

## Turkey in the geopolitics of energy

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### ARTICLE INFO

#### Keywords:

Turkey  
Natural Gas  
Southern Gas Corridor (SGC)  
BOTAS  
Turkstream  
Geopolitics of energy

### SUMMARY

This article discusses how geography, energy markets and political developments determine Turkey's role in the geopolitics of energy. Located strategically between two continents, Turkey has a desire of becoming an international physical hub and transit corridor for natural gas, while at the same time improving its own energy security. Domestic Turkish demand and market regulations, existing and new sources of supply, as well as internal and external economic, regulatory and political factors interplay in the realization of these goals. The article argues that the potential Turkey has to become a significant player in natural gas transit depends on the simultaneous developments of the domestic political situation and the great political uncertainties in its neighborhood. If market developments allow, Turkey may become a hub for Russian gas through the Western part of the country, and it may become a hub for gas from Central Asia and the Middle East while also serving its Middle and Eastern parts. The outcome depends on domestic decisions colored by the economics of natural gas transportation and political developments in its surroundings.

### 1. Introduction

The geopolitics of energy for a country or region is defined by its geographical location and role for supply, transit or demand for energy. Located strategically between two continents, Turkey is an important oil and gas transit country, decisive to its own import dependence as well as to regional energy security. Currently, Azerbaijani and Kurdish oil is transmitted across the Eastern part of the country to Ceyhan by the Mediterranean Sea. Russian and Azerbaijani oil passes through the Turkish Straits of the Bosphorus and Dardanelles waterways to Western markets. Natural gas is coming from Russia, Iran and Azerbaijan, but so far only for domestic usage. Some natural gas from former Soviet republics in Central Asia has also been transmitted through Russia. For the European Union (EU) it has been important to diversify natural gas supplies and reducing the role of Russia as a producer and transit country.

The first break-through for an alternative route was reached with the signing of the Nabucco agreement in 2009. After the cancellation of Nabucco in 2013, Caspian natural gas shall be transmitted from Azerbaijan to the Italian market via Turkey, Greece and Albania, referred to as the “Southern Gas Corridor” (SGC), planned to come on stream from 2018. Later, natural gas projects from Central Asia and

the Middle East, including from Israel and Cyprus, may be directed through the SGC, destined for Turkey as a market and/or as a transit country. The Russian Southstream project was seen as competitor to Nabucco, bypassing Turkey from Novorossiysk through the Black Sea directly to Bulgaria. After Southstream was cancelled in 2014, partly due to EU legislation, Turkstream (also through the Black Sea) became the Russian alternative. Russian gas should now reach the Western part of Turkey, rather than Bulgaria, continuing to compete not only for EU markets, but also directly for the Turkish market itself.

The natural gas projects are important to meet domestic Turkish demand, but also for their potential to make Turkey a significant international and regional transit country and physical hub between producers in the Middle East, Central Asia, Russia and the Mediterranean on the one side, and the EU on the other. However, capital costs for both the Russian Black Sea subsea projects and the expansion of SGC across Turkey are substantial. From the outset, they need huge volumes of natural gas to be profitable. In the combined EU-South and Turkish market, it may be room for only one of the projects, at least in the short and medium term. The realization of the initial step of Turkstream depends primarily on Turkish- Russian bilateral agreements concerning market capture in the Istanbul area and on investments in infrastructure (e.g. subsea pipelines). The expansion of the

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SGC depends a lot on domestic Turkish demand “on the way”, especially in the Middle and Eastern part of the country, to finance the infrastructure.

Turkey's priority to secure energy for its own market coincides with the aim of diversifying sources and becoming an international physical hub and transit corridor for natural gas. With a rapidly expanding economy and a population of 80 million people, the country has been one of the fastest growing energy consumers in the world over the past decade, only bypassed by China in natural gas and electricity demand growth. The question is if Turkish demand for natural gas will grow enough, and in which parts of the country, to support the substantial investments needed. The difficult domestic political situation creates uncertainty about how decisions will be made for energy demand as well as for energy transit. At the same time, the great political risks the country faces in its neighborhood may prevent it from launching new pipeline projects and exploit supply options, but also open for one of the options rather than the other.

In this article, first, we outline how a country's geographic location, international security, markets and politics determine its geopolitical position. Second, Turkish natural gas demand developments and its drivers are described. Third, domestic natural gas market reform and its impacts on the development of domestic infrastructure is analyzed. Fourth, we put focus on the expiration and possible renewal of existing long-term contracts (LTCs) from Azerbaijan, Iran and Russia as sources of future supply. Fifth, Turkey's role as a transit country for natural gas from both existing and potential new sources is outlined. Finally, we assess the country's role in the geopolitics of energy as a consumer and transit country of natural gas.

## 2. Geopolitics and energy

Kjellén (1905) first coined the term geopolitics, and defined it as the studies of the way geographical (and often also historical and social) factors help explain the power and role in international affairs of nation states. In classical formulations, the links and causal relationships between political and physical power over geographic space were emphasized. Mackinder (1904) described much of the 20th century's geopolitical thought, great power strategies, alliances and military events based on geographic and historic factors. Geopolitics was often considered a competitive zero-sum game played by nation states in their pursuit of power and security, and gains from trade and investment *relative* to other national competitors (Victor et al., 2006:4). Geopolitics was a study of the dynamic or evolving political structuration of space. Greater territory and more resources was the win for one and loss for the other. The outset was that geography (or nature) created various types of societies and cultures as their spatial dimensions implied different opportunities and limitations. Often rivers, mountains, forests, lakes and coasts were borders to human societies. For example, around the Black Sea there are a number of very different languages, cultures and countries due to their separation by the waters.

Because geopolitical thinking was used to defend Lebensraum for Nazi-Germany, social scientists and politicians more or less abandoned the concept after WWII, claiming there was no geopolitical science anymore, only geoideologies, such as Nazism and fascism (Haushofer, 1924; Bingen, 2014). For more decades, borders and the established geopolitical structures were considered permanent sacrosanct. After the break-up of the Soviet Union, the market became more or less the sole mechanism for allocation of economic resources. Fukuyama (1992) even declared the “End of History”. Nevertheless, a rebirth of geopolitical studies emerged in the economically and politically interdependent world of the 1990s, and beyond. Now the concept was adjusted to the international economic and political integration that had taken place, and included how political control over a territory influences power and political and economic outcomes through factors, mechanisms and institutions in the international economic and

political system (Agnew and Corbridge, 1989). Modern geopolitics became concerned with the political discourse among international actors resulting from all factors that determine the political and economic importance of a country's geographic location. “Relative gains matter, but so (also) joint gains from possible cooperation” (Victor et al., 2006:5).

As part of geopolitics is geoeconomics and geostrategy. Geoeconomics describes and analyzes the distribution of resources in and between states, focusing on industrial capacity, technology scientific and administrative competence and capacity, finance and the flows of trade in space. Geopolitics is very much a geoeconomic phenomenon and vice versa. Any state's control of a given territory is in the end a question of “economic gain” – how to finance the costs and how to gain an optimal share of the values created or transmitted in/on that territory. Geostrategy has mostly been used as a military concept and describes plans for obtaining physical control of certain areas, or the capability to deny others to control them, irrespective of prevailing geopolitical and geoeconomic structures. Together they presuppose intentionality and are thus not natural phenomena. “States do not grow on trees” (Bingen, 2014). Hence, the energy geopolitics of any region must be understood by both the size and location of own and other natural resources, how available they are, who controls them, their cost, alternative transportation routes, how regional and global markets balance, market mechanisms and regulations, political decisions, and prices in general. Furthermore, as national and international policy-making is intertwined, the state is not anymore the only actor that shapes political outcomes. The geopolitical role of a country is influenced by the scale and scope of the dependence it represents for other actors (businesses, countries). Resources affect national policy making by acting upon domestic actors, which in turn affect the domestic political system through associations, state structure and ideology and, hence, business-to-business and business-to-government relations, and must be included in the analysis.

Energy and geopolitics have been closely linked in both old and new formulations. Countries have made and make national strategies and geostrategies to meet their energy needs, reach markets and secure national positions and interests. The securitization of energy policy have contributed to shape bilateral, European and global affairs. Historically, the industrial revolution from the mid-1700s was partly a coal and steam revolution, and an economic backdrop for the build-up of the British Empire in the 1700s and 1800s. One important goal for Nazi Germany's expansion eastwards in World War II was to gain control of oil production in Azerbaijan, albeit stopped at Stalingrad. The motivation was both to secure oil for itself, as well as to prevent the Soviets from using it in its motorized forces. The American empire from the 1900s, and especially after WWII, has been based on imported petroleum, largely from the Middle East, heavily influencing both US, Western as well as Arab foreign and security policy over decades. In some cases, for example in the Soviet era and in Saudi Arabia, oil and gas has been emphasized for geopolitical influence.

In recent decades, climate and environmental concerns and the desire for a greener economy has added to the politicization of the energy sector, and created worldwide pressures and policies for improved energy efficiency, more renewable energy, and less dependence on fossil sources. The climate debate has added to the complexity of the energy industry, not least since fossil energy, still representing as much as 87% of world energy usage (2016) is the main source of global CO<sub>2</sub> emissions. Hence, it should be curbed, renewable energy increased, and energy savings encouraged as an alternative source of energy supply competing with all non-renewable and renewable sources. At the same time, while domestic US shale oil and gas resources are about to change American physical dependency on imported energy, and thereby the scope of the geopolitics of oil for the U.S., Europe remain largely dependent on import. Although the shale “revolution” may spread to Europe and elsewhere, and liquefied natural gas (LNG) will transport natural gas globally, new trade routes

based on pipeline transportation that can bring gas resources to European markets continue to be central for EU energy dependency and energy security. The geopolitics and the geoeconomics of energy is changing, but natural gas is still fast gaining shares in energy markets, first-of-all for electric power generation, as the most environmentally friendly among the fossil fuels.

The politicization and securitization of energy markets has also to do with imperfect market structures and concerns for energy security. A country can lie somewhere on the continuum between neutral, sensitive, or vulnerable in its dependency on a commodity when its price or availability/market access changes (Austvik, 2016:375). For example, EU concerns over natural gas imports from Russia is often addressed as a problem of the monopoly power of Gazprom (security-of-supply), while the Russians are concerned with its dependence on Ukraine as a transit country and EU policy making (security-of-demand). To assess whether a high dependency on trade with another country constitutes a security risk, considerations whether relations are (or can become) antagonistic, and/or how the (domestic) ability is adapt to change, are important. The politicization of the market is underlined by a lack of sufficient international law about energy transit. The existing GATT provision on ‘freedom of transit’ covering all tradable goods within the international system, makes no clear reference to energy transit (Austvik and Lembo, 2017). The provision ensures the freedom of transit through the territory of WTO members via the most convenient routes, but fails to define ‘convenience’ and how such convenience is measured. Without clearer international law directly regulating the exchange, countries must today mostly meet in bilateral arrangements to set relations and solve disputes (arbitrage).

In this context, natural gas markets based on pipeline transportation differ from oil and LNG markets by the large and irreversible investments made in natural gas transportation. Pipeline transportation is favorable over shorter, albeit increasingly longer, distances, which make most natural gas markets regional in nature. LNG promotes trading over much longer distances. For pipelines, operating costs are relatively low as compared to capital costs. A high or low degree of utilization (the ‘load factor’) affects costs per transported unit directly, but does not affect total costs of transportation much (Austvik, 2000:4). Accordingly, large-scale operations are important for realizing investments that bring gas to the market. Hence, the more expensive the infrastructure, the larger the initial contracts must be to cover costs. The advantages of large-scale operation and vertical integration imply that few companies operate as gas transporters in any immature gas market. In these markets, as opposed to in mature and often liberalized markets, large and long-lasting business-to-business, business-to-government and government-to-government contracts and agreements are necessary to build costly production and transport installations with reasonable economic security.

Both Turkstream and the SGC involves substantial sunk long-term investments and large volumes. As free market principles of competition is less relevant to such infantile market situations, case-by-case political decisions and relations are important both domestically and internationally for the realization of the huge projects.. Accordingly, to identify the potential for domestic demand growth, as support for infrastructural investments that can also be used for transit especially for the SGC, the next sections, first, study domestic Turkish natural gas demand and market regulations. Thereafter, existing and potentially new natural gas supply sources and Turkey’s potential as a transit country are outlined. In interplay, in the final section, these factors form the basis for the discussion of the country’s role in the geopolitics of natural gas.

### 3. Turkey’s natural gas demand

Turkish energy policy is based on the principles of maintaining supply security, promotion of energy generation facilities based on both imported and indigenous resources, diversification of energy supply,

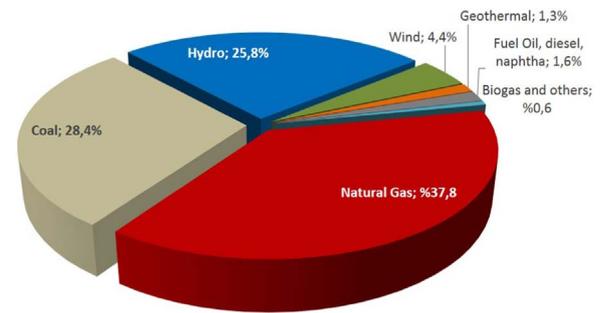


Fig. 1. Turkish electricity generation by energy source, 2015. Source: MENR.

and an increase of renewables in total primary energy consumption. These main targets include a substantial increase in installed electricity capacity based on nuclear, coal, renewables (including hydro power), natural gas as well as improved energy efficiency (Said Arinc, 2016: 7–8). Hydropower, natural gas and coal-based power plants represent more than 90 per cent of total electricity generation (Fig. 1), while oil is mostly used in the transportation sector. Among these, the most important fuel in both absolute and relative is natural gas, with a share of total energy demand around 37%. Natural gas is also one of the most important energy source for strategic industrial segments due to its direct and indirect impact on economic development and growth.

Turkey must import some 3/4 of its total energy needs including more than half of the coal it uses, and almost all of its oil and natural gas.<sup>1</sup> Currently, it imports natural gas from Russia, Iran and Azerbaijan by pipeline, and LNG from the world market (Fig. 2). Imports from Russia started in 1987 in Soviet times. A Western routed (Trans-Balkan) pipeline (845 km) transits Ukraine, Romania and Bulgaria and passes through the Turkish towns of Hamitabat, Ambarlı, Istanbul, Izmit, Bursa and Eskisehir before reaching Ankara (Map 1) with a capacity of 14 Billion Cubic Meters (BCM) per year after expansion. Russian gas supplies via Blue Stream pipeline (1213 km of which 396 km lies through the Black Sea) started in 2003 with 16 BCM/year contracted volume. Together these lines make Russia by far the largest exporter of natural gas to Turkey. The first alternative supplier, Iran, started its natural gas export to the Eastern parts of Turkey in 2001 with a pipeline capacity of 10 BCM/year. The next country was Azerbaijan in 2007, where the Baku-Tbilisi-Erzurum Natural Gas Pipeline (690 km) transport 6.6 BCM of Shah Deniz (SD) Phase-I gas to Turkey.<sup>2</sup> The Turkey-Greece Interconnector (300 km), developed under the EU’s INOGATE program (Interstate Oil and Gas Transport to Europe), became operational also in 2007, and the first smaller amount of Azerbaijani natural gas was delivered to Europe.

The Turkish government has an objective of reducing the share of natural gas in the electricity generation sector, replacing it with domestically produced lignite coal, renewable energy and nuclear. This policy has been driven by high oil prices and expensive contracts for natural gas imported from Russia and Iran persisting from 2008 to mid-2014<sup>3</sup> as well as to improve the country’s energy security. The

<sup>1</sup> Turkey has some domestic coal and hydro resources for electricity production. Around 2/3 of these resources are located in the Eastern part, while most demand is in the more populated Western part of the country (TMFA, 2016). For the future, there may be significant shale oil and gas reserves under the Aegean Sea, the Black Sea and in the Dadas shale in the southeast of Turkey in Diyarbakir Province (EIA, 2015).

<sup>2</sup> This was following an intergovernmental agreement between Turkey and Azerbaijan, and between state-owned BOTAS (Boru Hatlarile Petrol Tasima A.S) and SOCAR (the State Oil Company of Azerbaijan). The SD consortium pays Georgia the transit fee for transportation of natural gas through Georgian territory to Turkey. Apart from the contracted volume of 0.3 BCM/year, the natural gas delivered to Georgia as the transit fee (5% of total transit volume) depends on the natural gas volume transported through the South Caucasus Pipeline (SCP) for Turkey (Rzayeva, 2015).

<sup>3</sup> All Turkish long-term contracts are linked to end-user oil product prices with a lag of 6–9 months. See Austvik : (1997: 1001–1003) for an overview of how natural gas prices have been set in European LTC.

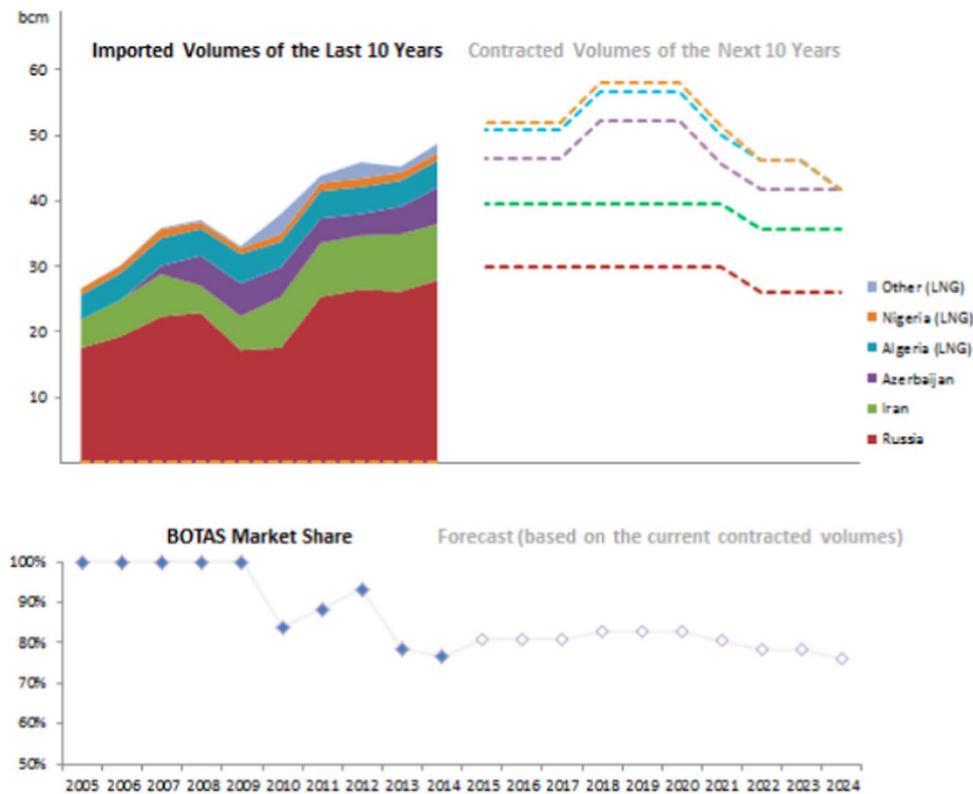


Fig. 2. Turkey's gas import outlook, 2015. Source: Okan Yardimci, Energy Expert, Energy Market Regulatory Authority (EMRA) of Turkey.

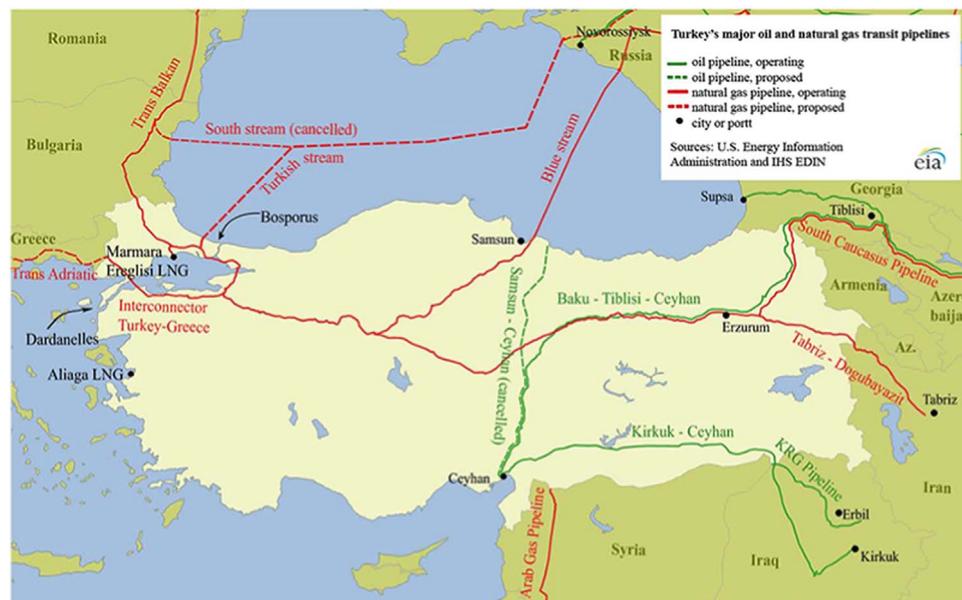


Fig. Map 1. Existing and planned natural gas pipelines in Turkey. Source: U.S. Energy Information Administration (EIA) and IHS EDIN.

Vision 2023 foresaw an increased share up to 30% each of renewable sources, coal and natural gas in the electricity mix, and nuclear 10%.<sup>4</sup> The main strategy is to import natural gas from multiple sources of both economic and political reasons. For the expansion of natural gas

import beyond the existing contracts, an important challenge is that domestic infrastructure is not sufficiently developed. In this context, the Turkish government is keen to increase the LNG regasification capacity of the Egegas and Marmara Ereğlisi terminals (current total regasification capacity of both terminals is 12.2 BCM/year) and is negotiating with Qatar for LNG terminal expansion investments. It is also considering using floating storage and regasification units (FSRU), which would be the option that fastest would increase capacity. Floating terminals would create mobility and deliver LNG in a flexible manner. However, increasing Turkey's LNG regasification capacity does not address the main technical problem, the pipeline transfer

<sup>4</sup> The shares of natural gas in power generation are reduced from 48% (24 BCM) in 2014 to 33% (or 16 BCM) in 2016 (Rzayeva, 2017), with overall gas consumption forecast by EMRA to be at 46 BCM in 2017. In residential and commercial sectors, the number of eligible subscribers is 12.5 million and the plan expects that by 2020 it will reach 16.7 million. These sectors accounted for 25% of total gas consumption (46 BCM) and it is expected to reach 29% by 2025.

capacity of BOTAŞ inside Turkey.<sup>5</sup> The limited capacity of regasification terminals, and in the BOTAŞ storage and transmission system, especially during peak winter seasons, remain constraints and bottlenecks for market growth.

#### 4. Domestic market reform

Most of the Turkish energy sector and the energy intensive industries remain under government control and/or regulation.<sup>6</sup> While market reform and liberalization of the Turkish electricity market has made significant progress in the last decade, it has been much slower in the natural gas market. Only BOTAŞ and Egegas are importing LNG. The government determines natural gas sales prices and, in some cases, BOTAŞ subsidizes prices, especially from Iran (whose prices are the highest) where the government reimburses BOTAŞ the costs of the subsidy (Rzayeva, 2014). Bottlenecks in pipeline capacity and storage create problems in peak-demand periods. “The lack of adequate transmission infrastructure is especially problematic in the eastern parts of the country, as Ankara had to pay fees in the past for the contracted gas that it failed to take from Azerbaijan and Iran” (Tunçalp, 2015:76). Clearly, the situation represents a risk for private actors in natural gas imports and natural gas storage investments.

Turkey began liberalizing its natural gas market in 2001 with the Natural Gas Market Law (NGML). A major issue was the unbundling of BOTAŞ into separate legal entities for transportation, LNG terminals, storage, trading and marketing. The NGML set forth various restrictions on its purchases, with the aim of decreasing BOTAŞ’s market share and establishing a more competitive market. The provisional Article 2 of the NGML places a restriction on natural gas imports by companies other than BOTAŞ. It states that no new natural gas purchase contracts can be signed with countries from which BOTAŞ is already importing natural gas until BOTAŞ’s existing contracts with these countries expire. As BOTAŞ currently imports LNG gas from Nigeria, Algeria, Iran, Russia and Azerbaijan, a private company will not be allowed to import from these countries. There are, nevertheless, certain exceptions to this restriction:

- EMRA may grant import licenses if the natural gas is exported to other countries (transit).
- If EMRA identifies a deficiency in domestic natural gas supply, it may grant import licenses to private legal entities for connections

<sup>5</sup> Theoretically, each LNG terminal can feed around 20mcm/day in to the system (20×2=40 mcm maximum from two LNG terminals).

<sup>6</sup> “Türkiye Petrolleri (TP) is the dominant oil exploration and production entity in Turkey. As a state-owned firm, TP has preferential rights in petroleum exploration and production, and any foreign involvement in upstream activities is limited to joint ventures with TP.

State-owned Petroleum Pipeline Corporation (BOTAŞ) dominates the natural gas sector, although most of the market is open to competition. BOTAŞ is vertically integrated across much of the natural gas sector. BOTAŞ accounts for about 80% of natural gas imports; it builds and operates natural gas pipelines in Turkey; it accounts for most of the wholesale market; and it accounts for most exports of natural gas.

State-owned and vertically integrated Turkish Electricity Authority controlled generation, transmission, and distribution of electricity in Turkey prior to the electric sector reforms that began in the 1980s. Since then, the government has passed several laws which have unbundled and partially privatized the Turkish electric sector.” State-owned Electricity Generation Company (EUAS) remains the largest electric generation company controlling about 40% of all generation capacity. “The remaining generation comes from independent power producers and firms given special state concessions to build and operate power plants.

The wholesale electricity market in Turkey is also open to private companies although the state-owned Turkish Electricity Trading and Contracting Company (TETAS) dominate it. Transmission and distribution services are separate (unbundled) from generation and marketing services. The Turkish Electricity Transmission Company, a state-owned enterprise, owns and operates the transmission system. There are 21 electric distribution regions in Turkey, most of which are operated by private companies.” Source/quotes: (EIA 2015).

from these countries.

- Tenders can be put forward for taking over BOTAŞ’s existing natural gas purchase contracts.<sup>7</sup>

The NGML also dictates that the amount of natural gas imported by any company cannot exceed 20% of expected national consumption, as determined annually by EMRA. BOTAŞ is not exempt from this limitation and, under Article 2, BOTAŞ cannot enter into new natural gas purchase contracts until the volume of natural gas it imports falls to 20% of total annual national consumption. Hence, BOTAŞ is prevented from renewing the contracts with its current suppliers as well as from entering into any new natural gas purchase contracts. There are two exceptions to these restrictions, as well:

- The restrictions under Article 2 do not apply to the import of natural gas in the form of LNG.
- While Article 2 imposes restrictions on BOTAŞ signing new contracts, it does not prohibit BOTAŞ from amending its existing contracts. When amending a contract, terms and conditions can be changed.

The NGML was expected to help transform the natural gas sector to a more competitive, transparent, and financially stable position, aiming at a better investment environment for foreign direct investment (FDI) and for the private sector in the energy system. The NGML progress has been quite slow and only 22% of total gas imports are now transferred to private companies. Part of the challenge is that Turkey has a number of long-term contracts with Russia, Iran and Azerbaijan that expires in the 2020s. An extension or renewal of these contracts appears as necessary to meet demand.

#### 5. Extension of existing LTCs

Contracts expiring in the 2020s affects some 36 BCM/year, or 80% of current natural gas demand (Table 1, Fig. 2). The renewals depend both on commercial and bilateral political issues. For Russia and Gazprom, Turkey is the second biggest market after Germany, with a yearly export of 27 BCM, which represents a 55% share of the Turkish market. Most Russian natural gas is imported by BOTAŞ. Since 2011, private Turkish companies have also imported 10 BCM/year from Gazprom through the Western Line. This import constitutes 22% of the total Turkish market, partly resulting from liberalization of the natural gas market. The extension of 4 BCM/year of these contracts is fraught with pricing difficulties. Private companies do not get the same subsidy as BOTAŞ. Gazprom is the only company that sells natural gas to others than BOTAŞ, and must sell at a lower price to the private Turkish companies to make up the difference. Gazprom faces financial losses in the current low price environment. However, given the fact that Gazprom has a direct or indirect interest in the form of shares in some of the private companies, it may be in the Russian interest to continue this practice. Russia need markets as it has lost one of its biggest markets, Ukraine, to which it did not export gas in 2016, in comparison with around 15 BCM in 2014 (Gazprom, 2016). Gazprom has also lost huge market share in Russia itself with decline of 83 BCM/year between 2011 and 2015, as independent suppliers have started to supply base demand (Henderson and Mitrova, 2015). In light of these realities, both Russia and Turkey will most likely be keen to find

<sup>7</sup> There has been progress in BOTAŞ selling off its import contracts: BOTAŞ has transferred 10 BCM of import contracts, equal to about 20% of Turkish natural gas consumption, to seven private companies.” Russia’s state-owned natural gas company, Gazprom, has a 71% stake in Bosphorus Gaz (which holds import contracts for 0.75 BCM/year and 1.75 BCM/year; about 5% of Turkish consumption), and Gazprom has filed an application with Turkey’s antimonopoly regulator to buy a controlling interest in Akfel Gaz (contracts for 2.25 BCM; about 4.5% of Turkish gas consumption). Source: EIA 2015.

**Table 1**

Natural gas purchase contracts. Source: BOTAŞ, 2016.

Agreements	Volumes (During the Plateau Period) (BCM/y)	Date of signature	Duration (years)	Date effective	Expiry Date	Status
Algeria (LNG)	4	14 April 1988	20	1994	Oct 2024	In operation. Has been renewed for next 10 years by BOTAŞ
Nigeria (LNG)	1.2	9 November 1995	22	1999	Oct 2021	In operation
Iran	10	8 August 1996	25	2001	Jul 2026	In operation
Russian Fed. (Blue Stream)	16	15 December 1997	25	2003	End of 2025	In operation
Russian Fed. (Western Line)	8	18 February 1998	23	1998	End of 2021	In operation
Turkmenistan	16	21 May 1999	30	–	–	–
Azerbaijan (SD Phase-I)	6.6	12 March 2001	15	2007	Apr 2021	In operation
Azerbaijan (SD Phase-II)	6	25 October 2011	15	2018	2032/2033	–
Azerbaijan	0.15	2011	35	2011	2046	In operation

solutions to renew contracts.

The *Iranian* contract expires in 2026. Iran has the world's largest proven natural gas reserves, but historically the country has not been able to fully benefit from its huge potential and become a major player in the global natural gas trade. Most important reasons are U.S. and other international sanctions and an unfavorable legal and contractual investment regime within Iran. In addition, its rapidly growing domestic demand, which has surged because of, among other factors, government subsidies, is important. Turkey is currently the only Iranian export destination. The price for Iranian natural gas to Turkey is the highest that BOTAŞ pays for pipeline natural gas, around \$205/thousand cubic meter, higher than average European natural gas price (currently around \$180–190). Iran would not easily be able to develop an alternative outlet for its natural gas. Iran currently has four contracts with its neighboring countries, four concluded but not yet operational, and four under negotiation. Turkey may not have any choice other than to renew its sales and purchase contract with Iran upon expiry. Natural gas and other relations between the two countries have always been complicated and encountered many problems. Delivery shortfalls during peak seasonal demand in Iran has been one issue, but also BOTAŞ's inability to take all contracted volumes due to transmission system capacity constraints in the eastern part of the country and temporary reductions in demand during low demand seasons is important. Turkey has sought a 30% price reduction, a removal of the 'take or pay' clause, and has taken the case to arbitration twice. In both cases, Turkey won, receiving \$800 million<sup>8</sup> and \$1 billion<sup>9</sup> (recovering 13–15.8% price reductions) in compensation.

*Azerbaijan* is Turkey's only natural gas supplier that has not been subject to a serious price conflict with BOTAŞ or to other political tensions. Given the cultural, ethnic and historic ties between the two nations, they are cooperating to realize the US\$40 billion SGC project. The most important segment of the value chain, the \$9.5 billion TANAP line passing through Turkish territory, shall deliver 6 BCM/year to the Turkish domestic market beginning in 2018. Given the fact that the SD1 field started producing in late 2006 and reached its plateau level in 2010, the field's geological tail-off period should begin in 2025–2027. During the tail-off period, production levels may decrease to around 2 BCM/year or more, depending well productivity. There may not be enough natural gas to renew the SD1 contract for a longer term. The 15-year sales and purchase contract signed between the SD consortium and BOTAŞ to import 6 BCM/year of SD Phase 2 natural gas could simply replace the SD1 6.6 BCM/year, rather than being an additional volume.<sup>10</sup> Another scenario is that the remaining

volume from SD1 could be added on top of the contracted SD2 natural gas.

## 6. New gas in a transit corridor for natural gas

Turkey's strategic geographic position between 47% of world energy resources in Russia, Central Asia and the Middle East and 17% of global natural gas consumption in Europe (BP, 2015) makes the country important from both a geopolitical and geoeconomic point of view (Bilgin, 2009). The oil pipelines in the Eastern part of the country<sup>11</sup> and oil transportation through the Turkish Straits<sup>12</sup> are well established. The signing of the Nabucco agreement in 2009 was intended to make it possible to avoid that the majority of Caspian energy resources are transported to the European market through Russia (Müftüler-Baç and Başkan, 2011:375). However, during the negotiations with the potential buyers along the Nabucco route it became apparent that due to low gas prices and market condition the Nabucco pipeline was not as commercially attractive and viable as the Trans Adriatic Pipeline (TAP). On the Russian side, after the cancellation of Southstream, Turkstream is envisaged to transport 15.75 BCM/year to the Turkish domestic market and equally large 15.75 BCM/year as a later second string to European customers. In addition to existing sources, Turkey has had negotiations with Qatar about LNG imports. Turkey also has a Heads of Agreements from 1999 to import 16 BCM/year of natural gas from Turkmenistan, which has not been fulfilled until date. It has been fraught with disputes over the safety of the Caspian Sea flora and fauna, and strong opposition from Russia and Iran to build a Trans-Caspian pipeline. Taking all projects together, up to 100 BCM/year can potentially be transported across Turkey to

(footnote continued)

import natural gas from SD2, despite the existing contract with SD1, showed that the Turkish government is able to create an exception if it can contribute to security-of-supply situation for the country.

<sup>11</sup> The Iraq - Turkey Crude Oil Pipeline system consists of two parallel 986km-long pipelines build in 1973 and 1987. These are transporting Iraqi crude oil to the Ceyhan (Yumurtalık) Marine Terminal with a total annual capacity of 70.9 Million tons/year as of 1987. The BTC was constructed to transport mainly Azerbaijani, and some Turkmen and Kazakh crude oil, from Baku to Ceyhan Terminal via Georgia completed in 2006. Total length of the pipeline is 1.769km of which 1.076km is within the Turkish territories and a capacity around 50 Million tons annually (1+ mbd). Source: TMFA, 2016.

<sup>12</sup> The Turkish Straits is one of the world's busiest chokepoints. In 2014, the amount of oil and oil derivatives transported through Bosphorus was 125 million tons (TMFA, 2016). However, a maritime accident in the narrow straits would involve great humanitarian, environmental and economic risk. The straits has therefore a limited potential for increased energy transit. Alternative land based solutions between the Black Sea and the Mediterranean have been considered to bypass the straits, such as the Samsun-Ceyhan pipeline in the East of Turkey and a line between Burgas in Bulgaria and Alexandroupolis in Greece. In addition, LNG could be transported through the straits, but Turkish authorities have indicated that they would not allow LNG vessels to transit for safety reasons (EIA 2015).

<sup>8</sup> "Turkey wins gas price row against Iran in court", Hürriyet Daily News, February 2, 2016.

<sup>9</sup> "Turkey prevails in Iran arbitration", Hürriyet Daily News, February 27, 2009.

<sup>10</sup> For example, a BOTAŞ contract with the Azerbaijan Gas Supply Company (AGSC) to

Europe in the long-run (Rzayeva, 2014), once the large-scale investments in infrastructure have taken place, including new LNG facilities and the expansion of storage capacities.

For new natural gas transiting Turkish territory, binding agreements are in place to transit *Azerbaijani* natural gas from the SD2<sup>13</sup> field to Greek, Bulgarian and Italian markets. The natural gas will flow through the SCP, TAP, and the expanded Greece–Bulgaria Interconnector (IGB). The TANAP line<sup>14</sup> across Turkey between the Turkish–Georgian border and the Marmara Sea, and the TAP are new projects within the context of the SGC. The supply of natural gas to Turkey is planned for a start-up in mid-2018 and to Europe in 2020. TANAP may play a crucial role for Turkey both in covering its own demand and in becoming a transit hub.<sup>15</sup> The capacity of TANAP will be 31 BCM/year, which can be extended in three stages.<sup>16</sup> A main issue will be whether the SCP will increase its capacity, as currently all is booked for SD1 and SD2, and whether there will be acceptable pricing environment and marketing arrangements. Future potential supplies to the SGC also include some countries in the Middle East, Central Asia and Eastern Mediterranean.

Second, Turkstream and *Russian* natural gas, formerly known as Turkish Stream, was initially designed to consist of four lines with a capacity of 63 BCM/year. It was meant as an alternative to the Trans-Balkan pipeline via Ukraine. After the thaw in bilateral relations between Turkey and Russia, it is back on track, but now designed with only one or two lines to transport 15.75–31.5 BCM/year. One line would serve the Turkish market while a second line would be meant for Southeast European purchasers through a natural gas hub set up by Gazprom with delivery points at Lüleburgaz for the Turkish customer and Ipsala near the Greek border for European customers. Turkey was initially reluctant to transit large volumes of Russian natural gas to Europe even if it would gain from its transit role. Helping Russia to eliminate Ukraine as a transit country (together with Nord Stream2) could challenge political relations not only with Ukraine but also with the EU and the U.S. Turkey's long-planned goal to become a regional natural gas hub through the SGC would also be challenged. Having the delivery point on non-EU territory would however allow Gazprom to avoid compliance with EU legislation. Russia would put the responsibility for natural gas transportation from Turkey to the market on the purchasers, who would need to request transportation through the TAP or the IGI Poseydon pipeline. The initial capacity of TAP is 10 BCM/year all dedicated to SD2 natural gas and is exempted from the EU Third Party Access requirements for 25 years. Whether an expansion of TAP to 20 BCM/year to transport Russian natural gas would get an exemption by the EU is not clear.

For Turkey, transiting large volumes of Russian natural gas to Europe gives almost no capacity expansion of Turkish domestic East-West infrastructure and leaves the country more dependent on Russian natural gas for a longer time. It would reduce, or at least challenge, the chance of growing as a transit hub at the crossroads of the Middle East, the Caspian Sea and Europe (Kim and Blank, 2015). On the other hand,

<sup>13</sup> Shareholders in the Shah Deniz Field are currently: BP (UK) 28.8%, Turkish Petroleum 19%, SOCAR (Azerbaijan) 16.7%, Petronas (Malaysia) 15.5%, Lukoil (Russia) 10% and NICO (Iran) 10%.

<sup>14</sup> A consortium led by Azerbaijani state oil company SOCAR manages TANAP. Shareholders are SOCAR 58%, BOTAS 30% and BP 12%.

<sup>15</sup> Bulgargaz has already signed a gas purchase contract with the Shah Deniz consortium of 1 BCM/year from 2020. Preparations for a Greece–Bulgaria Interconnector (IGB) are made, supported by the EU under the "Connecting Europe Facility" (CEF) fund.

<sup>16</sup> Azerbaijan may have unallocated natural gas above SD1 and SD2 volumes by the 2020s and 2030s and potentially produce additional 15 BCM/year from three fields – Absheron, Umid/Babek, and Azeri-Chirag-Guneshli (Rzayeva, 2015), plus a possible extra 15 BCM/year if SD3 is implemented. The Absheron field operator plans to start production in 2019 producing 1.5 BCM for the Azeri domestic market and reach a plateau level of 5 BCM/year as a second stage of development if the consortium decides so. There are three potential markets for this natural gas: the domestic Azerbaijani, the Turkish and the European market.

there is a security-of-natural gas-supply for Turkey to go for Turkstream. As demand in Western Turkey will continue to grow on a modest pace, interruptions in flows through the Trans-Balkan line could create serious supply shortages, especially in the Istanbul area with 14 million inhabitants. Price is another issue for Turkey with a desired 10.25% discount (Hürriyet Daily News 11.9.2015). Russia does not have other southern transportation options to eliminate Ukraine in the Trans-Balkan pipeline route after the South Stream and Blue Stream II failures. The renewed Turkish–Russian relations reflects a broader geopolitical change where regional integration and bilateral relations may become more important (Öniş and Yılmaz, 2016). The economic interdependence following a possible realization of the Turkstream project may coexist with continued regional geopolitical rivalry in Syria, Ukraine and elsewhere.

Third, *Iran* could become a substantial global natural gas exporter now that sanctions have been lifted. Iran has an enormous potential, both offshore and onshore. The main priority of the Rouhani government has been to develop the remaining 14 phases of the giant South Pars offshore field in the Persian Gulf, which is expected to add approximately 172 BCM/year of natural gas to the current approximately 210 BCM/year. The timeframe of the current 12 phases and other onshore fields will strongly depend on Iran's ability to attract multibillion dollars of foreign investments in the upstream and mid-stream industry, as well as to create a favorable legal and contractual framework. Despite the low-cost environment in Iran, it may take several years before the country is able to deliver. Most produced natural gas will be consumed domestically due to rampant demand growth leaving little excess for export. Iran will have to choose whether to increase injection into aging oilfields in order to produce more oil and petrochemical products and thus restore its market share, mainly in Europe and elsewhere; or export either power generated from natural gas or more natural gas. However, the maximum capacity in the Iran Natural Gas Trunk line I (IGAT1) that exports natural gas to Turkey is 11–16 BCM/year depending on compressor stations, of which currently 11 BCM/year is used, which leaves little space for additional volumes (Rzayeva, 2016). Iran has signed a Memoranda of Understanding and sales and purchase agreements on natural gas exports with different neighboring countries. For Iranian natural gas exports in general, the country will more likely copy Qatar and become an LNG exporter, rather than investing in very costly, lengthy and bilateral pipelines to Turkey and beyond, or elsewhere in the near future.

Fourth, *Iraq's Kurdistan region* (KRG) appears to be a stronger option for new supply to Turkey. Development of the Miran and Bina Bawi fields with 350–400 BCM of natural gas reserves by Turkish-British Company Genel Energy is ongoing with an estimated cost of \$2.9 billion (Genel Energy 2015). The financing of a \$2.5 billion 250 km pipeline remains unresolved, although the tender in process for construction of the stretch on Turkish territory has already begun, and the construction can be accomplished within a relatively short timeframe. Turkish officials have repeatedly referred to the fact that if the transport solution materializes, Iraqi natural gas would be the cheapest option for imports to Turkey. However, the main obstacle lies in the security issues in Iraq. Companies need increased financing to fund security in Northern Iraq, and the influx of refugees to KRG combined with terrorist attacks in the country has led companies to hold back from investment in the upstream and mid-stream business.

Fifth, *Israel and Cyprus* may soon be new natural gas producers in the Eastern Mediterranean region. The reconciliation of Turkey with Israel and ongoing negotiations on the reunification of Cyprus create opportunities for Turkey to import natural gas from the Eastern Mediterranean region (Ulusoy, 2016). Potentially, 10–20 BCM/year of natural gas can be exported from Israel and Cyprus to Turkey through subsea pipelines once the Cyprus reunification issue is resolved. Having access to a large and growing market with appropriate prices can make development of the Israeli Leviathan field commer-

cially viable and justify the building of a subsea pipeline to Turkey through the exclusive economic zone (EEZ) of Cyprus. Israel can benefit not only economically, but can also gain politically from enhanced trade agreements with Turkey. Rapprochement between Israel and Turkey could restrain Iranian influence in the region in which both sides are interested. Such development would put Turkey at the center of the Eastern Mediterranean regional geopolitical and energy network. Russia, acknowledging Turkey as its second largest market, would prefer that Israeli natural gas not only penetrate the Turkish market, but also, through Turkey, possibly the European market. It seems that this fact plays no minor role in the repeated attempts of Gazprom to enter Israel's natural gas market and upstream projects (Ellinas et al., 2016), although Gazprom's attempts to bid for a 30% share in the Leviathan field and to sign a deal to export LNG from Tamar have yet failed to materialize.

## 7. Conclusions and policy implications

Turkey's growing natural gas demand, geographic location, and desire to become a regional energy hub for Europe is at the forefront of the country's geoeconomic strategy. The outcome is strongly interconnected with its foreign relations and the geopolitical considerations by more parties, international discourse about climate change, technological break-through, as well as on domestic regulatory, financial, political, and logistical constraints. "Geopolitics are affected by the trajectory of gas markets as much as it shapes the trajectory" (Jaffe and O'Sullivan, 2012:24). From an economic point of view, the substantial sunk costs and huge volumes required for the Turkstream project and the expansion of the SGC, respectively, implies that only one, if any, may be realized at the expense of the other. As LTCs are needed to realize investments in the immature character of the market and transit routes in question, parties in production, transmission and consumption become interdependent over a long period. Accordingly, they "place the security of their energy systems partly in the hands of others, which in turn gives both suppliers and users of gas a stake in the internal political stability of one another" (Victor, Jaffe and Hayes, 2006:5). The character and stability of the interdependency determines how governments, investors, and other key actors can enter into long-term investments and political relations.

The Turkish government has set a number of strategic objectives, including liberalizing and creating a competitive domestic market and ensuring security of natural gas supply. It also wants to minimize and gradually nullify the state budget deficit and BOTAS's losses, and shift the risks and investment responsibilities from the state to private companies. At the same time, it wants to transform Turkey into an international natural gas trading hub, playing the role of a bridge for hydrocarbon flows from the East to the West. Infrastructural problems and capacity constraints in the BOTAS system and legal limitations in its NGML challenge the situation. The current NGML restricts the process, since BOTAS according to the law cannot sign new contracts or renew expired agreements. Furthermore, private companies cannot buy natural gas from countries from which BOTAS is currently importing. Another obstacle for private companies is the subsidized natural gas price in Turkey, as they have to sell natural gas to households below the state-subsidized price. A revised NGML should create a liquid market, to make it more secure for importers and investors in infrastructure. The roles of BOTAS and the private companies must also be better clarified and transparent, and the discriminatory parts of the dual pricing system abolished. For the SGC, this could improve the possibility for more flexible business-to-business relations in addition to the existing government-to-government relations dominating to drive developments. In a better business-to-government relation within Turkey, as well as between Turkish and foreign suppliers, relations can be based on mutual economic interests, and, hence, political risk from the interdependency reduced. Such an approach could also enhance the possibility of bringing Israeli and

Cypriot gas via pipeline to the Turkish market and to the SGC.

Turkey's strategy to balance between the EU, and as a NATO member the U.S, on the one side, and Russia and countries in the Middle East, Central Asia, and Mediterranean on the other, is important for the scale and scope of its roles as natural gas consumer and transit country. The Russian intervention in Ukraine, Syrian crises and the Arab spring are only some of the high profile instances of wider geopolitical developments "which affect Turkey's ability to meet its own rising growing needs as well as its ambition to act as Europe's energy bridge" (Said Arinc, 2016:1). It may also be true, the other way, that Turkish and EU natural gas import dependency and neighboring countries export dependency may influence bilateral relations themselves. The recent internal political developments in Turkey show that the current government is enhancing and strengthening the institutions of the Presidency and centralizing power to unify the ruling team in the country, bolstering civilian control over the military forces and boosting vibrant industrial and economic development. The failed military coup in July 2016 reinforced this trend. In this highly volatile environment, Turkey has to deal with internal attacks by Kurdish groups, in addition to various external pressures. These involve attacks of DAESH from Syria, the war in Syria to the south and occasional political tensions with the EU to the west. To make the necessary cooperation with potential partners in neighboring countries include actively promoting a solution of the Cyprus problem; rapprochement with Israel; the security efforts in Iraqi KRG; and solving its natural gas price disagreements with Iran. Energy is also one of the most important subjects in Turkey-EU relations. Turkey joined the EU Energy Community as an observer in 2006 within the scope of its accession negotiations, and a Turkey-EU Energy Dialogue was launched in 2015 (TMFA, 2016). The outcome of these relations are also highly uncertain.

Will Turkey become an international gas hub between East and West? Even when the SGC's first stage comes on stream in 2018, 10 BCM represents a too small share of the market to make Turkey a hub in the relatively short term. There are market changes that can impede the possibility in the longer run. First, there is a "potential to export significant volumes of gas to the EU.. only if the EU market actually needs more gas supplies" (Tagliapietra, 2015:6). Second, the shale gas revolution in the United States and the wide expansion of LNG trade may transform the geopolitics of natural gas (Grigas, 2017) and the importance of Turkey's geographic location. A substantial expansion of LNG shipping capacity and LNG receiving regasification terminals (in the EU) make natural gas on the verge of becoming a global commodity. Non-land-locked states become less dependent on pipeline transportation and the role and strategic position of conventional natural gas suppliers (such as Russia, Azerbaijan and others) and transit countries (such as Turkey) may be weakened. Regional gas prices and contract formulas in America, Europe and Asia may converge and set by the market rather than agreed on in bilateral contracts. "The concept of Turkey as a natural gas hub might still be in the cards, but only in the medium- and long-term.. the natural gas sector tends to be dominated by grandiose infrastructure projects and ambitious themes that may not come to fruition" (Tunçalp, 2015:79).

More likely is that if domestic energy market commercial, financial, regulative and infrastructural problems are resolved, infrastructural expansion will be made and the potential role as an East-West transit country (SGC) step-by-step expanded. Contract renewals with its current pipeline natural gas suppliers, Russia, Azerbaijan and Iran expiring in the 2020s are important, but price uncertainty and concerns with the ongoing market liberalization, new natural gas suppliers, LNG and political developments make the import picture more open. In addition, the capacity of BOTAS's natural gas transmission system is limited on all its six entry points. If, for instance, any supply interruption occurs from the Northwest route from Russia, it will not be possible to substitute this natural gas from other import directions, for instance, from the east (Azerbaijan or Iran). Russian

Turkstream can mitigate this problem in the Western part of the country, as will also TANAP and more LNG regasification capacity. If Turkstream becomes the solution, both Turkey and the EU will suffer from stronger dependency on Russian natural gas. Turkstream decisions depend on fewer factors and actors to be realized than an expansion of the SGC. With enough will from Moscow, and an acceptance by Erdogan, the project may in its limited capacity, be realized first. If market developments allow, Turkey may become a hub for Russian gas through the Western part of the country, and it may in the longer run become a hub for gas from Central Asia and the Middle East while also serving its Middle and Eastern parts. The outcome depends on domestic decisions colored by the economics of natural gas transportation and political developments in its surroundings.

## Acknowledgements

Thanks to the participants of Harvard Kennedy School study group on “Europe and the Geopolitics of Energy” for fruitful discussions. We also like to thank Jon Bingen, Okan Demirkan, Okan Yardimci, Okan Eser Özdil and the anonymous referees for helpful comments. Any errors that remain are the sole responsibility of the authors.

## References

- Agnew, John A., Corbridge, Stuart, 1989. The new geopolitics: the dynamics of global disorder. In: Johnston, Taylor (Eds.), *A World in crisis? Geographical Perspectives*. Blackwell, Oxford, 266–288.
- Austvik, Ole Gunnar, 2016. The energy union and security-of-gas-supply. *Energy Policy* 96, 372–382.
- Austvik, Ole Gunnar, 2000. *Economics of Natural Gas Transportation (Research Report no. 53)*. Lillehammer University College August, Lillehammer.
- Austvik, Ole Gunnar, 1997. Gas pricing in a liberalized European market; Will the rent be taxed away? *Energy Policy* 20, 997–1012.
- Austvik, Ole Gunnar, Lembo, Carolina, 2017. EU-Russian gas trade and the shortcomings of international law. *J. World Trade* 51, 4.
- Bilgin, Mert, 2009. Geopolitics of European natural gas demand: supplies from Russia, Caspian and the Middle East. *Energy Policy* 37 (2009), 4482–4492.
- Bingen, Jon, 2014. *The Geographical Structure of History: An Introduction to Geopolitics*. BI Norwegian Business School, Oslo, Lecture.
- BOTAŞ official website, 2016. *Gas Supply Contracts*.
- BP, British Petroleum, 2015. *BP Statistical Review of World Energy*. BP, London.
- Ellinas, Charles, et al., 2016. *Hydrocarbon Developments in the Eastern Mediterranean*. Atlantic Council, Washington DC.
- EIA, Energy Information Agency, 2015. *Turkey. Country Analysis*. US Department of Energy, Washington DC.
- Fukuyama, Francis, 1992. *The End of History and the Last Man*. Free Press, New York.
- Gazprom, 2016. *Quarterly Report*. Gazprom, Moscow.
- Genel Energy plc, 2015. *Audited results for the year ended 31 December*.
- Grigas, Agnia, 2017. *The New Geopolitics of Natural Gas*. Harvard University Press, Cambridge MA.
- Haushofer, Karl, 1924. *Geopolitik des Pazifischen Ozeans*. Kurt Vowinckel Verlag, Heidelberg Berlin.
- Henderson, James, Mitrova, Tatyana, 2015. *The Political and Commercial Dynamics of Russia's Gas Export Strategy*. OIES.
- Jaffe, AmyMyers, O'Sullivan, MeghanL, 2012. *The Geopolitics of Natural Gas*. Report of Scenarios Workshop of Harvard University's Belfer Center and Rice University's Baker Institute Energy Forum, Belfer Center for Science and International Affairs, Harvard Kennedy School.
- Kim, Younkyoo, Blank, Stephen, 2015. The new great game of Caspian energy in 2013–14: Turk Stream', Russia and Turkey. *J. Balk. Near East. Stud.* 18 (1), 37–55.
- Kjellén, Rudolf, 1905. *Stormakterna. Konturer kring samtidens storpolitik*. H. Geber, Stockholm.
- Mackinder, Halford John, 1904. The geographical pivot of History. *Geogr. Soc.* 23 (4), 421–437.
- Müftüler-Baç, Meltem, Başkan, Deniz, 2011. The future of energy security for Europe: Turkey's role as an energy corridor. *Middle East. Stud.* 47 (2), 361–378.
- Öniş, Ziya, Yılmaz, Şuhnaz, 2016. Turkey and Russia in a shifting global order: cooperation, conflict and asymmetric interdependence in a turbulent region. *Third World Q.* 37 (1), 71–95.
- Rzayeva, Gülmira, 2014. *Natural Gas in the Turkish Domestic Market*. Oxford Institute for Energy Studies (OIES), Oxford, 79, (OIES PAPER: NG 82).
- Rzayeva, Gülmira, 2015. *The Outlook for Azerbaijani Gas Supplies to Europe*. Oxford Institute for Energy Studies (OIES), Oxford, 88, (OIES PAPER: NG 97).
- Rzayeva, Gülmira, 2016. *Post-sanction Iranian natural gas production and export potential: challenges and opportunities*, Cedigaz (available for subscribers).
- Rzayeva, Gülmira, 2017. *Turkey's Gas Demand Decline: Reasons and Consequences*. Oxford Institute for Energy Studies, Oxford, (OIES PAPER).
- Said Arinc, Ibrahim, 2016: *Maintaining the energy security of Turkey in the era of geopolitical turmoil*. Discussion Paper no.17. Durham University, HH Sheikh Nasser Al-Sabah Programme, Durham.
- Tagliapietra, Simone, 2015. Turkey and the regional natural gas geopolitics. The “Hub Vision” in light of the future prospects of the southern gas corridor. *Quad. Mediterr.* 22, 177–184.
- TMFA, Turkish Ministry of Foreign Affairs, 2016. *Turkey's Energy Profile and Strategy*. Ministry of Foreign Affairs, Ankara.
- Tunçalp, Emre, 2015. Turkey's natural gas strategy: balancing geopolitical goals and market realities. *Turk. Policy Q.* 14 (3), 67–79.
- Ulusoy, Kıvanç, 2016. The cyprus conflict: Turkey's strategic dilemma. *J. Balk. Near East. Stud.* 18 (4), 393–406.
- Victor, David G., Jaffe, Amy M., Hayes, Mark H., 2006. *Natural Gas and Geopolitics: From 1970 to 2040*. Cambridge University Press, New York.