

# WORKING PAPERS

*Working Paper No 10*

JULY 2009

THE FOURTH CORRIDOR  
GAS PIPELINES  
PERSPECTIVES, UNCERTAINTIES AND IMPLICATIONS  
FOR SE EUROPE AND GREECE

*Spiros Paleoyannis*

Chemist, MB

Former Deputy Chairman IENE

Former General Director DEPA SA



INSTITUTE OF ENERGY  
FOR SOUTH-EAST EUROPE



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The present Working Paper refers to Europe's Fourth Gas Corridor Pipelines and the perspectives, uncertainties and implications for SE Europe and Greece. IENE wishes to thank its author Mr.Spyros Paleoyiannis for his valuable contribution.

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JULY 2009 | Working Paper No 10

*Spiros Paleoyannis*  
Chemist, MBA  
Former General Director DEPA SA

The Fourth Corridor Gas Pipelines  
Perspectives, uncertainties and implications  
for SE Europe and Greece

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## *Summary*

Over the last two decades, natural gas consumption has nearly doubled in Europe. From around 300 bcm in 1990, gas demand in Europe, including EU-27 countries and other European countries (Albania, Croatia, Former Yugoslavia, Norway, Switzerland and Turkey) reached to 550 bcm in 2007. In the Balkans and SE European countries in particular, gas demand also increased during the same period, although with a quite different growth pattern, mainly due to the political and economic reforms of the '90s in certain countries of the region.

According to gas demand scenarios significant investments will be needed across the entire gas supply chain in order for the projected gas demand in Europe to be covered. However, certain key questions currently concern the European gas industry. Where these new quantities of gas will come from and through which pipelines will reach the market. On the one hand Europe faces energy dependency on Russian gas and on the other hand there is no realistic and secured alternative for massive gas imports from other gas producing countries (e.g Central Asia, Middle East etc.).

The present Working Paper focuses on the idea of the “fourth corridor” as a new energy transmission corridor to supply gas to Europe not from a single gas producing country, but from several gas suppliers located in the above mentioned broader geographical area. This perspective presents a first class opportunity for SE European countries, since the struggle for control over regional gas supply routes has attracted considerable international attention from companies and governments alike. The consideration and routing of new gas pipelines through SE European territory is bound to enhance the area's geopolitical importance.

## 1. The new world reality reshapes the future of the European gas industry

We live in a dynamic, continuously changing and very uncertain world.

The quickly shifting and turbulent economic, social, technological and geopolitical environment affects decisively all business activities, by creating a wide range of opportunities, but also by imposing new uncertainties and risks.

The world is not only moving further into a new “Globalisation” wave, but as some reputable analysts argue has entered into the so-called “Globality” era.

*Hal Sirkin, senior partner and Managing Director at Boston Consulting Group supports that globalisation was a one-way street. It was about companies from USA and Europe and later on from Japan, going to the rapidly developing economies with large populations and very low wage rates and either producing products or buying products, shipping them back to the developed markets, and then shipping over some very high-end and often luxury goods to those markets.*

*What has changed over in the last few years with the rise of China, India, Russia, Eastern Europe and Brazil is the emergence of a two-way street. What we have seen the last five years is not just companies from USA coming to India and China etc., but companies from India, China, Russia and Brazil becoming real companies that are not operating just in their local markets, but are actually taking their rightful place on the global stage. [1]*

Nevertheless, beyond the “globalization” or “globality” issues, the today's world is either way full of new challenges, uncertainties and risks.

Businesses could dramatically be affected by various uncertainties originated by geopolitical tensions, terrorism actions and political and ethnic instability currently exist in many areas and/or countries of our planet.

Unprecedented and to a great extent regionally contradicting social trends such as diverged demographics, income, poverty, employment and migration create a completely new social landscape and have their own impact on business activities and practices. [2]

Furthermore, climate change and earth peril awareness calls for new environmental policies, as well as for the employment of clean energy technologies, “green” production processes and life style patterns changes that directly affect the traditional business models and activities.

On the top, the current financial crisis, which may have its roots at the last years' high energy and food prices bubbles, as well as in the credit crunch in the USA, now threatens the foundations of the post-second world war global financial system (known as Bretton Woods system) and the world faces the prospect of a severe and painful recession, with immeasurable consequences and risks for all businesses. [3]

Under such circumstances, the energy sector could not be an exemption.

The European gas industry in particular, faces a number of all new and of strategic importance issues and challenges, which collectively form a completely new business landscape.

No doubt that Europe will need more and more energy to fuel its future socio-economic development. This reality, combined with the increasing climate change awareness and the quest for a low carbon future, creates favourable conditions for a new boost in gas demand, at least in short and medium-term, due to natural gas environmental friendly characteristics.

Purely, from the business point of view, these are good news for the European gas industry. But there are two inherent critical issues: the continuous increase in its gas imports dependence and the questionable availability of gas, at least in the short run.



Europe's gas imports dependence is expected to reach 80% by 2030 from some 50% today, out of which 60% are imports from Russia, equivalent to one-quarter of its total gas consumption.

Simultaneously, the new world economic reality, caused mainly by the extraordinary economic growth of some developing countries like China, India and Russia, may force Europe to compete for scarce gas supplies with other regions in order to fill the widening gap between the growing demand and the declining indigenous production.

Furthermore, business and regulatory uncertainties, combined with other uncertainties caused by the wider geopolitical, economic and environmental context, may threaten the implementation of certain gas supply projects of European interest (both upstream and midstream), which are fundamental for Europe's access to alternative gas sources and the improvement of its security of supply level.

Finally, to complete the picture, new legislation and regulation cause further structural changes in the European gas market, affects substantially the relationships between sellers and buyers and modifies the traditional business models. In addition, the increasingly global nature of the gas market, directly affects commercial conditions and business activities and practices, especially in terms of pricing, contracting and trading of gas.

## *2. The future for European gas*

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During the last two decades, natural gas consumption was nearly doubled in Europe. From around 300 bcm in 1990, gas demand in Europe, including EU-27 countries and other European countries (Albania, Croatia, Former Yugoslavia, Norway, Switzerland and Turkey) reached to 550 bcm in 2007.

In the Balkans and SE European countries in particular, gas demand was also increased during the same period, although with a quite different growth pattern, mainly due to the political and economic reforms of the '90s in certain countries of the region.

The main driver for this spectacular gas demand was without any doubt the power generation sector. Only during the last 5 years, gas consumption in the European power generation sector increased by some 50 bcm.

By 2010, some 35 GW of new gas-fired generation capacity is expected to come online in Europe and thus the yearly consumption of the sector will exceed 200 bcm, for the first time, representing 35% of the total European gas demand. [4]

Incremental increases in gas consumption are also expected in nearly all the other sectors of the economy, during the next decade.

It is not easy to accurately forecast the future for European gas.

Gas demand forecasts vary, depending on the scenarios and the assumptions used, as well as on the time horizon looking at by each energy analyst.

For the short-term (say the next two years) there are deteriorating prospects for gas demand in Europe, mainly due to the ongoing financial crisis and recession.

For the medium-term (say the next decade), gas demand projections of nearly all energy experts, converge: Europe will need substantial new gas quantities to fuel its socio-economic development and fulfill its environmental protection goals.

On the contrary, long-term forecasts differ substantially. Gas consumption growth rates (especially in the power generation sector), could be affected by a number of factors such as gas availability, high gas prices, carbon technologies and prices in power generation, CO<sub>2</sub> prices under ETS, lack of effective regulatory frameworks especially for gas transiting, growing dependence on gas imports, climate change policies etc. etc.

However, even for the low demand scenarios, significant investments will be needed across the entire gas supply chain in order the projected gas demand in Europe to be covered.

According to a CERA's study, "investment decisions to commit more than 500 billion Euros will need to be made over the next 10 to 15 years, in order the projected gas demand in Europe to be covered. In the midstream alone, the European Gas Infrastructure Operators group considers that the industry needs to invest some 100 billion Euros over the next 15 years in national transmission systems reinforcement, new storage, interconnectors, import pipelines and LNG terminals, in order the forecasted demand of around 180-280 bcm of new gas supplies, to be made available for the European gas market by 2030. Even with conservative cost estimations for finding and developing gas fields, this implies upstream investments at least at the level of 250-400 billion Euros, excluding any amount for LNG liquefaction and shipping investments". [5]

### *3. Uncertainties related to Russian gas production and exports and the European gas supply dilemma*

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From all the above, it is obvious that under any scenario, Europe should urgently negotiate and contractually secure substantial new quantities of gas, while, simultaneously, should timely and effectively promote/support significant new gas supply infrastructure (both upstream and midstream) in order to make these quantities of gas available to its market.

But there are still many challenges and obstacles ahead if Europe is to fulfill the above strategic objectives.

The main questions currently worry the European gas industry refers to where these new quantities of gas will come from and through which pipelines will reach the market.

On the one hand, Europe knows very well that Russia and Gazprom have a 40-year history of reliability in gas exports, but as previously explained many of the European countries (including SE Europe's countries) are very sensitive to further increase their import dependence on Russian gas, simply because such an increase is not consistent with their security of supply. At the same time, Europe realizes that for the near future (at least for the next five years), there is no realistic and secured alternative for massive gas imports from other gas producing countries (e.g Central Asia, Middle East etc.).

The above reality constitutes a very big dilemma and calls Europe to make urgently certain strategic choices about its future gas supplies.

Europe's long-standing objective to gain access in alternative gas supply sources and routes does not derive just from the simple and completely understandable principal to reduce gas imports dependence from one single supplier (Gazprom), but also from some justifiable concerns about Russia's ability to export enough gas to Europe in the years to come.

At a time when gas demand in Russia surges, gas production at country's "big three" giant fields (Urengoi, Yamburg and Medvezhe), is rapidly "coming off the plateau". Energy experts estimate that only by 2010, Russia will need as much as 310 Bcm per year for export (excluding

Asia) and 440 Bcm per year for its domestic market, or a sum of 750 Bcm per year. [6]

Since Gazprom could for the time being roughly produce only 550 Bcm per year from its own resources, there will be in the next 2-3 years a gap of about 200 Bcm per year, to be filled from Central Asia and from Russian independents and oil companies, according to the company's "Gas Bridge" strategy, developed in late 90's.

Gazprom's "Gas Bridge" strategy was primarily aimed at postponing the difficult and expensive upstream investments in the Yamal Peninsula as late as possible.

The said strategy, although worked effectively for nearly a decade, seems now to have reached to its limits. Gazprom should urgently proceed with the huge upstream and other relevant investments needed in the Yamal Peninsula and in the Barents Sea, in order to have first gas from Bovanenkovo in 2011, from Kharasavey in 2014 and from Stockman later on.

Furthermore, Europe worries about the other two elements of the Gazprom's strategy (known as by pass-and-develop strategy), aiming at protecting and straightening its status as the dominant supplier in target markets by:

- a) Lessening the dependence (and the risks) on third-countries transit for access to European gas markets. To this end, Gazprom supports pipelines that bypassing certain countries (e.g. Ukraine, Poland and Belarus) or/and preempts and tries to block or at least to limit possible gas flows from the Caspian and Central Asia to Europe via Turkey (see gas purchase agreement of the Turkmen and Uzbek gas and the South Stream project respectively)
- b) Increasing its direct presence/access both to European gas markets and to international gas sources (Iran, Nigeria, Libya etc.).

Finally, Europe should carefully monitoring Russia's (and other gas producing countries) intentions to establish the "gas OPEC", in order to foster cooperation in gas supplies and control gas prices. Recent agreement by the world top gas reserves holders Russia, Iran and Qatar to set up a technical committee to coordinate new gas exploration and production projects, may be the first step towards the transformation of the Gas Exporting Countries Forum (GECF) into such an organization. [7]

### *The "fourth corridor" idea*

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The idea of establishing a new transport corridor for European gas supplies (the so-called "fourth corridor") from the Caspian region and the Middle East countries via Turkey has been around for more than a decade.

The basic concept of such an approach is to supply gas to Europe not from a single gas producing country, but from several gas suppliers located in the above mentioned broader area.

As potential suppliers have been considered several gas producers located in the broader Caspian region (Azerbaijan, Turkmenistan, Uzbekistan etc), the Middle East (Iran, Iraq) and even Egypt, through the Arab Gas Pipeline (AGP)

Both the European Union and the United States consider that such a gas transport channel straightens Europe's energy security, diversifies its gas sources and supply routes, and reduces its dependence on Russian gas.

Due to its geographic position, South Eastern Europe is also directly interesting for such a perspective, not only because regional pipeline projects could contribute to its energy security

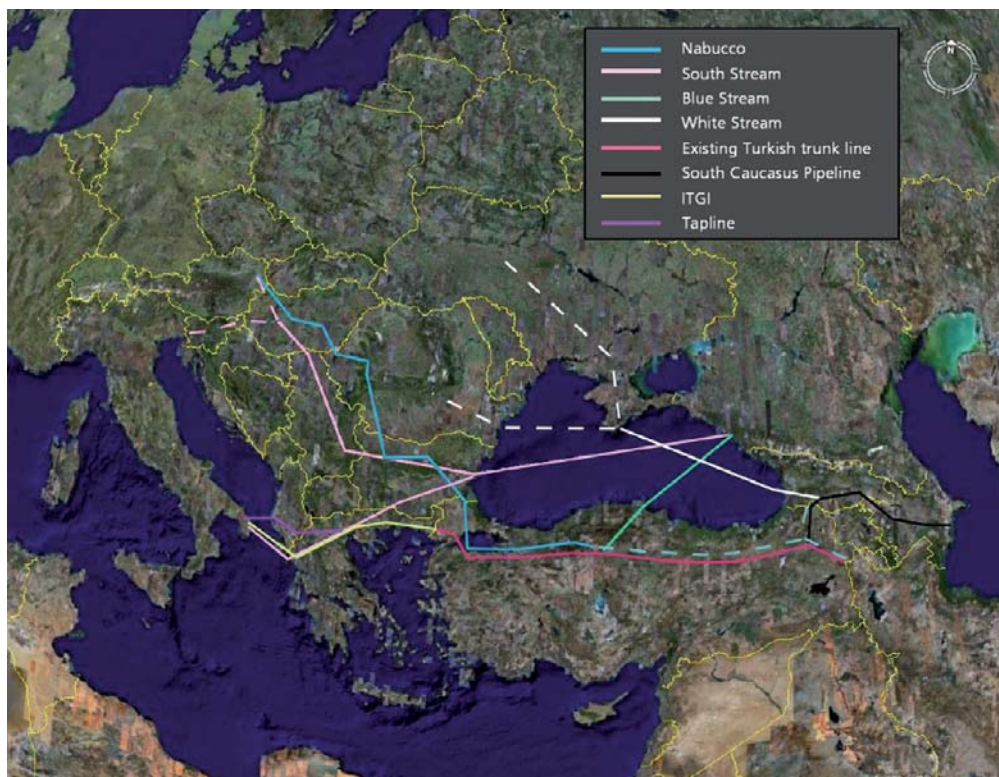
improvement, but also because their implementation is expected to upgrade its role for total Europe's gas supply diversification.

This perspective constitutes a first class opportunity for SE European countries, since the struggle for control over regional gas supply routes will put into international attention (and conflict) the interests of companies and governments from all over the world.

Towards the establishment of the "fourth corridor" a considerable number of gas supply pipelines (see map below), with a total capacity of nearly 80 bcm per year, have been proposed the last ten years.

**The Greece-Italy Interconnector:** This Interconnector is part of the broader Turkey-Greece-Italy gas pipeline project and is aiming at bringing Azeri gas to the Greek and the Italian market. After commencement of gas deliveries of Azeri gas to Turkey and start of operation of the Turkey-Greece Interconnector in 2007, IGI is probably the quickest moving project in the area. The IGI pipeline has a 590 Km and 42 inches onshore segment in the Greek territory and a 203 Km and 32 inches offshore segment, connecting the Greek and the Italian coasts in the Ionian Sea (from Parga to Otranto). The project, to be built, owned and operated by the recently established Poseidon SA (a 50-50 Edison and DEPA joint venture, but with 80-20 rights in the Foundation Volume Allocation respectively), has a 10 bcm per year gas transport capacity. The European commission granted IGI a TPA exemption for 25 years, but asked for project's completion prior to the end of 2012.

**The Nabucco Pipeline:** Nabucco, aiming at linking Turkey with Austria via Bulgaria, Romania and Hungary, is without no doubt the most important project for Europe's gas supplies



Map 1: Proposed Gas Pipeline Projects in S.E. Europe.

Source: CGES, London

diversification. With a 3,300 Km length and a total capacity of 31bcm per year at its final phase, could bring substantial gas quantities from Azerbaijan, Iran, Iraq and even Egypt.

Apart from the support from its six sponsors, namely OMV, MOL, Transgaz, Bulgargaz, BOTAS and RWE, the project gathers strong political buck-up both from the European Union and the USA.

Construction works are expected to start in 2010 and start of operations in 2013. Nabucco has also been granted a TPA exemption by the European Commission.

**The Trans Adriatic Pipeline:** The project was announced three years ago by the Swiss power and gas company EGL, which has also active presence in Italy and the Balkans. The Trans Adriatic Pipeline project (a 520 Km and 36 inches pipeline linking Greece's gas transportation system with Italy via Albania), has 10 bcm of gas transport capacity a year, expandable to 20 bcm per year. The project is expected to start its operation by late 2011.

TAP is aiming to supply gas both to EGL's power plants in Italy and possibly to Greece and Albania. In a second stage, there are plans for pipeline extension to West Balkan countries e.g Bosnia and Croatia.

During the last months, there were two very important developments towards project's implementation: StatoilHydro announce its decision to joint EGL in the TAP project last February and thus gave a strong buck up to it, since the Norwegian giant could substantial contribute, both financially and by securing future gas supplies from the Caspian and according to an EGL's declaration, a 5.5 bcm gas purchase contract has been signed with Iran.

**The White Stream Pipeline:** Although just an idea yet than a concrete project, the pipeline aims at supplying Azeri gas to north-eastern Europe, via Georgia, the Black Sea and Ukraine.

The pipeline, currently supported by the Polish, the Ukrainian and the Georgian Governments, was firstly announced two years ago.

However, such a perspective, apart from serious geopolitical issues (especially after the recent Caucasus crisis), encounters also several other obstacles, namely substantial investments costs, high transit tariffs and questionable gas demand and ability for gas payments in the target markets.

**The South Stream Project:** In mid 2007, Russia announced its own plans to construct a new pipeline in the area in cooperation with the Italian major ENI and within the next months gained support from many countries in the area, namely Bulgaria, Serbia, Hungary and Greece.

The pipeline, with a total capacity of 30 bcm per year, will link Russia with Bulgaria via its undersea segment in the Black Sea and then through its north and south branches will reach both to Central and Southeastern Europe's markets.

The recent Russian-Ukrainian gas crisis could perfectly explain the logic behind Gazprom's by-pass-and develop strategy, as well as its plans for the development of the North and South Stream pipelines.

Although for the time being no final investment decision has been made for the project, its announcement, combined with the uncertainties related to gas demand in the Balkans and Europe in the long-term, previously discussed, the numerous regulatory barriers across the hosting countries and the geopolitical tenses in the broader area, has changed dramatically the game in the area and made the future of the gas supply pipelines under consideration more complicated and more uncertain.

Under these circumstances, which will be the future of the above described "forth corridor's" pipeline projects?

Will all the regional projects be implemented? Or could some of them be merged?

Let's have a deeper look to the main issues and challenges which the regional pipeline projects currently face and collectively constitute the today's "fourth corridor" puzzle.

#### **Geopolitical tensions and uncertainties in the area**

Political instability in a number of Caspian and Middle East countries (including somehow Turkey), combined with the ongoing political and diplomatic race/competition between USA and Russia to increase influence in certain CIS countries and secure "control" in a number of gas producing countries and gas transiting routes, directly affects Europe's efforts to diversify its gas supplies. Consequently this political and energy "war" creates serious obstacles towards securing gas supplies from alternative sources for nearly all the regional gas pipeline projects. The recent crisis in Georgia, worsen the already strained relations between USA and Russia and created additional tenses in the area.

Geopolitical tension and uncertainties, political and ethnic stability and domestic security across the hosting countries are always crucial for the gas pipeline companies, since they are critical preconditions to decide upon investment and ensure that their staff can safely build and operate a gas pipeline.

For all the above reasons, without certain improvements in the broader geopolitical environment and removal of the related uncertainties in the area, it may be proved extremely difficult for gas companies to secure gas supplies and to decide upon their pipelines projects.

#### **Gas availability from alternative sources**

But even with a better geopolitical environment in the area and a more stable situation in certain countries in Central Asia and Middle East, gas availability from alternative sources is questionable, at least for the next five years.

Gas production and transportation in Iran, the world's second richest country in gas reserves, apart from its political isolation and the sanctions imposed, requires huge and long-time investments, in both upstream and gas export infrastructure. Indeed, Iran is the only country that under different circumstances could play a key role for future European (and not only) gas supplies, balancing the Russian intentions to dominate the markets.

The same roughly applies also for the Iraqi and Egyptian gas [Egypt has been considered as potential gas supplier, especially after last years developments towards the creation of the Arab Gas Pipeline (AGP)], due to lack of foreign investments, technology and transparency, political and ethnic instability, and unrealistic export commitments, which collectively will prevent gas flows to Europe at least in the next five years.

The perspective for Turkmen and Uzbek gas flows to Europe through the so much discussed Trans Caspian Pipeline remains still questionable and uncertain, although EU and USA try constantly to keep it alive.

Apart from the existing disputes in the Caspian Sea legal regime, such a pipeline seems now more faraway, especially after Russia's preempt strategic choice to purchase substantial quantities of gas from these countries for its own purposes, as well as because the above countries examine

seriously the option to export gas to other east markets e.g China.

The only realistic option for the time being seems to be the Azeri gas, since such a perspective not only gathers strong political support both from the EU and the USA, but also because Shah Deniz Phase I production started and gas deliveries to Turkey and Greece commenced last year.

However, since all the quantities of Phase I production (8.6 bcm per year) are either used in Azerbaijan or exported to Georgia and Turkey, there is no gas available for the European market, till the time that Phase II production will come on stream (in 2015 the earliest).

At present, the gas outlook for Azerbaijan is still clouded and thus very difficult to accurately predict how much gas would be produced in Phase II and what quantities would be available for transit via Turkey.

It should be mentioned that there are many voices putting these quantities at only 6-8 bcm per year. Furthermore, we cannot ignore also that certain constraints exist in the export capacity of the South Caucasus Pipeline.

Under such circumstances, which pipeline project will manage to secure these limited gas supplies?

Or, even worse for all pipeline projects and Europe too, will we witness once again another deal, this time between Russia and Azerbaijan and Azeri gas will be purchased "at market prices" by Gazprom?

### **Transit regulatory regimes**

Absence or incomplete transit regulatory regimes across hosting countries and related uncertainties directly affect investment decisions and efficient operation for any gas pipeline.

More specifically, planning, construction and operation activities or in other words successful business in the interstate gas pipeline sector are heavily depend on the existence of clear, stable and timely known transit regulatory rules.

Unfortunately in the case of the "fourth corridor" pipelines there are still a lot of regulatory gaps and uncertainties across all the hosting countries, which could have tremendous implications on projects under discussion. This reality consists without any doubt a serious source of risks for all projects' implementation and profitable operation.

The later is particularly important for the case of Turkey, the role of which is crucial for the perspective of transiting non-Russian gas.

Governments, regulatory authorities and gas pipeline companies involved across the "fourth corridor" should systematically and hardly work in a productive spirit to eliminate the soonest possible all the regulatory gaps and inefficiencies in order to minimize the relevant risks and promote the implementation of the relevant gas pipelines.

### **Competition among gas supply projects**

Competition among pipeline projects under discussion is not limited only to gas supplies sources.

Interstate gas pipeline projects have to compete with other (existing or new) gas pipeline and LNG facilities in terms of non-gas costs (transportation costs and transit fees), and may be exposed to serious and unexpected deviations in gas transit volumes assumed to support projects development and operational costs. These sources of competition became more critical in nowadays,

because construction and material costs in pipeline projects rose substantially during the last years (more than 70% compared with 2000 costs, according to CERA/IHS indexes).

Consequently, even if future gas demand in Europe justifies nearly all the pipeline projects currently under discussion, the reality might be completely different.

Nabucco and South Stream for example will unavoidable compete each other, not only because of their completely different gas supply sources, but also because they target the same markets.

Furthermore, under the current competitive and uncertain business environment in Europe, gas demand may exist in a given market, but there is no guarantee that a certain player will manage to catch and benefit from it.

ENI and Edison for example are both market competitors in the Italian market and sponsors to certain pipeline projects (South Stream and IGI respectively). It is more than certain, that competitive pressures in gas trading activities in the Italian market will move backwards to pipelines and thus will affect companies' transit activities.

### **Project financing uncertainties**

The current financial crisis has introduced additional uncertainties for nearly all the gas supply infrastructure projects.

Traditionally, financial resources for both upstream and midstream gas supply projects were easily secured in the past through long-term gas purchase agreements and/or long-term capacity contracts.

Today, under the current crisis in the global financial markets project financing conditions have become tighter and interest rates tend to be unattractive.

Consequently, it should be expected that investments with low upfront capital costs will be preferred over the high capital intensive ones.

Furthermore, difficulties in finding financing and a wait-and-see attitude on the part of the investors will unavoidable lead to further delays in many energy infrastructure projects currently in the planning phase.

Similarly, the tight conditions in financial markets, combined with the tumbling down of the oil and gas prices, as well as with the other uncertainties presented in this paper, create new obstacles for the "fourth corridor" interstate gas pipelines and may lead to further delays in their implementation.

### **Economic viability of projects**

Economic viability and related risks are the most important issues for any business foundation and for this reason are always, firstly and above all, at the center of the attention of sponsors and lenders.

This reality is also valid for the interstate gas pipelines under discussion.

Market potential, availability of financial resources, regulatory regimes and political support are important presuppositions, but not self-sufficient for final investment decisions.

Apart from investors feasibility studies, financial institutions are always asking for concrete business plans, based on realistic assumptions, as well as on effective strategies and certain actions that could persuasively secure projects' economic viability and mitigate the related risks and uncertainties in the long-term. [8]



To this end, well defined budgets and construction schedules, certain Gas Supply Agreements and Gas Transiting Arrangements across all the hosting countries, capacity booking and built-up profiles, full-transportation expenses and realistic revenues stream through secured transit tariffs are very critical for the economic viability and profitability of all “fourth corridor” gas pipeline projects.

### **Turkey's gas transit uncertainties**

Apart from the current unclear gas transit regulatory regime in Turkey, there are also many other uncertainties related to its gas infrastructure and consequently for its future to become a key transit country.

Turkish gas transport infrastructure is essential, not only for the domestic gas market, but also for the regional gas pipeline projects aiming at enabling Azeri and other Central Asia and Middle East gas to reach the European markets.

The continuous increase in domestic gas demand (from some 18 bcm in 2002 reaches to 35 bcm in 2007), reduces rapidly BOTAS system spare capacity for gas transit and limits the possibility for gas re-exports, a main strategic objective of Turkish policy. Energy experts assumed that currently only 12-13 bcm of gas per year could be transited via the Turkish system and without new significant investment and expansion will not be possible to satisfy both the growing domestic gas demand and supplies to other European markets after 4-5 years. [9]

The above constrains in the Turkish gas transit infrastructure are directly affecting the future of the regional pipeline projects, since they impose significant long-term uncertainties and risks. At this stage, “fourth corridor” pipelines are unavoidable seeking for limited Turkish transit capacity, another source of competition for gas pipelines projects.

### **The future of Russian-Turkish gas relationships**

Without any doubt, this issue is one of the most important factors for the future of the “fourth corridor” pipelines, especially after the announcement of the South Stream.

On one hand, the southern corridor idea cannot be translated into a reality without Turkey's crucial role and on the other hand, such a perspective could directly be affected by Russia's strategic choices.

Turkey, although a major importer of Russian gas, worked systematically in the last five years, to promote the east-to-west corridor and its transit and trading strategy.

Thus the critical question now is whether or not Turkey will re-new its 6 bcm per year contract with Russia, which will expire in the near future (2012).

At the same time, which are or which will be the real Russia's strategic intentions for the regional gas pipelines under discussion?

Will Russia continuous to apply the last years' strategy and insist in blocking or at least limiting the east-west flow of non Russian gas via Turkey?

Or will partially revise this strategy and leave some room for limited gas transit through Turkey, mainly from Azerbaijan and Iran, but not from other Central Asia countries like Turkmenistan, Uzbekistan and Kazakhstan?

The later is probably more consistent with Russia's broader by-pass-and develop gas strategy, since wouldn't substantially undermined its plans for the South Stream project, while simultaneously

create conditions both to maintain (if not to improve) its prime role in Turkey's gas supplies and to supply Russian gas through the Blue Stream to other regional pipelines (Nabucco, TGI and TAP), according to an older idea (known as the Samsun concept).

### *5. The role of LNG*

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Under such circumstances, hurdles and uncertainties in bringing Caspian and/or Middle East gas supplies to Europe, the question of security of supply has been put once again on the front burner, especially after the recent Russia-Ukrainian crisis.

Although non-Russian gas and the "fourth corridor" pipelines remain important options for diversifying Europe's gas supply sources and roots, much of the relevant discussion refers to LNG contribution in future gas supplies.

During the last decades LNG has gained an increasingly important role worldwide (especially in the Asian and European regional markets), mainly due to geographic particularities and the flexibility that provides.

No doubt that LNG will continue to gain share in the global market in the years to come and thus could also be a partial solution for the expected piped-gas shortages in certain European countries with coastal areas or/and big islands.

However, its contribution in future European gas supplies will be constrained by certain factors and the below realities:

- a) LNG is a mean for diversification rather, not a substitute for pipe-gas
- b) LNG replaces volume risk with price risk and
- c) Europe should compete for LNG supplies in the global LNG market that is gradually being created.

Consequently, LNG contribution, although significant for both sufficiency and security of gas supplies in Europe, cannot exceed a percentage in total gas imports, due to existing constraints in easily accessible liquefaction plants and the relatively low (and very expensive to be expanded, especially under the current economic conditions) re-gasification capacity in Europe.

More specifically, the present regas capacity in Europe accounts for some 117 bcm and it is estimated that after completion of a number of both new and upgrading LNG terminal projects currently under construction, the total re-gas capacity will reach to 165 bcm. [10]

The new re-gas capacity will mainly come from the Dragon, South Hook and Isle of Grain LNG terminals in UK, the upgrading of the Fos Cavaou and Zebbrugge LNG terminals in France and Belgium respectively and the Adriatic and Livorno LNG terminals in Italy.

On the other hand, LNG supply remains also a serious concern for European gas market.

Although the world liquefaction capacity will be increased in the next 2 years by some 45 mtpa and reach to a total capacity of 235 mtpa, the global liquefaction capacity remains still limited. The new projects are mainly located in Pacific, Australia and the Middle East.

From the proximity point of view, the Middle East new liquefaction plants (the majority of which is expected to be operational in 2009), are the most important for future LNG supplies to Europe (and Greece).

These plants with a total new liquefaction capacity of 11.5 mtpa include Qatar II (T1), Yemen LNG (T1 and T2), RasGas Qatar, and Qatar II (T2). Some incremental increases in liquefaction capacity will also come from existing plants in Algeria's Arzew and Norway's Snohvit. [11]



Map 2: LNG Terminals in Europe

Source: Cambridge Energy Research Associations (CERA)

Based on the above realities, reputable energy analysts estimate that LNG share in the total European gas imports will be maintained constant (around 28%) in the next decade, although in absolute numbers LNG demand will be increased from 55 bcm in 2007 to around 135-140 bcm in 2015.

Coming to SE Europe and Eastern Mediterranean in particular, LNG could play a significant role for gas supplies in certain coastal countries like Italy, Greece, Turkey and Cyprus, due to their proximity with many LNG producing countries (Egypt, Libya, Algeria and even Nigeria, Qatar and Yemen).

For Greece for example, the LNG option should be seriously examined, given the various obstacles currently exist and prevent the implementation of the regional gas pipelines. A new, high capacity LNG terminal in northern Greece could be proved of vital role not only for country's gas supplies in the future but also for diversification and security of gas supply for the entire SE Europe.

However, due to new competitive conditions in the (global) LNG market, regional countries and companies should pay specific attention to factors affecting the LNG business e.g. strategic alliances, design and costs of storage and re-gasification facilities, LNG transportation models and costs, and (mainly) to contractual terms defining LNG supply flexibility, take-or-pay requirements, liability penalties, price mechanism etc.

It should be particularly mentioned that the radical changes in the European gas market and industry will have a tremendous impact on the traditional LNG business (and the gas business in general), affecting margins and value opportunities.

As a result, gas companies should carefully evaluate or re-assess supply and demand fundamentals, load profiles and investments schemes and costs, before enter any LNG business commitment.

Furthermore, specific attention should be given to policy and regulation constrains and opportunities, together with possible exploitation of potential synergies, for example in vertical or horizontal integration (e.g gas and power) or/and in LNG shipping opportunities. [12]

### *6. Implications for SE Europe and Greece from further delays in regional gas pipelines*

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From all the above it is clear that Europe should urgently take certain actions towards the securing of the necessary gas quantities (piped-gas and LNG), as well as the supporting by all means the new infrastructure needed both upstream and midstream.

Similarly, SE European countries should systematically and hardly work towards the same direction, since they are expect gas supply shortages in the near future.

Any further delay in the implementation of the "forth corridor" gas pipelines and/or region's LNG facilities not only could create serious problems for gas supplies in the near future, but could also jeopardize the region's efforts for gas supply sources and routes diversification.

Furthermore, gas shortages will put the entire energy systems of the region's countries in trouble, since currently a number of gas-fired power generation plants are either under construction or under consideration.

Deteriorating prospects for gas demand due to current financial crisis may soften the expected gas supply shortages in the region, but only for the next 1-2 years.

Greece for example, although actively participates in the regional pipeline diplomacy/game and has to demonstrate some remarkable results towards the creation of the "fourth corridor", will face gas supply shortage in the near future (gas demand in 2008 was roughly equal to contractual quantities).

In case that there will be soon certain developments towards the implementation of anyone of the IGI, TAP and Nabucco pipelines, as well as the South Stream pipeline and new LNG facilities, SE Europe and Greece will be benefited from future improved conditions for both gas quantities available and security of gas supplies.

Otherwise, the shortage of available supply options for the entire region will become worsen in the years to come and the implications will be more severe.

## *7. Conclusions*

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Europe and Southeastern Mediterranean countries will need more gas to fuel their socio-economic development, at least in the short and medium-term.

Consequently, substantial new quantities of gas (from both traditional and alternative sources) should be secured the soonest possible and significant new supply infrastructure (upstream and midstream) should be effectively and timely promoted.

To this end, Europe should urgently find ways to balance its wariness for the continuous increase of its imports dependence on Russian gas and its interest to gain access to alternative gas supply sources.

However, for the time being there are still many hurdles and uncertainties towards such a south-eastern corridor perspective: gas availability from alternative sources remains questionable and various geopolitical, financial and other uncertainties currently prevent regional pipelines sponsors to make their final investment decisions.

Further delays in the implementation of the critical new gas supply infrastructure (both pipelines and LNG facilities) will have serious implications for both sufficiency and security of future gas supplies in the region.

Consequently, governments, regulatory authorities and gas companies of the SE European countries should enhance their cooperation and multiply their common efforts towards the creation of the necessary gas supply and transit infrastructure which will improve regional security of gas supplies.

The soonest the necessary conditions for the establishment of the "fourth corridor" pipelines or/and new LNG facilities will be created and the relative hurdles and uncertainties will be removed, the easiest Europe and SE European countries will achieve its strategic objectives to secure sufficient gas quantities from alternative sources.



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## **ABOUT THE AUTHOR**

**Spiros Paleoyannis**, Chemist, MBA Former General Director DEPA SA

Mr Spiros Paleoyannis was born in Greece in 1953.

He has a scientific background in chemistry and holds an MBA degree major in strategic management.

He joined Public Gas Corporation of Greece (DEPA) SA since its establishment in 1988 and was successively appointed company's Head of Strategic Planning Department (1991-1993), General Manager (1993-1996) and General Director of Trading Division (1997-2004).

Today Mr Spiros Paleoyannis serves as senior advisor to DEPA's Management.

He has also been a member of the Board of Directors of Public Petroleum Corporation of Greece (DEP) SA (today Hellenic Petroleum SA), General Manager of Asprofos Engineering SA as well as senior executive in other enterprises of Greece's private and public sector.

Mr Spiros Paleoyannis is Former Vice Chairman of the Institute of Energy for South East Europe (IENE) and a member of the "International WHO is WHO Historical Society".

**INSTITUTE OF ENERGY FOR S.E. EUROPE**

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3, Alex. Soutsou 106 71, Athens

Tel: +30210-36.28.457, 36.40.278 – Fax: +30210-36.46.144, e-mail: [secretariat@iene.gr](mailto:secretariat@iene.gr)