Ukraine. The latter may enter the region more aggressively upon the liberalization of the European market in 2012 – 2015. Furthermore, in a consumer market situation of abundant base load supply Bulgaria could be forced to supply electricity at prices lower than prevailing market rates as it could be unable to shut down its reactors to react to market conditions.

Figure 10. Monthly Consumption of Electricity and Net Export: All Balkan Countries, except Bulgaria and Albania (GWh)



Source: Balkan Energy News, 2010.

The Belene NPP Project from a Financial-and-Economic Perspective

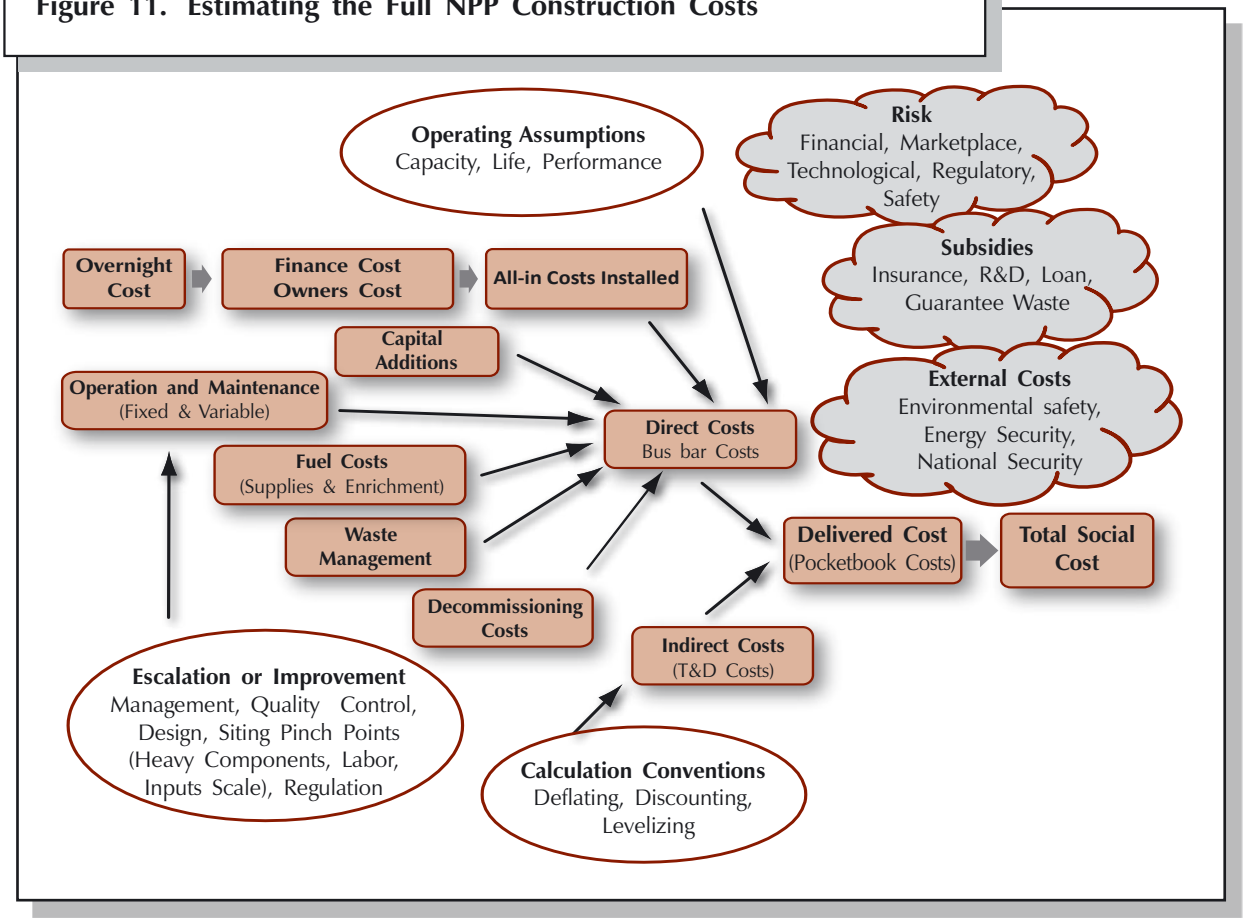
The construction of a nuclear power plant involves very high initial costs. Historically, approximately 75-80 % of the price of the electricity generated by NPPs is determined by the size of the initial investment.[46] The size of this initial investment is most sensitive to the duration of the construction period and the prevailing interest rates. All of the new reactors currently under construction in the EU are behind schedule. For example, the delayed construction of a new reactor in the French Flamanville led to a cost increase from EUR 3.3 billion to EUR 6 billion. In Finland, the construction of the Olkiluoto NPP was delayed by four years with a similar effect on costs. That is why the return-on-investment (ROI) timeframe is 25-40 years – a period during which significant changes to the market may occur. Although electricity generated by nuclear energy remains among the cheapest, due to its long lifespan for exploitation and its low running costs, the **initial costs are a serious financial risk for the investor, which calls for some form of government guarantee or incentive**. In a monopoly market the ROI timeframe is relatively easy to calculate, but **with the prospective liberalization of the European market, the selling price and volumes of Belene NPP electricity become extremely difficult to estimate**.[47]

[46] The Economics of Nuclear Power, World Nuclear Association, July 2010.

[47] Hidden Costs of Energy: Non-priced Consequences of Energy Production and Use, National Research Council, 2010.

In addition to the direct and relatively predictable expenditures, the nuclear power sector is also characterized by certain indirect costs, which may significantly alter the economic assumptions related to a NPP project. These include the costs for management and storage of spent nuclear fuel and radioactive waste. **The storage of the high-level radioactive nuclear waste** is probably the greatest concern regarding NPP, which has not yet been resolved on an international level. According to the latest legislative proposals of the European Commission, nuclear waste from a Member State should only be stored within the EU.[48] If this approach is adopted, the costs to Bulgaria will increase. Other important indirect costs are the potential changes to NPP regulation, which typically depend on external factors (especially true for small countries). Bulgaria is one of a number of countries that has already incurred such indirect costs, with the closure of the first four reactors of Kozloduy NPP due to changes in the political and regulatory environment.

Figure 11. Estimating the Full NPP Construction Costs



Source: Cooper, M., The Economics of Nuclear Reactors: Renaissance or Relapse?, June 2009.

According to the initial energy lobby reassurances (2002-2004), the Belene NPP Project would cost USD 1-2 billion and financing would be covered entirely by private companies. In 2005-2006, the price tag was recalculated to be EUR 2-4 billion. In January 2008, NEK signed a contract with Atomstroyexport in the amount of nearly EUR 4 billion, which was revised by

[48] Proposal for a COUNCIL DIRECTIVE on the management of spent fuel and radioactive waste, Brussels, 3.11.2010 COM(2010) 618 final.

Atomstroyexport in 2010 to EUR 6.3 billion. The initial amount of EUR 3.997 billion is the so-called **overnight cost** – the price that would have been paid if no interest were incurred during the construction period and the project were completed overnight. Some additional costs, which have not yet been taken into account, include:

- Costs to the owner for the exploration and preparation of the site (currently exceeding EUR 250 million for Belene NPP);

- Inflation costs, higher prices of raw materials, goods and services – the indexation of the project value which, according to the Russian authorities, by 2010 is approximating EUR 2.3 billion (an almost 50 % increase from the initially agreed price);

- Loan servicing costs. For instance, if 50 % (EUR 6 billion) of the Belene NPP project are financed by a loan at six-month EURIBOR + 3.5 % interest (similar to the loans under the Tsankov Kamak hydro power plant project), and if an increase of 3 percentage points in the interest rate is assumed (as was the case in 2005-2008, compared to the previous three years), the interest payments would increase by EUR 180 million per year, which would pose a serious threat to the financial health of the main investor – NEK. Coping with such a situation might require state intervention or putting off other needed company investments.

In order to obtain the end cost, or so-called **direct cost** of an NPP – the cost of the project until the point when it can start feeding electricity into the system, it is necessary to add:

- **The cost of energy infrastructure around the nuclear site.** At present, only one electric transmission line of small capacity connects the Belene NPP site to the national grid. In order to properly connect the site to the electric power system (EPS), it is necessary to install approximately 600 km of transmission lines and one or two substations, with the cost likely to exceed EUR 1 billion;

- The costs for protection and safety of the reactor active zone, nuclear fuel and sinks (EUR 300-400 million);

- The costs of project consultants (EUR 300-400 million), salaries for the Russian specialists, operation, and maintenance (salaries, fuel, chemicals, raw materials, etc); security costs;

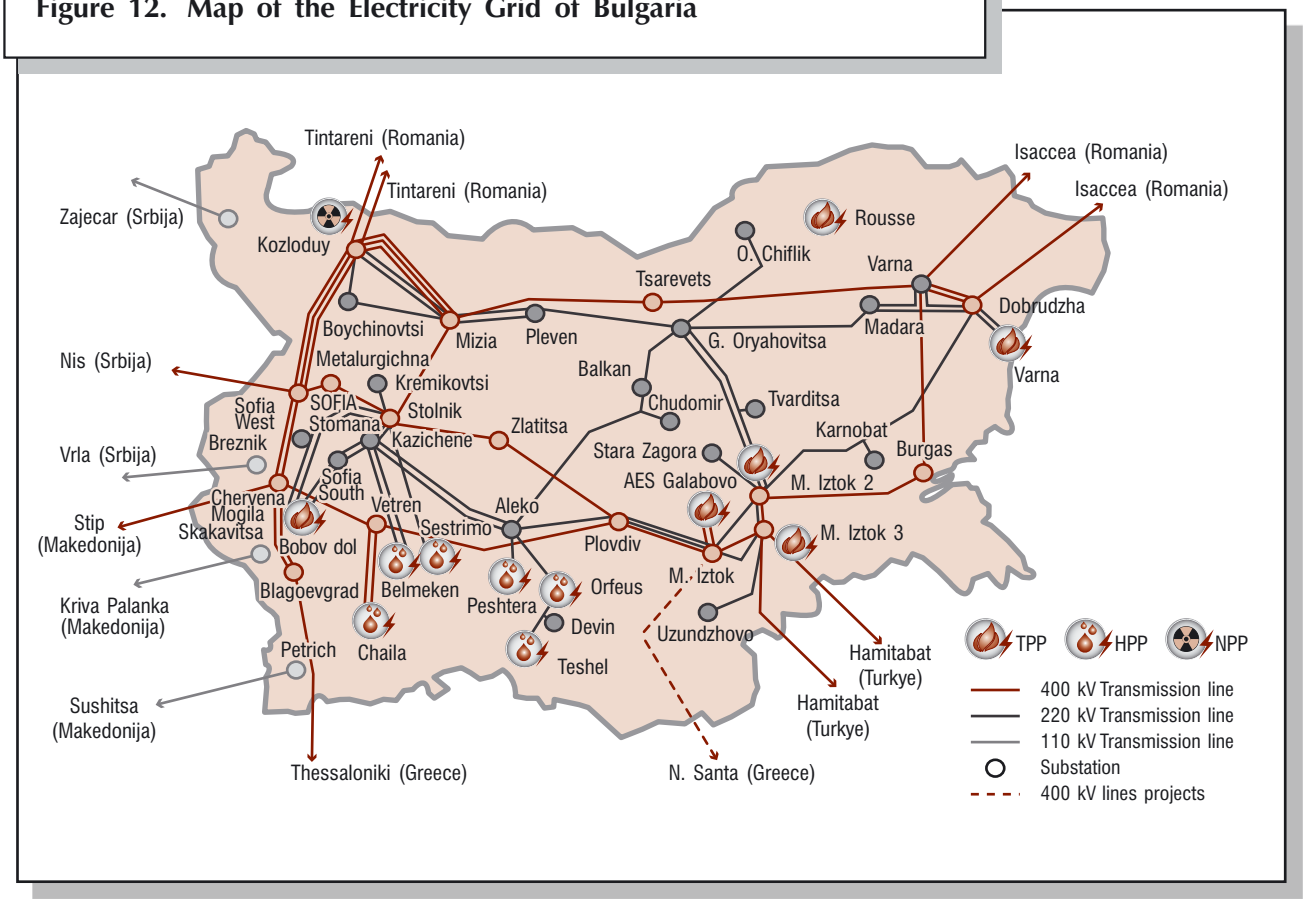
- The cost of financial guarantees or insurance for nuclear damage;

- The management of radioactive waste and spent nuclear fuel; decommissioning costs, etc.

Taking as a reference the costs of nuclear power plants under construction in the EU (Finland and France) as of 2010 and those planned in Turkey, it is reasonable to expect that the direct cost of Belene NPP will amount to approximately EUR 10-12 billion.[49] A number of statements by Bulgarian officials seem to support this estimate. In early 2010, the Minister of Economy, Energy

[49] Кто кого? Why Bulgaria should abandon NPP Belene, Candole Research, November 2010.

Figure 12. Map of the Electricity Grid of Bulgaria



Source: ESO, 2010.

and Tourism and the Belene NPP consultant Deloitte, announced an anticipated cost of EUR 8-10 billion. In June 2010, the Bulgarian Prime Minister estimated the probable cost of the plant at EUR 13 billion.[50] This makes the Belene NPP project larger in scale than all of the financing allocated to Bulgaria under EU funds for the 2007 – 2013 period. Considering the serious difficulties in absorbing EU funds that the country is experiencing and the delays in all major infrastructure projects, it can reasonably be expected that the implementation of a project of such proportions may pose a **long-term threat to the financial stability of the country**. It should further be noted that these huge costs come with relatively few direct benefits to the Bulgarian economy (mainly in the construction sector). A substantial portion of funds invested in the NPP construction will in fact flow to the Russian economy and to EU economies, since Bulgaria manufactures neither electrical nor nuclear equipment.

The escalating cost for constructing Belene NPP will lead to an increase in the cost of electricity produced from the site. This will, in turn, affect the ROI timeframe. In the years between 2002 and 2010, the estimated cost per kWh increased from 2.5 to 6.5 Eurocents. The price can be expected to increase further to 8-10 Eurocents, though it will likely remain one of the cheapest alternatives to fossil fuels.

[50] Meeting between the Prime Minister and EU member-state ambassadors in Sofia of June 11, 2010.

The Poor Management and Corruption Risks of Belene NPP

The absence of immediate energy-related and/or financial and economic need for building Belene NPP raises a number of questions with respect to the rationale of project-related decision-making. From its onset, the project has been characterized by a **lack of transparency and economically unprofitable decisions**. The responsibility for these decisions is blurred within the complex institutional scheme for management of the energy sector in Bulgaria. In this context, a number of **questions and concerns about the expediency of the decisions made in the process of project implementation** arise:

- **Lower-cost alternatives were not considered**, e.g., using the site of Kozloduy NPP, where the related electricity transmission infrastructure is already in place and seismic risk is lower;

- The Government and the related state institutions were not active in attracting interest from the widest possible circle of participants and technologies in the call for tenders for the construction of the NPP. **Competition was restricted** by selection criteria, such as the use of the existing infrastructure and equipment on the site. Subsequently, these requirements were violated and the existing nuclear reactor bed on the Belene site was dismantled, while the equipment was sold to the main contractor at a price lower than its valuation. The consequences were higher project costs to the detriment of NEK and Bulgarian taxpayers;

- The choice of architect-engineer followed the same **discriminatory criteria**, incl. prior experience in the Bulgarian nuclear energy sector. The deadline for submitting bids was 45 calendar days. After the conclusion of the contract with the architect-engineer, its value was increased nearly threefold through annexes without justification and before any real progress on the NPP construction had been made;

- **The government guarantee** for the project was appropriated by BEH and NEK and the allocated funds were spent, incl. for extraneous purposes, yet the principal objective set by the Council of Ministers before the Minister of the Economy and Energy for disbursing the funds – the establishment of a joint venture company with the selected strategic investor RWE – was not achieved. Moreover, even before the approval of the technical project of the NPP by the regulator, the Bulgarian side commissioned extremely costly equipment with long production lead time without securing the financing for it or calculating the payment schedule and financing options over the following years;

- In violation of the *Law on Energy*, the public procurement procedure for the construction was assigned to NEK, rather than to the State Energy and Water Regulatory Commission. Project development was also assigned to NEK, even though it did not hold a license for nuclear electricity production. **NEK did not have the financial stability to implement the project**, yet spent significant government funds before the establishment of a joint-venture company with the strategic investor;

- The Environmental Impact Assessment (EIA) Report was produced on the basis of limited general information provided by five companies[51] in seven different draft proposals for three types of reactors.[52] The **EIA Report was developed in five months**, which is too short a period for quality assessment of a site of such crucial importance to the environment;

- The Ministry of Environment and Water approved the construction of two light-water reactors; yet, NEK only conducted a tender for reactors of the VVER type (Russian pressurized water reactors). NEK developed a project for 2,120 MW in violation of the maximum of 2,000 MW authorized by MEW.

It can be concluded that the Bulgarian Government decided to resume the Belene NPP project without a solid energy-related or economic rationale. The restriction of competition when choosing the contractor for the Belene NPP placed the development of the Bulgarian energy sector in a position of complete dependence on a single country. As a result of the poor management of the project, eight years after it was resumed, **the declared objectives are still not met, while the government funds allocated for this purpose have been spent**. The project does not have a strategic investor, financing bank, or a financing schedule.

Towards Improved Management of Belene NPP

The excessive expenditures and the mismanagement and malpractice in the implementation of the Belene NPP project call for **taking administrative and legal action against the government, administration and company officials** responsible for the decision-making and execution of the project. It is possible to significantly improve the project management of Belene NPP and in general in the energy sector through the following actions:

- The project should be **structured and implemented by a separate company**, which includes all shareholders, is registered in Bulgaria, and takes on the existing obligations and assets. The Bulgarian government has already taken steps towards the implementation of such an approach. The **strategic investor** should be a company with proven experience in the construction of nuclear facilities. The choice of an investor associated with the selected contractor should be avoided in order to prevent potential conflicts of interest and compromises on security and safety;

- **Priority setting** should be based on proven needs of the domestic market. Bulgaria does not need additional nuclear generating capacity before the units of Kozloduy NPP are closed down. The Bulgarian government should first ensure the extension of the life of units 5 and 6 at Kozloduy NPP. Only then should the decision to proceed with building Belene NPP be taken;

- **Alternative sites** for the construction of new nuclear facilities in the country **should be reconsidered**. The infrastructure already in place at Kozloduy NPP

[51] EIA Report on the Construction of Belene NPP, Non-Technical Summary, National Electric Company, March 2004.

[52] In the accessible version (the non-technical summary) the main attention is on the description of the characteristics of the region. General information is provided on 7 different projects for three types of reactors with capacity ranging from 728 MW to 1500 MW.

and its lower seismic risks make it a more attractive location for new nuclear capacities. The equipment already commissioned for Belene NPP may be re-sold in order to reduce the incurred costs, or installed at the Kozloduy NPP site;

- **All contracts with subcontractors** under the project must be announced in advance, documented in a special register, and monitored by the Public Procurement Agency. It should be noted that the main reason for the escalating costs of Belene NPP and other energy projects (e.g., the Tsankov Kamak hydro power plant) is not inflation indexation itself but the manner in which it is calculated and applied, and the concluding of a number of subcontracts of uncertain expediency and with unclear responsibilities.

Proceeding with the Belene NPP project calls first and foremost for **conducting a more adequate risk assessment and taking preventive measures with respect to a number of risks** that have not yet been considered:

- **Seismic risk.** As early as June 1983, Russian scientists recommended abandoning the Belene site on account of the high seismic activity in the region and seeking a different location for the construction site;

- **New technology risk**. The execution of all new nuclear projects in Europe involving untested technology is marred by significant increase in the period and costs of construction. The same applies to the technology chosen for the construction of Belene NPP (AES 92) – it is new and unfamiliar both to the manufacturer and to the regulatory bodies in Bulgaria and in Europe. This may considerably delay the plant's start of operation, incl. due to possible defects and malfunctions. Two units of the earlier modification – AES-91 – installed in Tianwan, China, have shown defects in a number of basic components.[53] In view of the novelty of the technology, Bulgaria will hardly be able to ensure adequate quality control of the manufactured equipment;

- **Belene NPP quality of construction works risk**. The project envisions assigning roughly 30 % of the work, mainly in the construction phase, to local contractors. Considering the very limited experience of Bulgarian companies in building sites of such proportion over the past twenty years, there is a high risk of failure to achieve the desired quality of the construction works. This may lead to reduced involvement of Bulgarian companies in the project implementation;

- **Long-term environmental risks**. It is necessary to take adequate measures and plan the costs for:

  ◊ Spent nuclear fuel and radioactive waste management;

  ◊ Decommissioning nuclear facilities. Reports of the European Commission have pointed to the failure of Bulgarian authorities to meet deadlines and requirements for securing financing for closing down the last two units of Kozloduy NPP. It is estimated that, out of the necessary BGN 5.2 billion, the plant has currently secured only half of the funds;[54]

[53] Nucleonics Week, September 29, 2005, Nucleonics Week, April 13, 2006.

[54] Comparison of Different Decommissioning Fund Methodologies for Nuclear Installations, Country Report Bulgaria, 2007.

◊ Civil liability for nuclear damage. The standard amount of civil liability in Western European countries is set at EUR 570 million.[55] Amendments were proposed in 2004 (still not in force) stating that the amount of the required coverage by NPPs may reach as much as EUR 1.5 billion. In Germany, for example, liability is unlimited, with each operator obliged to ensure coverage for EUR 2.5 billion. Liability for nuclear damage in Bulgaria is limited to BGN 96 million[56] (EUR 49 million) and is among the lowest in Europe. The involvement of foreign companies in Belene NPP would require increasing the nuclear damage liability;

- **Risk for the stability of the electric system.** Bringing into operation a nuclear power plant with installed capacity totaling 2,120 MW, and potential net annual production of 15 billion kWh, would run against Bulgaria's binding goals for renewable energy generation under international and EU agreements. This affects the construction of RES capacity of 1,100 MW (with 2,200 hours of operation per year), in order to meet Bulgaria's commitment of 16 % of end-use consumption from RES by 2020. The simultaneous entry into operation of all of these generating facilities would create additional problems in terms of the safety and stability of the electricity system.

2.2. NABUCCO, SOUTH STREAM, AND BURGAS-ALEXANDROUPOLIS

The large infrastructure projects in the oil and gas sectors duplicate many of the characteristics and risks of Belene NPP. The considerably earlier stages of execution of these projects allows for correcting some of the mistakes made in the planning and implementation of Belene NPP. To do so, it is necessary to adhere to several **basic rules for good governance** of this type of projects:

- **Consistency with national and EU strategic documents** and commitments. Implementation of the highest priority projects only;

- **Structuring the projects into separate companies** and mandatory preliminary approval by the National Assembly of Bulgaria's participation when it involves a state-owned company and/or government guarantees, incl. the amount of the guarantee;

- Operating the energy grid infrastructure should remain with the national grid operators so that **equal access for all participants is guaranteed**.

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[55] World Nuclear Association, Civil Liability for Nuclear Damage, November 2009 <http://www.world-nuclear.org>. The liability is regulated by two instruments – the Vienna Convention on Civil Liability for Nuclear Damage and the Paris Convention on Third Party Liability in the Field of Nuclear Energy.

[56] *Law on the Safe Use of Nuclear Energy*, Chapter 10, Article 132, para. 1.

A growing concern about climate change is putting ever-increasing pressure on fossil fuels through the rising prices of coal, oil, and gas. Nevertheless, it is expected that even in 2050 fossil fuels will provide most of the energy consumed worldwide, with the newly emerging markets (incl. China and India) being the main engines of rising demand. Natural gas, however, is the only fuel expected to be in greater demand in 2035, as compared to 2008, largely due to its less harmful effects on the environment and the increasing demand from Europe and China.[57] The development of technologies for liquefied and compressed natural gas (LNG and CNG) and the extraction of shale gas would make natural gas supply more flexible and marketable. Meeting the demand for gas is one of the main priorities of the European Commission and the Member States. The goal is to make the European gas systems interconnected and to liberalize the market in order to reduce the monopoly power of the main importer in Europe – Russia. In this international context, Bulgaria is an important transit country for two of the major competing gas projects in Europe – the South Stream and Nabucco gas pipelines. Compared to the transit volumes, the country's domestic market is insignificant but it is expected to grow. Household gasification in Bulgaria is at a level far lower than in Europe in general.

Considering the limited resources of the national economy, Bulgaria needs to prioritize the order and importance of implementation of the main alternatives for securing natural gas supplies and for obtaining maximum gains from the planned transit corridors. The combined goals of maximizing energy security at the lowest possible price give Bulgaria a clear **strategic course and priorities**, according to which gas projects should be implemented:

- **Development of its own national reserves** in the Black Sea shelf and exploring shale gas. This option would provide the highest level of energy security and is relatively cheap in view of the possibility to easily attract private investors;

- Connecting the national gas system to that of neighboring countries through **gas interconnectors –** this would allow for diversification of supply routes and sources of natural gas, while a significant portion of the financing could be secured by EU funds;

- **The Nabucco project** allows for a diversification of both supply sources and routes, with a large portion of the financing secured through the EU budget;

- **The South Stream project** allows for a diversification of supply routes only, but likely at a higher price than in the case of the Nabucco project, considering the expected increase in costs due to its underwater segment;

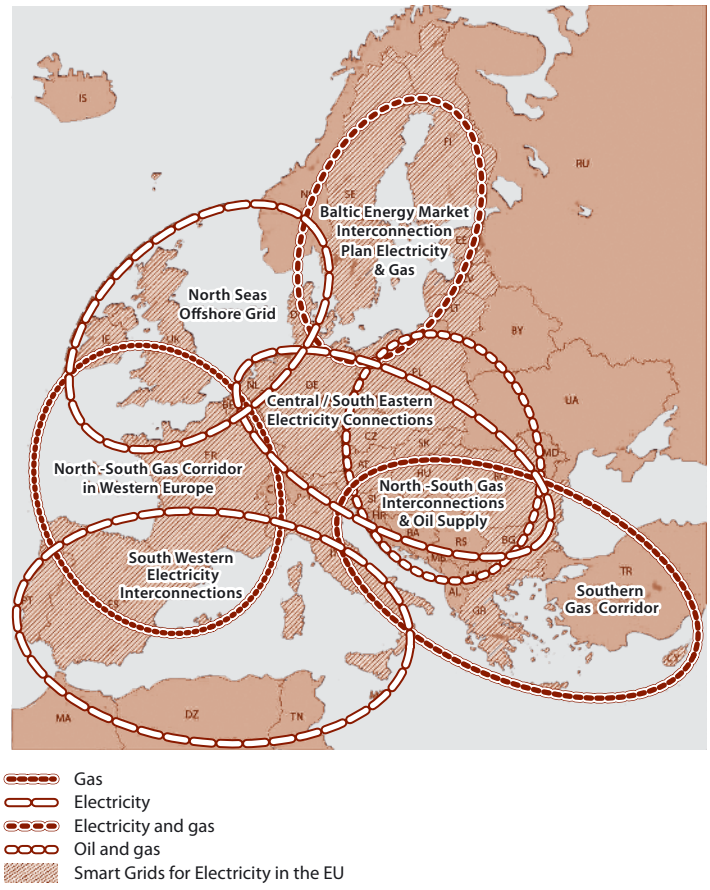
- Building a **LNG terminal** at the Black Sea, or jointly with Greece and/or Turkey at the Aegean Sea; the first option would be more beneficial in terms of the country's energy security, yet the second would involve lower costs, incl. environmental ones.

[57] World Energy Outlook 2010, International Energy Agency, 2010.

The Burgas-Alexandroupolis oil pipeline project does not fit into the strategic development of the Bulgarian energy sector, nor is associated with any potential financial and economic benefits to the country's economy.

The *Concept for National Energy Strategy 2020* reflects the priorities outlined above but does not clearly specify the national policies for their realization. The Bulgarian government's policies during the period 2006-2008 for implementing the South Stream and Burgas-Alexandroupolis projects, as well as Belene NPP, ran counter to good practices in strategic governance and **sound cost-benefit analysis with regards to energy security**. Launching projects that are not of top strategic priority and that lack a clear business plan would entail considerable risks for the country's energy as well as financial and economic security, and is conducive to mismanagement and corruption in the sector.

Figure 13. Priorities in European Energy Infrastructure for Electricity, Gas and Oil



Source: European Union, DG Energy, 2010.

The latest available data and the strategic documents adopted at the EU level suggest that **the European Commission perceives South Stream and Nabucco projects as strategic competitors**. The demand for gas, incl. for gas imports

to Europe, is now expected to be significantly lower than previously estimated owing to the wide penetration of renewable energy sources, nuclear energy, and improved energy efficiency.[58] These forecasts may prove inaccurate and, over the long term, Europe may actually need gas volumes that would justify the viability of both projects.[59] In the short term, however, the two projects are competing in terms of gas supply and market demand. They both target the natural gas resources in the Caspian Sea region and European customers. Whoever succeeds in making a better offer to the Caspian exporter countries would gain an important strategic advantage.[60] In its plans for the development of an integrated European energy network, the European Commission clearly expresses its support for the Nabucco project as an important priority in terms of reducing European gas dependence and preventing a recurrence of the 2009 gas crisis.[61]

Considering Bulgaria's limited public financial resources in the context of the economic crisis, the two gas projects will be competing for scarce government funds (from the national budget or state-owned companies) and can hardly be implemented simultaneously. The governance structure of the Nabucco project is clearer and subject to a uniform regulatory framework – that of the EU, which allows for greater transparency of Bulgaria's commitments. The South Stream project is based on a number of bilateral treaties and joint ventures between Russia (Gasprom, respectively) and the individual partner countries (as represented by their national gas companies). This leads to a fragmentation of ownership and imbalance in the relations between the partners with potential negative consequences in terms of project transparency. In addition, the planned **South Stream project** pipeline **remains currently inaccessible to third parties, which runs counter to the precepts of the EU Third Liberalization Package.**[62]

The Nabucco Project

The Nabucco project envisions the construction of a transcontinental pipeline for the transportation of natural gas from the Caspian Sea region and the Middle East to Central and Western Europe. The project's goal is to secure **an alternative gas supply corridor in the South, thus reducing the dependency of European gas supplies on Russia**. The project is said to guarantee reliable gas supplies to Europe, enable the diversification of supply routes, and enhance the energy independence of EU Member States (including Bulgaria).

The pipeline runs from the eastern border of Turkey to Austria's Baumgarten gas hub. Its total length is 3,400 km, including 1,935 km on Turkish territory, 400 km on Bulgarian territory, 495 km on Romanian, 519 km in Hungary, and 46 km in Austria. The construction work was scheduled to start at the end of

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58 EU Energy Trends to 2030, DG Energy, 2010. According to the report, the need for gas imports in EU-27 will increase by about 10 % to 318 Mtoe by 2030, indicating substantially reduced dependence on gas compared to previous scenarios.

59 According to forecasts of the European Commission and the International Energy Agency of 2007-2008, the total additional demand for imported gas in Europe is likely to reach 100 billion cubic meters.

60 According to World Energy Outlook 2010 of the International Energy Agency, the Caspian Basin is expected to emerge as one of the largest oil and gas producers over the next two decades.

61 Energy Infrastructure Priorities for 2020 and beyond – a blueprint for an integrated European energy network, COM(2010) 677/4.

62 Should the Nabucco pipeline project be shelved?, Centre for European Reform, 2010.

2010 or the beginning of 2011, yet it is likely that this deadline will not be met due to implementation delays. According to the plan, the pipeline segment between Ankara (Turkey) and Baumgarten (Austria) will be ready by 2014, having a carrying capacity of 8 billion cubic meters (m^3) per year, and gradually increasing its capacity (through the construction and use of compressor stations) to 15.7 billion m^3 per year by 2015, 25.5 billion m^3 by 2018, and 31 billion m^3 per year by 2020. It is also envisioned that by 2015 the construction of the pipeline connection between Ankara and the eastern border of Turkey (about 1,300 km) will be completed either by extending the existing gas transmission network in Turkey, or by building a separate, new gas pipeline.

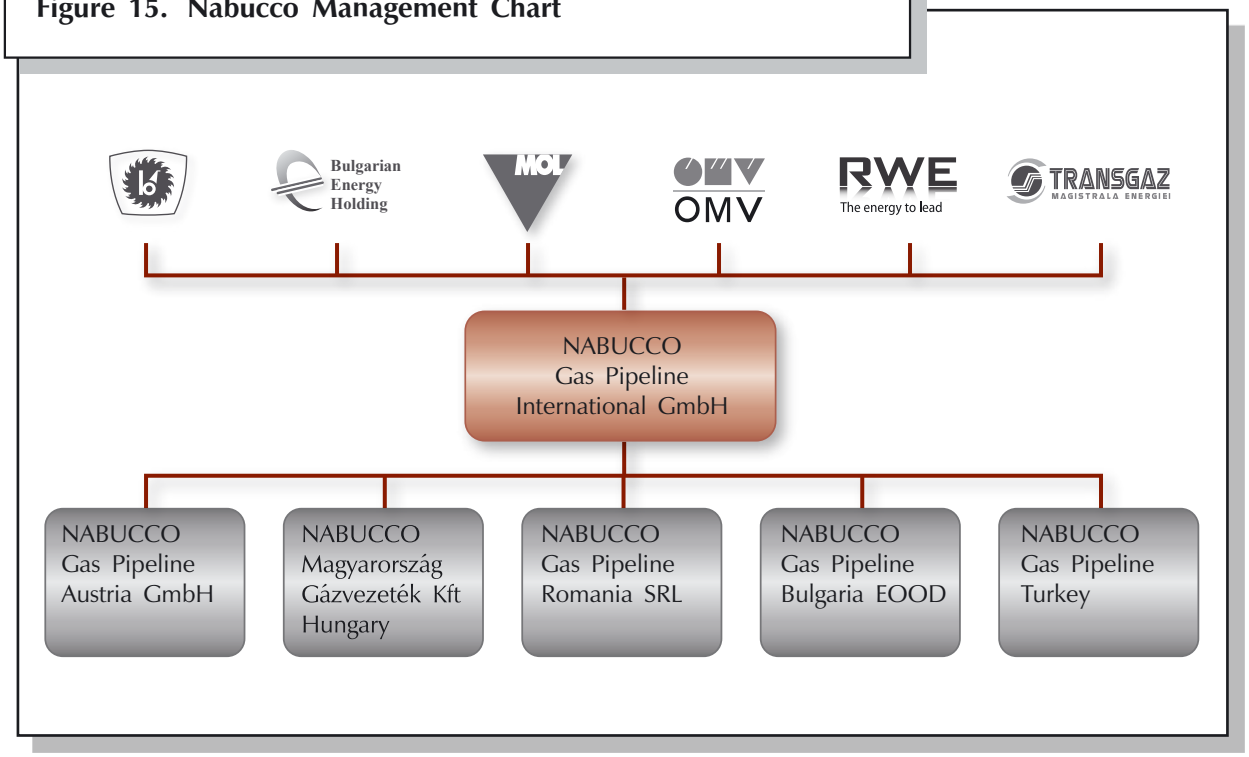
Figure 14. Map of the Nabucco Project

Source: Nabucco Gas Pipeline International.

National Nabucco companies, 100 % owned by the international Nabucco company, have been established and registered in all five transit countries. In Bulgaria, the respective company is Nabucco Gas Pipeline Bulgaria EOOD. The main document regulating the relations of partner companies is the Cooperation Agreement. The total cost of the project is estimated at about EUR 8 billion, 70 % of which are to be provided by the international Nabucco company, while 30 % are provided by the national shareholders. The **Bulgarian share of EUR 400 million is payable in 2011**, yet it remains unclear whether this amount has been included in the country's budget for 2011. Bulgaria's participation in the Nabucco project is managed by the Bulgarian Energy Holding (BEH) through the Holding's managing directors. Bulgaria also has a representative in the international Nabucco company.

The fact that BEH is managing both the Nabucco and South Stream gas pipeline projects is **an additional source of conflicts and competition**. It could lead

Figure 15. Nabucco Management Chart



Source: Nabucco Gas Pipeline International.

to a serious political pressure on BEH's management for supporting either one or the other. It could also lead to a confrontation between members at managerial positions at the expense of the long-term development of the Holding. It is thus necessary that the executive directors of BEH have a clear framework for action at their disposal, based on the National Energy Strategy and the policies set by political leaders for the sector. **The absence of such benchmarks has led to a decline in Bulgarian participation in the Nabucco project during the past year**. While BEH is the smallest participant in the project (in terms of company size), thus not likely to have a leading role in the project's development, it is necessary to ensure that Bulgaria's interests are well represented within the international Nabucco company.

Box 3. The Nabucco Project: Potential Synergies

On Bulgarian territory, 166 km (41 %) of the Nabucco gas pipeline would be built alongside already existing gas pipelines, while 239 km (51 %) would be built separately. Additionally, the pipeline crosses the Danube at about 40 km away from the existing Chiren underground gas storage facility and 7 km away from Kozloduy NPP. These are useful preconditions for adding the Chiren gas storage facility to the Nabucco gas transmission system, and/or for restarting NPP Kozloduy's electricity generators 1-4 (currently out of service) with natural gas.

The Nabucco Project Management: Advantages and Bottlenecks

As the parties in the Nabucco project are equal transit countries with common interests (i.e. the highest possible gas transit fee), project negotiations or transit fee negotiations will be easy. In accordance with existing EU rules for natural gas supply and transit, Nabucco Gas Pipeline International will secure free access, subject to capacity,[63] for every seller or owner of natural gas willing to use the Nabucco pipeline. **The lack of secured gas supply sources is the major shortcoming of the project**. Possibilities include supplying natural gas from the Caspian region and/or the Middle East, yet, gas supply remains uncertain due to a number of strategic (relations between Russia and Turkmenistan), political (Turkey's accession into the EU), and security factors (the Kurdish question in Northern Iraq). In the shorter run, Azerbaijan is the only viable source of gas supply, and both Nabucco and South Stream are competing for this resource. Therefore, the timely implementation of the Nabucco project is considered as a crucial competitive advantage. Still, Nabucco is currently an infrastructure project rather than a gas supply project as neither it or its shareholders have their own gas reserves.

A major advantage of the Nabucco project is its EU dimension. Nabucco is commonly seen as a symbol of European solidarity and will for collaborative action in the energy sector. A potential failure of the project could be seen as a fundamental problem for European integration. The European Commission uses various financial support schemes to assist the Nabucco project. The Commission used a grant scheme to finance 50 % of the project feasibility study and, in 2010, provided about EUR 200 million via the European Economic Recovery Plan for the project implementation. It is also expected that the European Bank for Reconstruction and Development and the European Investment Bank will provide additional project financing. Despite that, **the Nabucco project still lacks critical mass in terms of political support**, most notably from large European consumer countries such as Germany. Moreover, **Germany's position on the project remains ambiguous**, while the country insists that the private sector take over a the larger share of the project's financing.

The **major advantages** for Bulgaria stemming from its participation in the Nabucco project are:

- Securing **a new alternative route and source of natural gas supplies** to the country, which would significantly improve the security and reliability of supply to consumers and ensure competition between suppliers within the country;

- Offering **new employment opportunities**, such as in construction in the short term and the exploitation of the pipeline in the longer run (over the next 40 to 50 years);

- The possibility for attracting **foreign investments** to finance the pipeline's construction;

- Securing **additional revenues** for the Bulgarian partner and the state budget;

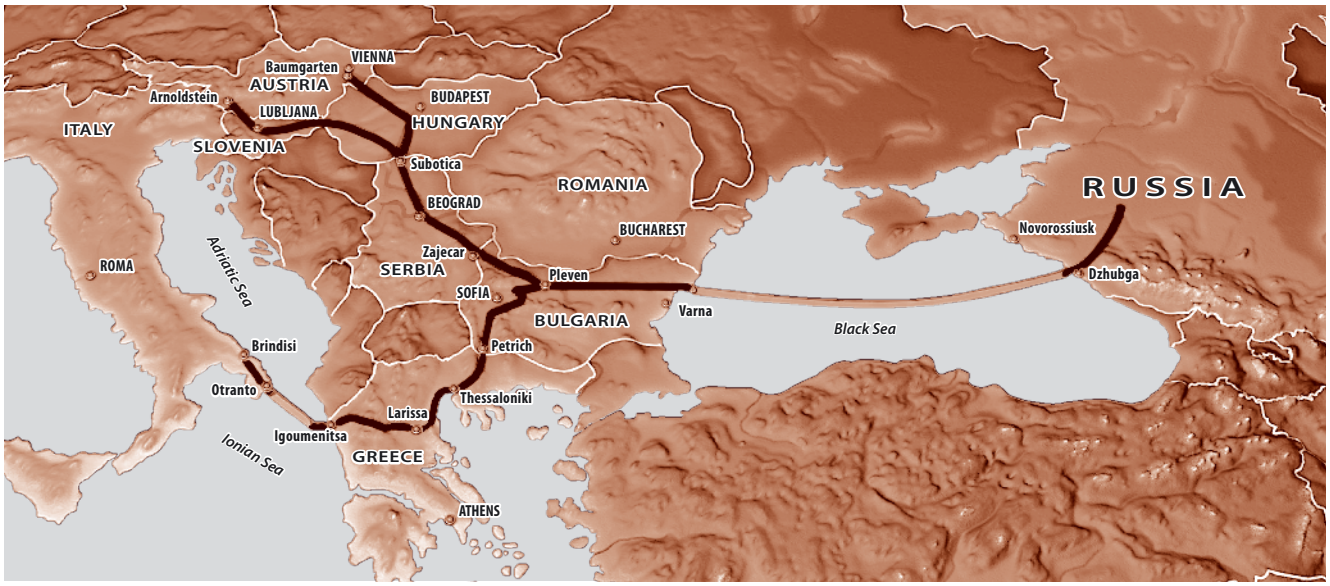
[63] It is expected that, initially, the participants in the pipeline project will secure about 50 % of the total carrying capacity through contracts.

- Introducing **new technologies and innovative management techniques** and know-how in the process of construction and exploitation of the pipeline.

The South Stream Project

The South Stream project envisions the construction of a transcontinental pipeline for the transportation of natural gas from Russia to Italy and Central Europe. According to the plan, the total length of the pipeline would be approximately 3,000 km, including 900 km of underground pipelines beneath the Black Sea starting at Dzhubga (Russia) and ending at Varna (Bulgaria).[64] The total carrying capacity is planned at 63 billion m^3 per year and should be reached by 2018. The gas pipeline would run through Bulgaria, where it would split in two: one of the bifurcated pipelines would pass through Greece and the Ionian Sea to South Italy, while the other would pass through Serbia, Hungary, and Slovenia and end in Austria and Northern Italy. The total project costs (prior to completing the project feasibility study and the technical planning) are estimated at about EUR 25 billion. By mid 2010 Russia had signed bilateral agreements with Greece, Bulgaria, Serbia, Austria, Hungary, and Slovenia. An additional agreement between Russia and Turkey was signed so that the gas pipeline can bypass the Ukrainian waters segment of the Black Sea. The underwater segment of the pipeline would be built by Russia's Gazprom and the Italian ENI.

Figure 16. Map of South Stream Project



Source: South-stream.info

[64] The pipe's point of entry into Bulgaria can be changed following the project feasibility study.

Bulgaria's participation in the South Stream project was agreed upon on the January 12, 2008. The agreement between the governments of Bulgaria and the Russian Federation stipulates the implementation of a joint project for building a pipeline for natural gas transit through Bulgarian territory. In line with the agreement, on November 13, 2010, BEH and Gazprom agreed on and signed the statutes of the South Stream – Bulgaria AD Joint Venture Company. The company is to be headquartered in Sofia and is entrusted with the planning, financing, building, and exploiting the gas pipeline. BEH and Gazprom each hold 50 % of the company's shares.

The South Stream Project Management: Bottlenecks

Bulgaria is faced with several problems in the process of planning and implementing the South Stream project. These issues necessitate further clarification from and action on the part of the Bulgarian government in order to maximize gains from the project implementation and minimize the risks associated with poor project management. Virtually all details of the project's implementation are currently unspecified, while sensitive issues among the shareholders have not been resolved and are potential points of conflict likely to affect Bulgaria.

The signed intergovernmental agreement (18.01.2008) **needs to be amended to comply with the rules of EU legislation** and, more specifically, the *Directive Concerning Common Rules for the Internal Market in Natural Gas.*[65] The European Commission has already voiced its concern that some of the clauses of the agreement may contradict provisions of EU energy legislation, thus requesting that the Bulgarian government changes the contract agreement. The EC has also insisted that the agreement should guarantee equal access to the gas pipeline for European energy companies.

It is also necessary that **the statutes of the joint company** clearly and explicitly define the competencies and relations between the two shareholders (BEH and Gazprom) in terms of hiring personnel, preparation of the annual budget, decision making mechanisms, rules on dispute settlement, etc. It should be pointed out that introducing a decision-making mechanism based on consensus would aid accountability, yet would slow down the operational performance of the company.

Ensuring transparency and better project planning and implementation require the use of an **open tendering procedure for choosing an independent international company with extensive experience for preparing the feasibility study** and technical project of the pipeline. There are already **examples of poor project management** of South Stream on the Bulgarian side. The procedure for choosing a contractor to carry out the feasibility study preceded the signing of the statutes of the joint project company, thus blurring the separation of management responsibilities of the shareholders and the joint venture. The joint venture should be responsible for all financial and organizational costs related to the choice of feasibility study contractor. The feasibility study deadline for applications has been extended a number of times, and the last extension was for mere several hours. The latter is indicative of poor organiza-

[65] Directive 2009/73/EO of the European Parliament and the Council of the European Union Concerning Common Rules for the Internal Market in Natural Gas and Repealing Directive 2003/55/EO from July 13, 2009.

tion at best and/or of tailoring the call for tenders to the interests of a specific applicant. Moreover, providing only six working days for applications for a contract of such magnitude and levels of technical detail is clearly inadequate, especially in the absence of a prior indicative announcement. This practice is among the most commonly used methods of limiting competition in public procurement in Bulgaria. The implementation of the South Stream project on the Bulgarian side lacks consistency – the establishment of the joint company and the completion of the feasibility study are being conducted simultaneously. This is likely due to the need to formally adhere to the agreed with Gazprom deadlines for carrying out the feasibility study within eighteen months from the establishment of the joint company.

Transit Fees

Transit fees should be significantly increased from their current values (determined by the current contract with Gazprom) and updated annually in line with gas prices and inflation in the EU. The interests of the South Stream shareholders are entirely opposing – Bulgaria would benefit solely from the transit fees, while Russia's interests are in selling gas at competitive prices, hence its incentives lie with lowering transit fees.

The **transit fees should be paid in Euros** in light of Bulgaria's future accession to the Eurozone. The **contract for gas transit must include the so-called "transit or pay" clause**[66] (as is the case with the existing Gazprom gas transit contract for Bulgaria), so that returns on investment are guaranteed. The transit fees should be based on the carrying capacity of the gas pipeline (63 billion m^3), and not on the actual amount of natural gas running through the pipeline, as the investments in the project are made on the stated maximum of carrying capacity.

There are reasonable doubts that South Stream is a political project[67] that is not economically justifiable. The preliminary assessment of the project's costs makes it the most expensive venture in the gas energy sector ever. The latter is a real threat to the project's competitiveness and returns on investments. Hence, Bulgaria must insist on timely commitments from Russia to meet its obligations under the project and on possible compensation in case the project is not completed. Moreover, **an exact date for reaching the maximum carrying capacity of the pipeline should be set**.

To address the above issues, when signing agreements on South Stream, Bulgaria should also rely on the Energy Charter adopted by all EU-27 Member States.

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[66] Such a clause would stipulate that the whole volume of the gas pipeline should be used for transit, or otherwise penalties would apply.

[67] Security Aspects of the South-Stream Project, Briefing Paper, DG External Policies of the Union, European Parliament, October 2008.

Additional Issues

When the carrying capacity of the South Stream pipeline is reached (at 63 billion m^3 per year), it is likely that the transit of natural gas through the existing pipelines in Ukraine, Romania and Bulgaria to Turkey, Greece, and Macedonia (currently 17.7 billion m^3) would cease. This raises two issues associated with the transit of gas to the above-mentioned Balkan countries. First, the new EU legislation on the liberalization of the gas market stipulates that **South Stream should sign a contract with and pay for the services of Bulgartransgaz –** the gas transmission system operator for the transmission of Russian natural gas to Turkey, Greece, and Macedonia. Second, **Bulgaria should be compensated for the lost revenues** from not using the compressor stations and gas pipelines in the case the transit of gas through them stops. Gazprom is obligated to use the existing gas transit pipeline system in Bulgaria at its maximum carrying capacity until 2030, as per the memorandum signed on December 18, 2006, and the additional agreements to the gas transit contract dating back to 1998. On average, for the period between 2011 and 2030, the revenues from the transit of gas according to the existing contracts wit Gazprom will be about USD 35 million per every 100 km of the pipeline on Bulgarian territory. That amounts to a total of USD 700 million for the next 20 years per every 100 km of pipeline.

The Burgas – Alexandroupolis Project

The Burgas-Alexandroupolis oil pipeline is an international project for the transportation of Russian and Caspian oil from the terminal at Novorossiysk (Russia) to the port of Burgas (Bulgaria), where a pipeline would transport the oil to the port of Alexandroupolis (Greece). The project's aim is to serve as an alternative to the oil route through the Bosporus and Dardanelles straits. As such, Burgas-Alexandroupolis would emerge as **a new transit corridor for Russian oil to the European petroleum markets**.

Figure 17. Map of the Burgas-Alexandroupolis Project

Source: Wikipedia.

It is estimated that the Burgas-Alexandroupolis project will transport 30-35 million tons of oil per year. The project company – Trans-Balkan Pipeline B.V was registered in February, 2008, in Amsterdam (Netherlands). Fifty-one percent of the company's capital is owned by three Russian companies: Rosneft, Transneft, and Gazprom Neft. Greece and Bulgaria each own 24.5 % of the capital via the Hellenic Petroleum and Traki consortium and (23.5 %), the Greek state (1 %), and Technoexportstroy (24.5 %) respectively. The total cost of the oil pipeline (prior to completing the project feasibility study) is estimated at EUR 1-1.2 billion. Thus, the Bulgarian share in financing the project is expected to be between EUR 240 and 300 million.

A closer look at the project's parameters demonstrates that it is unlikely that the Bulgarian state-owned company will recover its investments. Upon adding the interest rate and loan guarantees, the estimated participation of the Bulgarian shareholder in the project would reach EUR 340 to 400 million. Considering the (preliminarily) estimated transport fee of USD 1 per ton of oil transported through the pipeline, the total revenues of the international company would be in the range of USD 30 to 35 million annually. Thus, the Bulgarian share of 24.5 % would bring at most revenues of USD 7.35 to 8.75 million annually. This amount could not cover either the annual depreciation costs, or interest, nor the operational costs of the Bulgarian company.

Despite the obvious strategic and economic irrationality of the project from a Bulgarian standpoint, Bulgaria's participation in Burgas-Alexandroupolis was withdrawn only after the completion of an environmental impact assessment. Meanwhile, the Bulgarian government continues spending resources to support the country's participation in the project. In light of the above it would be best if **Bulgaria's participation in the project company be discontinued as soon as possible, and the company and its assets be liquidated**.

There are certain **common shortcomings** in the management of the three largest energy infrastructure projects of the past decade in Bulgaria described above. These shortcomings should be clearly pointed out so as to develop effective measures for overcoming them:

- The **lack of clearly defined strategic priorities** and the relation of each project to these priorities;

- The **deviation from the principles of good corporate governance and transparency** during the decision-making process and the project implementation;

- The **absence of quality standards for managing public procurement**, which leads to unforeseen increases in project costs and the risk of poor quality of implementation.

The following section of the report discusses the issues related to public procurement in the energy sector.