

NATURAL GAS PENETRATION IN THE LIGHT OF NEW ALBANIAN ENERGY STRATEGY

Natural Gas Production, Importing, Transmission and Distribution Capacities

Natural Gas Production Capacities

The domestic gas production capacities are in their minimal limits, due to drying up of the reserves and decline of the initial pressure in oil resources. So far, approx. 500 wells have been drilled in natural gas fields, from which only 255 of them contained gas. Due to gas reserve decline, 25 wells have a debit production varying from 1000-8000 m³N/day. The existing natural gas fields are in their final development phase. The only concrete possibility to increase gas production is forecasting to drill of a new well in one Albanian region.

Natural Gas Transmission Capacities

The endogenous gas network infrastructure has had a larger extension than the oil infrastructure. Due to the fact that gas fields have a larger extension starting from Durres to Delvina, which creates the possibility for the close-by consumers to connect with the network. The pipeline network has a length of 498 km. Currently, gas infrastructure in many places is out of operating and needs rehabilitation and parts of the network need to be totally substituted. Due to the low level of gas production, some of the pipelines are unable to transport gas due to their continuous corrosion and destruction.

Studies done so far in the gas field aimed the identification of different alternatives to connect Albania with the European gas network and the market evaluation for the next 15 years.

Natural Gas Market Evaluation and Possible Options of Connection of Albania to International Gas Network

In the Optimist Scenario of the Albanian National Energy Strategy (approved by Albanian government) foresees no growth of the domestic natural gas production. Under these conditions, the Optimist Scenario, based on the WB study, analyses and evaluates the options of supplying of our country with natural gas from the international gas network. Despite the natural gas market drop off, the long-term development of energy sector should take into consideration a possible development of the natural gas industry in Albania. Based on the trends of EU member countries, where natural gas demand as a primary energy source used in the energy industry is experiencing a progressive growth, this energy commodity is expected to play a primarily role in the next 20 years. The development of the Optimist Scenario for Albania is mainly based on the supply with imported gas and on a mix supply in case of discovery of any new domestic gas field. Taking into account the actual developments where no new gas field is expected or increase in the internal gas production on level are very unlikely, the options that are analyzed largely are those of supplying with gas from neighbor countries. For this reason,

it is important to evaluate the strategies of alternative supply from North Africa, Western Europe, Russia and Caspian Sea region.

Option A: Supply of Albania with Russian gas via Macedonia which requires an extension of the existing gas pipeline 20” ending at Skopje. From Skopje there are several options to extend Macedonian system up to the Albanian border with the goal to enter in Albania via Librazhd (Albanian city) further direction to Elbasan (Albanian city) until Fier-Vlore (Albanian city) area, which shall be considered as the center of the national distribution network. There are several reasons why Fier-Vlore region would be attractive as a gas center:

- a) this region is already identified for construction of a new TPP;
- b) in this region exists an experience of oil and gas industry development;
- c) this region has the perspective to become a developed industrial region in the future;
- d) has a high population density.

Option B: Supply of Albania with gas from North Africa or the European grid via Southern Italy (Otranto) towards Greece up to link with the existing network near Larissa. For Albania, such a link to the Trans-European Network requires a connection line (approximate 140 km) to the south passing through Igoumenitsa, which is the landing point of the offshore pipeline from Southern Italy. From there, the connection line to Albania would be directed to the Sarande-Delvine region, and from there via Gjirokater (Albanian city) and Tepelene to the Selenice-Vlore (Albanian city) region where it will be connected to the existing domestic natural gas network.

Option C: Supply of Albania with Russian gas via Greece, which requires an extension of the existing 28” gas pipeline from Bulgaria to Greece, and construction of tie-in near Thelassoniki headed to Ptolemeida and then further via Kastoria to (Korce)Albanian and subsequently to the Fier-Vlore (Albanian city) area.

Option D: Supply of Balkan and Western European countries with natural gas from the Caspian Sea region via Turkey and Greece to Southern Italy with a link to Albania as mentioned under Option B. This option is supported by INOGATE Program sponsored by the TACIS “INOGATE” EU Program.

During the selection of supply options, it has to be considered the plans for further development of the Trans-European Gas Network that are not based on a possible routing through Albania for several reasons, such as:

- Gas market is relatively small,
- There is not an attractive economic environment,
- Low industrial development with a lack of potential key players on the consumer market (e.g. fertilizers industry, power plants, chemical plants/refineries, etc.),
- Disadvantageous topographic conditions.

The objective of connecting Albania to the existing international natural gas network is mainly driven by a short-term realization at reasonable costs as a competitive energy carrier, without considering the diversification strategies for the time being.

Option D would be eliminated due to the fact that for a such an complex and integral project, its promotion has only been performed in terms of conceptual studies and, therefore, within the next 10-15 years its realization isn't likely to be achieved. For financing of this option, a budget in the order of US\$ 7 billion has to be provided, which requires intensive negotiations at multinational level until a feasible financing concept is found. In more details this option is given in the evaluation of the option B.

Option C was subject of a study prepared in 1994 and sponsored by the EC under the INTERREG Program. The objective of this study was to examine the introduction of natural gas in the region of Western Macedonia with a link to Albania. The feasibility of this gas supply option is based on two key factors, which are:

- Re-powering of existing lignite fired power plants in the Ptolemaide/Kozani region with natural gas;
- Financing of project by support from the EU, considering limits and criteria of the grants in favor of Greece.

Option B represents the alternative supply of natural gas to the southern Balkan region and Greece from Northern Africa and Southern Europe. This alternative will serve as West-to-East natural gas transfer corridor. However, the use of this corridor appears not attractive for the time being due to high investment cost for the gas pipeline from Otranto (Southern Italy) to Larissa via Corfu and Igoumenitsa, which is of the order of US\$ 0.7 billion, and it requires a big market potential to become economically feasible. This situation is expected to improve step by step with accession to EU of Balkan countries. Seeing this link as part of the Caspian region corridor, this alternative would become more attractive for a diversified gas supply of European market, while a branch of this pipeline may serve as an option for Albania to connect to this big gas network. This line has become important especially after recent discoveries of natural gas fields in the Caspian area. Option B can be classified as a probable future supply option of our country.

Option A establishes a gas supply route for our country with Russian gas via Macedonia, which, from its part, was connected to the Russian gas supplying system since 1997 via a 20" pipeline ending in Skopje. The natural gas supplied to Macedonia is imported from Russia (Western Siberia) and is transported through Ukraine, Moldavia, Romania and Bulgaria. The gas pipeline Deve Bair-Skopje is designed to transport 1.2 billion Nm³ per year taking into account that later this gas pipeline will supply the neighboring countries such as Albania, Kosovo and Serbia.

There are initial plans for construction of a compressor station in Skopje with the goal of further extending of the pipeline toward the west (toward Albania). The pipeline to Albania will be 120 km long passing through all urban centers located in the Eastern Macedonia.

Forecast of natural gas demand in Albania

Based on the optimistic natural gas scenario, the possible commercial operation in our country is expected to start by 2008. Under these conditions, the calculation of the load of supply is foreseen to be around 25 years, a time period (2006-2030), which can be

considered economically viable for all projects of this kind. Gas demand is based on priority consumers listed as follows:

- First priority, the sector of power generation and industrial consumers;
- Second priority, the residential and commercial sectors which will use the natural gas for heating purposes;
- Third priority, the residential sector using natural gas for cooking and hot water.

Based on the above analysis and the conclusions of the WB study, the annual gas demand by 2015 are estimated to be around 0.969 billion Nm³ and 1.1 billion Nm³ according to the Passive and Optimist Scenarios, respectively, where power generation plants and industry are likely to be developed:

- **Base Scenario**, according to which the natural gas is expected to spread out in all sectors, including power generation, industry, service and residential sectors. According to this scenario the power generation sector will contribute with 60% of the total demand.

- **Alternative Scenario**, according to which the natural gas is expected to be used for power generation purposes and in the residential sector. According to this scenario the power generation sector will contribute with 92% of the total demand.

As developing these two scenarios, the technical limitation of supplying our country with maximum 1.2 billion Nm³ is taken in consideration. Table gives the forecasted gas demand until 2020 according to both scenarios.

Sectors	Scenarios			
	Base		Alternative	
Power generation	724	60 %	888	92 %
Industry	81	7 %	81	8 %
Commercial	264	22 %		
Residential for space heating	104	9 %		
Residential for cooking and hot water	25	2 %		
Total	1198	100 %	969	100 %

If natural gas will be available, the best TPPs candidates would be:

- Gas fired CCGT for base load generation;
- Gas fired CCGT for peak-load generation.

Energy legislation in hydrocarbon sector

During last 10 years, the huge transformations occurred in the energy sector as in other economic sectors, are accompanied with a new legal framework governing and regulating different issues of this sector. In the existing legislation easily can be noticed that particular legal or by-legal acts deal with one specific energy source or by-sector. This happened not only due to passed experience of treating all energy by-sectors separated from each other, but also due to completely different developments that by-sectors of hydrocarbons, power, coal, fuel wood etc experienced with the radical changes occurred in our country. In the mean time, in the process of adoption of the energy legislation positive efforts are made to approximate it as much as possible to the legislation of the most developed countries, especially to the EU legislation.

Involvement of foreign private investors in the exploration and production activities of hydrocarbons since early 90', marked the first participation of private operators in the energy sector, and it made necessary adoption of a law, which would govern the activities of private investors in the oil and natural gas sector. The law no.7746, dated 28.07.1993 "On hydrocarbons (exploration and production)" created space and a bigger security for foreign investors in the exploration and production activities of hydrocarbons. The law recognizes the sovereignty of Albanian state over hydrocarbons reserves, which remain property of Albanian state. Contractors are granted exclusive rights for a period not more than 25 years to develop and exploit the reserves of hydrocarbons in the area of contract in accordance to terms of a development plan approved by the Ministry responsible for energy as well as to renew this right for another period as the agreement provides for. In 1994, the Parliament approved the law no.7811 "On the fiscal system of hydrocarbons sector". This law, which is a specific one applied only to the contractors operating in the exploration and production activities of hydrocarbons, created a greater security for private investors because, based on that, all contractors were exempted from taxes and other fiscal duties imposed by Albanian state, and they would be subject only of the profit tax.

The activities of refining, transportation and trading of hydrocarbons and their by-products are regulated by a separated law. The law no.8450, dated 24.02.1999 "On processing, transportation and trading of oil, gas and their by-products" established the necessary legal bases for governing the abovementioned activities. This law is applied without any distinction for all legal persons, public or private, domestic or foreign. Law envisages the full liberalization of activities from export-import point of view and the wholesale or retail prices of oil by-products except specific situation of the market when the Council of Ministers may impose temporary restrictions for wholesale and retail prices. Law classifies the persons subject to this law in: a) oil refineries exercising activity in the refining of crude oil, b) oil and gas pipelines, c) companies of wholesale trading, d) retail pumping station which trade fuels; e) retail units that sell fuel for heating purposes. As far as the permissions are concerned the law provides for three type of permissions: 1) concessionary permission granted for refineries, oil and gas pipelines, 2) trading permission granted for wholesale trading; and 3) authorizations granted for the fuel pumping stations.

This law also introduced an important concept in the hydrocarbons sector that of reserve stocks for supplying hydrocarbons in emergency situations. According to provisions of this law, the oil refineries and the wholesale trading companies are obliged to keep reserve stocks equal to 30 days average sale, calculated based on the data of the previous year.

Conclusions

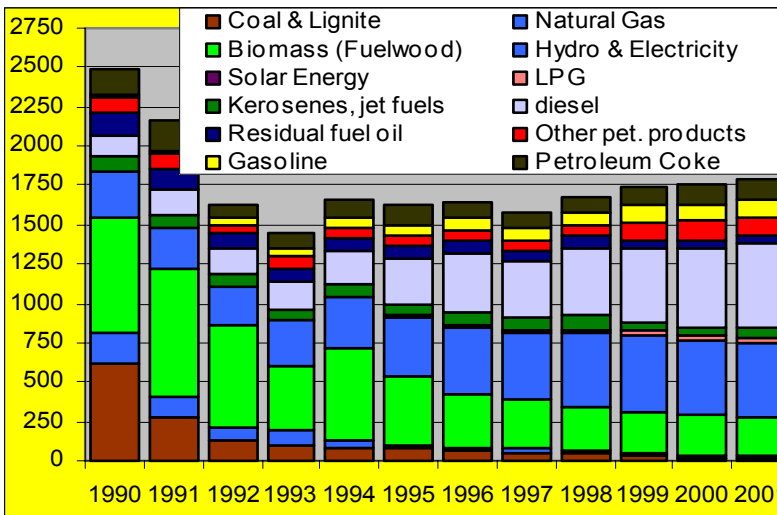
- The natural gas demand for power generation by 2015 is expected to be 0.98 billion Nm³ while the total demand will be 1.1 billion Nm³.
- The analysis made in National Strategy of Energy recommends strongly the option of using natural gas for power generation and in the industrial sector. The Strategy

also proposes the possibility of importing natural gas to our country, which will heavily depend on the different circumstances of our energy market developments.

- As it was analyzed in the Active Scenario, penetration of natural gas in the Albanian energy sector isn't likely to occur before 2008. If natural gas penetrates in the energy sector, its use for power generation is more profitable than marine diesel oil. However, the new TPPs will be constructed to work with both, marine diesel oil and natural gas.

Some indicators

Albanian Energy Consumption by fuels (ktoe)



Analysis indicates that coal, natural gas, electricity, diesel and heavy fuel oil were energy sources that used to play the major role in 1990. One decade later, the situation was quite different with fuel woods, electricity and diesel.

Albanian Energy production by fuels

Natural gas production declined from 206 ktoe in 1990 to 7.8 ktoe in 2001. Contribution of natural gas declined to 0.43% in 2001 compared to 10% in 1990, due to:

- Existing natural gas fields are in their last production period,
- Researches for new resources have not been successful so far.

By graph: Albanian Energy Supply (ktoe)

