CLINGENDAEL INTERNATIONAL ENERGY PROGRAMME

FROM SOUTH STREAM TO TURK STREAM

PROSPECTS FOR REROUTING OPTIONS AND FLOWS OF RUSSIAN GAS TO PARTS OF EUROPE AND TURKEY

LUCA FRANZA

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INTRODUCTION

Russia's cancellation of the South Stream project in December 2014, accompanied by the announcement that a pipeline to Turkey would instead be built, is an important turn of events that could potentially have significant consequences for future Russian gas flows to Turkey and parts of Europe.

First of all, it may mark an initial step by Russia towards a change in its gas sales strategy. In the weeks following the cancellation of South Stream, Gazprom executives announced the company's strategic refocus from selling directly to European end consumers to delivering gas on the EU's external border.¹

Second, the cancellation of South Stream calls for a reassessment of Russian rerouting options in Southern and Southeast Europe² – and of Russia's ability to bypass Ukraine. Crucially, the newly announced infrastructure will stop at the Turkish-Greek border instead of reaching the Baumgarten hub in Austria. Its regulatory and financial risk profile, as well as that of the infrastructure which would have to be built inside Europe to reach this new delivery point, is different from the risk profile of South Stream. The timing of the project is also likely to be affected by the route change.

Third, the new project, known under the provisional name of *Turk Stream*, may bring additional Russian gas to the Turkish and Southeast European gas market and render Turkey a transit country for gas shipments to Europe. The influx of additional Russian gas to Turkey's shores could negatively affect prospects for supplies from other countries, aggravating the region's dependence on Russian gas. On the other hand, the infrastructure could have a positive impact in terms of security of supply by minimising transit through Ukraine.

Due to a stalemate in negotiations between Russia and Turkey and the cancellation of Gazprom's contract with Saipem for the laying of the offshore pipes, scepticism about the feasibility of the project has mounted over the last months. In a longer term perspective, however, it still appears useful to assess the potential impact of the new pipeline.

- 1 Interview with Gazprom CEO Alexei Miller on the Rossiya-1 TV Channel, 6 December 2014.
- 2 For the purposes of this study, Southeast Europe includes the following countries: Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Greece, Hungary, Kosovo, Macedonia (FYROM), Montenegro, Romania, Serbia and Slovenia. Southern Europe includes Italy. The term 'Europe' is used in a generic way and excludes Turkey. The acronym 'EU' exclusively stands for 'European Union' and refers to the EU-28.

This paper aims to discuss a number of questions stemming from the cancellation of South Stream and the planned construction of Turk Stream. First it briefly describes the circumstances under which South Stream was conceived and subsequently cancelled. In Section 1 we discuss whether this pipeline is irreversibly off the table, how the Turk Stream project came to life, and whether Turk Stream is a better fit in the mutated context of Europe's gas market. The latter is a question that is attempted to be answered throughout the paper.

The second section provides a description of the project's characteristics and status by looking at its legal grounds, financial structure, routing and schedule. While Turk Stream has been officially presented by Gazprom as a four-line, 63 Bcm/y infrastructure,³ it may very well be that only one or two lines are ever built. Indeed, a few weeks before this report went to press, Gazprom Chief Executive Officer Alexei Miller stated that, at the present stage, his company targets a capacity of 32 Bcm/y. The CEO of Gazprom also hinted that the reduction in Turk Stream's planned capacity is linked to progress in negotiations on Nord Stream's expansion.⁴ This study approaches Turk Stream as a scalable project, considering each of its lines separately. Russia's objective to reduce or eliminate its shipments through Ukraine appears to be one of the main drivers behind Turk Stream, as it was for South Stream. Unlike South Stream, however, Turk Stream will directly serve the Turkish market, Gazprom's second largest and one that is highly exposed to Ukrainian transit risk.⁵

Since rerouting current supplies appears to be one of the main rationales behind this project, the third section of this study examines the possible impacts of the various lines⁶ of Turk Stream for rerouting options in Southern and Southeast Europe. This also serves the purpose of determining whether transit through Ukraine can realistically be eliminated by 2019, as originally indicated by Moscow.⁷ In doing so, we adopt a 'static' approach, assuming constant demand and the lack of alternative supplies by the time these lines are built. This is done pragmatically in order to isolate Turk Stream's rerouting potential. While we cannot exclude the possibility of increased demand in Southern and Southeast Europe, it is also possible that actual market fundamentals around 2020 may broadly reflect our assumption of flat

³ Turk Stream official website (http://turkstream.info/project/).

⁴ Pinchuk, D., and Coskun, O., 'Russia's Gazprom to Halve Turk Stream Pipeline Capacity – CEO', Reuters, 6 October 2015.

⁵ With annual volumes of 27 Bcm, Turkey is second only to Germany (38 Bcm) in Russian gas imports, BP Statistical Review 2015. Turkey is highly dependent on Russian gas (58% of imports), and Ukrainian transit (47% of Russian imports), lacks significant storage capacity and cannot readily replace disrupted supplies with alternative volumes due to bottlenecks in internal infrastructure and limited LNG import capacity.

⁶ The study focusses on Line 1 and 2, also in the light of Turk Stream's recently announced capacity reduction.

⁷ The plan to terminate shipments through Ukraine by 2019 was announced by the Chairman of the Gazprom Board of Directors Viktor Zubkov at the Vienna European Gas Conference on 28 January 2015.

demand growth, as is also indicated by some forecasts.⁸ At the end of this section, we will also discuss potential regulatory and financial obstacles with which the infrastructure to be built in Europe to facilitate Turk Stream supplies may be confronted.

The fourth and final section of the paper focuses on Turkey and introduces a 'dynamic' element in our analysis, represented by future Turkish gas demand. Contrary to Europe, for which demand outlooks are highly uncertain, most scenarios point to a substantial expansion of Turkey's demand for natural gas, which is expected to grow by at least 20 Bcm by 2030.⁹ In this section we will discuss prospects for additional Russian gas sales to the Turkish market through Turk Stream, taking into account potential competition from other sources. This section ends with reflections on Turkey's ambition to establish a natural gas hub.

⁸ For example: Honore, A., 'The Outlook for Natural Gas Demand in Europe', Oxford Institute for Energy Studies (OIES), June 2014 (this comprehensive overview of gas demand scenarios per European country indicates that gas demand growth in Southeast Europe will be negligible by 2030 [+0.9 Bcm]).

⁹ Rzayeva, G., 'Natural Gas in the Turkish Domestic Energy Market', Oxford Institute for Energy Studies (OIES), February 2014.

1 FROM SOUTH STREAM TO TURK STREAM: SETTING THE SCENE

STRATEGIC CONSIDERATIONS: REROUTING AND MARKET POSITION

One fundamental aspect shared by South Stream and Turk Stream is their rationale of enabling Russia to reroute at least part of its gas supplies to Europe away from the Ukrainian transit system.¹⁰ At the time when South Stream was proposed, Ukraine had already proven to be a problematic transit country. The 2006 gas pricing dispute between Russia and Ukraine had resulted in supply disruptions to Central and Southeast Europe. This entailed a serious reputational damage for Russian gas in its main export market, with high collateral costs that are difficult to measure in their entirety.¹¹ Around 2006, as much as 80% of Russia's gas supplies to Europe (120 out of 150 Bcm)¹² were shipped through Ukraine, making the issue of route diversification particularly pressing. The correlation between Ukrainian transit disturbances and the willingness to build South Stream was further confirmed by the fact that immediately after the second Ukraine gas crisis in 2009, Russia announced an increase in South Stream's planned capacity from 31 to 63 Bcm/y.¹³

At the time of South Stream's proposal, Moscow was also generally concerned about former Soviet republics engaging in increasingly independent foreign energy policies and adopting a more confrontational attitude. In a number of cases, this was perceived by Russia as a threat to gas transit. In 2004, for instance, Russia clashed with its long-standing ally and transit country Belarus on gas pricing terms and on the price to be paid for Russia's takeover of 50% of Beltransgaz.¹⁴ In other cases, Moscow was concerned about independent initiatives by former Soviet republics on the premise that these would undermine Russia's price and volume position in export markets. Azerbaijan and Kazakhstan had already diversified their energy exports away from Russia by building direct links to Turkey and China, respectively. Additionally, Turkmenistan was negotiating the terms for the construction of a new

^{10 &#}x27;Gazprom to Use Turkish Route to Substitute Europe-bound Supply of 63 Bcm via Ukraine', ITAR Tass, 14 January 2015.

^{11 &#}x27;Gazprom – A Reliable Partner for Europe's Energy Supply?', Russian Analytical Digest, 2006.

^{12 &#}x27;Transit of Natural Gas', Energy Charter Secretariat Working Paper, 2007.

¹³ ENI and Gazprom signed an agreement to expand South Stream's capacity on 15 May 2009, in a meeting attended by the presidents of Italy and of the Russian Federation. See Bush, J., 'Gas Pipelines: South Stream Gets a Boost', Bloomberg, 18 May 2009.

¹⁴ Caldiroli, G., 'Belarus-Russia Energy Disputes, Political and Economic Comparative Analysis', PECOB, 2012.

long-haul gas pipeline to China. Against this background, Moscow was growing increasingly wary of its newly independent neighbours, which could create transit disturbances or attempt to build their own market position in Europe. For these reasons, Russia scaled up its efforts to build new direct routes towards its most important export market.

Route diversification efforts by Russia had already started to bear fruit by the early 2000s with the construction of Blue Stream, which had the additional strategic objective of defending market share by limiting the space for Caspian and Iranian gas in the European and Turkish markets. Long-term strategic priorities can transcend considerations of immediate profitability, and Blue Stream is a good case in point. Blue Stream's commercial robustness can only be properly understood in the larger context, namely by considering its ability to obstruct prospective contestants. Blue Stream is usually regarded as a long-term strategic success for Gazprom, as it prevented Turkmen and additional Iranian gas volumes from reaching the Turkish market.¹⁵

Ironically, Russia's choice of building South Stream in 2007 was also a reaction to Turkey's opposition to a cheaper plan to expand Blue Stream, motivated by fears of overreliance on Russian gas.¹⁶ Turkey was instead aiming to diversify its supply by building links with Azerbaijan, Turkmenistan, Iran and Iraq. An additional complicating factor was Botaş' stated ambition of becoming a gas trader and gaining the ability to resell Russian gas in Europe. This was strongly opposed by Gazprom, which wanted to keep control over the value chain.¹⁷ In the same period, the European Union was also engaging in diversification efforts and offered special support to the Nabucco project. The timing of Russia's plan to build South Stream suggests that this infrastructure was also meant to discourage the construction of pipelines that would bring non-Russian supplies to Turkey and Europe.

The arguments presented above show that strategic considerations have played a crucial role in all of these pipeline projects. South Stream and Turk Stream – the features of which will be presented in Chapter 2 – are largely responses to this same strategic logic, namely finding alternatives to an increasingly burdensome Ukrainian transit and strengthening Russia's market position by getting a head start over competing projects. The additional strategic value of Turk Stream is that it is designed

17 Roberts, J., 'The Turkish Gate: Energy Transit and Security Issues', Turkish Policy Quarterly, Vol. 3, No. 4, 2004.

¹⁵ Smeenk, T., 'Russian Gas for Europe: Creating Access and Choice', Clingendael International Energy Programme (CIEP), 2010.

¹⁶ World Gas Intelligence (WGI), 27 June 2007.

to directly supply Turkey, one of Gazprom's largest and fastest growing markets. This is also a market with significant exposure to Ukrainian transit risk, limited storage capacity¹⁸ and high seasonal variation in its import profile, resulting in pipeline capacity congestion in winter months.¹⁹ In turn, Turk Stream may be strategically relevant for Turkey as, at least in the short term, it enhances the country's security of supply,²⁰ may offer increased leverage in price negotiations with Russia²¹ and may arguably turn Turkey into a transit hub for gas.²²

IMPACT OF LOWER PREDICTED RISE IN EUROPEAN GAS DEMAND AND STRICT EU REGULATION

Nonetheless, there are also relevant differences between the two projects. Comparing today's context with the one in which the South Stream pipeline was proposed in 2007 helps in understanding the reasons behind its cancellation and replacement with Turk Stream. Europe's gas market fundamentals and its regulatory and political environment have changed in the past eight years, undermining the feasibility of South Stream. As will be discussed later, Turk Stream may indeed fit better than South Stream in today's context. The newly announced project shows Russia's attempt to adapt to a worsened outlook for European gas demand, as well as to the inability to reach a compromise with the EU on regulation, particularly on the Third Energy Package.

While, as mentioned, one of South Stream's primary goals was to reroute some of the gas transiting through Ukraine, Russia was also aiming to use the new infrastructure to ship additional volumes to Europe. In those years, Russia was not yet aiming to reduce Ukrainian transit to zero.²³ At the time of South Stream's proposal, Europe's gas demand was expected to grow substantially²⁴ and its import needs relatively more.²⁵ Global gas markets were temporarily tight, but several new gas suppliers were lining up to supply Europe, including LNG producers in the

- 19 Turkey Country Review, Energy Information Administration (EIA).
- 20 Dombey, D., 'Putin's Vision Matches Turkey's Oil and Gas Ambition', Financial Times, 2 December 2014.
- 21 World Gas Intelligence (WGI), 11 March 2015.
- 22 Roberts, J., 'Analysis: Turkey Pivotal to Future of European Gas Supplies', Financial Times, 15 April 2015.
- 23 In any case, a 63 Bcm/y South Stream would not have allowed a complete interruption of transit through Ukraine (this was 120 Bcm before the first Ukrainian gas crisis, and more than 80 Bcm/y until 2013). Therefore, reaching an agreement to continue transit through Ukraine was seen as unavoidable.
- 24 Projections by Eurogas, cited and endorsed by Gazprom in the report 'South Stream: Ensuring Europe's Future Energy Security' estimated an increase in European gas demand from 489 Bcm in 2009 to 694 Bcm by 2030.
- 25 EU domestic gas production was already expected to decrease in the longer term.

¹⁸ According to the Turkish Ministry of Energy and Natural Resources, Turkey's underground gas storage capacity is 2.6 Bcm and its LNG storage capacity is 0.5 Bcm: Incedalcı, S., 'Doğal Gaz Depolaması', T.C. Enerji ve Tabii Kaynaklar Bakanlığı, 30 October 2014.

Atlantic Basin.²⁶ In this context, Russia wanted to be in a position to take advantage of growing demand in Europe.

After 2008-2009, however, the European gas market outlook changed drastically. From 2009 to 2014, gas demand in the EU-28 collapsed by more than 100 Bcm,²⁷ and Russian imports fell by more than 30 Bcm.²⁸ In the same period, gas demand in Turkey grew by 13 Bcm and Russian imports by almost 10 Bcm.²⁹ Today scenarios for future gas demand in Europe are highly uncertain, and the possibility of a further contraction cannot be ruled out. Russian gas may have to face additional obstacles in finding its way to the market, as Europe's appetite for it is at a low due to the complicated political situation. On the other hand, most scenarios for future Turkish gas demand are optimistic,³⁰ pointing to a potential growth of up to 36 Bcm by 2030.³¹

This evolution in gas demand along Russia's border played a role in gradually eroding the viability of a 63 Bcm/y pipeline that would reach the heart of the EU market. In the years prior to 2014, many had begun to question the usefulness of building such an expensive project to supply a shrinking market.³² Prospects for realising the project wore thinner last year as Gazprom's financial situation became increasingly precarious, owing to falling oil-indexed gas prices, the indirect effects of Western sanctions against Russia,³³ a drop in sales in 2014,³⁴ and rising costs in other projects of the portfolio.^{35,36} In 2014, the estimated costs for South Stream had hit \$40 billion, of which \$17 billion for the onshore infrastructure in Southern Russia, ³⁷

- 26 Gaul, D. and Platt, K., 'Short-term Energy Outlook Supplement: US LNG Imports, the Next Wave', Energy Information Administration (EIA), January 2007.
- 27 Natural Gas Consumption Statistics by Eurostat and Eurogas Statistical Reports.
- 28 Mitrova, T., 'Current Role and Future Evolution of the Long-term Contracts', Energy Research Insitute of the Russian Academy of Sciences (ERI RAS), 17 September 2014, updated with 2014 data from Gazprom.
- 29 BP Statistical Review 2010 (for 2009 data) and BP Statistical Review 2015 (for 2014 data).
- 30 Rzayeva, G., 'Natural Gas in the Turkish Domestic Energy Market', Oxford Institute for Energy Studies (OIES), February 2014.
- 31 'Natural Gas Sector Report 2012', Botaş.
- 32 Chazan, G., 'South Stream Project May Now Be a Pipe Dream', Financial Times, 24 August 2014.
- 33 Complicating the operations of subcontractors in Europe as well as Gazprom's access to capital.
- 34 Gazprom's total production of gas fell by 5% in 2014: Belyi, A. and Goldthau, A., 'Between a Rock and a Hard Place: International market dynamics, domestic politics and Gazprom's strategy', European University Institute, Robert Schuman Centre for Advanced Studies, Florence School of Regulation, Working Paper, April 2015.
- 35 WGI, 11 February 2015.
- 36 Gazprom's year-on-year net profits fell by 60% in Q3 2014: Marson, J., 'Gazprom Braces for Oil Price Impact', Wall Street Journal (WSJ), 29 January 2015.
- 37 Stern, J., Pirani, S., Yafimava, K., 'Does the Cancellation of South Stream Signal a Fundamental Reorientation of Russian Gas Export Policy?', Oxford Institute for Energy Studies (OIES), January 2015.

Unlike South Stream, Turk Stream will land in a rapidly expanding market and, importantly, will stop at the external border of the EU. Gazprom will be free to gradually expand capacity based on the evolution of market fundamentals in Europe and Turkey, as well as on its own financing capabilities, as we will see in the next sections.

While the worsened outlook for European gas demand contributed over the years to a gradual erosion of the rationale for South Stream, the insurmountable obstacle that prompted Russia to cancel the project once and for all appears to be of a regulatory and political nature. Since the adoption of the Third Energy Package, Gazprom and Brussels have been fighting a long battle over the application of the Third Party Access (TPA) rule, especially in relation to its implications for the South Stream and OPAL pipelines.³⁸ Between 2008 and 2010, instead of formally applying for an exemption in Brussels, Gazprom reached intergovernmental agreements (IGAs) with the South Stream transit States. In December 2013, the Commission declared all these IGAs in breach of EU law and asked its Member States to renegotiate them or stop construction on South Stream's onshore sections. In June 2014, the Commission opened two infringement procedures against Bulgaria on Third Energy Package violation and irregularities in tendering procedures, subsequent to which the Bulgarian government ordered a suspension of construction works. In December, when the first pipes were about to be laid underwater in the Black Sea, Putin announced the cancellation of South Stream and its replacement with Turk Stream. Political tensions over the Ukrainian dossier, along with a pending European antitrust probe denouncing Gazprom's activities in Eastern Europe, made it virtually impossible to reach an agreement on a TPA exemption for South Stream. Gazprom and Russia were aware of the state of affairs and had to take a last minute decision before pipes were laid on the seabed.

Turk Stream does not pose these regulatory challenges because the landing point is located outside EU territory. As discussed in Chapter 3, regulatory restrictions might still affect some of the infrastructure that would have to be built in Europe in order to reach the new delivery point in Turkey. However, Gazprom would only be confronted with this issue in the construction of additional lines, provided that these ever see the light.

³⁸ Gazprom failed to secure a full exemption from TPA rule for the OPAL pipeline (one of the two pieces of infrastructure connecting Nord Stream with the German and Central-European markets), which prevented it from utilising Nord Stream's capacity in full. Gazprom never applied for a similar exemption on South Stream and pursued intergovernmental agreements instead, but these were declared to be in breach of European Law by the European Commission.

The context in which South Stream was replaced by Turk Stream suggests that it is highly unlikely that the decision to cancel South Stream will ever be revisited. This would be imaginable only in the case of an implausible U-turn on the part of European institutions regarding the application of internal gas market regulation. Moreover, what this study has so far presented suggests that Turk Stream may fit better than South Stream in today's context of lower demand and restrictive regulation in Europe alongside growth opportunities in Turkey. This is particularly true for the first line of the project, as it will serve Turkey's domestic market. The next chapters will shed more light on the newly announced project and the outlook for its various lines, focussing on the first two lines.

2 STATUS AND OVERVIEW OF TURK STREAM

President Putin unveiled the plan to build a new pipeline connecting Russia and Turkey across the Black Sea on 1 December 2014, at the same time as announcing the cancellation of South Stream. As of September 2015, the only official document underpinning Turk Stream is the Memorandum of Understanding (MoU) signed between Russia and Turkey on that occasion. An IGA is expected in the coming months, although the two parties would not be required to sign one if a connection were to be built between Turk Stream and the existing Western (or Trans-Balkan) line, as in that case the new infrastructure would be considered an extension of a domestic one.³⁹ The ratification of an IGA has also probably been delayed by the failure of Turkey's general elections in June 2015 to produce a working government.⁴⁰

In the weeks following the announcement, Russia signalled its determination to proceed swiftly with the new plan by taking a number of initiatives. These included defining the project's schedule, landing point and deliveries in agreement with Turkey and purchasing shares from South Stream partners ENI, EDF and Wintershall. Initially, Gazprom confirmed its contracts with subcontractors Saipem and Salzgitter and asked them to resume work in order to avoid hefty penalties.⁴¹ In July 2015, however, Gazprom cancelled its contracts with Saipem and must now identify a new contractor, which is causing delays to the project.⁴² Moreover, intergovernmental discussions on prices and other terms were complicated by the uncertain political situation in Turkey until November 2015, and decisions were postponed until the formation of a new government.⁴³ This is going to compromise Gazprom's ambition to complete the first line of Turk Stream by December 2016. Gazprom's Deputy Chief Executive Officer Alexander Medvedev has recently stated that his company does not rule out a year's delay to Turk Stream to send gas to Southern and Central Europe.⁴⁴

Soon after the announcement of Turk Stream, Gazprom's CEO Alexei Miller declared the company's objective of terminating all shipments through Ukraine by 2019,

40 'Gazprom Sees 2015 Gas Export at 159-160 Bcm, Turk Stream Delay: Report', 2 November 2015, Platts.

^{39 &#}x27;Pipeline Dream', ICIS Heren European Gas Markets, 29 May 2015.

^{41 &#}x27;Pipeline Dream', ICIS Heren European Gas Markets, 29 May 2015.

⁴² Reed, S., 'Gazprom Cancels Italian Contractor's Deal for Black Sea Pipeline', 9 July 2015, The New York Times.

^{43 &#}x27;Турецкий поток придержали до осени', Kommersant, 3 August 2015.

^{44 &#}x27;Gazprom Sees 2015 Gas Export at 159-160 Bcm, Turk Stream Delay: Report', 2 November 2015, Platts.



FIGURE 1: TURK STREAM'S CHOSEN ROUTE.45

when the transport contracts with Naftogaz will expire, although more recently this stance has been softened.⁴⁶ In explaining Gazprom's new strategy of transporting gas only up to the EU's external border,⁴⁷ Miller urged European buyers to develop plans to connect their existing gas infrastructure with the new delivery point. This will be a delivery point situated on the Turkish-Greek border at Ipsala, close to the future entry point of the Trans-Adriatic Pipeline (TAP).

The landfall point in Turkey will be near the town of Kıyıköy, in Thrace,⁴⁸ while the point of delivery of gas to Turkish consumers will be near Lüleburgaz. This is conveniently located near the Istanbul Metropolitan Area, Turkey's largest gas consuming region. The chosen route is probably going to be more expensive than

- 45 The boundaries shown on this map do not imply official endorsement or acceptance.
- 46 Теткіп, А., еt al., 'Кремль передумал прекращать транзит газа через Украину после 2019 года', RBK, 26 June 2015 and Serov, М., Tretyakov, Р., 'Газпром готов обсуждать транзит газа через Украину и после 2019 года', Vedomosti, 29 June 2015.
- 47 "The principle of our strategy in relation to the European market is changing. The decision on stopping South Stream is the beginning of an end to our operation model of the market [sic] within which we oriented ourselves towards supplying [gas] to the end consumer... But you can't win love by force. If the buyer doesn't want the purchase to be delivered home, well then perhaps he needs to get dressed and go to the store, and if it happens in winter, get dressed warmer", interview with Gazprom CEO Alexei Miller on the Rossiya-1 TV Channel, 6 December 2014.
- 48 Another option that is still being discussed is to build a landing point closer to Istanbul (Ormali Koyu), ICIS Heren European Gas Markets, 29 May 2015.

the route originally proposed by Russia, which would have run parallel to Blue Stream. That route would have minimised the offshore stretch and the need for new maritime surveys. However, the chosen route was strongly preferred by Turkey, as it entails the construction of a much shorter onshore segment in Turkish territory. This will have to be financed by Botaş.⁴⁹ On the other hand, Gazprom will take full responsibility for the financing and building of the offshore section.

Even if the route chosen for Turk Stream is not the cheapest possible,⁵⁰ it largely follows the same path as South Stream would have, with the exception of a relatively short final leg for which maritime survey still needs to be conducted. In fact, a significant share of the cost of Turk Stream's first line would be costs already sunk from South Stream. According to estimates, close to \$9 billion had already been spent on South Stream – approximately half of this on onshore infrastructure in Southern Russia and the other half mainly on offshore pipeline sections and marginally on the Bulgarian and Serbian onshore sections.⁵¹ Part of the costs of Turk Stream's second line are also sunk costs, as the pipes necessary to build it had already been ordered and paid for by Gazprom.⁵²

However, the third and the fourth lines would have needed a significant allocation of funds. Gazprom declined to provide cost assessments, but VTB Bank had estimated offshore costs alone at \$10-12 billion for the original full-fledged project.⁵³ As financial constraints were quoted as an obstacle to the construction of South Stream, this would have also been the case for a four-line, 63-Bcm/y Turk Stream – and even more so given that this time Gazprom would have had to bear all the offshore construction costs. As mentioned, Gazprom and the Russian State have limited resources at the moment and would have found financing a full-sized Turk Stream quite challenging.

An additional complication is that Botaş – and Ankara's government behind it – may find it difficult to finance Turk Stream's Turkish section. The financial effort would also clearly be proportional to the number of lines built. There are multiple reasons for this, including reduced GDP growth in the country, the recent depreciation of the

⁴⁹ Stern, J., Pirani, S., Yafimava, K., 'Does the Cancellation of South Stream Signal a Fundamental Reorientation of Russian Gas Export Policy?', Oxford Institute for Energy Studies (OIES), January 2015.

⁵⁰ A line parallel to Blue Stream would have had an offshore length of 396 km, while the chosen route entails an offshore length of 910 km.

⁵¹ Stern, J., Pirani, S., Yafimava, K., 'Does the Cancellation of South Stream Signal a Fundamental Reorientation of Russian Gas Export Policy?', Oxford Institute for Energy Studies (OIES), January 2015.

⁵² Chow, E., 'Russian Gas: Stream or Dream', Center for Strategic and International Studies (CSIS), 2 February 2015.

⁵³ Lewis, B., Chestney, N. and Golubkova, K., 'Even with Turkish Stream, Russia Cannot Avoid Sending Gas Through Ukraine', Reuters, 13 February 2015.

Turkish lira, Turkey's expensive gas subsidy scheme and Botaş' prior financial commitments on TANAP (30% of the \$2.5-3 billion annual costs).⁵⁴

Sunk costs, the absence of significant regulatory hurdles and the willingness of Russia and Turkey to eliminate exposure to Ukrainian transit play in favour of the construction of Turk Stream's first line. This line would have a capacity of 15.8 Bcm and would serve the Turkish market. As mentioned, however, progress on this line has stalled in the last months owing to a number of reasons. Prospects for a second line are also favoured by sunk costs, as the pipes for Turk Stream's second line have also been purchased by Gazprom. The major factor of uncertainty in this case is whether the Turkish market would absorb additional volumes of Russian gas. Sales to countries other than Turkey would be possible, but Southeast European markets also have a limited capacity to absorb new volumes, and infrastructural interventions would then be necessary. Prospects for other lines have appeared much more uncertain since the announcement of the project, due to financial and regulatory constraints (Chapter 3) and the fact that there was no clear plan on what to achieve with them - apart from the generic suggestion that they would have served the purpose of rerouting gas away from Ukraine. The next section examines the various options that are being discussed on how to connect European infrastructure with the new delivery point at Ipsala, their possible impact on capacity and rerouting options in Southern and Southeast Europe, and the related question of whether transit through Ukraine can be halted. This will help to shed some light on the function that each of Turk Stream's lines might serve.

54 'Pipeline Dream', ICIS Heren European Gas Markets, 29 May 2015.

3 TURK STREAM'S VARIOUS LINES AND REROUTING OPTIONS

Before examining the possible impact of Turk Stream on Ukrainian gas transit, we need to establish what European countries are currently exposed to it and how much gas they receive through that route. In doing so, it is important to realise that the transit of Russian gas through Ukraine was reduced sharply between 2013 (82 Bcm) and 2014 (57 Bcm).⁵⁵



GRAPH 1: EVOLUTION OF RUSSIAN GAS TRANSIT ROUTE UTILISATION 2010-2014 (IEA)

This added some credibility to Gazprom's proposal of eliminating Ukraine as a transit country by expanding Nord Stream and building Turk Stream. In previous years, South Stream – designed to reach the same final capacity as Turk Stream's original version – was generally thought to allow a reduction, rather than a complete elimination, of Ukrainian transit.

As shown by the graph above, the lower utilisation of Ukraine's network from 2013 to 2014 was made possible by an increase in Nord Stream's throughput and by lower imports of Russian gas in the EU. While Germany and other Central European

⁵⁵ IEA's Gas Trade Flow (GTF) database.

countries connected to the German network were already able to significantly reduce or eliminate exposure to Ukrainian transit risk in 2013, countries in Southern and Southeast Europe are still very much dependent on it. The map below shows simplified 2014 cross-border gas flows in Central and Eastern Europe.



FIGURE 2: SIMPLIFIED CROSS-BORDER GAS FLOWS IN CENTRAL AND EASTERN EUROPE (2014) BASED ON IEA'S GAS TRADE FLOW (GTF) DATABASE

From Figure 2 above and Figure 3 below,⁵⁶ Ukrainian transit can be broken down into the following units:

- Slovak transit (entry point Veľké Kapušany): approximately 31 Bcm of gas mostly directed to the Baumgarten hub, where it is offtaken by Austrian, Hungarian, Italian and Slovenian customers. As also shown in Figure 3, these countries are fully or mostly dependent on Ukrainian transit for their Russian gas imports.
- 56 Figures quoted in this section are derived from the IEA's Gas Trade Flow (GTF) database and from Gazprom Export's delivery data for 2014 (flows). For capacity, transmission capacity data by ENTSOG has also been used.

Around 3 Bcm of Russian gas flowing through Veľké Kapušany appear to be delivered to Slovakia and the Czech Republic.⁵⁷

- Romanian transit (entry points Isaccea and Mediesu Aurit): approximately 17
 Bcm of gas directed to the Romanian, Bulgarian, Macedonian, Greek and Turkish markets through the Western Line. Romania, Bulgaria, Macedonia and Greece are fully dependent on Ukrainian transit for their Russian gas imports. However, Romania relies on Russian gas for only a negligible share of its consumption, given its substantial domestic production.⁵⁸ Turkey is dependent on the Ukrainian route for less than half of its Russian gas imports, the remaining volumes being supplied directly via Blue Stream.
- Hungarian transit (entry point Beregovo): approximately 6 Bcm sold on the Hungarian market (in addition to volumes offtaken at Baumgarten) but also to Serbia and Bosnia Herzegovina, which are fully dependent on Ukrainian transit for their gas imports.
- Polish transit (entry point Drozdovichi): approximately 3 Bcm sold on the Polish market, which, as far as physical deliveries are concerned, is dependent on Ukrainian transit for around one-third of its Russian gas imports, the remaining two-thirds being imported via the Yamal pipeline running through Belarus.

Vulnerability to Ukrainian transit is particularly acute in Southeast Europe (with the exception of Romania), given the lack of alternative routes to ship Russian gas and the scarcity of substitute sources of gas. In absolute terms, however, Italy (21.7 Bcm) and Turkey (12.7 Bcm) are the countries that receive by far the largest volumes of gas transiting through Ukraine.⁵⁹ In the coming pages we will see how the construction of one or more lines of Turk Stream and complementary infrastructure in Europe may impact cross-border capacity and rerouting options.

As mentioned in the introduction, we will adopt a 'static' approach, assuming constant demand and a lack of alternative supplies by the time these lines are built.

- 58 Romania has the ambition to increase its domestic gas production in future and perhaps to become a modest net gas exporter. Exploration is ongoing in both Romanian and Bulgarian areas of the Black Sea, but acreage holders confirm that production – if any – would only start after 2020.
- 59 Gazprom Export delivery data, 2014 (http://www.gazpromexport.ru/en/statistics/).

⁵⁷ It is possible to reach this conclusion by comparing IEA's Gas Trade Flow (GTF) database, Gazprom Export's delivery data for 2014, and information published by the Russian press agency Itar Tass (http://tass.ru/en/infographics/7275). Sources within Gazprom consulted by the author in July 2015 confirm that the Czech Republic and Slovakia still receive Russian gas via Ukraine. With regard to the volumetric estimate, it appears that 3 Bcm of Russian gas cross the border at Ve ké Kapušany but do not reach Baumgarten. These might then be the volumes delivered to Slovakia and the Czech Republic.



FIGURE 3: VOLUMES OF RUSSIAN GAS RECEIVED BY EUROPEAN COUNTRIES (EXCEPT FORMER SOVIET UNION) THROUGH UKRAINE (IN BCM), BASED ON IEA'S GAS TRADE FLOW (GTF) DATABASE AND GAZPROM EXPORT'S DELIVERY DATA FOR 2014.

The only exceptions are short-term incremental increases in demand in the Turkish market (Option 1), as capacity has already been reserved to satisfy this demand, and contracted volumes from the second phase of Shah Deniz that will be transported via the TAP pipeline.

This static approach was chosen pragmatically in order to isolate Turk Stream's rerouting potential. However, it is also possible that actual market fundamentals around 2020 may broadly reflect these assumptions. Indeed, some forecasts point in this direction.⁶⁰ The region of Europe that will be served by Turk Stream has very few alternatives to Russian gas. Moreover, the energy policies of Southeast European countries seem to focus on the promotion of renewables and energy efficiency rather than on natural gas.⁶¹ One factor which may contribute to limiting the region's appetite for gas is a fear of overreliance on Russian gas.

61 Ibid.

⁶⁰ For example: Honore, A., 'The Outlook for Natural Gas Demand in Europe', Oxford Institute for Energy Studies (OIES), June 2014 (this comprehensive overview of gas demand scenarios per European country indicates that gas demand growth in Southeast Europe will be negligible by 2030 [+0.9 Bcm]).

Some scenarios point to a possible growth in Southeast European gas demand. However, they differ from one another with regard to the expected scale of such growth.⁶² This variance and the merely partial coverage of the scenarios make it difficult to embrace any particular conclusion. What can be safely said is that even an incremental increase in gas demand in these markets would translate into higher utilisation rates of prospective pipelines, therefore strengthening the case for Turk Stream's second line.

The non-exhaustive list of options that follows does not aim to forecast future flows but simply illustrates how some of the infrastructure planned to connect European markets with Turk Stream's delivery point would impact capacity and rerouting options.

OPTION 1: TURK STREAM'S FIRST LINE

The first option considered is the construction of Turk Stream's first line (15.8 Bcm). As explained in Chapter 2, the project's route, volumes and commercial structure have been defined, and part of its costs have already been sunk for South Stream. No ancillary infrastructure is needed on the EU side, as deliveries are fully contracted for sales in the Turkish market. However, delays to the original target date for construction are likely, due to the cancellation of Saipem's contract and the subsequent suspension of works. The availability of pipe-laying vessels is also going to be an important factor with regard to timing.

Russia and Turkey agreed that the infrastructure will be used to reroute volumes currently supplied via the Western Line, which crosses Ukraine, and to satisfy increased demand in the Istanbul Metropolitan Area. In December 2014 the two governments also agreed to an expansion of Blue Stream's capacity and import volume from 16 to 19 Bcm, in order to fill a supply gap expected to materialise in 2016. This is due to demand growth in the Turkish market (+4.6 Bcm between 2014 and 2017) and the lack of alternative supplies, particularly because Shah Deniz Phase-2 volumes will not be available yet.⁶³ In total, therefore, the cross-border capacity between Russia and Turkey will reach 34.8 Bcm,⁶⁴ which will be fully utilised

63 'Gazprom Primed to Boost Exports to Turkey', Business Monitor Intelligence (BMI) Research, October 2014.

⁶² These include the 'South-East Europe Gas Power Consortium' Interim Report, Economic Consulting Associates, June 2015 (covering only Albania and Former Yugoslav republics) and projections by the Institute for Energy in Southeastern Europe (IENE).

⁶⁴ Existing cross-border capacity between Russia and Turkey: 16 Bcm. Future cross-border capacity according to Option 1: 16 Bcm (original Blue Stream capacity) + 3 Bcm (planned Blue Stream expansion) + 15.8 Bcm (capacity of Turk Stream's first line) = 34.8 Bcm (IEA and ENTSOG, 2014; Gazprom, 2015).



FIGURE 4: IMPACT OF ONE LINE OF TURK STREAM ON CAPACITY (TOP) AND MAXIMUM REROUTING POTENTIAL (BOTTOM). SOURCE: CIEP MAPS BASED ON IEA AND ENTSOG DATA (IN BCM).

to supply the Turkish market.⁶⁵ As shown in Figure 4, the Western Line will then only be used to supply Romania, Bulgaria, Greece and Macedonia (5 Bcm),⁶⁶ while Turkey's exposure to Ukrainian transit will be completely eliminated.

- 65 The additional volumes will mostly be rerouted volumes from the Western Line, but both the expansion of Blue Stream and part of the capacity of Turk Stream's first line will cater to increased demand in Turkey.
- 66 Volumes of Russian gas imported through the Western Line, excluding Turkey: 2.8 Bcm (Bulgaria) + 1.8 Bcm (Greece)+ 0.3 Bcm (Romania) + 0.1 Bcm (Macedonia) = 5 Bcm (IEA, 2014).

OPTION 2: TWO LINES OF TURK STREAM AND REVERSAL OF THE WESTERN LINE

Since the construction of Turk Stream's first line will significantly reduce the utilisation of the Western Line, an option that is currently under discussion is to reverse the flow of the latter. This would not be as expensive as building new lines, because it would essentially only require the construction of new compressor stations.⁶⁷ A reversed Western Line would allow the shipment of Russian volumes from Turkey to the Balkan region. Given that the capacity of Turk Stream's first line will be fully utilised to supply the Turkish market (Option 1), a second line would have to be built under the Black Sea to reroute volumes to the Balkans. Given the sunk costs on Turk Stream's second line (Chapter 2) and the relative ease with which reverse flows can be arranged, the scheme described in Option 2 could potentially be achieved by the end of this decade. However, possible regulatory hurdles exist (see end of Chapter 3).



FIGURE 5: IMPACT OF TWO LINES OF TURK STREAM AND WESTERN LINE REVERSAL ON CAPACITY (TOP) AND MAXIMUM REROUTING POTENTIAL (BOTTOM). SOURCE: CIEP MAPS BASED ON IEA AND ENTSOG DATA (IN BCM).

67 Theisen, N., 'Can Gazprom Really Cut Out Ukrainian Transit Post-South Stream?', The Atlantic Council, 9 April 2015.

29

Figure 5 shows, assuming constant demand and no alternative supplies, that the construction of two lines of Turk Stream and the reversal of the Western Line⁶⁸ would allow Romania, Bulgaria, Macedonia and Greece to stop imports through Ukraine. However, without the construction of additional infrastructure in Southeast Europe (and again, operating under the assumption of constant demand), only up to one-third of the capacity of Turk Stream's second line would be used.⁶⁹ This is due to the lack of substantial cross-border capacity in Southeast Europe and the limited dimension of the markets reached by the Western Line.

OPTION 3: TWO LINES OF TURK STREAM, REVERSAL OF THE WESTERN LINE AND INTERCONNECTORS

The construction of new interconnectors and reverse flows would allow Russian gas shipped through Turk Stream to reach a larger number of Southeast European markets. Several projects of this kind had already been planned in the region before the announcement of Turk Stream and enjoy support from the European Commission for their role in ending 'energy islands' and enhancing security of supply. As a result, many of them are listed as European Projects of Common Interest (PCIs).⁷⁰ This means that they would benefit from accelerated licensing procedures and that they would be well positioned to receive EU funds.⁷¹

In combination with the reversal of the Western Line,⁷² three projects appear to be relevant for prospective shipments of Russian gas in the Southeast European region:

- 68 The assumed reverse capacity of the Western Line in both Option 2 and Option 3 corresponds to the maximum volumes that would be absorbed by the local markets given current demand and the interconnectors assumed in the two options. It would not make commercial sense to install more compressor stations and further increase reverse capacity beyond the absorption capacity of local markets.
- 69 Under Option 2, volumes of Russian gas imported through the second line of Turk Stream would be 2.8 Bcm (to supply Bulgaria) + 1.8 Bcm (to supply Greece) + 0.3 Bcm (to supply Romania) + 0.1 Bcm (to supply Macedonia) = 5 Bcm (IEA, 2014). This would be approximately one-third of Turk Stream's second line's capacity of 15.8 Bcm.
- 70 IBS is the PCI no. 6.10, and the reverse flow between Hungary and Romania is the PCI no. 6.14. ITGI and TAP, which could also be used to bring Russian gas from Turk Stream into Greek territory, are the PCIs no. 7.1.4 and 7.1.3, respectively.
- 71 PCIs enjoy a number of advantages in terms of permitting and financing, notably: a) accelerated planning and permit granting procedures, including a binding three-and-a-half-year time limit for the granting of a permit, b) a single national authority to deal with when it comes to the obtaining of permits, c) lower administrative costs for project promoters and authorities resulting from the streamlining of their environmental assessment procedure and d) the possibility of receiving financial support under the Connecting Europe Facility (CEF). The EU has expressed interest in allocating funds for the IBS see 'EU Interested in Funding Serbia-Bulgaria Gas Link', Institute of Energy for Southeast Europe (IENE), 2014. The interconnector between Romania and Hungary has already received EU funding through the European Economic Recovery Programme.
- 72 Without the reversal of the Western Line, other interconnectors would be necessary to ship Russian gas from the Turkish-Greek border to Southeast European markets, for example the Interconnector Bulgaria-Romania (IBR, between Ruse and Giurgiu).

- The Interconnector Bulgaria-Serbia or IBS (Kalotina-Dimitrovgrad),⁷³
- The reverse flow from Romania to Hungary (Csanadpalota),⁷⁴ and
- The connection of the future hub at Ipsala (Turkish-Greek border) with the Greek gas network.⁷⁵

The abovementioned advantages in terms of licensing and financing could enable project developers to achieve their objective of building this infrastructure by 2019.⁷⁶ Figure 6 shows, assuming constant demand and no alternative supplies, that the construction of two lines of Turk Stream, together with the reversal of the Western Line and the construction of the three new projects listed above, would allow several countries to stop imports through Ukraine. Importantly, among these are the countries identified at the beginning of this chapter as the most vulnerable to Ukrainian transit: Romania, Bulgaria, Macedonia, Greece, Serbia and Bosnia and Herzegovina. Moreover, Hungary would be able to reduce imports through Ukraine by up to 30%. Under these assumptions, the maximum utilisation of Turk Stream's second line would be slightly more than 50%. It is worth highlighting that in Option 3, exposure to Ukrainian transit would largely remain unchanged for the Baumgarten offtakers⁷⁷ and other Central European countries.⁷⁸ These markets would be able to benefit from the rerouting opportunities offered by Turk Stream only if connected to the future delivery point through new, longer pipelines.

- 73 With a capacity of 1.8 Bcm/y. IBS Factsheet on the European Commission website, interactive map available at: http:// ec.europa.eu/energy/infrastructure/transparency_platform/map-viewer/
- 74 Also with a capacity of 1.8 Bcm/y. Romania-Hungary Reverse Flow Factsheet on the European Commission website, interactive map available at: http://ec.europa.eu/energy/infrastructure/transparency_platform/map-viewer/
- 75 Different options are being discussed to connect the Greek gas network with the future delivery point of Russian gas on the Turkish-Greek border. A number of planned long-haul pipelines that would transit through Greece could be used to deliver Russian gas to the Greek domestic market. This is the case of the Interconnector Turkey-Greece-Italy (ITGI) and the Trans-Adriatic Pipeline (TAP). Another option is 'Greek Stream', a tentative extension of Turk Stream in Greek territory agreed upon by Russia and Greece in a Memorandum of Understanding (MoU) signed on 19 June 2015. Alternatively, a smaller interconnector could be built, with a capacity sufficient to transport Russian gas volumes consumed in the Greek domestic market (which amounted to 1.8 Bcm in 2014, according to Gazprom data). This is the scenario discussed under Option 3 and reflected by Figure 6, as the construction of TAP is considered under Option 4 and the construction of other long-haul pipelines is considered under Option 5. In Figure 6, the expected cross-border capacity between Turkey and Greece is approximated to 2.5-3 Bcm. This is because current cross-border capacity between Turkey and Greece is 1.7 Bcm (with 0.6 Bcm already utilised for Azeri gas and 0.9 Bcm potentially available for Russian gas), thus calling for a capacity addition of about 1 Bcm to allow all Russian gas supplies to Greece to flow through this route.
- 76 On 2 June 2015, the Minister of Energy and Mining of the Republic of Serbia, Aleksandar Antic, declared that the IBS will be built by 2018 and that the first deliveries will be carried out by 2019 see 'Antić: Gasna interkonekcija Srbije i Bugarske do 2018', N1 TV, 2 June 2015. Similarly, the Romanian TSO Transgaz aims to finalise the reverse flow with Hungary by 2019 see 'PCI Projects and Future Development Plans', Transgaz, 2014.
- 77 Italy, Austria, Hungary (for part of its supplies) and Slovenia.
- 78 Namely the Czech Republic and Slovakia.



FIGURE 6: IMPACT OF TWO LINES OF TURK STREAM, WESTERN LINE REVERSAL AND CONSTRUCTION OF NEW HUNGARY-ROMANIA, BULGARIA-SERBIA AND TURKEY-GREECE CONNECTIONS ON CAPACITY (TOP) AND MAXIMUM REROUTING POTENTIAL (BOTTOM). SOURCE: CIEP MAPS BASED ON IEA AND ENTSOG DATA (IN BCM).

OPTION 4: TWO LINES OF TURK STREAM, TAP EXPANSION AND IGB

Among the new pipelines planned in Europe, the Trans-Adriatic Pipeline (TAP) deserves special attention. First of all, TAP's starting point will be located only 10 kilometres from Turk Stream's future delivery point, making it possible to connect the two infrastructures with relative ease. Second, TAP has already reached a Final Investment Decision (FID) on a capacity of 10 Bcm/y. This initial capacity has been fully secured by Azerbaijan for future sales on the Italian (8 Bcm), Greek (1 Bcm) and Bulgarian (1 Bcm) markets. An expansion would, however, enable Russia to use TAP to bring gas shipped through Turk Stream to Western Europe, and the project already has the option to reach a capacity of 20 Bcm/y by means of upgrades to

compressor stations.⁷⁹ Expanding capacity in this way would clearly not take as long as constructing a new line *ex novo*, and it is estimated that these interventions may be completed around 2020.⁸⁰ Turk Stream's second line would also be ready by that date (according to Gazprom's plans), while no other producer (Turkmenistan, Iran or Iraq) would realistically be able to feed gas into TAP by then. In the past, suggestions have been made that there might be regulatory obstacles to Russia's ability to make use of TAP, but as we will discuss at the end of Chapter 3, this seems to apply only to initial capacity.⁸¹ It is also worth noticing that TAP calls for the construction of the Interconnector Greece-Bulgaria (IGB), needed to bring contracted Azeri supplies to the Bulgarian market.



FIGURE 7: IMPACT OF TWO LINES OF TURK STREAM, THE EXPANSION OF TAP TO 20 BCM/Y AND THE CONSTRUCTION OF THE INTERCONNECTOR GREECE-BULGARIA ON CAPACITY (TOP) AND MAXIMUM REROUTING POTENTIAL (BOTTOM). NUMBERS IN YELLOW SHOW CAPACITY/ REROUTING POTENTIAL BOOKED FOR AZERI FLOWS. SOURCE: CIEP MAPS BASED ON IEA AND ENTSOG DATA (IN BCM).

- 79 Rzayeva, G., 'The Outlook for Azerbaijani Gas Supplies to Europe: Challenges and Perspectives', Oxford Institute for Energy Studies (OIES), June 2015.
- 80 Ibid.
- 81 'Repercussions of Turkish Stream for the Southern Gas Corridor: Russia's New Gas Strategy', Natural Gas Europe, 16 April 2015.

Figure 7 shows, assuming constant demand and no alternative supplies other than the 10 Bcm/y already contracted from Shah Deniz Phase-2, that Russia could use TAP's expansion to supply Greece and reroute up to 8.3 Bcm of its shipments to Italy. In this case, Italy's exposure to imports through Ukraine would be reduced by 40%.⁸²

Alternatively, Russia could reroute up to 2.9 Bcm of shipments to Bulgaria and Macedonia using the IGB, and up to 5.4 Bcm of shipments to Italy using TAP.

In both cases, up to two-thirds of the capacity of Turk Stream's second line could be utilised. Given the spare transportation capacity remaining in this line (one-third, i.e., more than 5 Bcm), there would still be a rationale for reversing the Western Line as envisaged in Option 2 and potentially associating this operation with the construction of new cross-border capacity between Bulgaria and Serbia and between Romania and Hungary, as envisaged in Option 3.

OPTION 5: NEW PIPELINES IN CENTRAL AND SOUTHEAST EUROPE

Turk Stream was originally presented as a four-line, 63 Bcm/y pipeline project. While still being officially presented as such on the project's website⁸³, Gazprom CEO Alexei Miller declared that Turk Stream's designed capacity had been revised downwards to 32 Bcm/y a few weeks before this report went to press.⁸⁴ Apart from the interconnectors and expansions discussed above, the announcement of a four-line, 63 Bcm/y Turk Stream in December 2014 incited numerous schemes to develop new pipelines and revived a number of shelved projects in Central and Southeast Europe. These pipelines appeared necessary to transport up to 47 Bcm/y⁸⁵ of Russian gas from the Turkish-Greek border to final markets in Europe.⁸⁶ However, the announcement of Nord Stream's expansion – in which, unlike Turk Stream, some European companies have also agreed to participate – clouded the outlook for a full-fledged Turk Stream and connecting pipelines. Although subject to uncertainty, however, the construction of some of the pipelines listed below cannot completely be ruled out for a number of reasons.⁸⁷

- 82 Decreasing from 21.7 Bcm to 13.4 Bcm.
- 83 http://turkstream.info/, retrieved on 3 November 2015.
- 84 Pinchuk, D., and Coskun, O., 'Russia's Gazprom to Halve Turk Stream Pipeline Capacity CEO', Reuters, 6 October 2015.
- 85 Gazprom's original declarations on Turk Stream stated that 47 out of 63 Bcm transported via Turk Stream would eventually be delivered to European customers at Ipsala, on the Turkish-Greek border.
- 86 'Europe Will Have to Care about Delivering Russian Gas from Turkish Border', Interfax, 6 December 2014.
- 87 We may in fact at least imagine scenarios in which 1.) pipelines described in this section are also in a position to ship some non-Russian volumes (e.g. from Azerbaijan or the Middle East), which could call for their construction also in case two lines of Turk Stream are built; 2.) Nord Stream-2 unexpectedly suffers a setback and the case for a 63 Bcm/y, fourline Turk Stream is revived; or 3.) the interconnectors, flow reversals and capacity expansions described in Options 1-4 unexpectedly suffer a setback, calling for the construction of some of the pipelines described in this section also in case two lines of Turk Stream are built.



FIGURE 8: LONG-HAUL PIPELINES PROPOSED IN SOUTHEAST EUROPE (SOURCE: OSW)

The proposed pipeline projects that have been considered (also) for transporting Russian gas from the Turkish border are:

- The revived Nabucco West, with a projected capacity of 23 Bcm, potentially expandable to 30 Bcm. The advantage of Nabucco West over other projects is that its costs are well established and permits for its construction have already been granted. Nabucco West has recently received support from both the Bulgarian and the Azeri governments⁸⁸ and, if built, it may end up transporting both Russian and Azeri gas volumes.⁸⁹
- The Ionian Adriatic Pipeline (IAP), possibly with an initial capacity of 5 Bcm,⁹⁰ which would be linked to the Albanian section of TAP and run parallel to the Adriatic coast towards Montenegro, Bosnia and Herzegovina and Croatia, where

⁸⁸ Roberts, J., 'The Southern Gas Corridor and the Challenge of Turkish Stream', Euxeinos, University of St. Gallen, 2015.

⁸⁹ Poptchev, P., 'A Vision of a Gas Union in Central and South-East Europe', Energy Post, 30 March 2015.

^{90 &#}x27;South-East Europe Gas Power Consortium', Interim Report, June 2015.

it could be connected to both the prospective LNG terminal at Krk and to the Hungarian system. Spurs could reach Kosovo and Serbia.⁹¹

- The 'Eastring' pipeline, which would connect Slovakia, Hungary, Romania and Bulgaria. Four alternative routes have been proposed, all departing from the Veľké Kapušany compressor station in Slovakia. This pipeline would have a final bidirectional capacity of 40 Bcm/y, and project developers also aim to feed it with non-Russian gas.⁹²
- The 'Tesla' pipeline seems to be the option preferred by Russia. It would reach Hungary after crossing Greece, Macedonia and Serbia. The governments of all of the transit countries met in Budapest in April 2015, expressing support for the project.⁹³
- The so-called 'Vertical Corridor' between Greece, Bulgaria and Romania, which builds on and strengthens a combination of previous projects, such as the IGB (Interconnector Greece-Bulgaria) and the interconnector between Bulgaria and Romania. This corridor was conceived immediately after the cancellation of South Stream and is primarily meant to give Bulgaria and possibly Romania access to the Greek LNG terminal of Revithoussa in order to improve their security of supply. However, it cannot be ruled out that some Russian gas will flow through it.⁹⁴

Besides competition from Nord Stream-2, these pipelines are also confronted with significant regulatory and financial challenges, as will be discussed in the next section. Given the tentative nature of these projects, their longer time frame and the vast number of possible combinations between them, we have not attempted to analyse their impact on capacity or maximum rerouting potential as we did for Options 1-4.

REGULATORY AND FINANCIAL ISSUES

Russia's scheme of diverting supplies to Europe from Ukraine to Turkey is complicated by a number of regulatory issues; some are project-specific, while others are of a more general nature.

The regulatory issue that might stand in the way of Options 2 and 3 (above) is the compatibility of the Western Line's reversal with the Third Energy Package. One aspect that has received attention is that Gazprom's supply and capacity contracts

^{91 &#}x27;Ministerial Declaration on the Ionian-Adriatic Gas Pipeline Project', 25 September 2007.

^{92 &#}x27;Eastern Europe Homes in on East Ring', WGI, 3 June 2015.

⁹³ Poptchev, P., 'A Vision of a Gas Union in Central and South-East Europe', Energy Post, 30 March 2015.

⁹⁴ Kantchev, G., 'Bulgaria Says Signs Natural Gas Link Deal with Romania, Greece', The Wall Street Journal, 22 April 2015.

with Bulgaria and Romania, which expire between 2022 and 2030, oblige the supplier to deliver gas to a specific delivery point. However, this obligation should not pose any significant legal challenge to the project, as the reversal would not entail a change of delivery point. Moreover, the planned reversal would not alter capacity reservations. The most uncertain issue is whether the reversal would require adaptations to the contracts that amount to contractual revisions. If so, European regulation would require the revisions to be in line with the new CAM network code. In its current version, the code does not distinguish between rules to be applied to new and incremental capacity and seems to treat reverse-flow capacity as incremental, meaning that the contracts would have to abide by Third Energy Package rules.⁹⁵

Second, there have recently been discussions on whether Russia would be able, from a regulatory point of view, to make use of TAP's expanded capacity (thus calling into question the feasibility of Option 4). These discussions were reignited in May 2015 by the extension of the terms of the TPA rule exemption that had already been secured by Azerbaijan. This was cited by some observers as grounds to conclude that Russia had been deprived of the possibility of using TAP.⁹⁶ In actuality, that was a mere confirmation of the exemption for the utilisation of TAP's initial capacity and does not apply to expanded capacity. EC officials have confirmed that EU regulation does allow Russia to use TAP's additional capacity.⁹⁷ The TAP consortium appears to be mandated to conduct a survey every two years to determine whether there is a new shipper interested in booking capacity. If a party expresses interest for an amount of capacity that is higher than a minimum required threshold, the expansion must be executed.⁹⁸ In their role as pipeline operators, the TAP consortium members would have an interest in having additional gas flow through the pipeline, as this would allow them to recover their costs sooner.⁹⁹ However, it should be kept in mind that some of the partners also have upstream interests which may cause them to oppose the transit of Russian volumes through TAP. This seems to be the case especially (but not only) for Socar, which would be damaged by competition from Russian gas.¹⁰⁰

- 95 Stern, J., Pirani, S., Yafimava, K., 'Does the Cancellation of South Stream Signal a Fundamental Reorientation of Russian Gas Export Policy?', Oxford Institute for Energy Studies (OIES), January 2015.
- 96 'TAP Pipeline Secures Exemption from Third Energy Package', Euractiv, 30 April 2015.
- 97 'Russia Can Use Trans-Adriatic Pipeline, Commission Confirms', Euractiv, 6 March 2015.
- 98 Cfr. Rzayeva, G., 'The Outlook for Azerbaijani Gas Supplies to Europe: Challenges and Perspectives', Oxford Institute for Energy Studies (OIES), June 2015; and Kristallinskaya, S., 'South Stream: Pipeline to Nowhere', Oil and Gas Eurasia, 10 March 2015.
- 99 Bagirov, E., 'Turkish Stream Offers Russia Increased Export Control', Azerbaijan Diplomatic Academy, 6 January 2015.
- 100 Also because this could have negative repercussions on the economics of TANAP. In fact, TANAP could improve its IRR (Internal Rate of Return) if it received Iranian, Iraqi or Turkmen volumes to be then sold in Europe via TAP (a scheme that would be disrupted if Gazprom were to book TAP's capacity): Roberts, J., 'The Southern Gas Corridor and the Challenge of Turkish Stream', Euxeinos, University of St. Gallen, 2015.

More generally, regulatory and financial obstacles stand in the way of new pipelines to be built within Europe discussed under option 5.

First of all, it remains to be seen who would allocate the substantial investments necessary to build these pipelines, most of which are not (yet) included in the list of Projects of Common Interest (PCIs).¹⁰¹ One option would be that national TSOs invest in the infrastructure,¹⁰² in which case costs would probably need to be socialised.¹⁰³ It is questionable, however, whether not only the TSOs of small Southeast European countries, but also their governments, would have sufficient resources to invest. Apart from financial constraints, there also appear to be limitations in terms of experience with this type of investment, as well as insufficient coordination and common interest among regional TSOs.

If the 'merchant model' is chosen, in which funds are allocated by a private investor other than the national TSO,¹⁰⁴ project developers would probably want to apply for a TPA exemption and regulated tariffs.¹⁰⁵ This leads to the other crucial issue, which is whether the European Commission would grant TPA rule exemptions to the proposed pipelines. As has been visible in the past, European legislation confers substantial manoeuvring room to the Commission in approving exemptions. One of the criteria that the Commission needs to examine in reviewing applications is whether the new infrastructure "enhances competition and security of supply"¹⁰⁶ and whether it is not "detrimental to competition and the effective functioning of the internal market in natural gas".¹⁰⁷ In light of the recent Statements of Objections presented by the Commission against Gazprom,¹⁰⁸ Brussels may very well refuse TPA exemption to infrastructure connected to Turk Stream in EU territory on the grounds that it does not help – and may even endanger – competition and security of supply.

A complicating factor appears to be that amendments to EU regulation 984/2013, which establishes a Network Code on Capacity Allocation Mechanisms (CAM) for new cross-border capacity, are still under discussion. This creates uncertainty, as the

- 106 Art. 36 (a), Directive 2009/73/EC.
- 107 Art. 36 (e), Directive 2009/73/EC.

¹⁰¹ These pipelines could be declared PCIs in future if Cost-Benefit Analyses (CBAs) produce positive results. However, the inclusion in the list of PCIs would not automatically entail the availability of EU funding for this infrastructure.

¹⁰² Art. 13.2, Directive 2009/73/EC.

^{103 &#}x27;The Rise and Fall of South Stream and Implications for a European Energy Union', presentation by Chi Kong Chyong of EPRG, Cambridge Judge Business School, 12 February 2015.

¹⁰⁴ Art. 36 (c), Directive 2009/73/EC.

^{105 &#}x27;The Rise and Fall of South Stream and Implications for a European Energy Union', presentation by Chi Kong Chyong of EPRG, Cambridge Judge Business School, 12 February 2015.

^{108 &#}x27;Antitrust: Commission Sends Statement of Objections to Gazprom for Alleged Abuse of Dominance on Central and Eastern European Gas Supply Markets', European Commission, 22 April 2015.

amendments may impact the financeability of new cross-border infrastructure. Gazprom has often complained that long-term capacity access mechanisms are needed to avoid a mismatch between transportation and supply contracts and to recapture the initial investment,¹⁰⁹ particularly in immature gas markets like Southeast Europe.¹¹⁰ One prominent adviser to Gazprom also recently warned that the auctioning procedure, as outlined in the current draft amendments to regulation 984/2013, would make it impossible to finance the new cross-border infrastructure needed to prolong Turk Stream within the EU.¹¹¹

Last but not least, it appears difficult for Russia to 'impose' a change in gas delivery point to its European customers.¹¹² Gazprom's transport contracts with Ukraine's Naftogaz expire in 2019, and the Russian company declared its intention of not renewing them.¹¹³ However, many of Gazprom's supply contracts with European importers that receive gas through Ukraine expire only in the 2020s or even in the 2030s (Graph 2).



GRAPH 2: GAZPROM'S PORTFOLIO OF LONG-TERM CONTRACTS FOR SUPPLIES TO EUROPE UP TO 2035. SOURCES: ENERDATA, ERI RAS.

- 109 Feigin V. and Konoplyanik, A., 'Comments on Capacity Allocation on European Gas Transmission Networks Pilot Framework Guideline', 2009.
- 110 Konoplyanik, A., 'What Next After Cancellation of South Stream & Decision on Turkish Stream. Gazprom's Plans and Possible EU Reaction', 15th WS2 GAC meeting/22nd round of Informal Consultations, Vienna, E-Control, 11 May 2015.
- 111 Konoplyanik, A., 'Energy Security and Gas Supply in South-east Europe: What after South Stream?', IENE Regional Conference 'Energy Security and Gas Supply in South-east Europe', Vienna, 12 March 2015.
- 112 Lewis, B., Chestney, N. and Golubkova, K., 'Even with Turkish Stream, Russia Cannot Avoid Sending Gas Through Ukraine', Reuters, 13 February 2015.
- 113 The plan to terminate shipments through Ukraine by 2019 was announced by the Chairman of the Gazprom Board of Directors, Viktor Zubkov, at the European Gas Conference in Vienna, 28 January 2015.

These contracts state specific delivery points (mostly the Slovak-Austrian border), and it would be complicated for Gazprom to unilaterally change them.¹¹⁴ In Europe, there is political support to maintain transit through Ukraine,¹¹⁵ and the prevalent position is that if Gazprom is unable to deliver gas at the points specified in long-term contracts, it will have to pay hefty fines.¹¹⁶ However, Russia rejects the idea of penalties, claiming that by *de facto* blocking South Stream, the European Commission has essentially prevented Gazprom from honouring its commitments with regard to deliveries (as South Stream would have allowed Russia to deliver gas at the agreed delivery point of Baumgarten). This suggests that Gazprom may attempt to use this line of argument as a ground to claim *force majeure*.¹¹⁷ Another argument supported by Gazprom is that since EU regulation effectively strips Russia of its ownership of gas volumes after these volumes have entered the EU, it should be up to European buyers to find ways to reroute the contracted volumes.¹¹⁸

CONCLUDING REMARKS ON REROUTING OPTIONS

What has been said in Chapter 3 points to the conclusion that the various lines of Turk Stream have different chances of success. The project of building one 15.8-Bcm line to reroute volumes currently shipped to Turkey via the Western Line and to satisfy some marginal Turkish incremental demand within a few years appears quite feasible. However, regulatory and financial risks increase proportionally to the number of proposed lines.

In combination with relatively small investments in interconnectors, reverse flows or expansions, a second line of Turk Stream could allow the partial rerouting of Ukrainebound Russian supplies to some Southeast European countries and/or Italy.

Turkish-Russian bilateral agreements reached in December 2014 and detailed in February 2015¹¹⁹ established that 47 of the 63 Bcm shipped through a full-fledged

- 117 This point of view is also reported in a paper by Natalia Ulchenko: "It should be remembered that the EU was largely implicated in using protraction techniques to hinder the implementation of the project, which has eventually led to a change in the point of delivery." In Ulchenko, N., 'From South Stream to Turkish Stream: Underlying Reasons and Consequences of Transformation', Russian Analytical Digest, No. 163, 24 February 2015.
- 118 This is the point of view expressed by Andrey Konoplyanik, Adviser to the Director General of Gazprom Export, at the European Gas Conference in Vienna, 28 January 2015.
- 119 'Russia and Turkey Agree on Turkish Stream Onshore Route', Russia Today, 9 February 2015.

¹¹⁴ Changing the delivery point normally requires the agreement of the buyer. When Gazprom changed delivery points in the past (e.g. when Nord Stream was built), it had to make concessions to the buyers: 'With Turkish Stream, Gazprom Faces Major Obstacles', Stratfor, 9 July 2015.

¹¹⁵ Declarations by the European Commission Vice-President for Energy Union, Maros Sefcovic, at the GLOBSEC Bratislava Global Security Forum on 21 June 2015.

¹¹⁶ Koch, F., 'Turkish Stream and Its Implications for the EU', Egmont Institute – Royal Institute for International Relations, 8 April 2015.

Turk Stream were destined for European customers. Given that the volume of Russian gas shipped through Ukraine in 2014, excluding the gas offtaken by Turkey, was 44 Bcm, Turk Stream's third and fourth lines would have technically allowed for a complete rerouting of Russian shipments away from the Ukrainian gas transit system. This plan, however, appeared to face a number of obstacles, mainly because it would have required a change in delivery points and because it would have depended on the availability of large sums to be invested in new infrastructure, in a context of European political opposition and restrictive regulation. These constraints, together with speedy progress in negotiations on Nord Stream's expansion, probably contributed to Gazprom's recent decision to revise Turk Stream's capacity downwards to 32 Bcm/y.

In order to isolate the rerouting potential of Turk Stream, our discussions in Chapter 3 operate under the assumption of a lack of alternative supplies to Russian gas and flat demand in the European markets affected by Turk Stream. Increased gas demand in these markets would strengthen the case for Turk Stream's second line and would increase the utilisation of the pipelines.

Given the complications that exist in bringing Russian gas to Europe via Turkey and the uncertain outlook for gas demand in Europe, the next chapter considers the alternative possibility that Turk Stream would instead be used to satisfy longer-term demand increases in the Turkish market. In order to do this, we will consider prospects for gas demand and alternative supplies in Turkey.

4 TURK STREAM IN THE CONTEXT OF TURKEY'S GROWING IMPORT NEEDS AND HUB AMBITIONS

Turkey's natural gas market is young and rapidly expanding, in sharp contrast with the European gas market. Gas demand in the country, which was as low as 10 Bcm in the year 2000, is now approaching 50 Bcm.¹²⁰ In Turkey, gas is competitive with both petroleum products (in all non-transportation energy uses) and locally mined coal, which is considered of poor quality given its low calorific value.¹²¹ Moreover, the environmental qualities of gas seem to have been acknowledged in the last decade by Turkish policy-makers and were a driver behind the promotion of the coal-to-gas switch in the Istanbul Metropolitan Area.¹²²

Most scenarios concur that Turkey's gas demand is set to grow further in the coming years, although they point to different growth patterns. The IEA expects an increase in gas demand to 60 Bcm already by 2018.^{123,124} In the longer term, Botaş sees gas demand rising by 36 Bcm over the next 15 years.¹²⁵ Botaş forecasts that gas demand in the residential sector will reach 22.7 Bcm by 2030 (up from 9 Bcm in 2012), mainly due to an expansion in gas demand in large metropolitan areas. Gas demand growth in the industrial sector is projected to be more modest, with consumption at 14.1 Bcm in 2030 (up from 10 Bcm in 2012). Together with further industrialisation sustained by the highest GDP growth in the OECD area, the main driver behind gas demand growth in this sector is the lack of viable alternative fuels. However, the highest absolute growth would take place in the power sector, where Botaş sees gas demand reaching 45 Bcm by 2030 (up from 21.5 Bcm in 2012). This is primarily due to estimated electricity demand growth rates of 6-7% per year.^{126, 127}

- 120 BP Statistical Reviews and IEA data.
- 121 "Moisture, sulfur and ash decrease the quality of coal, which causes problems during combustion": Asmatulu, R., Ipekoglu, B. and Dasdemir, Y., 'The Effects of Coal-Based Power Station on the Environment in Turkey', in Sequeira, C.A.C. and Moffat, J.B., 'Chemistry, Energy and the Environment', Royal Society of Chemistry, 1998.
- 122 "The policy to generalise the consumption of natural gas had been adopted [...] to prevent air pollution in the urban centres based on the polluting effects of coal consumption": Özdil, E., 'Can Turkey be a Central Country for Natural Gas Trade?', European Centre for Energy and Resource Security (EUCERS), King's College London, Issue 43, April 2015.
- 123 'Natural Gas Market Mid-Term Report', IEA, 2014.
- 124 The Institute of Energy of South-east Europe (IENE) expects that this level will be reached in 2020.
- 125 'Natural Gas Sector Report', Botaş, 2012.
- 126 'Natural Gas Sector Report', Botaş, 2012.
- 127 These three sectors (residential, industrial and power generation) absorb 90% of Turkey's gas demand.

However, two elements appear to limit the Turkish government's support for natural gas and will probably play a role in its future energy policies: high gas import prices and a substantial dependency on Russian gas.

Domestic political discussions reveal Turkey's mounting unease about high gas prices, due to their negative effect on the country's trade balance¹²⁸ and the government's budget, especially in a context of slowing economic growth and currency devaluation.¹²⁹ In 2011, gas import prices in Turkey reached a record high of 13.7\$/ MMBtu, placing them firmly above the Western European average.¹³⁰ In the same year, the country's account deficit soared to 10% of the GDP.¹³¹ Moreover, the Turkish government is directly exposed to high import prices, as it must reimburse Botaş for value foregone from sales to certain categories of domestic users that benefit from subsidies (estimated at \$3.5 billion in 2014).¹³²

High gas import prices are certainly one of the reasons why the government pledged to reduce the share of natural gas in the power sector from 44% to 30% by 2030.¹³³

As we mentioned, this pledge also appears to be motivated by political concerns about the over-reliance of the Turkish energy system on Russian gas.¹³⁴ In spite of its gas import diversification efforts in the last decade,¹³⁵ Turkey is still highly dependent on Russian gas, which constitutes 58% of gas imports. The situation appears particularly problematic in the power sector, as 40% of the power generated in Turkey is produced by burning imported gas.¹³⁶ Perceived security of supply risks – particularly high during winter demand peaks – are aggravated by exposure to

- 128 The contribution of the energy bill to Turkey's trade deficit is well documented. In 2014, Turkey's foreign trade deficit was \$84.5 bn and its energy bill was \$55 bn: data released by the Turkish Statistics Institute (TÜİK) on 30 January 2015: 'Turkey's Foreign Trade Deficit Drops by 15.4 pct Upon Fall in Oil Imports, Rise in Exports to EU', Reuters, 30 January 2015.
- 129 Jackson, A., 'Untangling Turkey's Gas Pricing Knot', Natural Gas Europe, 11 April 2012.
- 130 Rzayeva, G., 'Natural Gas in the Turkish Domestic Energy Market', Oxford Institute for Energy Studies (OIES), February 2014.
- 131 Candemir, Y. and Peker, E., ' Turkey's Current Account Deficit Exceeds Forecast', The Wall Street Journal, 13 January 2015.
- 132 Keuchel, M., 'Natural Gas in Turkey: Today and Tomorrow', EnerjiSA, 30 May 2014.
- 133 Rzayeva, G., 'Natural Gas in the Turkish Domestic Energy Market', Oxford Institute for Energy Studies (OIES), February 2014 and MENR Strategic Plans 2010-2014 and 2015-2019 (see also footnote below for further information).
- 134 The Turkish Ministry of Energy and Natural Resources (MENR) Strategic Plan 2015-2019 acknowledges that "a considerable import dependency exists in oil and natural gas". It also states that "due to the fact that natural gas is an import resource causing high foreign trade deficit as well as procurement risk, it is aimed that the share of the natural gas in electricity generation should be reduced to 38% by the end of the plan period [2019]". Additionally, it calls for a reduction of the country's dependence on one single gas supplier to 50% (Russia currently supplies 58% of the gas consumed in Turkey).
- 135 Turkey has strongly supported projects that would give it access to natural gas from the Caspian and the Middle East as well as LNG.
- 136 O' Byrne, D., 'Turkish Energy: Not Enough Storage', Financial Times, 15 March 2013.

Ukrainian transit, the lack of significant storage capacity, bottlenecks in internal infrastructure and limited LNG import capacity.¹³⁷ The government's pledge to limit the use of gas and the (ensuing) 2010 Strategic Plan of the Ministry of Energy and Natural Resources (MENR) show the determination to increase consumption of domestic energy sources and diversify energy imports. This document explicitly calls for an increased use of nuclear, wind, solar, hydro, and even coal, clearly excluding gas from the picture.¹³⁸ In particular, the construction of three nuclear plants (Akkuyu, Black Sea and Sinop) expected to come on stream in the 2020s is likely to compete with natural gas consumption in the country.

Nonetheless, it is estimated that even if the government succeeds in its plan of limiting the share of natural gas in the power sector to 30%, natural gas demand in the country will still grow. A thorough analysis by the Oxford Institute for Energy Studies (OIES), taking into account the government's 30% target and the projected increase in power demand (see above), indicates that the Turkish power sector would still need 30 Bcm of gas in 2030. This translates into a projected increase in total gas demand of 20-22 Bcm by 2030 (i.e., 14-16 Bcm less than the estimates by Botaş quoted above).¹³⁹

Since Turkish buyers contracted only 6 Bcm of additional deliveries from Azerbaijan's Shah Deniz Phase-2, a gap between gas supply and demand is expected to develop in the 2020s (see below).¹⁴⁰ The challenge for the Turkish government will be to reconcile the need of filling this gap with the two priorities discussed above: containing import prices and reducing dependence on Russia. It remains to be seen how Turkey's position on Turk Stream will play out in this context, and whether some of Turkey's demand increase (besides the short-term demand increase discussed under Option 1 in Chapter 3) can be satisfied by Russian volumes transported via Turk Stream.

Turkey's discontent about import prices led to intense bilateral discussions with its gas suppliers, notably Russia and Iran, whose gas appears to be the most expensive.¹⁴¹ Over the last years, Turkey won an arbitration case against Iran and managed to

140 Ibid.

^{137 &#}x27;Oil and Gas Security: Emergency Response of IEA Countries – Turkey report', IEA, 2013.

¹³⁸ The Republic of Turkey Ministry of Energy and Natural Resources Strategic Plan (2010-2014).

¹³⁹ Rzayeva, G., 'Natural Gas in the Turkish Domestic Energy Market', Oxford Institute for Energy Studies (OIES), February 2014.

¹⁴¹ Estimated price of gas supplies to Turkey in 2014: Iranian gas – 468-510 \$/mmcm, Russian gas sales to Botaş (average) – 400-425 \$/mmcm, Azerbaijani gas – 320-340 \$/mmcm. Estimate by Botaş, quoted in Özdil, E., 'Can Turkey be a Central Country for Natural Gas Trade?', European Centre for Energy and Resource Security (EUCERS), King's College London, Issue 43, April 2015.

obtain some price discounts from Russia. Turkey and Russia also reached a preliminary agreement on a 10.25 per cent price discount in the spring of 2015, in the context of negotiations on Turk Stream.¹⁴² This was not the first time that Russia has promised price discounts in exchange for consensus on pipeline projects, both within and outside Turkey.¹⁴³,¹⁴⁴ However, no binding document was signed and in October 2015 Turkey took Gazprom to arbitration over gas prices, in a context of deteriorating political relationships between Ankara and Moscow.¹⁴⁵ An additional complicating factor in bilateral negotiations appears to be disagreement on the ownership of gas.¹⁴⁶ It should however be noted that the existence of pending arbitration proceedings does not automatically compromise the possibility for Russia and Turkey to reach an agreement on Turk Stream. Out-of-court settlements of this kind of disputes are actually possible.

Given the impact of Turkey's energy bill on its national economy and government budget, promises of gas discounts are and will be particularly appealing to Ankara, and the Turk Stream project may be seen as an opportunity to gain leverage in price negotiations with Russia. In this sense, support for Turk Stream would be in line with the government's objective of seeking lower import prices. Yet it is doubtful whether Turk Stream would enable Turkey to reconcile its need to secure additional imports with its pledge to limit dependence on Russia.

As explained in Chapter 3, Turk Stream's first line primarily entails a rerouting of volumes currently shipped via Ukraine. As a result, this line does not seem to aggravate the country's dependence on Russian gas and will generally improve Turkey's security of supply by eliminating Ukrainian transit risk. However, it does not allow Turkey to fill its supply-demand gap in the longer term.

In Chapter 3 we have also seen that Russia's original plan was to use the other three lines, with an aggregate capacity of 47.2 Bcm, to serve European customers. However, we have also discussed that building the pipelines necessary to bring such a large volume from the Turkish-Greek border into the heart of the EU (Option 5) would meet significant regulatory and financial obstacles. Moreover, Russia recently

^{142 &#}x27;Pipeline Dream', ICIS Heren European Gas Markets, 29 May 2015.

^{143 &#}x27;South Stream Consent Provides Turkey With Gas Discount', Natural Gas Europe, 30 December 2011.

¹⁴⁴ This is one of Gazprom's practices denounced by the European Commission in its April 2015 Statement of Objections: 'Antitrust: Commission Sends Statement of Objections to Gazprom for Alleged Abuse of Dominance on Central and Eastern European Gas Supply Markets', European Commission, 22 April 2015.

¹⁴⁵ Political relations soured in the fall of 2015 over Russia's intervention in Syria and violations of Turkish air space by Russian jets. See for example 'Turkish-Russia Strains Threaten Turk Stream', World Gas Intelligence (WGI), 14 October 2015.

¹⁴⁶ Farchy, J. and Srivastava, M., 'Turkey Initiates Legal Action Against Russia's Gazprom', Financial Times, 27 October 2015.

revised Turk Stream's capacity downwards to 32 Bcm/y. In an alternative (presented in Options 2, 3 and 4), we have discussed the possibility that smaller infrastructures (interconnectors, reverse flows and additional compressor stations) would be built, enabling Russia to reroute volumes to a number of Southeast European markets but not to completely eliminate Ukrainian transit. Although not totally absent, regulatory and financial risks appear lower for these projects than for new, long-haul pipelines, especially by virtue of their inclusion in the list of European PCIs. In exploring this possibility (Options 2, 3 and 4), we have also seen that due to infrastructural bottlenecks and the small scale of Southeast European markets, a second line of Turk Stream would risk remaining underutilised.

This would support the case for additional exports from Russia to Turkey utilising Turk Stream's second line. In this way, Russia would be able to: a) use Turkey as an alternative market to Southern and Southeast Europe, depending on the evolution of demand in both markets and progress in the realisation of infrastructure on the EU side and b) gain the optionality to sell additional volumes to Turkey, in the attempt to discourage prospective competing suppliers from the Caspian region and the Middle East. This is also why, as we anticipated in Chapter 1, Turk Stream seems to fit better than South Stream in today's context. Given the uncertain outlook for gas demand in Europe and difficulties in promoting infrastructural projects within the EU, Gazprom's refocus on Turkey's growing market appears sensible.

While the interest for Russia in this scheme is clear, Turkey would have to weigh the advantage of being able to fill its future gas supply-demand gap against the disadvantage of aggravating its dependence on Russian gas. Turkey's appetite for increased imports via Turk Stream would crucially depend on Russia's willingness to grant further price discounts and on the availability of alternative supplies. It is important to realise that Turkey might not have alternatives to Russian gas, as shown by the recently signed deal augmenting Russian gas imports via Blue Stream in order to fill a supply-demand gap expected in 2016-2017.¹⁴⁷ Even taking into account future contracted deliveries of Shah Deniz Phase-2 gas from Azerbaijan, the next such gap may materialise around 2021. By that date Turkey will need to have secured additional supplies.¹⁴⁸

¹⁴⁷ Turkey had to agree to incremental purchases from Russia due to demand growth in the domestic market (+4.6 Bcm between 2014 and 2017) and the lack of alternative supplies, particularly because Shah Deniz Phase-2 volumes will only be available at the end of the decade.

¹⁴⁸ The existing contracts for the supply of Shah Deniz-1 gas to Turkey will expire in 2021, and it is unclear whether they will be renewed (Turkish Law prohibits incumbent Botaş to renew import contracts, and it is uncertain whether price negotiations between private buyers and Socar will succeed). If these contracts are not renewed, Turkey may have a shortfall of contracted supply of up to 10-15 Bcm in 2021. Even if the contracts are renewed, there would be a shortfall in the range of 3.5-8.5 Bcm: Rzayeva, G., 'The Outlook for Azerbaijani Gas Supplies to Europe: Challenges and Perspectives', Oxford Institute for Energy Studies (OIES), June 2015.

For alternative supplies, Turkey has primarily been eyeing additional volumes from Azerbaijan and Iran, as well as gas from new prospective producing regions such as Iraqi Kurdistan, the Eastern Mediterranean and Turkmenistan. In spite of significant potential, political obstacles cloud the outlook for future supplies from Iragi Kurdistan, which could technically come on stream by 2020¹⁴⁹ (insurgent activity and Baghdad-Erbil disputes on resource ownership, budget allocation and jurisdiction over oil and gas contracts), the Eastern Mediterranean (Cypriot-Turkish relationships)¹⁵⁰ and Turkmenistan (Russian and Iranian opposition and legal disputes on the delimitation of territorial waters in the Caspian Sea). Turkey's desire for additional gas supplies from Iran is constrained by their high prices, poor quality and frequent disruptions - which in the past prompted a case of arbitration and Turkey's request for a cessation of the import contract. Moreover, after years of sanctions and isolation, Iran would need to mobilise substantial resources to bring additional volumes into production, and this is expected to take several years. Finally, both Iran and Turkmenistan may opt to focus on sales to the Asian market. In short, there are numerous and significant uncertainties that make it difficult to make projections on prospects for additional supplies to Turkey from these countries. Additional LNG imports are also a possibility, especially if the current situation of relatively low prices in Asia persists.

Azerbaijan currently exports 5.3 Bcm of Shah Deniz gas to Turkey via the South Caspian Pipeline (SCP). ^{151,152} The second phase of production from the Shah Deniz field will deliver 17.6 Bcm of gas by 2020. These volumes are fully contracted for 25 years and will be exported through the SCP-TANAP-TAP system: 1 Bcm of gas will be sold to Georgia, 6.6 Bcm to Turkey and 10 Bcm to the EU (8 Bcm to Italy, 1 Bcm to Greece and 1 Bcm to Bulgaria). Works are underway on the expansion of the SCP from 8 Bcm/y to 26 Bcm/y and on the construction of TANAP. Turk Stream will not interfere in any way with these projects, as they are backed by FIDs and long-term contracts.

However, competition between Russian and Azeri volumes may emerge for further deliveries to the Turkish market, which, as mentioned, will need to secure additional

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¹⁴⁹ Rzayeva, G., 'The Outlook for Azerbaijani Gas Supplies to Europe: Challenges and Perspectives', Oxford Institute for Energy Studies (OIES), June 2015.

¹⁵⁰ For geopolitical aspects of gas production in Iraqi Kurdistan, East Mediterranean and Iran: 'The New Dimension of Geopolitics', A Study for the International Gas Union (IGU) by the Institut Français des Relations Internationales (IFRI) and the Clingendael International Energy Programme (CIEP), June 2015.

¹⁵¹ BP Statistical Review 2015.

¹⁵² Contracted volumes would be 6.6 Bcm, but Turkey is unable to offtake all the contracted gas due to a lack of compression capacity in Central Anatolia.

imports in the early 2020s. In Azerbaijan, the only field that is reasonably well positioned to deliver gas around 2021-2022 is Absheron (5 Bcm), while gas from the Umid/Babek complex and non-associated gas from the ACG (Azəri-Çıraq-Günəşli) field would only be available from 2026-2028.¹⁵³ Prospects for sales from these fields to Turkey would require further pipeline expansions. Indeed, TANAP's expansion schedule is moulded on expected output from these fields, as there is a plan to bring capacity to 23 Bcm/y by 2023 to accommodate Absheron volumes and to 31 Bcm/y by 2028 to accommodate volumes from Umid/Babek and ACG.¹⁵⁴ It is with these projects that Turk Stream might compete.

Prospects for the emergence of a gas hub in Turkey also crucially depend on future supplies. If Russia manages to discourage prospective competitors and further consolidate its position on the Turkish market, it would be hard to conceive how Turkey could turn into anything more than a mere transit hub. If, on the contrary, Turkey manages to diversify its sources of supply (attracting additional LNG supplies, volumes from Azerbaijan and, potentially, from Iraqi Kurdistan and other regions), the idea of establishing a trading hub may gain some credibility. Yet although diversified supplies are a necessary condition for the establishment of a trading hub in default of significant domestic production, they do not appear to be a sufficient condition. In order to establish a trading hub, Turkey would also need to implement all-encompassing reforms in the gas market and build new gas infrastructure.

PROSPECTS FOR THE ESTABLISHMENT OF A NATURAL GAS HUB IN TURKEY

The further liberalisation of Turkey's gas market is generally regarded as a precondition for the establishment of a trading hub in the country. The Natural Gas Market Law (NGML) no. 4646 of 2001, currently under review,¹⁵⁵ is the pillar of Turkey's gas market liberalisation process. This piece of legislation aims to stimulate wholesale competition and to encourage a more efficient use of the transmission system. After initial difficulties and delays in its implementation, the NGML favoured the entrance of several independent buyers in the market, and their role now seems to be consolidating.¹⁵⁶ However, Turkey's gas market liberalisation process is still far from complete.

¹⁵³ Rzayeva, G., 'The Outlook for Azerbaijani Gas Supplies to Europe: Challenges and Perspectives', Oxford Institute for Energy Studies (OIES), June 2015.

¹⁵⁴ Ibid.

^{155 &#}x27;Liberalizing Turkey's Gas Market: BOTAS Loosening the Reins', Natural Gas Europe, 2 March 2015. As of July 2015, an encompassing amendment is still under review.

¹⁵⁶ Shell, Bosphorus Gaz, Enerco Enerji, Avrasya Gaz, Akfel, Kibar and the Western Line Company now import 20% of Turkey's gas needs.

While the NGML originally established that 80% of the gas imported by Turkey should be traded by independent buyers and only 20% by the incumbent Botaş, the current market shares appear to be reversed: Botaş imports 80% of the gas consumed in Turkey, leaving only 20% to independent buyers. This is why, in principle, Botaş is prevented from signing new import contracts and from renewing existing ones (as we have seen in connection with the Azerbaijani contract expiring in 2021), and why the law mandates a number of 'contract transfers' from Botaş to independent buyers. However, these clauses meant to reduce the market share of Botaş can be overruled in case there is a perceived threat to security of supply. Indeed, both Botaş and the political opposition in Parliament have strongly opposed the liberalisation process on the grounds that it would endanger security of supply and have been seeking ways to water down legislation.

Another important existing barrier to liberalisation is that Botaş has so far successfully resisted attempts at unbundling. The issue is complicated by the fact that due to cross-subsidisation, the company is making profits in some segments (among which, importantly, gas transport and storage) and losses in others. While access to transmission is open in principle, this has created a *de facto* Botaş monopoly. In fact, even if there is a system of capacity allocation based on entry/exit points and nomination procedures similar to methods used in mature Western European markets, it is still Botaş – as the country's TSO – that must give approval to private companies applying for import licenses. The promoters of liberalisation lament that this lack of third-party access limits investment on transmission, storage and LNG capacity.¹⁵⁷

An additional problem, which does not seem to be addressed by the amendments currently under discussion, is that apart from undermining Botaş' finances (Chapter 2), subsidies have also distorted the market.¹⁵⁸ Subsidies, especially to the household sector, act as a barrier for sales from private companies. In fact, low Botaş prices have become a benchmark, and private companies find it hard to sell at such low prices.

Apart from speeding up the liberalisation process and securing substantial and diversified supplies, Turkey would also need to invest heavily in new infrastructure if it intends to establish a gas hub. The country is currently unable to even buy all the volumes it committed to from Iran and Azerbaijan, due to a bottleneck in its internal

¹⁵⁷ Rzayeva, G., 'Natural Gas in the Turkish Domestic Energy Market', Oxford Institute for Energy Studies (OIES), February 2014.

^{158 &#}x27;Liberalizing the Turkish Natural Gas Market', PWC, February 2014.

East-West transportation capacity. This is finally going to be solved by the imminent construction of new compressor stations and by TANAP, but it is illustrative of the low starting point from which Turkey is aiming at becoming a gas hub. Moreover, a key challenge for Turkey is to build substantial new storage capacity, as the current capacity is deeply inadequate to fulfil the role of a gas hub (2.6 Bcm, i.e., only 5% of consumption¹⁵⁹).¹⁶⁰

What has been said in this section seems to suggest that Turkey's plan of establishing a trading hub comparable to those of Northwest Europe will take a long time to implement, provided that it manages to attract substantial new supplies from a diversified basket of suppliers. Without diversified supplies, further market liberalisation and improved internal infrastructure, Turk Stream itself would actually appear to aggravate the country's dependence on Russian gas and turn Turkey into a mere transit hub.

159 'Turkey as an Energy Hub: Opportunities and Challenges', Hazar, 2014.

160 Storage should be brought to at least 10 Bcm in the short term and 20 Bcm in the medium term, and private companies should be incentivised to build storage: 'Turkey as an Energy Hub: Opportunities and Challenges', Hazar, 2014.

CONCLUSION

Similarly to Blue Stream and South Stream, Turk Stream can help to achieve route diversification and allow Russia to discourage the projects of competing suppliers in export markets. At the same time, the newly proposed pipeline appears to mark Russia's response to the impossibility of finding a compromise with the EU on the application of Third Energy Package regulation, as well as to an increasingly uncertain outlook for gas demand in Europe.

In light of this uncertainty, Turk Stream is best approached as a scalable and flexible project. One of several scenarios may unfold, depending on the evolution of gas demand in Southern and Southeast Europe and Turkey, and on regulatory and financial issues that may influence the pace with which both Turk Stream and complementary infrastructure in Southern and Southeast Europe are built. It is reasonable to expect that the Turk Stream project will gradually build on one initial line. Russia would then be able to make decisions on an additional line at a later stage based on what it wants to (and can realistically) achieve: a complete or partial rerouting of volumes currently shipped through Ukraine and/or a consolidation of its position in the export markets, particularly in Turkey.

Sunk costs, the absence of significant regulatory hurdles and the willingness of both Turkey and Russia to eliminate exposure to Ukrainian transit are favourable to the construction of one line of Turk Stream. This would have a capacity of 15.8 Bcm and would supply the Turkish domestic market – Gazprom's second largest and one that is quite vulnerable to disruptions.

Turk Stream was originally presented as a four-line, 63 Bcm/y pipeline project. While still being officially presented as such on the project's website¹⁶¹, Gazprom CEO Alexei Miller recently hinted that, at this stage, the target capacity for Turk Stream is 32 Bcm/y.¹⁶² The announcement of a four-line, 63 Bcm/y Turk Stream in December 2014 incited numerous schemes to develop new pipelines and revived a number of shelved projects in Central and South-eastern Europe. These pipelines appeared

¹⁶¹ http://turkstream.info/, retrieved on 3 November 2015.

¹⁶² Pinchuk, D., and Coskun, O., 'Russia's Gazprom to Halve Turk Stream Pipeline Capacity – CEO', Reuters, 6 October 2015.

necessary to transport up to 47 Bcm/y¹⁶³ of Russian gas from the Turkish-Greek border to final markets in Europe.¹⁶⁴ However, regulatory and financial constraints and progress in negotiations on Nord Stream's expansion are now casting a shadow on the third and the fourth lines of Turk Stream and on connecting pipelines to be built in Europe.

Partial (rather than total) rerouting to some Southern and Southeast European markets could be achieved more easily. This would require the construction of Turk Stream's second line, complemented by different possible combinations of reverse flows (notably of the Western Line), interconnectors (Romania-Hungary, Turkey-Greece, IBS, IGB) and pipeline expansions (notably of TAP). Although not totally absent, financial and regulatory constraints would be smaller for these infrastructures than for new, long-haul pipelines running from Turkey to Central Europe.

In order to isolate the rerouting potential of Turk Stream, our discussions in Chapter 3 operate under the assumption of a lack of alternative supplies to Russian gas and flat demand in the European markets affected by Turk Stream. Incremental gas demand in these markets would strengthen the case for Turk Stream's second line (and possibly the third and fourth lines).

While the outlook for gas demand in Europe is highly uncertain, there is a consensus that Turkish gas demand and import needs will grow in the coming years. This is in spite of the Turkish government's concerns over high gas import prices and dependency on Russian gas. Since Turkish buyers contracted only 6 Bcm of additional deliveries from Azerbaijan's Shah Deniz Phase-2, a gap between gas supply and demand is expected to develop in the early 2020s. The challenge for Turkey will thus be to reconcile the need to fill this supply-demand gap with the objectives of seeking lower import prices and reducing dependency on Russian gas.

As we have discussed, Turk Stream's first line primarily entails a rerouting of volumes currently shipped via Ukraine. As a result, this line does not seem to aggravate the country's dependence on Russian gas and will generally improve Turkey's security of supply by eliminating Ukrainian transit risk. However, only one line of Turk Stream will not allow Turkey to fill the supply-demand gap expected to open in the early 2020s. For this reason, at least one other line of Turk Stream would have to be built.

¹⁶³ Gazprom's original declarations on Turk Stream stated that 47 out of 63 Bcm transported via Turk Stream will eventually be delivered to European customers at Ipsala, on the Turkish-Greek border.

^{164 &#}x27;Europe Will Have to Care about Delivering Russian Gas from Turkish Border', Interfax, 6 December 2014.

The optionality of selling additional volumes to Turkey appears convenient for Russia. First, this would offset the risk of complications in the construction of infrastructure necessary to ship Russian gas from the Turkish-Greek border to the final markets in Southern and Southeast Europe. Second, it would discourage prospective competing suppliers from the Caspian region and the Middle East. On the other hand, in considering the option of importing more Russian gas through additional lines of Turk Stream, Turkey would have to weigh the advantage of being able to fill its future gas supply-demand gap against the disadvantage of aggravating its dependence on Russian gas. Turkey's desire for increased imports via Turk Stream would depend on Russia's willingness to grant further price discounts and on the availability of alternative supplies.

While prospects for future supplies from Iraq, Iran, Turkmenistan and the Eastern Mediterranean are highly uncertain due to political factors, Azerbaijan is well positioned to supply additional volumes to Turkey. Turk Stream would not interfere in any way with the supply of Shah Deniz Phase-2 gas to Turkey or with the related expansion of SCP and TANAP, as these projects are all backed by long-term contracts. However, competition between Russian and Azeri volumes may emerge for post-2020 deliveries to the Turkish market.

Prospects for the emergence of a Turkish gas hub, revived by the announcement of Turk Stream, crucially depend on the availability of future supplies. If Russia manages to discourage prospective competitors and further consolidates its position on the Turkish market, it would be hard to conceive how Turkey could become anything more than a mere transit hub. Apart from attracting new diversified supplies, Turkey would also need to further promote market liberalisation and build new internal infrastructure in order to establish a true trading hub.



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