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Turkey's Energy Strategy and its Role in the EU's Southern Gas Corridor

by Erkan Erdogan

ABSTRACT

The Southern Gas Corridor (SGC) is a European Commission initiative aimed at facilitating the diversification of the routes and sources of gas imported into Europe. This paper is devoted to the analysis of Turkey's role in this initiative. Following a summary of the current economic and energy situation in Turkey, the paper presents recent developments in the SGC and an analysis of Turkey's role in the EU's SGC vision. It concludes that although the newly-built infrastructure within the SGC framework will probably serve Azerbaijani and Turkish interests first in their future relations with the EU, rather than the other way round, as had been initially hoped by the EU, it still addresses the EU's basic strategic interests, namely, the diversification of gas supply routes and suppliers.

Turkey / European Union / Energy security / Natural gas / Pipelines



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by Erkan Erdogdu*

Introduction

The main objectives of the EU's energy security policy proposed by the Green Paper of 2006, endorsed by the European Council¹ and finalized in the Lisbon Treaty,² envisions the future energy system for the Union to be based on three principles: sustainability, competitiveness and security of supply in energy provision. Although the establishment of the new alternative gas corridors is also expected to contribute to environmental sustainability in one way or another, it has largely been associated with safeguarding the security of energy supply and ensuring competitiveness in the EU markets.³ In this context, the Southern Gas Corridor (SGC) is a European Commission initiative aimed at enhancing the diversification of the routes and sources of gas imported into Europe. The SGC is envisaged as supplying a significant amount of gas from the Caspian Basin and the Middle East to meet the Union's future energy needs. The SGC is expected to become the fourth major gas supply route into the EU, after the routes from Russia, Algeria and Norway. The Southern Gas Corridor is also seen as a way of gaining access to additional gas supplies, which is particularly important if one bears in mind the projected drop in gas production in Norway and EU domestic output (UK and the Netherlands) as well as the EU's reluctance to increase its reliance on Russian gas,

¹ European Commission, *An energy policy for Europe* (COM(2007) 1 final), 10 January 2007, <http://new.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52007DC0001>; European Commission, *Impact Assessment*. Commission staff working document accompanying the legislative package on the internal market for electricity and gas (SEC(2007) 1179 final), 19 September 2007, <http://new.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52007SC1179>.

² European Commission, *Energy 2020 A strategy for competitive, sustainable and secure energy* (COM(2010) 639 final), 10 November 2010, p. 2, <http://new.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52010DC0639>.

³ Faig Galib Abbasov, "EU's external energy governance: A multidimensional analysis of the southern gas corridor", in *Energy Policy*, Vol. 65, No. 2 (February 2014), p. 27-36.

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· Paper produced within the framework of the IAI-Edison project "The changing regional role of Turkey and cooperation with the EU in the neighbourhood", February 2014.

not to mention the EU's objective of meeting its carbon emissions targets.⁴

On June 26, 2012, Turkey and Azerbaijan signed an agreement for the construction of a new pipeline to bring Azeri gas across Turkey. The Trans-Anatolian Pipeline (TANAP) project is expected to be operational in 2018. It will be the first step in bringing 10 bcm (billion cubic metres) of Azeri gas to Europe and 6 bcm to the rapidly expanding Turkish market. On the other hand, on June 28, 2013, the Shah Deniz consortium and its leading stakeholders (SOCAR and BP) concluded negotiations and chose the Trans-Adriatic Pipeline (TAP) project to transport Azeri gas from the EU-Turkish border to European markets. In summary, for Azeri gas to reach Europe, two pipelines will have to be built. The first will connect Azerbaijan, via Georgia, to the EU-Turkish border, while the second will transport the gas to its final destination. Together they will create the Southern Gas Corridor.

The policies of both the EU and Turkey are shaped by their economic conditions and political preferences. On average, Turkey's energy demand is mounting by 8 percent annually, one of the highest rates in the world.⁵ Among primary energy sources, natural gas is the fastest growing one in Turkey. Turkish domestic gas consumption started at 0.4 bcm in 1982 and reached approximately 45.3 bcm in 2012.⁶ Turkish natural gas consumption is projected to further increase remarkably in coming years. On the other hand, the European Union (EU27) has only 0.9 percent of proved world gas reserves and is responsible for 4.5 percent of world production, while it consumes 13.4 percent of the gas produced in the world. Historically, EU gas consumption rose from 39.3 bcm in 1965 to 443.9 bcm in 2012. Indigenous EU27 gas production covered 33.7 percent of gas demand in 2012. In that year, Russia (105.5 bcm) and Norway (106.6 bcm) were by far the largest gas suppliers to the EU; the third major supplier was Algeria with 32.8 bcm of gas exports to the EU. In 2012, these three countries provided 55.2 percent of the total gas consumed in the EU and the EU's dependence on imported gas was 59 percent of the total.⁷ In summary, both the EU and Turkey will need to import natural gas in the near future, and this has important implications for their economies. So, the EU and Turkey aim at securing enough gas to meet demand at reasonable prices.

This paper is devoted to the analysis of Turkey's role in the EU's Southern Gas Corridor. Following the introduction in this section, the current economic and energy situation in Turkey is examined in Section 2. Section 3 presents a summary of the Southern Gas Corridor and TANAP and TAP decisions. Section 4 analyses Turkey's role in EU's SGC vision. The final section concludes.

⁴ Aleksandra Jarosiewicz, "Southern Gas Corridor managed by Azerbaijan and Turkey", in *OSW Commentary*, No. 86 (18 July 2012), <http://www.osw.waw.pl/en/node/19290>.

⁵ Erkan Erdogan, "Natural gas demand in Turkey", in *Applied Energy*, Vol. 87, No. 1 (January 2010), p. 211-219.

⁶ IEA, "OECD natural gas supply and consumption", in *Natural Gas Information 2013*, July 2013.

⁷ BP, *Statistical Review of World Energy 2013*, June 2013, <http://www.bp.com/statisticalreview>.

1. Current economic and energy situation in Turkey

With a gross domestic product (GDP) of US Dollar (USD) 794.5 billion in 2012 and a population of 80.7 million people, Turkey is the 17th largest economy in the world.⁸ As can be seen in the Annex, Turkey is heavily dependent on fossil fuels to meet its energy requirements, with oil (27 percent), natural gas (32.7 percent), and coal (30.2 percent) being the predominant primary energy sources, accounting for a significant majority (90 percent) of the total primary energy supply. They also account for approximately 72.4 percent of the country's total final energy consumption. Turkey's domestic energy resources, especially oil and natural gas, are very limited; so its dependence on imports is high. Turkey imported 78.7 percent of its primary energy needs and 98.2 percent of primary gas needs in 2011 (see Annex: *Energy balances of Turkey in 2011*).

Turkey's economy is increasingly driven by its industry and service sectors, although its agriculture sector is still responsible for about 25 percent of employment. An aggressive privatization program has reduced state involvement in infrastructure, industry, banking, transport, and communication sectors. Oil began to flow through the Baku-Tbilisi-Ceyhan pipeline in May 2006, marking a major milestone that will bring up to one million barrels per day from the Caspian to international oil markets.

Rapid population growth and economic development in the country have resulted in increases in energy demand in recent years. Figure 1 presents the rise in gross domestic product and total final consumption in Turkey over the 1990-2011 period. As shown in Figure 1, Turkish total final consumption has increased by an average annual growth rate of 3.6 percent in the last two decades while average annual growth rate of GDP was 9.7 percent in the same period. Turkey's per-capita energy consumption has remained low compared to EU and OECD countries. In 2011, per capita primary energy consumption was 4.1 and 4.8 toe in EU-27 and OECD countries, respectively; while this figure was just 1.6 toe (tone of oil equivalent) for Turkey in the same year, indicating potential for further growth and the need for additional investment in the Turkish energy sector.⁹ Similarly, electricity consumption per capita¹⁰ in Turkey is below the world average. Despite increasing demand, Turkey's per capita gross electricity consumption was still very low in 2010 at 2,776 kWh (kilowatt hour) compared to the OECD average of 8,382.¹¹

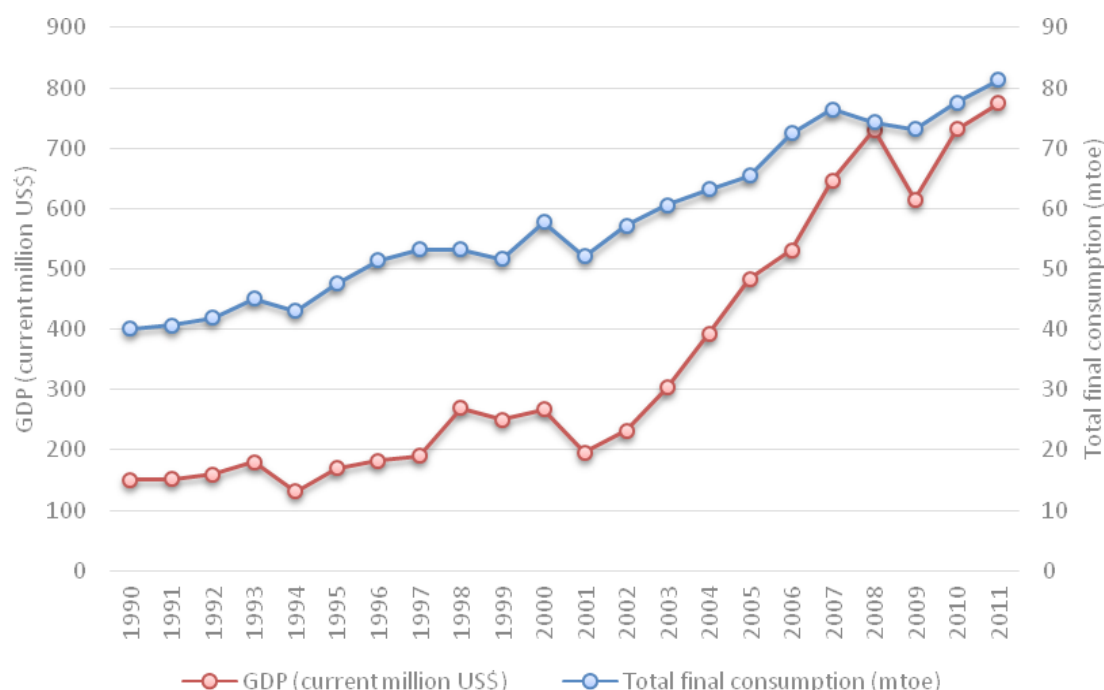
⁸ CIA, "Turkey", in *The World Factbook*, <https://www.cia.gov/library/publications/the-world-factbook/geos/tu.html>.

⁹ EIA, "Total Primary Energy Consumption per Capita", in *International Energy Statistics*, <http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=44&pid=44&aid=2>.

¹⁰ Electricity consumption per capita is an indicator commonly used to measure the level of a country's economic development.

¹¹ IEA, "OECD imports", in *Oil Information 2012*, June 2012.

Figure 1. Total final energy consumption and GDP in Turkey, 1990-2011



Source: IEA, *Energy Balances of OECD Countries 2013*, July 2013.

Foreign trade and current account balances are among the main indicators used to assess a country's economy. The trade balance refers to the amount a country receives for the export of goods and services minus the amount it pays for its import of goods and services. On the other hand, the current account is the trade balance plus the net amount received for domestically-owned factors of production used abroad. Table 1 presents Turkey's current account balance for 2012. In 2012, total Turkish imports amounted to USD 219.3 billion while total exports were USD 148.4 billion, resulting in a foreign trade deficit of approximately USD 65.2 billion. Since June 2011, at the request of BOTAS, the main public natural gas import company, official statistics regarding natural gas and crude oil import costs have not been published by the Turkish Statistical Institute (TUIK); instead, the total cost of natural gas and crude oil imports are classified as "confidential data" under the heading of "Mining and Quarrying" in the Turkish current account balance or TUIK tables, for reasons not explained by BOTAS.¹² In 2012, the "confidential data" item representing oil and gas imports was USD 39.5 billion, meaning that oil and gas imports accounted for about 18 percent of merchandise imports, 60.6 percent of trade deficit and 82.7 percent of current account deficit, making dependence on energy imports, the persistent current account deficit and fuel consumption major public policy issues in Turkey. Turkey's dependence on imported oil, in particular,

¹² "Botaş istedi TÜİK gizledi" [Botas wanted, TurkStat covered up], in *Milliyet*, 10 August 2011, <http://www.milliyet.com.tr/Ekonomi/SonDakika.aspx?aType=SonDakika&ArticleID=1424898>.

makes it vulnerable to changes in world oil prices generated by disruptions in the world oil market.

Table 1. Current account balance table of Turkey (2012)

Item	million \$
Merchandise exports (f.o.b.)	148,433
Merchandise imports (f.o.b.)	-219,323
- Confidential Data (mainly natural gas and crude oil)	-39,470
Non-monetary gold (net)	5,709
Foreign trade balance	-65,181
Services balance	22,912
Investment income balance	-6,483
Current transfers	1,383
Other	-360
Current account balance	-47,729

Source: TurkStat, *Foreign Trade Statistics*, 2012, http://www.tuik.gov.tr/PreTablo.do?alt_id=1046;
TurkStat, "Turkish Economy", in *Economic Indicators, Quarter I 2013*, February 2013, <http://kutuphane.tuik.gov.tr/yordambt/url.php?-action=new&-url=aHR0cDovL2t1dHVwaGFuZS50dWlrLm dvd50ci9wZGYvMDAyMTgzMC5wZGY=&demirbas=0021830>.

2. Southern Gas Corridor, TANAP & TAP decisions

The Southern Gas Corridor is seen as part of the New Silk Road of transport and energy links between Europe and the Caspian region.¹³ Since the EU supported the project, several pipeline projects are competing with one another to bring it to life. The best known pipeline projects in the Southern Gas Corridor have been Nabucco, TANAP and TAP. But other smaller projects, such as the Turkey-Greece-Italy Interconnector (ITGI) or the Azerbaijan-Georgia-Romania Interconnector (AGRI) all have the potential to become important elements of the SGC. Figure 2 presents potential projects in the SGC.

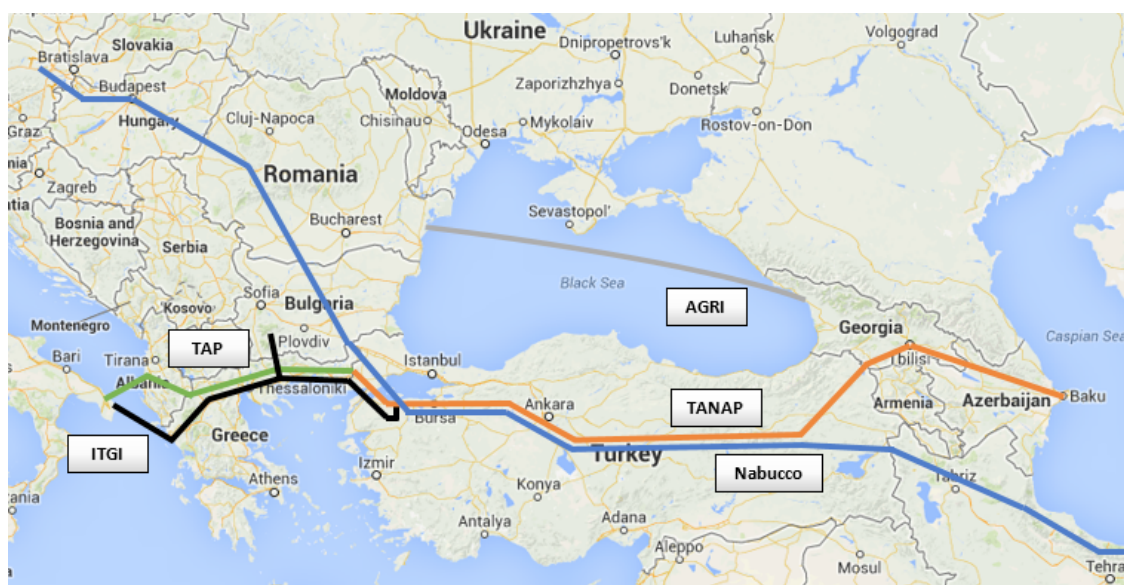
The disputes between Ukraine and Russia which interrupted the gas supply to Eastern Europe in the winters of 2006 and 2009 placed the energy security debate at the top of the agenda of both EU member states and the European Commission. In this context, the Southern Gas Corridor is seen as a way of gaining access to additional gas supplies bypassing Russia.¹⁴ It is also an important element of EU

¹³ "Europe's southern gas corridor: The great pipeline race", in *EurActiv*, 11 October 2010 (updated 29 May 2012), <http://www.euractiv.com/en/node/498558>.

¹⁴ On a discussion of the European gas market in detail, see Erkan Erdogdu, "Bypassing Russia: Nabucco project and its implications for the European gas security", in *Renewable and Sustainable*

policy towards Turkey and potential gas suppliers. Under the original plans, Turkey was to become an "energy bridge", which would forge a long-term link between Ankara and the EU. The EU had initially hoped to secure an agreement that would reduce Turkey's role to that of a "transmission belt"; this idea, however, was subsequently rejected by Ankara¹⁵ with the signature of agreements on the TANAP and TAP pipelines.

Figure 2. Potential projects in Southern Gas Corridor



In the framework of the Southern Gas Corridor, the EU initially supported the Nabucco project, the most ambitious of the proposals involving the construction of the largest gas pipeline with an annual capacity of 31 bcm.¹⁶ However, since Turkey and Azerbaijan regarded Nabucco as incompatible with their national interests, they both withdrew their support. In the meantime, individual energy companies (like Statoil, EGL, E.ON, BOTAS, DEPA and so on) began supporting the gas transit projects that served their interests best, especially the TAP and ITGI pipelines, which gave Azerbaijan and Turkey more choice. Since energy companies withdrew their support for Nabucco and supported other projects, the EU's bargaining power was weakened. Subsequently, the EU offered to support any project capable of achieving the same objectives as the Nabucco pipeline, and a series of measures implemented by the EU, energy companies and, above all, Azerbaijan and Turkey resulted in the informal adoption of a new approach to the Southern Gas Corridor. On June 26, 2012, Azerbaijan and Turkey signed an agreement on the construction of the Trans-Anatolian Pipeline (TANAP) project.

Energy Reviews, Vol. 14, No. 9 (December 2010), p. 2936-2945.

¹⁵ Aleksandra Jarosiewicz, "Southern Gas Corridor managed by Azerbaijan and Turkey", cit.

¹⁶ Erkan Erdogan, "Bypassing Russia...", cit.

Following the agreement on the TANAP project, the Nabucco project was the "biggest loser". In May 2012, after the original plan was challenged by the creation of the TANAP, Nabucco proposed the construction of a 23 bcm pipeline, Nabucco West, connecting to TANAP at the Turkish border, crossing Bulgaria, Romania and Hungary, and terminating in Austria.¹⁷ However, the winning project in the race to bring Azeri gas to Europe was another one: the 10 bcm Trans-Adriatic Pipeline (TAP) designed to link the Greek-Turkish border to southern Italy.

From the beginning, the Southern Gas Corridor has been seen by Russia as a challenge to its interests. Russia has tried to block implementation of the project by questioning its economic and technical feasibility. It has supported the construction of alternative pipelines, namely the Blue Stream 2 and South Stream projects, which aim to supply gas to the same markets as the Southern Gas Corridor. Russia has also agreed to pay more for gas from Central Asia in order to lower the gas producers' interest in seeking alternative routes to Europe. Furthermore, it has offered to purchase all the gas produced by the Shah Deniz field which, for the time being, is the only secure source of gas for the Southern Gas Corridor. However, Russia's efforts to prevent the Southern Gas Corridor project have failed in the sense that it is still a key energy and geopolitical initiative for the European Union. Nonetheless, Russian policies contributed to the failure of the Nabucco project and its replacement with the TANAP and TAP projects.

3. An analysis of Turkish international gas policy

Having summarized the Southern Gas Corridor initiative, this section analyses Turkey's role in EU's SGC vision in five separate but related dimensions.

As mentioned before, both Turkey and the EU need additional gas supplies from non-Russian sources at reasonable prices. Based on their respective interests, the EU wants to make Turkey a transit country with no say in the deals, while Turkey wants to turn itself into an energy hub in which independent energy transactions are fulfilled. This conflict about Turkey's role in the SGC constitutes the **first** dimension. The impact of this dimension was felt especially with regard to Turkey's policy towards the Nabucco project. Turkey initially supported Nabucco as it would not only strengthen its geopolitical importance and provide huge transit revenues, but also improve its position as a bridge between the Caspian and Middle East regions and Europe. In the course of time, however, Turkey became an obstacle because it insisted on the right to consume 15 percent of the gas from any pipeline built on its territory, to be purchased at a "reasonable price", and wanted to tax gas in transit and play the role of middleman in the Caspian-EU gas trade, rather than being merely a transit state.¹⁸

¹⁷ Ilektra Tsakalidou, "The southern European corridor", in *ISSUE Alerts*, No. 21 (July 2013), <http://www.iss.europa.eu/publications/detail/article/the-southern-european-corridor>.

¹⁸ Erkan Erdogan, "Bypassing Russia...", cit.

The **second** dimension relates to the Turkish policy of using its natural geographic leverage against the EU not only in accession negotiations but also in other domains. Before the SGC project, Turkey was in a weak position. It had been declined EU membership many times and depended on Russia for most of its natural gas. But now, with the country's gas demand skyrocketing and Turkish supply contracts with Russia set to expire, Turkey, on whose land most of the pipelines would lie, seemed to try to take advantage of the SGC initiative and use its geographic position to meet its gas demand at low prices and create a short-cut to EU membership. For instance, during Nabucco negotiations, Turkey sought to link approval of Nabucco to the opening of the energy chapter in its EU accession talks, which was blocked by Cyprus. Besides, when the EU asked the Nabucco consortium to bring in a European gas major as a sixth partner to increase not only political and business support for the project but also its feasibility, Turkey declared it was breaking off talks with Gaz de France because of Turkey's political problems with France. Without significant advances in membership negotiations, Turkish geographical leverage over the EU's Southern Gas Corridor is likely to continue in the foreseeable future.

The **third** dimension is about the EU's policy of using the accession process to restrict and shape Turkey's course of action. On the one hand, although the EU energy acquis may provide a transparent, efficient and depoliticized framework for the Turkish natural gas market, which is a precondition for being an international natural gas hub; implementation of the acquis without being a full EU member is seen as problematic by Turkey as it has no say in their formulation. On the other hand, by exporting its energy acquis to Turkey, the EU will attempt to minimize Turkey's ability to manipulate gas flows and tailor it to its political and economic objectives. In practical terms, this is to be achieved by institutionalizing its relations with Turkey through multilateral, bilateral and project specific rule transfer. This, in turn, would make gas supply a matter of multilateral market activity, where private or state actors compete against one another, as opposed to the political market that is currently being ensured through politically defined bilateral agreements.¹⁹ For instance, to become a full EU member, Turkey has to adopt and implement the liberalization rules of the Third Energy Package, more specifically, to unbundle its natural gas supply, transmission and distribution systems and allow transparent third party access (TPA) to the pipelines crossing its territory. With unbundling, the major state energy company, BOTAS, would lose its control over the strategic transmission lines (energy routes), consequently becoming a mere import company. The EU expects that this policy will inevitably decouple energy projects from Turkish high politics, thereby depriving Turkey of one of its strongest leverages. In the EU's ideal vision, Turkey would become a market-based transit country with shared trade, transit and environmental rules, rather than a hub.

The **fourth** dimension of Turkey's role in the EU's SGC vision is concerned with the recent decision of the Turkish government to include nuclear energy in its energy mix. Figure 3 shows the official reliable electricity generation projection by

¹⁹ Faig Galib Abbasov, "EU's external energy governance...", cit.

fuel source up to 2021. Figure 4 provides a visual plot of the same projection as the percentage share of each fuel in total electricity generated up to 2021.

Figure 3. Official reliable electricity generation projection by fuel source (TWh)

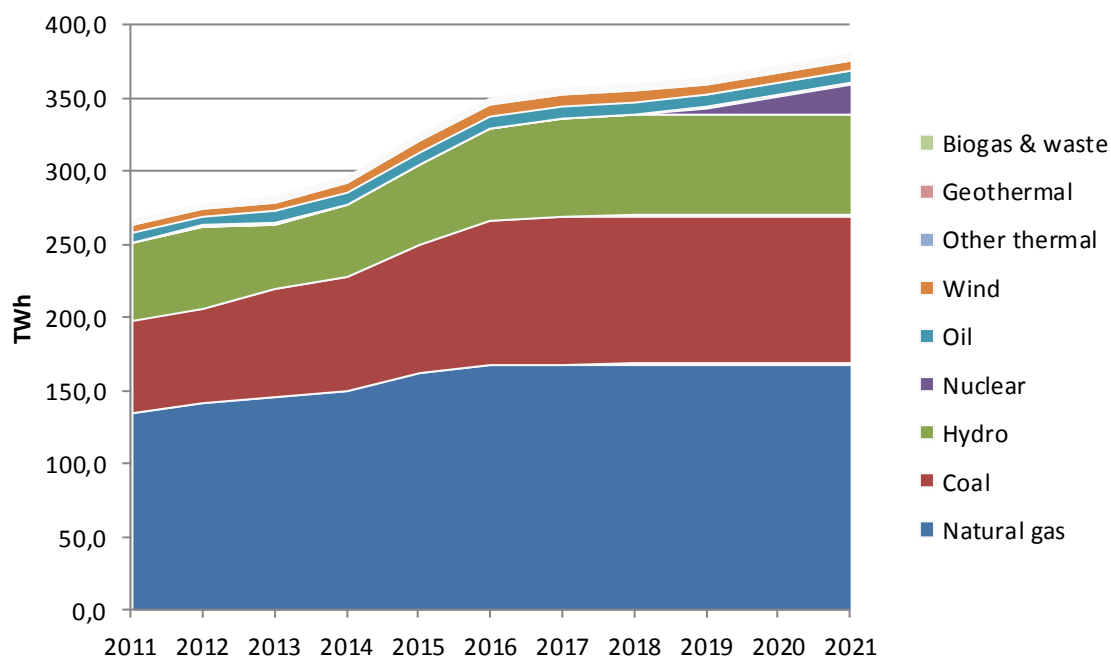
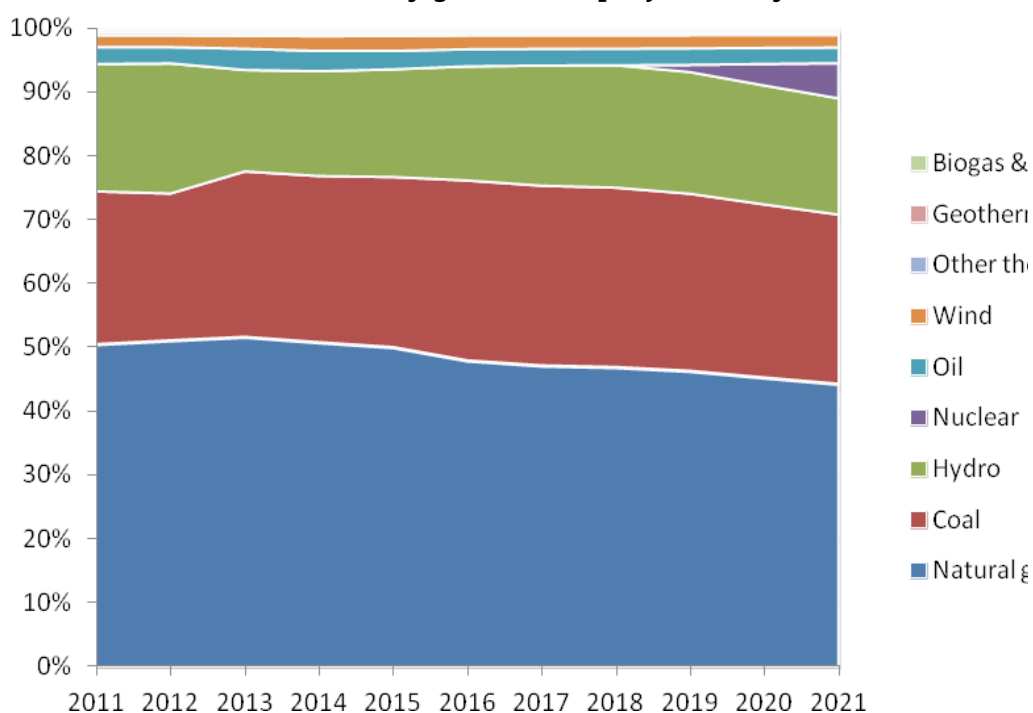


Figure 4. Official reliable electricity generation projection by fuel source (%)



Source: Turkish Electricity Transmission Corporation (TEIAS), *Türkiye Elektrik Enerjisi 10 Yıllık Üretim Kapasite Projeksiyonu (2012-2021)* [Turkish Electrical Energy 10-Year Generation Capacity

Projection (2012-2021)], December 2012, <http://www.teias.gov.tr/YayinRapor%5CAPK%5Cprojeksiyon%5Cindex.htm>.

Figure 3 indicates that, as expected, consumption of all fuel sources increases, parallel to increasing demand, in real terms throughout the next decade, meaning that new nuclear power plants in Turkey will definitely not result in a reduction in the consumption of any fuel below its current level. However, to reveal the real impact of adding nuclear energy to the Turkish energy mix, we need to concentrate on the development of the share of each fuel source in total electricity production from 2011 to 2021.

Figure 4 implies that the share of four fuel sources will considerably change in the next decade. In 2011, 50.4 percent of total electricity production came from natural gas, but it will decline to 44.2 percent in 2021. Similarly, the share of hydro will drop from 20 percent in 2011 to 18.2 percent in 2021. The combined reduction of 7.9 percent in natural gas and hydro shares will be compensated by the increases in the shares of nuclear (by 5.5 percent) and coal (by 2.6 percent). Since replacement of hydro with nuclear is not a policy objective in Turkey, it seems that nuclear power will replace natural gas and this trend will continue in the near future. So, the most important policy implication of adding nuclear power to the Turkish energy system will be the decline in the share of natural gas in electricity generation.

As indicated in the Annex, Turkey used 54.4 percent of imported gas to generate electricity in 2011. So, any decline in Turkish demand for gas to generate electricity may easily translate into a shift in its international gas policy. If the gas demand in Turkey declines due to construction of nuclear power plants in the near future, Turkey may be less interested in taking a share of the gas transported through the Southern Gas Corridor and, therefore, see the SGC more as a commercial initiative. Such a shift in Turkish policy could let the EU set up the SGC on its own terms.

The **final** dimension regards Turkey's relations with non-EU players in the SGC initiative, especially Azerbaijan. The EU's failure to secure additional gas supplies for the Southern Gas Corridor (from Iraq and Turkmenistan) left Azerbaijan as the only secure supplier for the whole project, which increased Azerbaijan's bargaining power enormously. The close cooperation between Azerbaijan (the most important gas supplier to the SGC initiative) and Turkey (the most important transit country in the SGC project) gave them considerable influence over the EU. Since then, these two countries have effectively begun to define the shape of the Southern Gas Corridor. This became particularly clear when the Trans-Anatolian Pipeline (TANAP) and the Trans-Adriatic Pipeline (TAP) agreements were signed on June 26, 2012 and June 28, 2013, respectively. The decision to invest in TANAP and TAP highlights that both countries perceive investment in energy infrastructure as a way of enhancing their geostrategic and commercial goals. So, it has gradually become obvious that if the EU wishes to implement the Southern Gas Corridor project, it has little choice but to take into account the preferences of Azerbaijan and Turkey at the expense of its own original plans.

Conclusion

The decline in natural gas production due to limited reserves (especially in the UK and the Netherlands) and dependence on imported gas (particularly on Russian gas) constitute the most important challenges that the European gas market will be confronted with over the next years. The key asset developed by the EU to overcome these challenges was supposed to be the Nabucco pipeline within the Southern Gas Corridor, which was described by former EU Commissioner for Energy, as "an embodiment of the existence of a common European energy policy".²⁰ However, the EU policy of reducing Turkey to a transit country and Azerbaijan to a supplier country has clearly failed and the opportunistic policies of Turkey and Azerbaijan have *inter alia* undermined the project. As a consequence, both states have found themselves in a significantly stronger position in their relations with the EU and have become key players who will define the shape and future of the Southern Gas Corridor. The decision to go ahead with the TANAP and TAP projects means that the pipeline will no longer be used by Europe as a bargaining tool in its policies towards Azerbaijan and Turkey, but will instead give more power to Azerbaijan and Turkey in their relations with the EU.

With its indispensable geographic position between the oil and gas reserves of Iraq, Iran and the Caspian, Turkey will host major pipelines sooner or later. Besides, it is clear that Turkey is interested in increasing gas imports from Azerbaijan at a competitive price, but refuses to take on only the role of a gas "transmission belt" between Central Asia and Europe. That is, Turkey is not willing to give up its control over strategic projects carried out on Turkish territory. In short, Turkey will not be simply a transit country. However, whether it will manage to turn itself into a gas hub through which independent gas transactions are fulfilled depends on many other variables, the investigation of which requires a detailed analysis of the characteristics of important current gas hubs in the world, and therefore constitutes an important research field to be further explored.

Although it seems that Azerbaijan and Turkey will consequently have the power to decide how much gas reaches EU markets and when it is delivered, the construction of the TANAP and TAP pipelines and the arrival of Azerbaijani gas in Europe will address the EU's basic strategic interests, namely, the diversification of gas supply routes and suppliers. In this respect the EU has been successful, even though it will not have the final say about the future shape and use of the Southern Gas Corridor.

Updated 13 February 2014

²⁰ Pavel K. Baev, "From European to Eurasian energy security: Russia needs and energy Perestroika", in *Journal of Eurasian Studies*, Vol. 3, No. 2, (2012), p. 177-184, <http://dx.doi.org/10.1016/j.euras.2012.03.008>.

Annex. Energy balances of Turkey in 2011 (ktoe)

Flow / Product	Coal	Natural gas	Oil	Hydro	Other renewables	Electricity	Other	Total
Production	17,840	625	2,342	4,501	6,751	0	5	32,064
Imports	15,533	36,115	36,484	0	0	392	0	88,524
Exports	0	-588	-7,467	0	0	-313	0	-8,369
Other changes	553	625	-939	0	0	0	0	239
Total primary energy supply	33,925	36,778	30,420	4,501	6,751	78	5	112,459
% share	30.2	32.7	27.0	4.0	6.0	0.1	0.0	100.0
Power plants	-18,208	-17,753	39	-4,501	-1,118	19,728	1,216	-20,598
Losses	0	-4	0	0	0	-2,784	0	-2,787
Other	-2,623	-1,359	-2,230	0	-189	-4,001	0	-10,403
Total final energy consumption	13,094	17,666	28,229	0	5,445	15,805	1,221	81,458
Industry	6,939	7,877	1,559	0	0	7,366	1,216	24,957
Transport	0	219	14,557	0	11	58	5	14,849
Residential	5,786	7,225	1,275	0	5,434	3,807	0	23,528
Commercial and public services	278	2,040	0	0	0	4,131	0	6,449
Non-energy use	0	252	5,944	0	0	0	0	6,196
Other	90	52	4,894	0	0	443	0	5,479

Source: IEA, *Energy Balances of OECD Countries 2013*, July 2013.

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