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THE FUTURE ENERGY PROJECTS OF BULGARIA – OPPORTUNITIES BEYOND FRONTIERS

Bulgaria is situated in a geopolitical crossroad. This creates opportunities that can be beneficial not only for the country, but also for the region and beyond.

One of the spheres that Bulgaria can take advantage of is the development of energy projects. This can happen in two main directions:

- *By serving as an energy hub for the region and by distributing natural gas brought via pipelines from Russia and the East.*
- *Exporting electricity produced in the upgraded production facilities as well as in the nuclear power plant in Belene at present under construction.*

The role Bulgaria could play in the energy market as key transit country is due mainly to two factors:

- *The geographical location at a crossroad that facilitates it being a mediator between Europe and Asia.*
- *The present situation on the energy market that leads the European countries to seek alternative routes as well as suppliers for vital energy resources.*

Whether and how much Bulgaria is going to utilize its position is a matter of political will in the first place. The opportunities lying ahead and are ready to serve for the prosperity of the region.

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There are a number of energy projects that are currently under preparation. The largest and most significant are the following:

1. South Stream Project.

2. Nabucco project.

3. Connecting the Bulgaria gas infrastructure to the gas pipe Turkey-Greece-Italy, supplying gas from the Caspian.

4. Projects meant to improve the security of gas supplies to Bulgaria.

5. The nuclear station in Belene.

One could easily see that these projects will affect the whole energy mix. Their proper implementation will not only improve it but will also create opportunities for additional export revenues and can potentially favor the neighboring countries.

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In order to be able to assess the current situation and hence – the importance of the large energy projects in Bulgaria, looking at some key figures from the energy market in Bulgaria is going to be insightful.

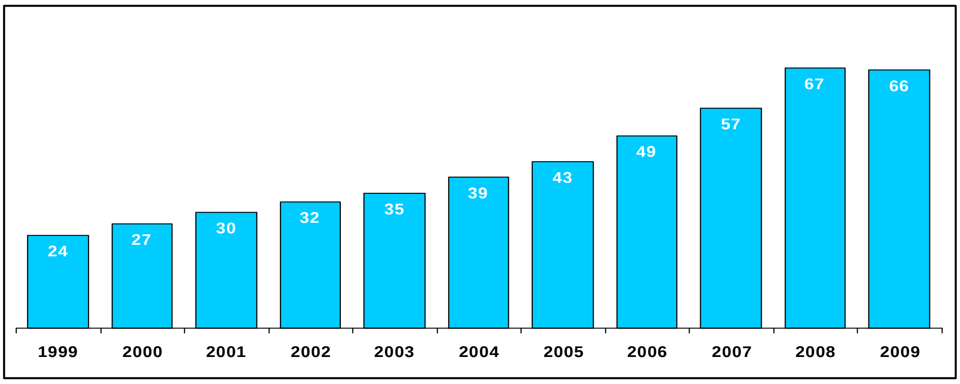
The current energy mix of Bulgaria is well balanced despite the fact that the country is poor in natural resources and is forced to import almost 100% of its oil and gas. Coal extraction is reduced only for lower qualities of coal such as the lignite that are being used primarily for electricity generation.

Neither total primary energy production, nor consumption and consequently exports, have changed significantly for the last 5 years. Consumption patterns have proved to be steady and this should be attributed to the lack of growth in the industrial and transportation sector, the two being the biggest energy consumers. The economy of Bulgaria was growing in nominal GDP terms primarily due to heavy inflows of FDI in the real estate and financial services sectors. Both sectors are comparatively low consumers of primary energy. Closer look at some key indicators reveal the framework of the picture.

Although the nominal GDP shows an upward tendency for the previous 10 years (see fig. 1), during the last 3 years real GDP growth exhibits downward trend (see fig. 2).

Figure 1

Nominal GDP in billion BGN (EUR 1 = BGN 1.95583)

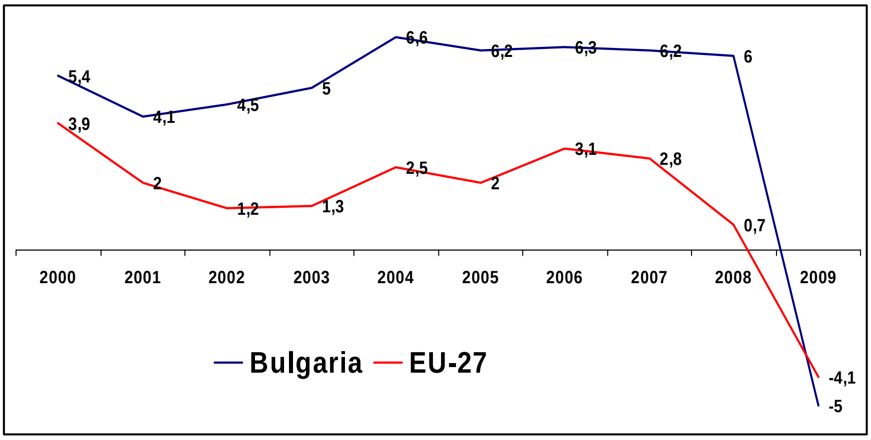


Source: Ministry of Economy, Energy and Tourism of the Republic of Bulgaria, 2010.

In a recent analysis performed by the Ministry of Economy, Energy and Tourism of the Republic of Bulgaria the possibilities for development of the Bulgarian economy were outlined. The sectors deemed most promising in terms of chances for growth are the information technologies, innovations, light industries as well as green technologies.

Figure 2

Real GDP Growth



Source: Ministry of Economy, Energy and Tourism of the Republic of Bulgaria, 2010.

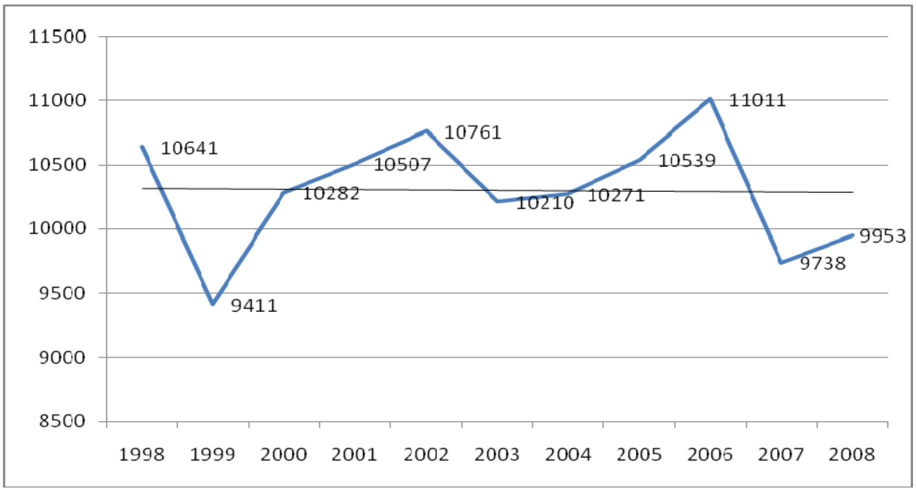
Neither of these sectors is specifically energy intensive. Growth, consequently, in these areas is not going to hit ostensibly the energy balance of the country. If we assume that the economy is going to develop in the way outlined in the strategy of the Ministry of Economy, Energy and Tourism, then evaluation of the energy mix and energy strategy should be performed considering more or less the present state of affairs in Bulgaria.

What are the specific characteristics of the current energy production, consumption and export patterns in Bulgaria?

Production of primary energy as a whole has been fluctuating around 10 300 ktoe for the last few years (see fig. 3).

Figure 3

Production of Primary Energy, ktoe (1998-2008)



Sorce: National Statistical Institute,
http://www.nsi.bg/otrasal.php?otr=30&a1=175&a2=216#cont

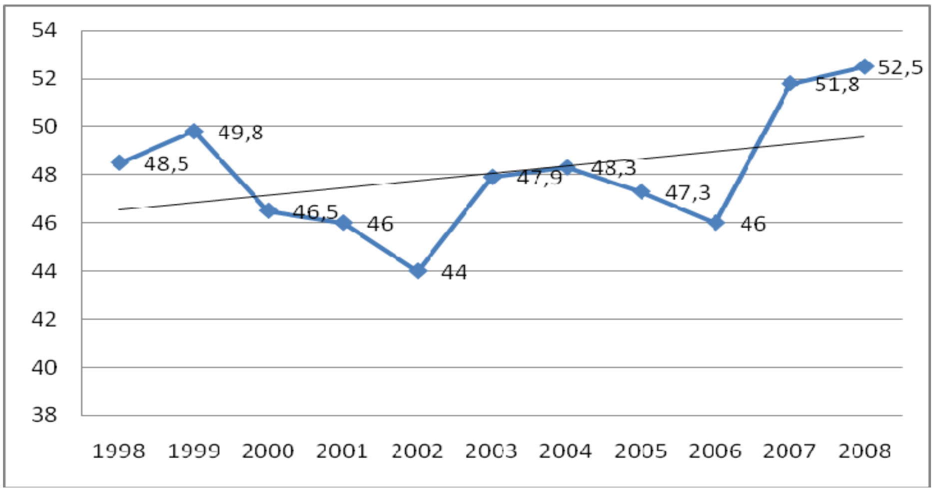
Another important observation refers to the energy dependency of the Bulgarian economy, or the share of energy import to total consumption, – for the last 10 years it has grown from around 45% to almost 53% (fig. 4).

The structure of the final energy consumption in Bulgaria (fig. 5) reveals the importance of petroleum products for the economy while the share of natural gas remains low and this explains the big in comparison to other EU countries share of electricity.

Similar inferences can be drown regarding the energy inputs for the production of final energy. Petroleum products and coal retain the dominant position with 36% and 35% respectively, while natural gas hold only a tiny fraction of around 5%.

Figure 4

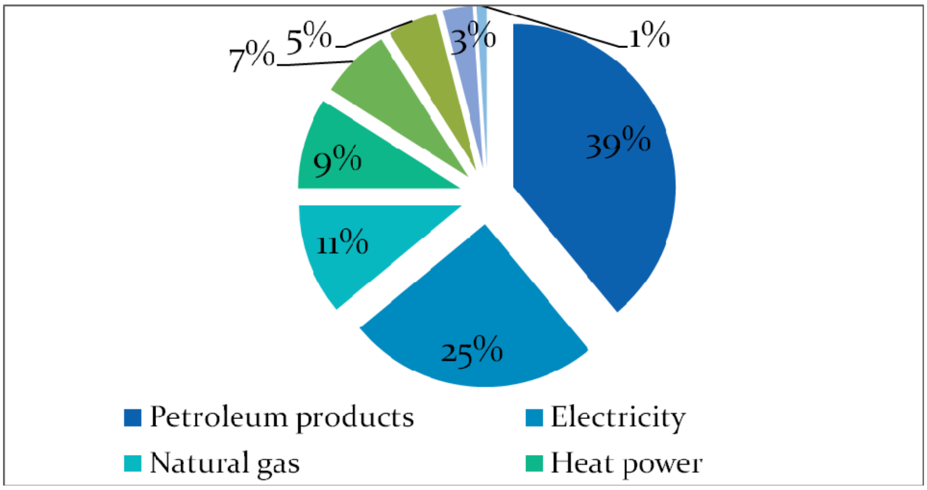
Energy Dependency of the Bulgarian Economy



Source: National Statistical Institute,
http://www.nsi.bg/otrasal.php?otr=30&a1=175&a2=216#cont

Figure 5

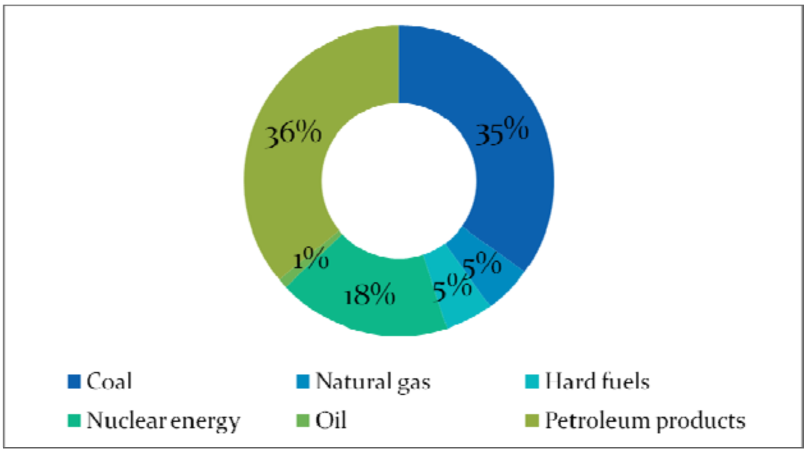
Structure of Final Energy Consumption in Bulgaria



Source: Bulletin for the Current State and Development of the Energy Sector in Bulgaria. Ministry of Economy, Energy and Tourism of the Republic of Bulgaria, March 2009.

Figure 6

Energy Inputs for the Production of Final Energy

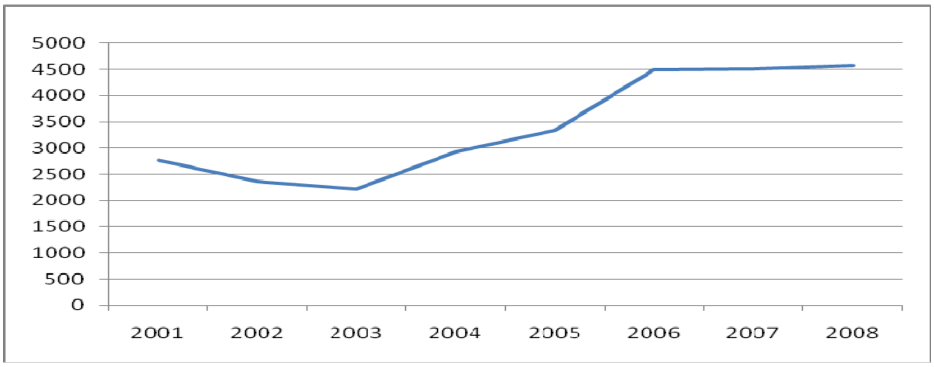


Source: Bulletin for the Current State and Development of the Energy Sector in Bulgaria. Ministry of Economy, Energy and Tourism of the Republic of Bulgaria, March 2009.

Energy exports exhibit upward trend for the last 10 years, the increase between 2001 and 2008 reaching almost 40%. This is a source of revenue for the state that facilitates the already (from the start of the crisis) worsened trade balance.

Figure 7

Energy Export of Bulgaria, ktoe



Source: National Statistical Institute, http://www.nsi.bg/otrasal.php?otr=30&a1=175&a2=216#cont

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Which are the areas in the energy mix to which special focus is placed in the project for energy strategy under development by the Ministry of Economy, Energy and Tourism?

The main starting points of the analysis are that:

1) According to Eurostat most recent data, when calculated based on the gross energy consumption, Bulgarian economy is 5.6 times more energy intensive compared to EU-27 average

2) Gas consumption in the country is times lower than the average for the European Union. Currently only 1.5% of the households in Bulgaria have access to natural gas. For EU this indicator is 55%. Low gas consumption by households is the reason for high electricity consumption (40%) in comparison with EU (11%).

3) The EU has set a target for Bulgaria of achieving 16% share of renewable sources (currently 9.4%) in the energy mix as well as decrease of the CO2 emissions to 20% compared to the base 1999

Considering this, emphasis is to be placed on:

1) Development of additional gas supply routes to feed the expanding delivery network in the country

2) Environmentally friendly energy projects. Apart from developing wind, solar and biomass facilities, a viable and important source of additional nature-friendly energy is nuclear power

It is not surprising then why the key and largest projects that the Bulgarian government is undertaking are in these two fields: natural gas pipelines and nuclear energy. The development of both directions requires foreign resources and vast capital expenditures in order to materialize.

Natural gas remains primarily an import item (approx. 85% of total domestic consumption), despite the discovery and recent development of the local sources. Bulgaria is relying on Russia for deliveries through one route that crosses Ukraine. Geopolitics have shown that this route contains risks that should not be neglected when the issue is related to the security of supply for the economy of the country. The smoldering conflict between Russia and Ukraine poses uncertainties for the deliveries also to other countries final consumers of Russian gas and forces them to seek alternative routes. That is how the two big European project – Nabucco and South Stream were born and why the Bulgarian governments have been placing pronounced attention to them.

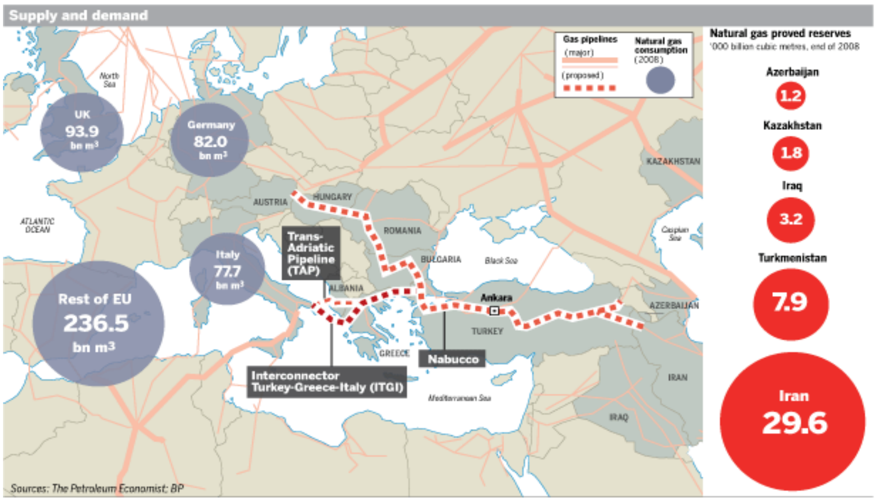
Materializing these 2 projects is vital not only for Bulgaria, but for the other European countries that will benefit from them. Fig. 8 below reveals the natural gas demand patterns in Europe in a nutshell.

South Stream Project

The project was initiated in 2007 after a memorandum was signed between the Italian company ENI and Russian Gasprom for the delivery of natural gas to Italy. Gas is planned for extraction by ENI in Kazakhstan and the pipe is going to be filled additionally with gas from the Caspian region bought by Gasprom. The carrying capacity of the pipeline is approx. 63 bil. cub. m. per year. It is not a negligible amount considering the consumption in Europe.

Figure 8

Supply and demand of Natural Gas in Europe



Source: British Petroleum,
http://www.bp.com/bodycopyarticle.do?categoryId=1&contentId=7052055

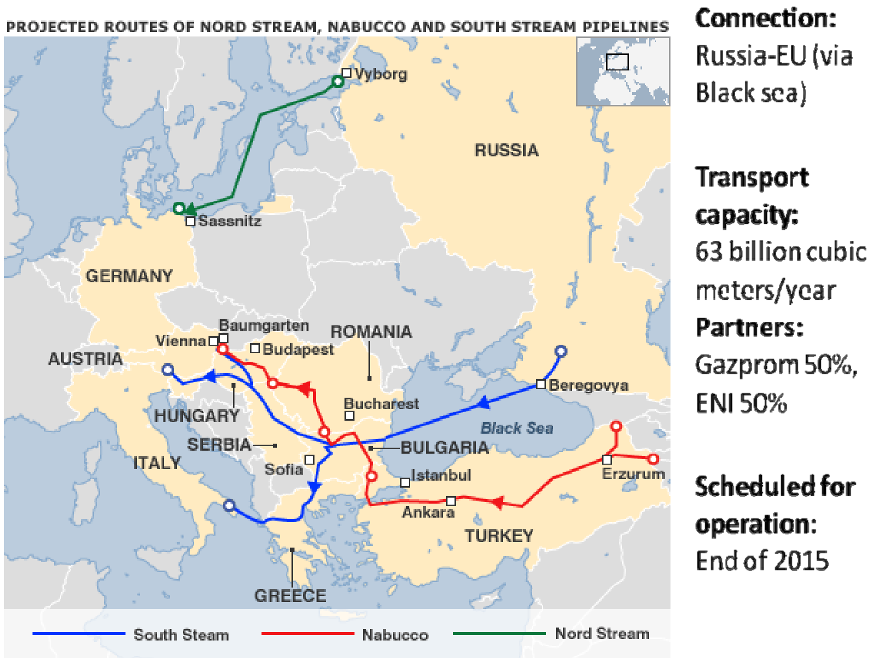
The additional gas that is meant to flow through the South Stream will bring a breath of fresh air for the importing countries as it is going to provide an alternative to the existing rout crossing Ukraine. The investment is planned for development by ENI and Gasprom that are sharing 50% each in the undertaking. Fig. 9 shows the routes that South Stream is planned to take as well as those planned for the other big transeuropean projects – Nabucco and Nord Stream.[2] It will start from Beregovya on the Black Sea coast in Russia, cross the Black Sea and reaches Bulgaria somewhere near the port of Varna. From there it is going to traverse the territory of Bulgaria. In Bulgaria it is planned to split in two sleeves – one running through Serbia towards Austria and another stretching south to the territory of Greece and from there to Italy.

[2] Nord Stream project is mentioned only for illustrative purposes in the present text and is not going to be considered further.

Figure 9

Routes South Stream Pipelines, Nabucco and Nord Stream Pipelines

Data are for South Stream



Source: Europe's Energy Portal. http://www.energy.eu/

Until present (Nov. 2010) Russia has signed intergovernmental agreements for the transportation of natural gas not only with Bulgaria, but also with Romania, Serbia, Hungary, Greece, Slovenia, Croatia and Austria.[3] This is an evidence of the importance of the project and its pan European significance. Bulgaria has started negotiations for its particular participation in the project much earlier, back in the beginning of 2008 when it signed with Russia an agreement for cooperation on the construction of gas pipeline through its territory. The agreement is signed with 30 years validity with the option to extend it for another 5 years. In case Russia fails to fill the pipeline to 31 bcm, it shall pay Bulgaria on 'transit or pay' principal. This agreement has been followed by another won in 2009 which stipulates that Bulgaria and Russia through the respective companies, will owe equal share in the development of the pipeline and will have equal weigh in the governing bodies charged with decision taking. The Ministry of Economy, Energy and Tourism of Bulgaria defines this as an important step towards materializing the goal of the country to become regional hub for energy transit. It outlines the significance of the progress on South Stream project as key to the success of its strategy in a broader aspect. The other project that is considered vital, for the realization of Bulgaria's aspiration to dominate the regional energy market is Nabucco.

[3] „Южен поток": Ябълка на раздора или плод на диалога Русия-ЕС. Гласът на Русия. 23.11.2010. http://bulgarian.ruvr.ru/2010/11/23/35488802.html

Nabucco project provides laying a pipeline stretching 3 300 km to transfer gas from the Caspian region, Iran and the Middle East through Turkey and Bulgaria to Austria, and from Austria – to Western Europe. It is scheduled to start transferring gas from 2015 on. Nabucco is the largest European infrastructure project in terms of countries involved. Apart from the other positive effects, it will support further European integration

When operating at full capacity, Nabucco will transport 1,550 bcm to Europe over the next 50 years or an economy the size of Germany could be supplied solely with Nabucco gas for over 16 years. Through its operation Nabucco will make a considerable contribution to the security of supply for Europe.[4]

Nabucco has long been considered as a rival to the South Stream project as its goal is to bypass Russia and ensure deliveries of gas to Europe from an alternative source through an alternative route.

Figure 10

Nabucco Pipeline Project

Source: Ministry of Economy, Energy and Tourism of the Republic of Bulgaria.

The Europen Union which imports approximately 30% of its oil and gas from Russia, has been striving for the implementation of this project as it regards it as means to shift away at least partially from its dependence on Russian resources. In the course of time however the understanding in the EU has changed to finding South Stream a necessary and important project, too. This has been made ostensible in the recent speech of the EU Commissioner on energy Mr. Gunther Oettinger on

[4] Nabucco Gas Pipelines. Facts and Figures. Novembre 2010. http://www.nabucco-pipeline.com/portal/page/portal/en/press/Facts%20_Figures

the occasion of the 10th anniversary of EU-Russia energy dialog when he emphasized that blocking South Stream is not in the interests of the EU. The only issue that needs consideration in his opinion is how to accommodate the project within the legislation of the EU.

The advantages of South Stream have been acknowledged and this is evident from the fact that a number of EU-member countries have already signed agreements with Russia for the development of the pipeline. Nabucco and South Stream, as Turkey energy minister Taner Yildiz has pointed out lately, should not be considered as rivals but as projects beneficial for all the countries in Europe.[5]

Thus by present the importance of Nabucco has received another nuance – not as a rival of South Stream but as a separate and equally important undertaking that needs common efforts in order to materialize. This view currently supported by the EU is facilitating Bulgaria's stance in the overall picture of strategic energy actions. The country can now fully embrace the two projects and work for their implementation on its territory. Nabucco is planned to carry 31 bil. cub. m. per year of which the transit countries are planned to receive approximately 12-15 bil. cub. m., the rest to be transported to Central and Western Europe. The cost of the project is estimated at around 8 bil. euro and the funds are to be drown from the companies participating in the venture. One of the key problems Nabucco is facing is of purely technical nature – will there be enough gas to fill the pipe. Azerbaijan is regarded as instrumental in this respect due to it well developed gas fields and its political stability. The project is going to be implemented by a company Nabucco Gas Pipeline International GmbH positioned in Vienna and on the part of Bulgaria participation is to be effected though Bulgarian Energy Holding, a state-owned company in charge of all energy projects in the country.

Bulgaria's interest in participation in the project is obvious – the country will ensure not only an alternative to the gas supplied from Russia but will fortify its central position in the region as an important transit country. This explains all the efforts by the Bulgarian governments in the direction of the implementation of the project. Both South Stream and Nabucco will have overall positive effects to the economy – they will lead to the creation of new jobs both directly in the construction and operation of the pipelines and also indirectly through the multiplier effect. For a small economy like Bulgaria, such projects are significant both in absolute terms as costs and labor, and in terms of positive externalities.

Participation in big energy projects that will diversify supplies and ensure additional deliveries is one side of the Bulgarian energy policy. Another important direction is towards ensuring local gas security. This is planned to happen in two ways, by:

1) Expanding existing gas storage facilities.

[5] Проектите на „Южен поток" и „Набуко" не са конкурентни. Гласът на Русия. 25.11.2010. http://bulgarian.ruvr.ru/2010/11/25/35641305.html

2) By connecting the Bulgarian gas grid to the grids of the neighboring countries so that in case of gas shortage (similar to the one experienced during the Russian-Ukranian strain in relations in 2009) to have vital supplies for solving immediate needs.

As regards the first point, at present there is one big gas storage facility in Bulgaria that is situated in Chiren. The government is currently working on expanding it to accommodate 850 mil. cub. m. of gas in order to be able to meet higher demand for a longer period of time. The project is estimated at 250 mil. euro and Bulgaria succeeded in November 2010 on financing it from the European Bank for Reconstruction and Development.[6]

Another project is related to the construction of a completely new gas storage facility in Galata for up to 500 mcm active gas in total. In such a way, upon completion of the projects, Bulgaria is going to have approximately 1 350 mcb of gas stored for emergency cases. This will significantly improve the level of security of gas supplies in the country.

With reference to the second point, Bulgaria is working on establishing reverse connection to the Italy-Greece-Turkey (IGT) pipeline that delivers supplies from new sources in the Middle East. This new connection will have the capacity to provide additional 5-9 bcm of gas per year to Bulgaria **or approximately 4% of the total consumption.**

Another project is related to the gas pipeline connection between Bulgaria and Romania through the Danube river with min. capacity 1.5 bcm per year, **or 1% of the total consumption.**

As a result of all the measures that have been taken until present, Bulgaria is now capable of ensuring supply equal to 9 mcm. of gas per day which is 90% of its needs thanks to:

1) Local production for approximately 15% of consumption of 1.8 mln. cub. m. per day.

2) Improved gas storage facilities ensuring 400 mln. cub. m. per annum.

3) Connection to the gas distribution grid of Greece for around 2 mln. cub. m.

4) Existing 2 mcm gas in the local distribution system[7].

[6] Газохранилището в Чирен ще увеличи дневния си добив. Mediapool. 25 November 2010. http://www.mediapool.bg/show/?storyid=172990
[7] Ibidem.

Nuclear Power Plant in Belene

Discussions about the construction of a second nuclear power plant in Bulgaria were initiated in the 70s the previous century and works actually started in 1980. Stopped in 1990 due to financial difficulties, the project was renewed in 2002 and since then it is under consideration for reasons of primarily financial viability. The project plans the construction of 2 blocks of 1000 MW each, which will ensure the possibility for Bulgaria to have additional revenues from electricity export.

Belene project has long been debated not only with regards to whether the investments are going to be paid back but also whether it is environmentally safe. The latter issue has been considered within the broader framework of nature friendly production and potential threats to the environment.

On the question regarding the danger of using nuclear power there are certain facts that are less well-known that, however, give an insight on the applicability of the this type of energy. More than 300 nuclear reactors are being used for scientific experiments in more than 50 countries around the world for the purpose of diagnosing and fighting cancer. More than 400 ships use nuclear reactors safely for their operations. In this respect, it is interesting what is the stance the European Union has taken towards the use of nuclear power.[8] In its strategy ‘Energy 2020’, the importance of development of the nuclear power production has been articulated. It has been stressed that the share of nuclear energy holds 1/3 of the total energy production in the EU and 2/3 of the low carbon energy produced.[9] In order to maintain these shares, importance should be placed in renewal of existing facilities as well as developing new ones. According to the latest Eurobarometer poll, every 2 out of 3 EU citizens consider the role of nuclear energy key for reducing dependency on fossil fuels and tackling climate change.

The fact that the EU regards nuclear energy as a key source that needs to be utilized and further developed in the future presents answer to the doubts and questions on its environmental safety and viability. The question currently (November 2010) ahead of the Bulgarian government is properly estimating the total cost of developing the nuclear power plant in Belene and agreeing on the financial parameters with the Russian partners from the company Atomeksportstroi which is to be in charge of the development of the construction. Enhancing the capacity for electricity production will create conditions to increase exports to neighboring markets that are interested in imports. The point in question is can the Bulgarian government secure future export revenues by reaching long term agreements with interested parties. This is the primary case for concern when taking the decision for the future of the plant.

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[8] See: Official Site of the Nuclear Power Plat in Belene. АЕЦ „Белене”. Енергия за бъдещето. http://www.belene-npp.com/index.php?lang=1&pid=39

[9] European Strategy. Energy 2020. http://ec.europa.eu/energy/strategies/2010/2020_en.htm

Conclusion

The development of the Bulgarian energy projects is going to benefit not only Bulgaria but other countries, too in the following main ways:

- The construction of the gas pipes through Bulgarian territory will ensure a **secure route for supplies** to the other countries involved.

- Connecting Bulgaria to other pipelines such as the TGI is not only an opportunity for our country but also for the others as it is a prerequisite for future reverse transfers from the Bulgarian network.

- Producing more electricity from an environment friendly source such as the nucleus will provide more supply of electricity to the regional market that is thrusting for it.

The Bulgarian energy projects currently under preparation should be regarded not only as a means to fulfilling indigenous needs, but as a bridge to the economies of the region and beyond that is meant to facilitate enough blood for their operations – energy. Whether and how much Bulgaria is going to utilize its position is a matter of political will in the first place. The opportunities are lying ahead and are ready to serve for the prosperity of the region.