

# Geopolitics of European natural gas demand: Supplies from Russia, Caspian and the Middle East

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## ABSTRACT

This paper addresses issues of natural gas which raise questions about European energy security. It first focuses on the rising gas demand of the EU27 and elaborates alleged risks of dependence on Russia such as Gazprom's disagreement with Ukraine, which became an international gas crisis in January 2006 and also more recently in January 2009. Incentives and barriers of Europe's further cooperation with selected Caspian (Azerbaijan, Kazakhstan and Turkmenistan) and Middle Eastern (Iran, Iraq and Egypt) countries are discussed. Supplies from Caspian are analyzed with a particular focus on Russia's role and the vested interests in the region. Supplies from the Middle East are elaborated with regard to Iran's huge and Iraq's emerging potentials in terms of natural gas reserves and foreign direct investments in the energy sector. The geopolitical analysis leads to a conclusion that the best strategy, and what seems more likely, for the EU is to include at least two countries from Azerbaijan, Turkmenistan, Iran and Iraq within its natural gas supply system.

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## 1. Introduction

Interactions among demand, supply and investments in natural gas pipeline transport, LNG, and storage facilities, will affect the European natural gas market over the period 2005–2030 and necessitate substantial investments in gas transport corridors to accommodate imports and seasonal demand variations (Lise et al., 2008, pp. 1890–1906). Regarding indigenous supply; Norwegian production is still increasing. However, Dutch production is flat; the UK and other continental European countries are in decline. The gap between consumption and production will be recovered by the import contracts until 2015. The EU, thereafter, will need to make new gas deals by diversifying its natural gas suppliers in order not to confront shortages. Regarding seasonal variations; risks arise from the growing dependence on Russia. Russia's use of natural gas, to politically compel Ukraine (according to Ukraine) or Russia's problems with Ukraine on gas terms (the price Ukraine will pay for Russian gas—and the tariffs Russia will pay Ukraine for the use of pipelines that cross its territory, sending Russian gas to Europe) led to halting the gas flow to Europe in January 2006 and January 2009 (Elder, 2009). Some analysts consider these problems as signs of Russia's commitment to manipulate natural gas as a

political weapon (Goldman, 2008, pp. 136–169). Doubts, on whether Russia is in search of a “gas containment policy” increase given that Gazprom looks for additional energy concessions from Middle Eastern (mainly Iran) and North African producers (mainly from Libya). Alleged risks of gas dependence on Russia make the EU search additional entry points and sources of supply from Caspian, the Middle East and Africa (Finon and Locatelli, 2008, pp. 423–442).

This paper will elaborate how European energy grid might include new suppliers from Caspian and the Middle East (Bilgin, 2005, 2007; Remme et al., 2008, pp. 1622–1642). In Caspian; Azerbaijan and Turkmenistan appear as alternative suppliers. Existing Baku–Tbilisi–Erzurum (BTE) gas pipeline between Azerbaijan and Turkey might be extended to Europe by the Nabucco Project which aims at distributing Caspian and/or Middle Eastern gas in Europe. Nabucco needs additional suppliers because Azerbaijan can supply only half of the amount needed for its feasibility. Nabucco consortium, composed of OMV of Austria, Botas of Turkey, Bulgargaz of Bulgaria, Transgaz of Romania, Mol of Hungary and RWE of Germany, is in search of reliable natural gas suppliers. Turkmenistan offers numerous advantages in terms of reserves, transport security and net-back advantages for Europe. Moreover, intertwining Azerbaijan and Turkmenistan by a trans-Caspian pipeline, which goes to Europe via Turkey, would expand the secure zone in the European neighborhood. However, Turkmenistan is still unconvinced due to its rising commitments to Russia (which has agreed to increase natural gas prices it has been importing from Turkmenistan) and to China (Bilgin, 2003, 2007).

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Regarding the Middle East; Iran, Iraq and Egypt appear as potential suppliers. Iran ranks second in the world right after Russia in terms of gas reserves. Nevertheless, the US attitude to Iran, the United Nations (UN) sanctions and the inadequacy of domestic infrastructure create new queries about short-term capabilities of this country. The EU, Arab-Mashreq countries, Iraq and Turkey agreed on Monday, the 5th of May 2008, that additional gas pipelines to bring Egyptian and Iraqi gas to EU through Turkey would deeply contribute to regional and European energy supply securities (TDN, 2008). The joint statement released after the European Commission's meeting on "Enhancing Energy Cooperation" in Brussels acknowledged the connection of the Arab Gas Pipeline, which has a capacity of 10 billion cubic meters (BcM) per year from Egypt through Jordan to Syria, with Turkey and Iraq by 2009 (TDN, 2008). Israel and Gulf countries share mutual interests where energy supply might meet demand (Bahgat, 2005, pp. 671–677). Nevertheless it is not possible to talk about a secure zone embracing the route passing through Jordan and Syria. Israel's problems with Hamas, for instance, threaten regional stability as in the case of Israeli incursion of Gaza which started on December 28th 2008 and continued early in January 2009 (Quinn and Weaver, 2009). Finally it is not clear whether Egypt might feed this pipeline as it is keen to develop an LNG industry while hardly coping with rising domestic demand.

Problems concerning the transit phase, in the mean time, occurred from: (1) the tension between Turkey and the EU as Turkey asked the EU to open the energy chapter which remains closed because of Cyprus' veto; (2) Turkey wanted to guarantee the transit countries a sort of tax calculated in terms of the distance that the pipeline passed through the passage country claiming that the Vienna based Nabucco consortium would pay taxes only to Austria; (3) the insistence of Botas on buying a 15% of all gas in transit at discounted price (Bilgin, 2009, p. 15). On May 11th 2009, Andris Piebalgs, the EU commissioner for energy, stated that the counterparts were very close to an agreement on cost-based transit terms (Traynor, 2009). On May 13th 2009, Taner Yıldız, the newly appointed Turkish energy minister, told that negotiations on discounted rates for a certain amount of the gas transported through Nabucco continued, yet they very close to an agreement (Yıldız, 2009, p. 13).

The difficulty of finding alternative suppliers is not limited to supply and transit problems. The EU's legal and contractual relations with suppliers other than Russia have remained undeveloped (Haghighi, 2007, pp. 341–380). The rising demand of Saudi Arabia, United Arab Emirates (UAE), China and India create a buyer competition (Klare, 2008, pp. 63–87). The advantages of making LNG trade elicit another lateral pressure upon the EU's quest for new suppliers. Furthermore the EU's intention to diversify its natural gas suppliers is more than a mere economic issue and intersects with vital geopolitical concerns of Russia, Iran, China and the USA. Within this context, this paper first highlights the characteristics of EU27 energy trend. It then concentrates on natural gas capacities of selected Caspian and Middle Eastern countries after a precise look at the role of Russia through a geopolitical perspective. The paper finally elaborates the potentials of Azerbaijan, Turkmenistan, Kazakhstan, Iran, Iraq and Egypt with a particular focus on geopolitical implications and comes up with a conclusion that the best strategy, and what appears very likely, for the EU is to add at least two countries from Azerbaijan, Turkmenistan, Iran and Iraq within its gas supply system.

## 2. European natural gas demand

Europe has agreed on its energy plan based on sustainability, competitiveness and supply security. This plan, as indicated by the

Second Strategic Energy Review, necessitates reduction of greenhouse gas emissions by 20%, increasing the share of renewables in the energy consumption to 20% and improving energy efficiency by 20%, all of it by 2020 (European Union Commission, 2008, p. 12). This agenda attributes a special significance to natural gas which is expected to grow in consumption and contribute to the targets set for reducing greenhouse gas emissions.

Natural gas customers registered within the EU27 grid increased 1% in the term of 2006–2007 reaching 110,171,000 at the end of 2007 (Eurogas, 2008). In contrast to rising number of end users, the EU27 natural gas consumption decreased 1.5% from 513.1 BcM in 2006 to 505.4 BcM in 2007. Warm weather at the beginning of 2007, rises in energy efficiency and hiking energy prices were the main reasons of the drop in consumption per capita with the exception of the UK, Spain and Italy.

Germany, Spain, France, Italy, Netherlands and the UK are the major natural gas markets with considerably high amounts of consumption above 35 BcM per year, as shown in Fig. 1. Belgium, Hungary, Poland and Romania are medium size markets as they annually consume about 10 BcM. The annual consumption of Austria, Bulgaria, Czech Republic, Denmark, Estonia, Finland, Greece, Ireland, Luxembourg, Lithuania, Latvia, Portugal, Sweden, Slovenia and Slovakia is less than 10 BcM for each, but might constitute coherent regional markets comprised of two or more relevant countries.

The indigenous production of EU27 fell almost 7% to 198 BcM, yet covering the highest percentage (38%) of the total net supplies. The rest of the demand is fed by external supply coming from Russia (38%), Norway (18%) and Algeria (10%). The decrease in indigenous production is recompensed by the increase of imports from Norway (Eurogas, 2008, p. 1). This picture shows that the European dependence on natural gas exports is not as much as it is perceived publicly. EU supplies its 56% of natural gas from indigenous and Norwegian production where as Russia and Algeria are the two other major suppliers.

The doubts on import dependence are not related to current figures but rather arise from the forecasts showing that natural gas imports will increase in the forthcoming years. Projections on European energy demand indicate that natural gas will attain the most significant share due to environmental concerns and supply security issues. Yet uncertainty about oil prices and the commitment to the development of renewables made the Second Strategic Energy Review develop baseline (current trends and policies as implemented in the Member States) and new energy policy (vigorous implementation of new policies to make substantial progress on energy efficiency for reaching other energy and climate targets scenarios) according to intermediate (61 \$/bbl) and high (100 \$/bbl) oil prices (European Union Commission, 2008, pp. 12–14) (Table 1).

Table 2 indicates that the increase in energy demand will be balanced through a rise in import dependency on solid and liquid fuels and natural gas.

The analysis of Eurogas (2007) is also noteworthy because it differs from other projection studies by its peculiar methodology based on the answers of the questionnaires filled by the managers of the associate natural gas companies on their expectations concerning supply and demand in their home markets until 2030. The analysis, completed in spring 2007, assumed that the factors determining future energy demand in EU27 include:

1. continued economic growth of more than 2% per annum
2. hardly any rise in population
3. oil prices remaining at a high level
4. gas prices determined by market forces
5. increased environmental awareness in politics and among consumers

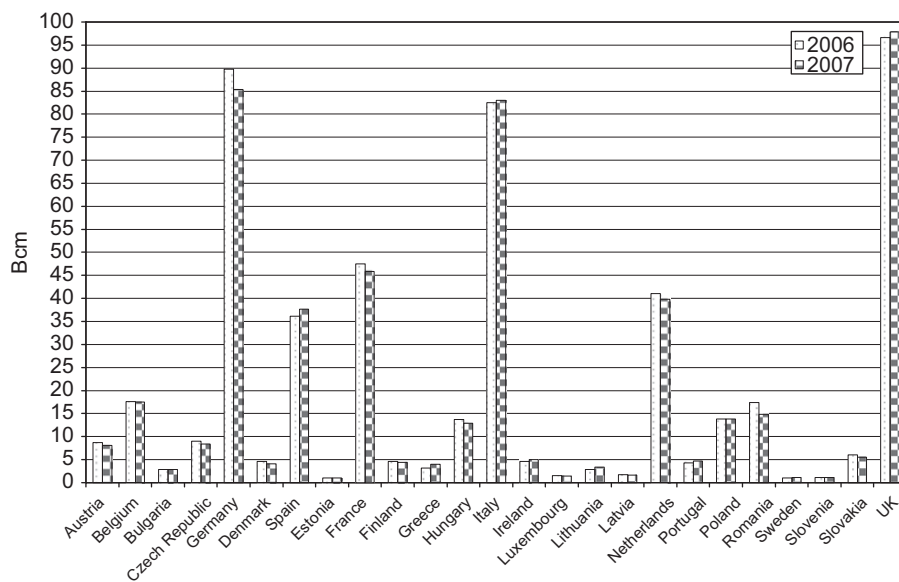


Fig. 1. Natural gas consumption in EU27 (2006–2007). Source: Eurogas, 2008.

**Table 1**  
Primary energy demand of EU27 (Mtoe).

	2005	Baseline scenario, oil price 61 \$/bbl	Baseline scenario, oil price 100 \$/bbl	New energy policy scenario, oil price 61 \$/bbl	New energy policy scenario, oil price 100 \$/bbl
Oil	666	702	648	608	567
Natural gas	445	505	443	399	345
Solids	320	342	340	216	253
Renewables	123	197	221	270	274
Nuclear	257	221	249	218	233
Total	1811	1968	1903	1712	1672

Source: European Union Commission, 2008, p. 65.

**Table 2**  
Primary production net imports and import dependence of EU27 (Mtoe).

	2005	Baseline scenario, oil price 61 \$/bbl	Baseline scenario, oil price 100 \$/bbl	New energy policy scenario, oil price 61 \$/bbl	New energy policy scenario, oil price 100 \$/bbl
<i>Primary production</i>					
Oil	133	53	53	53	52
Natural gas	188	115	113	107	100
Solids	196	142	146	108	129
Renewables	122	193	213	247	250
Nuclear	257	221	249	218	233
<b>Total</b>	<b>896</b>	<b>725</b>	<b>774</b>	<b>733</b>	<b>763</b>
<i>Net imports</i>					
Oil	590	707	651	610	569
Natural gas	257	390	330	291	245
Solids	127	200	194	108	124
Renewables	1	3	8	23	24
<b>Total</b>	<b>975</b>	<b>1301</b>	<b>1184</b>	<b>1033</b>	<b>962</b>
<i>Import dependence (%)</i>					
Oil	81.6	93.0	92.5	92.0	91.6
Natural gas	57.7	77.2	74.6	73.1	71.1
Solids	39.2	58.5	57.0	50.0	49.0
<b>Average</b>	<b>52.1</b>	<b>64.2</b>	<b>60.5</b>	<b>58.5</b>	<b>55.8</b>

Source: European Union Commission, 2008, p. 65.

- growing trend to save energy and to improve energy efficiency
- thoughts at national level to use nuclear energy and expand the use of renewables.

Environmental properties and highly efficient application technologies will make natural gas the primary energy choice of EU27. The consumption is expected to increase 43% from 438 Mtoe in

2005 to 625 Mtoe in 2030 whereas the share of natural gas in the European primary energy demand will rise from 24% in 2005 and 26% in 2010 to 30% in 2030 (Eurogas, 2008, pp. 2–3).

These estimates are challenged by current economic recession which is producing much lower short-term projections of energy/gas demand. Yet, as shown by a recent Gazprom presentation, which focuses on past experiences and future expectations, current economic recession will not drastically affect long-term tendencies of energy consumption growth especially in case of natural gas in Europe (Rusakova, 2009, p. 5). This is why the scenarios of Second Indicative Energy Review and Eurogas estimates can be considered indicative of long-term trends under given assumptions.

According to Eurogas, in contrast to rising demand due to power generation, industrial, residential and commercial consumption as stated in Fig. 2, Europe's production tends to decline. Current contracts presume gas imports of 187 Mtoe in 2005, 260 in 2010, 270 in 2015, 266 in 2020, 261 in 2025 and 226 in 2030. Actual gas import contracts will remain insufficient starting at 2015 and the EU will need to contract additional gas imports of 50 Mtoe in 2015, 127 in 2010, 171 in 2015 and 241 in 2030. The EU therefore needs to find new gas suppliers in order to sustain a balance between energy demand and supply while considering environmental concerns.

Table 3 illustrates the proven reserves of selected countries both in Tcf and BcM. Iran, with its 27,583 BcM of natural gas reserve ranks second in the world after Russia with a reserve of 47,577 BcM. Iraq's proven reserve is about 3115 BcM and ranks above Turkmenistan with 2010 BcM, Kazakhstan with 1840 BcM, Egypt 1656 BcM and Azerbaijan with 849 BcM. The EU has many options to diversify its natural gas suppliers by taking into account reserves and transit costs as two main parameters. The Caspian alternative embraces the reserves of Azerbaijan, Kazakhstan and Turkmenistan whereas the Middle East comprises those of Iran, Iraq and Egypt. The transit costs indicate relative advantages when compared to Russian gas of Western and Eastern Siberia as references (IEA, 2004). Yet there is a need of further analysis in order to indicate geopolitical advantages and disadvantages of alternative suppliers.

### 3. Russia's features in European natural gas supply

Its rich reserves ranking 1st in the world, geographic location, rapidly developing pipeline systems, technical skills and know-

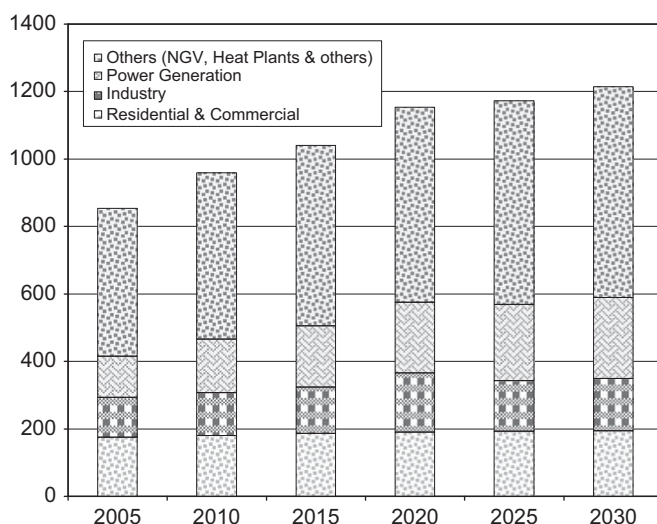


Fig. 2. Natural gas consumption of EU27 (2005–2030). Source: Eurogas, 2008, p. 3.

Table 3

Natural gas reserves of selected countries.

Country/reserves in Tcf and BcM	Tcf	BcM
Russia	1680.00	47577
Iran	974.00	27583
Qatar	910.50	25771
Saudi Arabia	239.50	6768
UAE	214.50	6060
USA	204.40	5777
Nigeria	181.90	5154
Algeria	161.70	4587
Venezuela	152.40	4304
Iraq	110.00	3115
Turkmenistan	71.00	2010
Uzbekistan	66.20	1869
Kazakhstan	65.00	1840
Egypt	58.50	1656
Azerbaijan	30.00	849

Source: EIA, 2008.

Table 4

Dependence of selected post-Soviet countries on Russian natural gas.

Country	Imports (Bcf/yr)	Imports (BcM/yr)	Share of domestic consumption (%)
Ukraine	2113	59.84	79
Belarus	710	20.10	100
Baltic States	205	5.80	100
Azerbaijan	120	3.39	36
Georgia	46	1.30	100

Source: EIA, 2008.

how make Russia the most significant energy partner of the EU. However, the high dependence of certain member countries, as well as some post-Soviet countries, on Russian natural gas creates doubts on energy security. Recent incidents, which give the impression that Russia implements natural gas as a political weapon, double worries about European energy security. Finally Gazprom's activities in Middle East and North Africa as well as Russia's willingness to increase Gazprom's market share in Europe put forward a new question on whether Russia is in search of a "gas containment policy".

To start from the European neighborhood, it should be mentioned that Belarus, Baltic States and Georgia are entirely dependent on Russia as shown in Table 4. Ukraine has an absolute dependency and feeds 79% of its natural gas consumption from Russia. Meanwhile, Azerbaijan, by the virtue of its Shah Deniz natural gas, has increased policy options. Azerbaijan ceased imports of Russian gas because it now produces sufficient gas for its own needs. Georgia began to import gas from Azerbaijan and therefore decreased dependence on Russian gas which is only being delivered to South Ossetia when the Georgian authorities allow.

The dependence of these countries on gas exports from Russia became noteworthy first in January 2006 then in January 2009 when Russia implemented its natural gas as a strategic tool. Georgia, following occasional pro-Western policies, was challenged by a drastic rise to \$230 per thousand cubic meters (McM) in 2006. In January 2006, Ukraine, already dealing with post-orange revolution incidents, was accused by Russia of stealing gas, and had to confront winter conditions as Russia halted gas flow. The gas trade would be restored after the regime proved less centrifugal move from Russia's vital interests. Furthermore Gazprom's 2007 budget presumed major price hikes varying between 400% in the case of Belarus and 54% in case of Lithuania. \$49 for Russia's domestic market, \$200 for



Belarus (\$46 in 2006), \$260 for Baltic countries, \$220 for Latvia (\$145 in 2006) and Lithuania and finally \$293 at average including all exporters (\$257 in 2006) would be charged throughout 2007 (Gazprom, 2006; Shevtsova, 2007). The hikes were partially due to rising oil prices which became important in most of the contractual assessment of charged fee. Lower oil prices in 2009, when compared to 2008, would lead to decreases in gas prices. Gazprom estimated that its total exports to Europe would fall from 179BcM in 2008 to 170BcM in 2009 where as the average European price was expected to decrease from \$409 to \$280 per McM (Medvedev, 2009, p. 22). If these countries had been importing gas from any other supplies, would all have been paying similar, and in certain cases much higher, prices? It would again be related to Gazprom prices. The most recent example that verifies this argument occurred between Azerbaijan and Turkey in May 2009. Azerbaijan asked Turkey to increase prices from \$120 per McM to similar levels that Turkey paid to Gazprom.

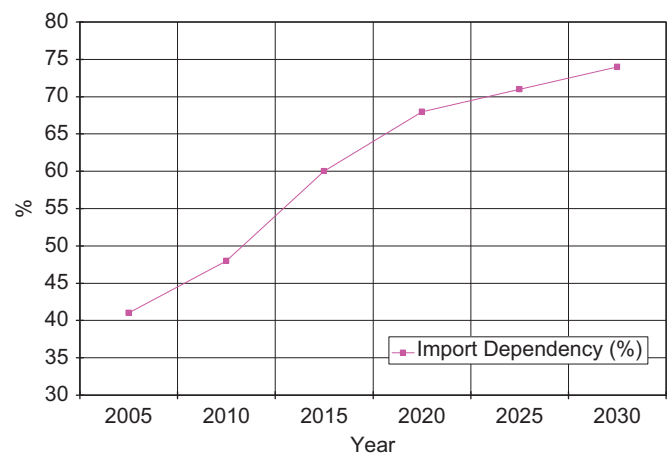
Gazprom appears as a natural monopoly, main reference for prices and looks like a political leverage of Kremlin in certain cases. In January 2009, the cutting off of all supplies by Gazprom to Europe via Ukraine did not only drastically decrease gas flow to Czech Republic, Turkey, Poland, Romania, Bulgaria and Hungary, but also forced these countries to confront the possibility of a shortage during winter, while also raising new questions in Europe about Russia's reliability as a gas supplier (Kulikov and Mosolova, 2009). "The dispute, viewed by the EU as a purely commercial one until recently, threatens a fresh breakdown in relations between Brussels and Moscow, with European Commission officials warning that Russia's reputation as a reliable partner is once again at stake (Gow, 2009)."

Countries, such as Ukraine, Belarus, Baltic States, Azerbaijan and Georgia, are significant both for the EU in terms of its neighborhood policy, as well as for the US interests in Eurasian geopolitics. Most of these countries depend on Russian gas supply without which, they can hardly handle consumer's winter conditions nor can they satisfy industrial demand. This is why the EU's intention to buy natural gas from Caspian or Middle East has effects on regional geopolitics. For instance, BTE gas pipeline, which bypasses Russia, not only supported Azerbaijan's independent foreign policy but also helped Georgia as a transit country. When Russia reduced the gas flow to Georgia in winter 2007 due to political reasons, it was Azerbaijan who satisfied its neighbor's needs by forwarding more natural gas to Georgia instead of Turkey.

**Table 5**  
Major recipients of Russian gas and their dependence.

Country	Imports (Bcf/yr)	Imports (BcM/yr)	Share of domestic consumption (%)
Germany	1291	36.56	43
Italy	824	23.33	30
Turkey	630	17.84	65
France	406	11.49	26
Hungary	294	8.32	62
Czech Republic	252	7.13	84
Austria	246	6.96	70
Poland	226	6.40	47
Slovakia	226	6.40	108
Finland	148	4.19	105
Romania	140	3.96	23
Fmr Yugoslavia	134	3.79	57
Bulgaria	101	2.86	89
Greece	85	2.40	96
Switzerland	13	0.36	12

Source: EIA, 2008.



**Fig. 3.** Natural gas import dependency of EU27. Source: EIA, 2007.

To continue with Europe, the dependence of certain countries, as shown in Table 5, is remarkable. The EU's plan, to allocate more shares for natural gas in future consumption patterns, raises new doubts about supply security.

Challenges do not only comprise the rising dependence of certain countries on Russia as shown in Table 5 and import dependency of EU 27 explicit in Fig. 3, but also arise from the decline of production. Natural gas production in West Siberia and Yamal peninsula is decreasing although most of the production since 1970 belonged to the three giant fields (Yamburg, Urengoy and Medvezhye) of this region. In the mean time, Russia's domestic gas consumption is rising faster than projected in Russia's Energy Strategy (436BcM in 2030) as already shown by the Gazekonomika study estimating 654BcM by 2030 and projecting that the amount of Russian gas replaced by Central Asian gas could total 24BcM in 2014; 30BcM in 2015; and reach 56BcM by 2030 (RFE/RL, 2006). The impact of current economic crisis and recession will be effective in Russia where Gazprom domestic sales are expected to fall to 292BcM in 2009 from 301BcM in 2008 (Korchemkin, 2009). Despite the crisis, Russian domestic market is tended to grow faster than projected in the mid and long terms. Gazprom's current estimates, which consider the negative effects of the current crisis, indicate that the domestic market will be 450BcM in 2020 (Rusakova, 2009, p. 14) which is far more than the figures stated by Russia's Energy Strategy (436BcM in 2030). This is why Gazprom states that purchases from Turkmenistan could reach 70–80BcM annually from 2009 to 2028; 30BcM from Uzbekistan from 2010; and boost from Kazakhstan as soon as remarkable production is sustained in Karachaganak field along with Tengiz and Kashagan (Medvedev, 2009, p. 22). In other words, Russia will need to buy natural gas from Turkmenistan, Kazakhstan and Uzbekistan to re-export to Europe, while satisfying its growing domestic demand.

#### 4. Russia's influence in Caspian

The proved natural gas reserves of Azerbaijan (849BcM), Kazakhstan (1840BcM) and Turkmenistan (2010BcM) total 4699BcM as shown in Table 6. Azerbaijan has recently become a net exporter of 1.7BcM by the virtue of rising production in Shah Deniz. New discoveries in Shah Deniz show that Azerbaijan will rapidly increase its exports. However, Azeri reserves will not be enough to feed more than half of Nabucco's full capacity. Kazakhstan can hardly satisfy its domestic consumption of 10.6BcM per year while the production of 12.9BcM leaves only 2.3BcM of gas (all sent to Russia). In the mean time, Turkmenistan

**Table 6**  
Natural gas production, consumption and export in Caspian (BcM, 2007).

Country	Azerbaijan	Kazakhstan	Turkmenistan	Uzbekistan
Production	11.00	12.90	72.30	65.30
Consumption	9.30	10.60	18.00	50.60
Net export	1.70	2.30	54.30	14.70
Proved reserves	849	1840	2010	1869

Source: IEA, 2008; EIA, 2008.

**Table 7**  
Natural gas exports from Caspian, breakdown by destination (BcM, 2007).

	Azerbaijan	Kazakhstan	Turkmenistan	Uzbekistan
Total export	1.7	5.5	54.3	14.7
to Russia		2.3	48.1	10.5
to Iran	0.2		6.2	
to Turkey	1.2			
to Georgia	0.3			
Within Central Asia		3.2		4.2

Source: IEA, 2008.

produces more than 72 BcM of gas which allows about 55 BcM of exports after meeting domestic consumption of 18 BcM.

2007 natural gas exports from Caspian breakdown by destination in Table 7 indicates that Russia dominated the gas flow from Caspian by taking 5.5 BcM from Kazakhstan, 48.1 BcM from Turkmenistan and 10.5 BcM from Uzbekistan. Azerbaijan has exported 0.2 BcM to Iran, 1.2 BcM to Turkey and 0.3 BcM to Georgia.

Russia's privileged position in Europe and the European neighborhood is highly linked to its ability to keep Caspian gas under its control. Russia managed to sustain its monopoly over the existing pipeline system, with the partial exception for Azerbaijan's BTC oil and BTE gas pipelines, and to 'keep a hand on the spigot' by steering transit routes across Russia and containing impulses for regional diversification (Stulberg, 2005, p. 6). Furthermore, Russia defined the Caspian as a 'unique inland water basin' (recognizing the sea as joint property of littoral states) not only to share in the benefits of offshore energy development but also to impede cooperation between Azerbaijan, Kazakhstan and Turkmenistan (Stulberg, 2005, p. 6). "It is not clear whether Russia will continue to base its role in European energy issues on retention of its current monopoly of major gas exports from Central Asia and parallel control of a number of major oil pipeline transit routes, or whether it will accept the EU position that it should open up its pipeline networks to Central Asian oil and gas producers on a transparent and non-discriminatory basis (Roberts, 2006, p. 222)."

Azerbaijan's 1994 decision to open its energy sector in the Caspian Sea to international investors coupled with the Baku–Supsa and Baku–Tbilisi–Ceyhan oil pipelines and the Baku–Tbilisi–Erzurum gas pipeline, aimed to cement Azerbaijan's place in Europe, in close cooperation with Turkey and the United States (Fred, 2008, p. 32). "Azerbaijan's aggressive play for the Turkish gas market in the wake of its 1999 discovery of a major gas field under the Caspian Sea has caused a variety of new problems, which have called into question the American plan to build a pipeline across the Caspian Sea to supply Turkmen gas to Turkey (Rasizade, 2005, p. 13)." Turkmenistan, under Saparmurat Niyazov's personal cult as "elected president-for-life", stopped negotiations with Azerbaijan and Turkey on gas extensions to Europe. The problems between Azerbaijan and Turkmenistan strengthened Russia's position in Caspian.

Only recently has Turkmenistan signaled that it could be interested in gas supply to Europe either via trans-Caspian pipeline to combine with BTE or through Iran, if the latter becomes included within Nabucco. Niyazov's successor, Gurbanguly Berdimukhammedov, begun to make moves to release the country from its self-imposed, Soviet-style isolation which had continued until the death of former president two years ago (Economist, 2009, p. 30). Berdimukhammedov gave signals for a more cooperative strategy with the EU, including gas supply, although he did not make commitments.

Russia is likely to loose its privileged position if Turkmen gas becomes connected to Europe. Turkmen gas, therefore, is not just a matter of amount and feasibility for Nabucco, but rather is a strategic supply which will be drastically influential on Russia's position in and around Europe. Regarding supply side; cut offs of Turkmen gas to Ukraine and Russia in December 2004 and 2007 caused security concerns. Turkmenistan accused Russia of manipulating Gazprom's monopoly position and for not paying fair prices (Burke, 2005). Prior to the 2004 crisis, Gazprom was paying \$36 per McM while average gas sale price to Europe was about \$136. Turkmenistan demanded \$58. Turkmenistan refused to sell gas to Russia when latter offered \$44 and emphasized that Gazprom was the only way for Turkmenistan to sell gas (Burke, 2005). In September 2006, Gazprom accepted to pay \$100 per McM to Turkmenistan when average sale price to Europe was \$162 (Ukraine \$182) given the difficulty of securing supplies to domestic and European markets without Caspian gas. Gazprom's average sale price per McM to Europe increased to \$169 in 2007 and \$179 in 2008. This is why Russia offered price increases to Turkmenistan up to \$130 per McM in the first half of 2008 and 150 in the second half of 2008. Consequently, PetroChina has reportedly agreed to pay \$195 per McM for Turkmen gas after completion of Turkmenistan–China pipeline scheduled for 2010 (Wood, 2008).

Turkmenistan's commitments to Russia and China raised doubts on whether it could export additional gas to Europe. A British firm, Gaffney, Cline & Associates, hired by the Turkmen government announced in October 2008 that the South Yolotan–Osman field in South eastern Turkmenistan is roughly the fourth- or fifth-largest field in the world (Economist, 2009, p. 30). This discovery might encourage Turkmenistan about developing relations with the EU while fulfilling commitments to Russia and China. Berdimukhammedov's new position and the discovery of rich gas deposits facilitate a prospective agreement on Turkmenistan's gas extension to Europe.

## 5. Attributes of Middle Eastern gas supply: Iran, Iraq and Egypt

The significance of Russian and Caspian gas for the European markets is clear. Yet there is a shortage of studies on feasibility and possible effects of connecting Middle Eastern gas supply, including Iraqi and Egyptian gas, with the EU. Consequently it is necessary to focus on characteristics of prospective Middle Eastern gas suppliers.

Middle Eastern gas supply for the EU might include imports from Iran, Iraq and Egypt. The proved reserves of these countries, detailed in Table 8, reach 32,354 BcM. Their exports might steadily increase if new upstream investments backed by transport agreements come into life.

However issues of infrastructure and security impede the rise of a coherent Middle Eastern natural gas supply network. Therefore it is necessary to analyze these countries one by one, and compare them as in Table 9, to indicate the possibilities of production rise and limits of regional cooperation.

### 5.1. Iran

Iran has 27,583 BcM of proved natural gas reserve. Yet, it cannot sustain a balance between domestic consumption (102.40 BcM) and production (101.00 BcM). Iran needs improvement in gas production infrastructure which remained undermined throughout the 1990s. Iran furthermore injects gas to oil wells, which are in decay, to increase production and meet OPEC quota. Energy prices in domestic market are extremely low as they are being subsidized by the government. Government's initiatives to increase domestic prices in 2007 triggered protests and riots, a rarity in the Islamic republic (Bozorgmehr, 2007). Iran currently sells natural gas to Turkey, but imports Turkmen gas to feed its domestic need which peaks in winter. On January 19, 2006, Iran reduced the gas flow to Turkey due to technical problems occurred because of extremely cold weather in Tebriz. Turkey recovered this cut off by increasing supplies from Gazprom through Blue Stream.

Iran signed a gas deal with Turkmenistan to secure gas flows to Turkey while meeting its domestic demand until it developed the gas infrastructure and increased production. The 2006 gas sales agreement between Iran and Turkmenistan aimed to lift exports to Iran from 8 BcM per year to 14 BcM per year by 2024, at \$75 per McM. Nevertheless, Turkmenistan demanded to increase gas sales prices to Iran given that Gazprom and PetroChina had already accepted to pay \$150 and \$195, respectively. Negotiations were suspended in late December 2007 when Turkmenistan halted natural gas flow of 23 McM per day causing gas supply interruptions from Iran to Turkey, and subsequently deliveries to Greece, throughout much of January 2008 (Wood, 2008). Iran wants to erect nuclear power plants in order to supply its domestic need of electricity, and re-export Turkmen gas while cooperating with foreign counterparts to develop its rich natural gas fields especially in South Pars.

Iran has been attracting considerable amounts of foreign direct investments (FDIs) in the energy sector for the last decade. According to Reuters' study (Reuters, 2008) the US-based conservative think-tank American Enterprise Institute, various corporate reports, websites, periodicals and other databases, the investments between 2000 and 2007 reached at least \$218.7 billion most of which belongs to the petrochemical, gas and oil sectors.

**Table 8**  
Total natural gas figures of Iran, Iraq and Egypt (2007).

Natural gas	Bcf	BcM
Production	5151	145.96
Consumption	4911	139.36
Net exports/imports (–)	241	9.76
Proved reserves	1,142,500.00	32,354.00

Source: Adapted from EIA, 2008.

**Table 9**  
Comparative gas figures of Iran, Iraq and Egypt (2007).

Country	Iran		Iraq		Egypt	
	Bcf	BcM	Bcf	BcM	Bcf	BcM
Natural gas (billion cubic meters/feet)						
Production	3563.00	101.00	87.00	2.46	1501.00	42.50
Consumption	3616.00	102.40	87.00	2.46	1208.00	34.50
Net exports/imports (–)	–52.00	–1.47	0.00	0.00	293.00	8.29
Proved reserves	974,000.00	27,583.00	110,000.00	3115.00	58,500.00	1656.00

Source: Adapted from EIA, 2008.

China: total FDIs from China are about \$101.74 billion. \$96.7 billion invested in petrochemical, gas and oil 70 billion of which belongs to development of Yadavaran gas field with Sinopec according to a 2004 agreement.

France: FDIs from France reached at least \$29.9 billion. Petrochemical, gas and oil sectors attracted \$18.5 billion. The biggest agreement signed in 2000, amounts to \$4 billion deal for the development of South Pars (phases 9–12).

Italy: FDIs originating in Italy are about \$24.7 billion, 21 billion of which has been invested in petrochemical, gas and oil. AgipENI's 3.8 billion deal with Iran in 2000 concerned development of South Pars (phases 4–5).

Russia: investments coming from Russia are about \$3.75 billion, 1.6 billion of which belongs to petrochemical, gas and oil. Gazprom's 2000 deal of \$1.6 billion concerns the development of South Pars (phases 2–3).

UK: investments from the UK are estimated to be worth \$12.7 billion, 10.3 billion of which is in petrochemical, gas and oil. In 2000 British Gas (BG) agreed with Iran to invest \$4 billion for the development of South Pars (phases 9–12).

Germany: Germany's investments in Iran stand at about \$25.4 billion, 9.82 of which belong to petrochemical, gas and oil.

Japan: Japanese FDIs in Iran are at least \$16.9 billion–\$9.33 billion belong to petrochemical, gas and oil sectors.

US: investments originating in the US are about \$3.6 billion, all to petrochemical, gas and oil sectors. \$2 billion of total FDIs come from a deal of Foster Wheeler led consortium for development of Iran's first LNG project.

It is therefore possible to point out that Iran, with its huge reserves and development projects, is an emerging natural gas country that cannot be ignored by energy demanding countries. India, for instance, is very interested in buying gas from Iran. 2,600 km of Iran–Pakistan–India (IPI) gas pipeline is a huge project with a capacity of 22 BcM/yr. Iran proclaimed to complete the domestic network between South Pars and Pakistani border in 2009. China is also interested in IPI pipeline which might be extended to its borders to feed its energy thirst (Manning, 2000, pp. 85–118). Nevertheless IPI, which means a lot to Iran expecting more cooperation with Chinese and Indian companies on development of natural gas fields, is jeopardized by regional issues. India still refuses to entertain the role of Pakistan for a fear of its energy supply being disrupted in case of a military conflict (Pandian, 2005, pp. 659–670). Pakistan still refuses to normalize trade relations with India, even though it is keen to earn hundreds of millions of dollars in transit fees and other annual royalties from a gas pipeline which runs from Iran's South Pars fields to Barmer in Western India (Verma, 2007, pp. 3280–3301). IPI does not only defy the US interests, but also drastically confronts regional instability in Afghanistan and Pakistan. This is why Iran will continue to search for alternative markets in order to commercialize its natural gas.

Iran, as detailed in Table 10, has signed a variety of contracts memorandum of understandings (MoUs) and continue negotiations with countries such as: (1) Oman (2008 contract

**Table 10**  
Iran's gas deals and MoUs.

Destination	Amount (BcM/yr)	Delivery start	Field	Status
Turkey	9/20 (South Pars phase 22, 23, 24)	Started 2003/ MoU signed in 2007	Khuzestan fields/ Turkmenistan phase 22, 23, 24, South Pars	Significant shortages in Iranian deliveries
Armenia	1	Reportedly October 2008	Possible Sarakhs	Delayed, was to be started in March 2008. Diameter of original pipeline cut in half.
Oman	10	Unknown	Kish	Delayed, deal for import from South Pars signed 2006
UAE	6	September 2008 (expected, delayed since 2006)	Salman	Development delayed
Bahrain	10	2009–2015	South Pars	Delivery start unknown, probably close to 2015
Syria	3	2009	Unknown	Gas only to be exported during summer due to high Iranian demand in winter
Italy (for EGL-Switzerland)	5.5	2012	South Pars	Pipeline not finished
Pakistan/India	22	2013	South Pars	Pipeline (IPI) delayed.

Source: IEA, 2008.

for the supply of 10 BcM/yr by pipeline); (2) Bahrain (December 2007 MoU for 10 BcM/yr); (3) UAE (negotiations continue to resolve a former price dispute with UAE's Crescent Petroleum to restart exports up to 6 BcM/yr); (4) Kuwait (negotiations continue on a prospective undersea gas pipeline); (5) Syria (2007 MoU to transfer 3 BcM/yr from 2009, during the summer months via the Tabriz–Ankara pipeline); (6) Turkey (agreement to supply Turkey with 9 BcM/yr, yet averaging about 4.5 BcM/yr overall since 2003); and (7) Italy (2008 contract with Swiss energy company Elektrizitäts-Gesellschaft Laufenburg AG (EGL) to sell 5.5 BcM/yr through the existing Iran–Turkey link for a period of 25 years, for EGL's power plants in Italy via the trans-Adriatic pipeline (TAP) to be completed in 2012) (IEA, 2008, pp. 30–31).

In addition to these agreements and MoUs, Iran started to develop relations with Turkey; to benefit from its transit role in Nabucco project. A preliminary agreement concluded in July 2007 had presumed that Turkish state petroleum company TPAO would invest some \$3 billion over seven years in the construction of operating equipment and enterprises from both countries were supposed to develop joint ventures for the transport of the gas by way of a pipeline system that will extend to Eastern Turkey (Kreyenbühl, 2007). Furthermore, Iranian Oil Minister Gholamhossein Nozari and National Iranian Oil Refining and Distribution Company (NIORDC) Managing Director Mohammadreza Ne'matzadeh emphasized the need of Europe to Iran's gas urging that it would not be possible to put Nabucco gas pipeline into operation without Iran, dismissing it as uneconomical (PIN Tehran, 2007). Finally it must be added that the production costs in Iran are lower when compared to Russian and Caspian gas (IEA, 2004) which appear as another incentive for the EU to include Iran within its supply system.

As to official point of view from Europe; the EU Energy Commissioner Andris Piebalgs underlined that Iran would be a major gas supplier to European markets in the future if it resolves the issue of the enrichment of uranium and keep good relations with the international community (Piebalgs, 2008). Economic benefits of Iranian gas, therefore, confront the US sanctions and the turmoil in Pakistan which together impede gas export pipelines to Europe, India and China. In March 2009, Iran announced a \$3.2-billion natural gas deal with China after Obama administration extended US sanctions against Iran for another year and President Obama called for talks with Tehran as a way of resolving a years-long dispute over the nature of the Iran's nuclear energy program and its support for Lebanese and Palestinian militant groups opposed to Israel (Daragahi, 2009). Iran, consequently, became more interested in LNG trade with the aim of

exporting 35 million tons per year by 2020. Iran will need 17 LNG ships of 150,000 cubic meter capacity (each costing \$200–240 million) to transport about half of the country's potential gas exports (Iran Daily, 2006). Iran will have to invest \$3–4 billion just for ships, excluding freezing plants and ports, and spend some time in queue for the vessels to become constructed. This is why Iran would definitely prefer to optimize its fleet development plan and get included within European gas system if this becomes possible.

## 5.2. Iraq

Iraq's natural gas reserve (3115 BcM as given in Tables 3 and 9) is still controversial due to the need for more exploration studies. The domestic market is very rough. The energy infrastructure has been drastically hampered because of the Gulf Wars. The ethnic clashes increased after the US invasion of March 2003 result in sabotage of pipelines. Most of the insurgence is somehow related to disagreements on the authorities of federal and regional administrations; status of hydrocarbon regions of Kirkuk, Dohuk, Erbil and Suleymaniyah; management of oil and gas reserves; revenue sharing mechanisms and foreign participation.

In February 2007, a draft hydrocarbon law, which was prepared by three members from Cabinet to define the legal framework for foreign investments as well as revenue sharing, was approved by the Iraqi Cabinet; yet to be passed by the Parliament to become effective. The draft law basically aims at transformation of Iraqi energy sector from a closed and a nationalized structure into a commercial industry that is fully open to all international oil companies while allowing the Iraq National Oil Company to have exclusive control of 17 of Iraq's 80 known oil fields, leaving two-thirds of known—and all of its as yet undiscovered fields open to foreign investors (Juhász, 2007). The Parliament did not pass the law because of the disagreements on significant details.

Main actors and their different positions as summarized from Blanchard (2007, pp. 13–17) are: (1) Kurds accepted to support the draft law with the hope of controlling the fields in Kurdish Regional Government (KRG), acquire directly 17% from revenues obtained from fields in KRG, while benefiting from central distribution of the rest of the revenues to 18 provinces according to population (which was expected to satisfy Sunni Arabs); (2) Sunni Arabs, who live in central Iraq away from the rich resources of North and South, ask for more equitable revenue sharing and foreign participation, and, therefore, oppose the draft law; (3) Shiite parties such as the United Iraqi Alliance favor centralization



of authority and creation of a strong centralized energy company and oppose the law; (4) Industry Unions and the Fadilah Party in Basrah are against the draft law and threaten the Parliament to shut down oil pipelines in Southern Iraq if the parliament passes it in its current form; (5) The Shiite Arab political faction of Sadr and at least two Sunni Insurgent Groups are fully against the draft law; (6) Some international energy companies, as shown in Table 11, have signed agreements with KRG and wait for the draft law. Others who have lost interests after 2003 invasion (CNPC, Agip, Repsol, TPAO, Lukoil, TotalFinaElf, ONGC, Sonatrach, Shell) ask for their rights and hope to acquire new agreements after the law.

Despite the problems on draft law, Iraq plans to increase production of the North Iraqi natural gas and commercialize it by cooperating with Turkey. Furthermore Iraq is in search of more international support to commercialize the gas found in Southern Iraq.

As shown in Table 11, KRG and Iraq have signed MoUs with Dana Gas and Crescent from UAE concerning Kor Mor and Chemchemical fields in Suleymaniyah, as well as with Gulfsands Petroleum from the USA concerning Misan fields in the South (EIA, 2008, p. 10). The status of Mansuriyah is already unclear. The most significant agreement of KRG concerns Akkas field in Western Desert because the partners of the \$8 billion consortium include OMV and Mol (Nabucco partners) in addition to Dana Gas and Crescent (Webb, 2009). The consortium, according to Jonathan Stern from OIES, will be able to supply 10BcM to Nabucco and 5 BcM to Iraqi domestic market (Webb, 2009). Iraqi government spokesman Ali el Debbah underlined that the agreements signed with KRG had to be approved by the central government, yet added that they could make the flow of gas possible from Iraq to Europe via Turkey by 2014 (Radikal, 2009, p. 4).

Turkey and Iraq have capacities to build further cooperation. Turkey might keep on providing Iraq's energy needs, such as electricity, liquefied petroleum gas and gasoline, whereas the latter might trade natural gas. Nevertheless this mutual dependency is hampered by Turkey's security concerns, still doubtful about the support of Iraqi Kurds for the PKK, which currently leads the Kurdish separatist movement in the south-east of Turkey along the Iraqi border. Despite these problems, it is possible to talk about an emerging rapprochement in the energy sector between Turkey and Iraq aimed at boosting regional cooperation. Turkish officials and the Iraqi State Oil Marketing Company (SOMO) intend to increase the capacity of oil pipeline between Kirkuk and Yumurtalik on the one hand, and make a pre-agreement that will allow Iraq to sell natural gas found in Northern Iraq to Europe via Turkey on the other (AA, 2008). Iraqi and Turkish authorities have signed agreements for the construction of a natural gas pipeline (to be conducted by a consortium of TPAO, Tekfen and BOTAS) passing through Silopi, Sirnak and Diyarbakir route in Turkey and carrying 10 BcM of natural gas obtained from five areas in Iraq to Yumurtalik port of Turkey where a great deal of gas will be shipped to world markets after construction of a new terminal (TNA, 2008). Turkey and Iraq seem to be in agreement on carrying

out gas trade. Iraq's interests in natural gas trade are not limited to North and also comprise the rich fields in South. Shell plans to spend \$2.5 billion on a natural gas plant in southern Iraq to meet the rising demand in the Persian Gulf (28% from 2003 to 2006) because the UAE and Saudi Arabia have developed steel, aluminum and chemical industries to curb their reliance on crude oil exports (Rex, 2008). Shell and Iraqi officials are planning to link Basrah region to a new terminal to be deployed on the country's coast to freeze 16 BcM of gas a day to ship to Kuwait and the UAE (Rex, 2008). Given these developments, it is very likely that Northern Iraqi gas from Akkas will be exported by pipeline to Turkey/Europe, whereas Southern gas will be more likely to be exported in liquefied form.

### 5.3. Egypt

Egypt's proven natural gas reserves increased to 32,354 BcM after the recent discovery of BP in the Nile Delta. Egypt's production of 149.96 BcM could hardly satisfy the domestic need (139.36 BcM) in 2007.

On May 5th 2008, the European Commission released a joint statement right after its meeting on Enhancing Energy Cooperation in Brussels aimed at connecting the Arab Gas Pipeline, which has a capacity of 10 billion cubic meters per year from Egypt through Jordan to Syria, with Turkey and Iraq by 2009 (TDN, 2008). Egypt has been exporting small amounts of gas to Jordan since July 2003 following the construction of a gas pipeline between these two countries. The capacity of Egypt–Jordan natural gas pipeline, currently 31.15 McM per day, was planned to reach 283.20 McM per day to export gas to other markets comprising the EU as well (APS, 2008). In mid 2008, Egypt declared a moratorium on new export contracts until international prices stabilize (May, 2008). This moratorium deferred the EU commission joint statement on Middle Eastern gas pipeline, which aimed at extension of Arab Gas Pipeline to Turkey by also including Iraqi gas. In the mean time, Israel's intrusions in Gaza in late 2008 and early 2009 (Quinn and Weaver, 2009) raised security doubts on the proposed route.

Egypt is likely to invest in LNG and benefit from marine transportation rather than confronting regional problems which jeopardize the stability in its neighborhood. It must be mentioned that Algerian LNG prices tripled in the past five years and producers have charged more amid rising construction costs and a shortage of equipment and contractors (Rex, 2008). This is why parties, which could be interested in natural gas, are also considering the incentives of the LNG business. Although its first LNG export terminal is quite new, which started operating in January 2005, Egypt currently ranks sixth in terms of production and aims to increase it rapidly. Egypt is likely to consider more LNG trade in Gulf Region, (mainly with Saudi Arabia and UAE), Mediterranean countries (currently comprising mainly Spain and Italy) and finally with India and China. The Suez Canal and Sumed

**Table 11**  
Iraq's gas deals and MoUs.

Status	Field	Location	Partners	Country	Type
MoU	Kor Mor	KRG (Suleymaniyah)	Dana Gas Crescent	UAE	Non-associated gas condensate
MoU	Chemchemical	KRG (Suleymaniyah)	Dana Gas Crescent	UAE	Non-associated gas condensate
MoU	Siba, Misan (Buzurgan, Jabal Faqi, Abu Ghraib)	South (Misan)	Gulfsands Petroleum	USA	Misan: associated gas Siba: non-associated gas
Unclear Agreement	Mansuriyah Akkas	North (Diyala) Western Desert (Al-Anbar)	Shell Botas TPAO Tekfen Dana Gas Crescent OMV Mol	UK Netherlands Turkey UAE Austria Hungary	Non-associated gas condensate Non-associated gas condensate

Source: EIA, 2007, p. 10; Webb, 2009.

Oil Pipeline make Egypt an important energy hub embracing strategic routes traversing Persian Gulf. Egypt aims to build upon the Persian Gulf infrastructure and develop terminals serving for Mediterranean transportation wherein LNG trains tend to more than triple and reach ten from actual three (APS, 2008). Gas production in the Nile Delta will lead to rapid growth of the port Damietta, Egypt's second most important trading port lying on 50 km North West of Port Sa'id. Furthermore Egypt's geographic location and the rising demand for LNG makes it more reasonable to invest in LNG infrastructure. "Combined with the 5 mt/yr LNG train operated by the Spanish Egyptian Gas Co. (Segas) at Damietta and NLNG at Idku, Egypt now has the capacity to export over 12.2 mt/yr of LNG. With a second train at Damietta and a third one at Idku, the capacity will reach more than 20.8 mt/yr by 2010/11. Further trains at Idku and at least one more 5 mt/yr train at Damietta by 2015 will have turned Egypt into one of the world's main sources of LNG (APS, 2008)." In addition, two different LNG export ventures made their plants on stream in 2005 (APS, 2008).

## 6. Conclusion

The significance of natural gas for the EU27 is steadily increasing due to environmental and cost effective reasons based on efficient application technologies. Natural gas is likely to become the most significant energy product throughout the next 30 years by moving from 438 Mtoe in 2005 to 625 Mtoe in 2030 as proposed in EU plans on energy. Consequently the share of natural gas in the European primary energy demand will go from 24% in 2005 up to 30% in 2030. The consumption increase in households and industry will not be covered by European production nor will Russia be able to feed the rising demand without re-exports from Caspian and Central Asia after 2015. This is partially due to its declining production at Yamburg, Urengoy and Medvezhze fields in Yamal peninsula of West Siberia and largely due to relative advantages of commercializing Eastern gas at Chinese and Japanese markets. The sharp rise in Russia's domestic demand is another pressure. Finally, Russia's problems with Ukraine, which has created interruptions of gas flow to Europe in January 2006 and January 2009, doubled European energy security concerns to diversify suppliers.

The analysis on Azerbaijan, Kazakhstan and Turkmenistan from Caspian on the one hand, Iran, Iraq and Egypt from the Middle East on the other, shows that it was best for the EU to include at least two countries from Azerbaijan, Turkmenistan, Iraq and Iran within its energy grid.

Regarding Caspian, Azerbaijan appears as a reliable supplier, yet with inadequate reserves to feed Nabucco on its own. Having quadrupled oil revenues Kazakhstan is following a pro-Russian politics and is not very enthusiastic about selling gas to Europe directly in the mid-term. Kazakhstan, on the contrary, seems committed to develop energy trade with China. Turkmenistan might export gas to Russia, China and Europe simultaneously if included in Nabucco. Yet the amount and pricing will be open to negotiations at a time when Turkmenistan boosted its bargaining power. Knowing the significance of Turkmenistan for Russia's natural gas policy, Gazprom increased the price for Turkmen gas to \$130 per McM in the first half of 2008 and committed to charge \$150 in the second half of 2008. In the meantime, PetroChina has agreed to pay \$195 per McM.

Regarding the Middle East, regional fragility (which arises from ongoing ethnic and religious conflicts in Iraq as well as from Israel's difficult encounter with Hamas, Syria and Iran) limits options for natural gas trade through Arab Gas Pipeline. Egypt's recent initiatives indicate that the country will be more concerned with LNG trade. Iraq and Iran, however, indicated more compat-

ibility to European gas supply system. In Iraq; Dana Gas, Crescent, OMV and Mol have recently agreed with KRG to produce, develop and export the Akkas gas field which is expected to supply about 15 Bcm to Europe via Turkey by 2014. In Iran; the FDIs from China, France, UK, Italy and Russia in natural gas fields (mainly Yadavaran and South Pars) and its recent agreements and MoUs with countries such as Turkey and Switzerland show that Iran, with its rich reserves and low production costs, is emerging as one of the best supply alternatives for the EU.

The final remarks, therefore, emerge as: (1) the EU (if Turkey and Botas agree on the transit conditions and terms) is likely to include first Azerbaijan and Iraq within its natural gas supply system, and then Iran depending on its ability to convince the international community on the nuclear issue. (2) Turkmenistan's status will be highly related to the amount of the gas found in South Yolotan–Osman on the one hand, the terms and conditions of its commitments to Russia, China and Iran on the other. (3) LNG plants and vessels are rapidly increasing. If regional and contractual disagreements impede the rise of a secure gas supply system, European countries may prefer going on their own and support their supply security by boosting LNG imports.

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