

EUROPEAN POLICY BRIEF



GLOBAL RE-ORDERING: EVOLUTION THROUGH EUROPEAN NETWORKS

European energy supply and consumption: effects on the European energy security, with specific reference to the Southern corridor

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INTRODUCTION

The recent ratification of the Final Investment Decision on the development of the Azerbaijani offshore Shah Deniz natural gas field has given the final green light to the long-awaited EU's Southern Gas Corridor.

The Southern Corridor will diversify European natural gas supply in a context of growing dependence on energy imports. However, its impact on the European energy security needs to be assessed considering the capacity of the infrastructures currently under construction and the real scalability of the project.

All the gas exported through the Southern Corridor is expected to come from Azerbaijani fields. In order to expand the Southern Corridor up to a size able to significantly impact the structure of the European supply, other producing countries need to be added on the upstream side. However, political and economic issues could reduce the possibilities for the upstream side to expand beyond Azerbaijan and scale up the Southern Corridor as an effective and reliable diversification source with a EU-wide impact.

EVIDENCE AND ANALYSIS

Natural gas and the EU markets

Natural gas plays a central role in the European energy mix. It represents a pillar of several member states' power generation system, while also being the most environmentally friendly fossil fuel, with low carbon and locally polluting emissions. In the prospective transition to a low carbon

economy, natural gas is expected to serve as “bridge fuel” – an ideal backup for discontinuous generation.

Natural gas adds up to a quarter of the EU’s primary energy consumption, and its share is expected to reach thirty percent in the next two decades¹. In 2013, the combined size of the EU’s national gas markets amounted to 463 Bcm². On the whole, the EU is the second market in the World, after the US. In comparison, the Chinese demand is currently estimated to be about half of the size of the EU’s³.

The main European market is Germany, which in 2013 consumed 89 Bcm. Other important markets are the UK (79), Italy (69), and France (46), Netherland (40) and Spain (31). EU gas markets are still essentially national markets, only partially interconnected. However, the evolution of the EU legislation has generated a clear trend towards greater integration, both at physical and institutional level.

At a physical level, Regulation no. 994/2010 imposed a minimum level of counter-flow capacity on all international pipelines within the EU⁴. As a consequence, national networks have become increasingly resilient because they can now tap on bordering nations in the case of an emergency. At an institutional level, regulation is increasingly harmonized: the EU energy packages and several multilateral initiatives, such as the Gas Target Model, are creating a strong push towards the creation of a truly European gas market, at least in the long term⁵.

While the future of the European markets appears to be characterized by increasingly deep integration, the most challenging issue consists in current demand trends. After the past decades’ consistent growth, the recent economic crisis has prompted a significant reduction of natural gas consumption, especially in Italy, Spain and the UK⁶.

Moreover, gas-fired power plants are increasingly challenged by the combined effect of subsidized renewables and cheap coal, which dramatically reduced natural gas demand. Future trends will depend on the strength of the economic recovery, but also on the environmental policies adopted at EU level for the next decades, which are now under debate.

Even if a structural recovery of natural gas demand is expected over the next two decades, the current oversupply of the European markets entails low incentives for energy companies to seek new sources of supply, which would need substantial investments in a time of tight budgets. Furthermore, the timeframe of the recovery could prove to be too optimistic, especially if the energy transition and the decarbonisation process will go on at fast pace after 2020. In general, investing in new infrastructures is an extremely risky strategy for every European company.

EU natural gas supply

According to the International Energy Agency (IEA), EU’s demand is expected to reach 485 Bcm in 2020, and 527 in 2030. The latter level is approximately the same of 2010 demand. Considering that several import infrastructures came online in the following years, from Nord Stream to Medgaz, supply system seems to be adequate for future needs. In particular, the EU liquefied natural gas (NLG) import capacity amounts to slightly less than 200 Bcm per year (Bcm/y) and is setting largely idle, since LNG imports in 2013 totaled less than 50 Bcm⁷.

Nonetheless, an expansion of the import capacity could be needed if we look at the internal production pattern. In 2013, internal production still represented the main source of the EU supply, with 156 Bcm. However, its level is structurally declining: after plateauing above 240 between the mid-1990s and the mid-2000s, the EU internal production has started a trend of reduction due to

¹ IEA, *World Energy Outlook 2013*, 2013. Figures are referred to the reference scenario (New Policies) and based on the *Annex A - Tables for Scenario Projections*. In this work, volumes are expressed in standard cubic meter with a gross calorific value of 39 MJ/cm.

² 2013 provisional figures. See Eurogas, [Statistical Report 2013](#). Unless otherwise stated, this is the source of all figures referring to current consumption in Europe, both at national and EU level.

³ See Platts, [China gas forecasts](#), 2014.

⁴ [Regulation \(EU\) No 994/2010](#) of the European Parliament and of the Council of 20 October 2010, concerning measures to safeguard security of gas supply and repealing council directive 2004/67/EC.

⁵ Katja Yafimava, [The EU Third Package for Gas and the Gas Target Model: major contentious issues inside and outside the EU](#), Oxford Institute for Energy Studies, NG 75, 2013.

⁶ Between 2008 and 2013, annual EU demand decreased of 55 Bcm (i.e. 11%), with a temporary spike in 2010, when EU consumption reached its highest ever level of 527 Bcm.

⁷ See Gas Infrastructure Europe, [GLE Investment Database](#), 2013.

the depletion of the North Sea fields and other smaller producing areas (Romania, Germany and Italy).

This trend is unlikely to be reversed by unconventional gas production, which is not expected to reproduce the scale of the US shale gas revolution⁸. Industrial, legal and political problems will limit the scale of the EU's unconventional production, which will be modest and essentially limited to the UK.

Accordingly, the EU production is expected to be at 133 Bcm in 2020, and 112 in 2030⁹. This trend will progressively increase the European demand of gas imports, even if a generally weak domestic demand will to a certain extent offset this trend. Indeed, imports are expected to increase from the current level of 307 Bcm to 353 Bcm in 2020, to 415 Bcm in 2030¹⁰.

Considering that the import level in 2010 was 348 Bcm, any expansion of the import capacity during the current decade will increase diversification rather than fill a capacity gap. Furthermore, if we consider that the new infrastructures which came online between 2010 and 2013 have a combined capacity of above 80 Bcm per year, new import capacity will be relevant in terms of diversification also in the next decade¹¹.

This diversification process has an economic dimension, since the increasing competitiveness of the European final markets entails a strong incentive for non-incumbent companies to seek new sources of gas alternative to the incumbents' long-term contracts. Moreover, diversification has also a strong political dimension, since instability in the producing- or transit-countries could endanger European energy security. Therefore, diversification represents a core strategy in order to reduce risks and improve security, inevitably drawing the attention of decision-makers at European level.

Southern Gas Corridor

One of the main pillars of the diversification process devised by the European Commission (EC) was the creation of a new import route running from the Greater Middle East area to the European final markets. In 2008 this concept was named Southern Gas Corridor, becoming a priority of the new geopolitical approach of the EC to the issue of energy supply¹².

The Corridor was initially expected to be established up through the construction of a large pipeline running across Turkey and the Balkans, from unidentified Eastern sources. The project, named Nabucco, was redefined several times until 2013, when its last version (Nabucco West) was discarded because too expensive. Instead, another project draw growing interest from international investors, eventually gaining the official support of European institution in June 2013: the Trans Anatolian Pipeline (TANAP) – Trans Adriatic Pipeline (TAP) system¹³.

The system is devised to convey the gas of the second phase of the Shah Deniz project – an offshore field in the Azerbaijani sector of the Caspian¹⁴ – to EU consumers by 2019. Azerbaijani gas will be transported for 692 km to the Georgian-Turkish border through the existing South Caucasus Pipeline, which will be expanded¹⁵. Then, the gas will flow through TANAP across the Anatolian peninsula for 1.700 km, up to Turkish-Greek border¹⁶. The last section will run for 870 km

⁸ Leonardo Maugeri, «The Shale Oil Boom: a U.S. Phenomenon», *Geopolitics of Energy Project*, Discussion Paper #2013-05, Belfer Center for Science and International Affairs, 2013.

⁹ IEA, *World Energy Outlook 2013*, 2013. Figures are referred to the reference scenario (New Policies) and it is based on the *Annex A - Tables for Scenario Projections*.

¹⁰ Forecasted quantities are intrinsically tentative and approximate since the energy sector is traditionally subject to dramatic changes. However, those figures are particularly relevant since they express current common expectations, which in turn drive actual investment decisions.

¹¹ New import capacity commissioned between 2010 and 2013 includes Nord Stream (55 Bcm/y), Medgaz (8 Bcm/y), and 20 Bcm/y of new LNG regasification capacity.

¹² European Commission, [Second Strategic Energy Review. An EU Energy Security And Solidarity Action Plan](#), Communication From the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2008) 781 final, 13 November 2008.

¹³ For a complete reconstruction of the selection process, see Carlo Frappi and Matteo Verda, *Azerbaijani, energia per l'Europa. Storia, economia e geopolitica degli idrocarburi del Caspio*, Milan, Egea, 2013.

¹⁴ The final investment decision (FID) for the Stage 2 development of the Shah Deniz gas field in the Caspian Sea was announced on 17 December 2013.

¹⁵ South Caucasus Pipeline owned the [Shah Deniz consortium](#), which is formed by BP (28,8%), SOCAR (16,7%), Statoil (15,5%), Total (10%, expected to pull out in 2014), Lukoil (10%), NICO (10%), and TPAO (9%)

¹⁶ Currently, TANAP shareholders are SOCAR (80%), and TPAO-BOTAS (20%). SOCAR is expected to sell a 12% share to BP and a 10% share to BOTAS. See AzerNews, [Botas may increase share in TANAP project](#), 18 March 2014.

through Greece and Albania up to Southern Italy, with a minor section reaching Bulgaria directly from Greece¹⁷.

The initial capacity of the system will be 10 Bcm/y to the EU border in Greece. Those volumes will be commercialized in Italy (8 Bcm/y), Greece and Bulgaria (1 Bcm/y each). Another 6 Bcm/y of Azerbaijani gas will be commercialized directly on the Turkish market. The TANAP-TAP system also offers the possibility of doubling its transport capacity by upgrading pumping capacity. According to the Azerbaijani government, Azerbaijani upstream could supply the extra-10 Bcm/y needed by the enhanced version of the pipeline¹⁸.

Other Sources of Gas

Even in the case of an expanded version of TANAP-TAP (20 Bcm), the relevance of the Southern Corridor would be marginal indeed: it will provide for less than 5% of the EU consumption, ten times less than the today's LNG import capacity and six times less than current imports from Russia. In order to give a substantial contribution to the diversification of the EU supply, Southern Corridor would need to be at least 10% the size of the EU market, i.e. above 50 Bcm/y.

This expansion could be viable and reliable only by adding new sources of gas to the Azerbaijani production. Turkmen gas would be the first option, having already aroused much attention in Brussels. Turkmen reserves are huge and could be added to the Westbound flows simply by adding a few hundred kilometers of offshore pipeline under the Caspian¹⁹. However, a trans-Caspian pipeline cannot be built until the issue of the legal status of the body of water is settled²⁰. Due to the current Russian veto on any concluding and comprehensive solution, the Turkmen option is bound to remain deadlocked for the foreseeable future.

The Levantine Basin, in the Eastern Mediterranean, provides another possible alternative. Also this case, though, presents a major problem: the issue of Cyprus. The relatively small reserves of the basin could be commercially viable only by reaching the Turkish pipeline system transiting through Cyprus's territorial waters, or via LNG. Since the legal status of the Northern part of the island is still pending and there is no expectation of a solution in the near future, international companies operating in the Levantine Basin are likely to resort to LNG to secure direct access to international markets in a reasonable and definite timeframe²¹.

Iranian world-class reserves represent another potential source of gas for the Southern Corridor²². The progress of the Iran-US relations is laying the conditions for a future role as a major exporter for Iran. However, the process is not consolidated and the situation could take several years – if ever – before reaching a complete normalization of the international position of Teheran²³. Moreover, the situation of the Iranian energy sector poses many potential problems, since it would require major foreign investments and the involvement of the foreign companies, and this process may have to face numerous political and legal hindrances, slowing the development of large scale exports.

Finally, Iraq is the most likely source of natural gas for a potential expansion of the Southern Corridor²⁴. However, the stability of the country represents a major risk for international investors and, unlike oil at current market conditions, the profitability of natural gas is low and requires a long time span before recovering investments. In addition, in the Iraqi case – and in the Iranian one – the distance from Europe is considerable and the infrastructure should be built from scratch. Moreover, the security of the pipelines could be easily endangered due to the uncertain control of the territory by the central government.

¹⁷ TAP [shareholders](#) are BP (20%), SOCAR (20%), Statoil (20%), Fluxys (16%), Total (10%), E.ON (9%), and Axpo (5%).

¹⁸ See AzerNews, [TAP to change energy map of Europe: Azerbaijani official](#), 11 July 2013.

¹⁹ According to the Energy Information Administration (EIA), Turkmen reserves amount to 7.200 Bmc. See EIA, [Turkmenistan](#), Country Analysis Brief, 2012.

²⁰ See Cristiana Carletti, «The legal regime of the Caspian Sea in support of the regional security issue», in Marco Valigi (ed.), *Caspian Security Issues. Conflicts, Cooperation and Energy Supplies*, Novi Ligure, Edizioni Epoké (under publication).

²¹ See Simone Tagliapietra, [Turkey as a Regional Natural Gas Hub: Myth or Reality? An Analysis of the Regional Gas Market Outlook, beyond the Mainstream Rhetoric](#), Nota di lavoro FEEM 02.2014, 2014.

²² Iranian natural gas reserves exceed 33.000 Bcm. See EIA, [Iran](#), Country Analysis, 2013.

²³ See Simone Tagliapietra, [Iran after the \(Potential\) Nuclear Deal: What's Next for the Country's Natural Gas Market?](#), Nota di lavoro FEEM 31.2014, 2014.

²⁴ Iraqi natural gas reserves exceed 3.000 Bcm. See EIA, [Iraq](#), Country Analysis, 2013.

Overall, a potential upgrade of the Southern Corridor would need to deal with a very complex upstream situation, which would require strong political commitment and sizeable investments. Moreover, another aspect should be taken into account: along the Southern Corridor, the EU should compete with Turkey for additional volumes, especially if the flows of Russian gas – currently Ankara’s most important supplier – were threatened by the long term consequence of the Ukrainian crisis²⁵.

Limited relevance at EU level, higher relevance at national level

The relevance and the impact of the Southern Corridor are different depending on whether they are assessed at EU or at a local level. Indeed, the TANAP-TAP system is very important for those countries directly interested by the project. In the case of the Italian market, for instance, the expected volumes are going to significantly improve its already diversified supply system. Moreover, TAP will represent a major contribution to the goal of transforming the Italian gas network in the Southern hub of the European gas network, as devised by the Italian national energy strategy²⁶.

For Bulgaria and Greece – small markets mainly relying on one supplier – the opening of the Southern Corridor will imply a dramatic shift, creating a truly diversified supply system. Moreover, in the case of Greece, the construction of the TAP will be a major source of foreign investments in the country²⁷. For other Balkan countries, further expansion of the Southern Corridor would generate the opportunity to create and expand an advanced natural gas market.

At the European level, instead, the role of the Southern Corridor as a significant source of supply and diversification is likely to be limited in the medium term (up to 10 years), due to the limited size of the infrastructures under construction. In the longer term (10 to 20 years), instead, the relevance of the Southern Corridor will depend on the possibility of tapping natural gas from sources other than the Azerbaijani reserves, but this is still a highly uncertain option, due to the weakness of the European demand and to the risks related to the potential upstream areas²⁸.

POLICY IMPLICATIONS AND RECOMMENDATIONS

- Current projects in the European Southern Gas corridor (ESGC) will represent a significant diversification source for the natural gas supplies of the countries directly involved (Greece, Bulgaria, Italy)
- Current projects in the ESGC will not represent a significant source of diversification at the EU level, due to its limited capacity in this policy field
- Any further expansion of the ESGC will need more countries on the upstream side, but possible solutions (Levantine Basin, Iraq, Iran, and Turkmenistan) currently do not represent a politically and economically viable alternative
- Even in the hypothesis of a significant expansion of the ESGC, the increased reliance on the Turkish transport system may limit its relevance in terms of diversification and its impact on the European energy security
- The ESGC may eventually prove to be a political concept with a limited impact on the European energy security.

²⁵ Approximately half of the Russian gas exported to Turkey (26 Bcm in total in 2012, according to Eni, [World Oil and Gas Review](#), 2013) transits through Ukraine and Ankara would need the construction of the South Stream pipeline to keep the pace of its increasing domestic demand. If the pipeline will not be realized, Turkey will need addition volumes from its Eastern partners.

²⁶ See Ministero dello sviluppo economico, *Strategia Energetica Italiana* ([English version](#)), 2013.

²⁷ See Christopher Coats, [Greece Gets Boost With TAP Decision](#), Forbes, 22 August 2013.

²⁸ Moreover, the expansion of the Southern Corridor above its initial maximum capacity of 20 Bcm/y would raise the relevance of the route as a source of diversification, but it would also raise the risks related to the transit in Turkey.

RESEARCH PARAMETERS

The assessment of the impact of the European Southern Gas Corridor is made comparing current and expected European consumptions and imports. The main scenario proposed by the International Energy Agency is used as reference for the evolution of the European demand for natural gas imports. Evidences about the potential evolutions of the alternative sources of upstream are based on a qualitative analysis of each country.

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FURTHER READING

All working papers, policy briefing papers and other publications are available on our website: www.greenfp7.eu/papers