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EU Gas Supplies Security: Russian and EU Perspectives, the Role of the Caspian, the Middle East and the Maghreb Countries



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Summary

This report tracks the major geo-economic and geo-strategic ruptures between the EU and Russia on the future patterns of gas supplies and shipping routes to the EU and the Western Balkans. It identifies the objectives and interests of the actors involved in this struggle: Russia, the EU, various EU members, the countries of the Caspian Basin (Kazakhstan, Uzbekistan, Turkmenistan, Azerbaijan) and the Middle East (Iran, Iraq, Qatar, Egypt) as well as the Maghreb countries (Algeria, Libya). It analyses in great detail the colliding interests of all actors at the intersection of business and (geo-) politics.

Russia's Gazprom is pursuing two strategic objectives in its mid-term strategies on gas supplies to European markets:

- *Diversification of its export routes*
- *Keep/tighten its grip on gas reserves and gas production in the Caspian Basin (herewith defined as Kazakhstan, Uzbekistan, Azerbaijan and Turkmenistan)*

As a consequence of the Soviet Union's dismemberment, Gazprom lost its direct access to the markets in the EU, the Balkans and Turkey. It got itself trapped in a strategic dependency on the Ukrainian gas pipeline network. It took Gazprom until 1999 to commission a second export route – the Yamal Pipeline exporting gas to Belarus, Poland and Germany; and a third until 2003 – the Blue Stream Pipeline shipping gas to Turkey. Still, up to 78% of Gazprom's gas exports to Europe are transited by Ukraine. Ukraine is still the single most important customer of Gazprom. However, gas trade has been hit by major turbulences due to price and transit disputes. These started not only in 2006 – when the EU for the first time was affected by these bilateral confrontations – but already in the 1990s.

Gazprom launched Nord Stream and South Stream to enhance its independency from the Ukrainian transit network.

Nord Stream will transport western Siberian gas from the Yuzhno-Russkoye' field via an off-shore pipeline linking Vyborg (close to St. Petersburg) and Greifswald (close to Lubmin). Its first trunk will be commissioned in 2010, its second in 2012. Total annual capacity will be 55 bcm/y. This allows Gazprom not only to redirect substantial gas export volumes from Ukraine, but to circumvent Yamal in case of Russian-Belarusian confrontations. Furthermore, this project deepens Gazprom's cooperation with major German energy companies (E.On, Wintershall), including downstream business in Gazprom's major EU customer.

Nord Stream had faced strong opposition by Poland, the Baltic States and – clandestinely – by the US.

South Stream is Gazprom's other effort to outflank Ukraine. This pipeline will ship Russian (and central Asian) gas off-shore on the seabed of the Black Sea. Its on-shore terminus is Bulgaria (with Romania still as an alternative); from there the pipeline will branch out with one route to Italy via Greece and the other to Slovenia and Austria via Serbia and Hungary.

The planned annual capacity of South Stream is enormous (63 bcm). Gazprom, however, has not identified which gas it will export via this pipeline. Again, it will first and foremost ship gas to European markets which otherwise would have to be exported via Ukraine. Despite the remarkable improvement of Russian-Ukrainian relations after the election of Viktor Yanukovich as Ukrainian President in February 2010, Russia sticks to its (potential) strategic disengagement from Ukraine's transit monopoly. South Stream will allow Gazprom not only to improve its strategic independency with its gas exports, but to enhance its leverage with Ukraine and Belarus.

Feasibility studies for South Stream ought to be finished in early 2011. Russia has signed Intergovernmental Agreements with all countries involved in this project. Again, as with Nord Stream, Gazprom has entered strategic alliances with Eni and is close to a deal with Electricité de France. Rumour has it that Wintershall will join the project.

It is on the southern flank that Gazprom and EU strategic interests collide. The major Russian-Ukrainian gas crises of 2006 and 2009 had exposed the EU's vulnerability to supply disruptions of Gazprom gas to its markets. While the 2006 crisis undermined the reliability of Gazprom as a major supplier of gas to the EU, the 2009 gas delivery disruptions eroded Ukraine's role as a reliable transit country.

The EU's Southern gas corridor aims at a fundamental diversification of suppliers to weaken Gazprom's strong position on EU gas markets and at a strategic diversification of supply routes. The Southern Gas Corridor is made up by (competing) pipeline projects:

- **Nabucco Gas Pipeline** shipping Caspian and Middle Eastern gas to central Europe
- **Interconnector Turkey–Greece–Italy** targeting very much the same gas suppliers as Nabucco
- **Trans-Adriatic Pipeline**, which targets Azerbaijani and Iranian gas, to be transported via Turkey, Greece and Albania to Italy
- **White Stream** bringing Caspian gas via Georgia and four parallel off-shore pipelines on the seabed of the Black Sea to Romania.

The Achilles' heel of all Southern Gas Corridor projects is the lack of long-term and substantial gas supply partners. All have Azerbaijani gas at their core, but require additional gas from Turkmenistan and Iran. Turkmenistan has been quite successful in diversifying its

export routes and expanding its gas production. With China and Iran as major trading partners, Turkmenistan has been able to break Gazprom's grip on its gas business.

Access to Iranian gas fields is prohibited by UN and EU bilateral sanctions imposed on Iran due to the disputed nature of Iran's nuclear programme. Even without sanctions, however, gas supplies from Iran would require substantial investment in exploring and developing Iranian gas fields. Despite its enormous proved reserves, Iran is not a net gas exporter.

In all those areas EU interests clash with Gazprom's strategic objectives: Gazprom is eager to hold and (slightly) expand its market share in the EU. It also needs guaranteed (cheap) gas imports from Caspian gas producers to meet domestic and external supply commitments. So far, imports from the Caspian Basin are cheaper than the exploration and development of new fields in remote areas such as the Yamal Peninsula (on-shore and off-shore) or the Barents Sea.

Gazprom aims to undermine EU access to Caspian gas. This objective is met in the case of Uzbekistan, which heavily relies on Russia in modernizing its gas infrastructure, developing new fields and increase production with its maturing fields. Kazakhstan exports most of its gas to Russia and small amounts to China via the newly commissioned pipeline from Turkmenistan. Major volumes of Kazakh gas, however, are reinjected to maintain pressure in its oil fields.

Russian relations with Turkmenistan have been strained as of late. Gazprom has lost its hegemonic grip on Turkmen gas production. However, as long as Turkmen gas is exported to China and Iran, this loss of control does not immediately threaten Gazprom's role on EU gas markets. Turkmen gas deliveries to European markets are being undermined by Russia, as it keeps a final legal settlement on the Caspian Sea.

Gazprom understands the crucial role of Azerbaijan for the viability of the Southern Gas Corridor. All SGC projects need Azerbaijani gas to move ahead. Gazprom is eager to buy as much gas from Azerbaijan as it possibly can and offers most attractive prices.

In addition, Gazprom profits from the gas glut in Europe, which at least slows financial investment in new gas pipelines.

If Gazprom manages to implement South Stream before the Nabucco consortium will, the latter project will have to be postponed for at least five years if not abandoned altogether.

Gazprom, however, still needs more partners for its South Stream flagship project. The financial volume of this venture is enormous. According to most estimates, costs will range from USD 20 to 25 billion. Even if Electricité de France comes on board, this will not be

sufficient to build a solid financial basis for the project. Talks with German energy companies are still going on (more or less clandestinely).

If the Southern Gas Corridor (SGC) is realized in full or in part, Turkey's status in the region and vis-à-vis the EU will rise significantly. The author considers the EU's relative gain in geoeconomic terms with the SGC less significant than the increase in Turkey's leverage on the EU. More than once, the Turkish government has indicated to link Turkey's support for the Southern Gas Corridor with its EU membership aspirations. In case Iranian gas is eventually included in the EU's SGC (after the settlement of the dispute over the nature of its nuclear programme) and Iraqi gas is freed up for exports (once domestic demand is met) Turkey will gain a most prominent role as a transit country for Middle Eastern gas. Therefore, the author recommends promoting alternative routes to bring Caspian gas to the EU. It is the **AGRI project** which **should be given more attention**.

The role of Maghreb gas in the EU's pool of suppliers will be enhanced, but will remain within bounds. It should be noted carefully that Gazprom expands its activities both in Northern Africa (in Egypt and Algeria) and in Western Africa (Nigeria). So the Russians could enter the European gas market through the backdoor. In addition, Gazprom tries to get a stake in the Galsi Pipeline Project shipping Algerian gas to Italy.

The EU efforts in diversifying its gas supplies and cutting the share of Russian gas on EU markets have not been very successful so far. No additional gas – neither from the Middle East, nor the Caspian – has been contracted as yet. The debate on Gazprom's reliability as a major gas supplier and EU measures to undermine Gazprom's downstream business have pushed the Russian company to diversify its export portfolio. The Asian markets are targeted in order to balance Gazprom's export dependence on EU customers. The Sakhalin projects as well as the East Siberian gas fields (first and foremost the Kovykta gas field) will ship LNG (liquefied natural gas) and/or pipeline gas to Japan, South Korea and China. Russian plans to build a pipeline from the gas fields in western Siberia, where the core of EU-bound Russian gas is produced, to China ('Altai Pipeline') are still on the table.

It remains to be seen whether mutual distrust and recriminations between the EU and Gazprom will come to an end. Fuel supplies are a cornerstone of EU members' security; every move on the chessboard of fuel suppliers, supply lines and customers is indeed not just about business, but about national security. Nevertheless, it seems that geostrategic calculations of both the EU and Russia have undermined business relations to an extent which in itself is weakening national security.

Keywords: energy security, EU, Russia, gas, Southern Gas Corridor, South Stream, Nabucco

JEL classification: F14, F59, L71, L78, L95, Q41

EU gas supplies security: Russian and EU perspectives, the role of the Caspian, the Middle East and the Maghreb countries

1 Russia's strategic objectives: breaking Ukrainian transit dominance in gas trade with the EU by export routes diversification

The bulk of Russian gas is exported to European markets. The Soviet Union had started gas exports to Western Europe in the late 1960s, with Austria's OMV as its first trading partner. All gas export infrastructure built by the USSR was directed to Europe. In 2008, Russia exported 154.41 bcm to Europe (EU-27, Switzerland, Western Balkans, Turkey). 82.7% were exported to EU-27 markets (127.7 bcm). Due to the global financial and economic crisis, Russian gas sales to Europe plummeted in 2009. Total export was 132.9 bcm only, down by 21.6 bcm (minus 24.0%) compared to 2008. 84.6% of this volume was sold EU-27 markets (112.4 bcm).¹

Gazprom export data are slightly different. In 2008, total Russian gas export to Europe (EU-27, Switzerland, Western Balkans, Turkey) was at 171.7 bcm, 83.4% of it sold at EU-27 markets, 13.9% in Turkey. Gas sales on FSU markets amounted to 92.4 bcm. Gazprom's total gas export in 2008 was 246.1 bcm. In 2009, Gazprom's total export went down to 220.5 bcm. Gas exports to Europe fell to 157.2 bcm (minus 8.4%), EU-27 exports to 131.3 bcm (minus 8.3%). Gazprom's sales in the FSU dwindled to 63.3 bcm (minus 31.5%). Gazprom's major customers in 2009 are Ukraine (37.8 bcm), Germany (33.5 bcm), Turkey (20.0 bcm), Italy (19.1 bcm) and Belarus (17.6 bcm).² In total, Gazprom in 2009 sold 56.3% of its gas exports on EU-27 markets, 10.3% in non-EU Europe and 33.4% in FSU countries.

Table 1

Gazprom gas sales on selected markets, 2003-2009 (in bcm)

Gazprom markets	2003	2004	2005	2006	2007	2008	2009
EU	26.1	26.8	25.9	24.5	25.3	25.8	26.6
non-EU Europe	3.2	3.4	4.1	4.2	4.8	5.1	5.2
FSU	7.9	11.5	13.2	16.6	16.6	16.6	12.8
Total export	37.4	41.7	43.1	45.4	46.7	47.5	44.6
Russia	62.6	58.3	56.9	54.6	53.3	52.5	55.4
Total production	493.8	524.5	539.7	578.8	576.4	556.1	494.0

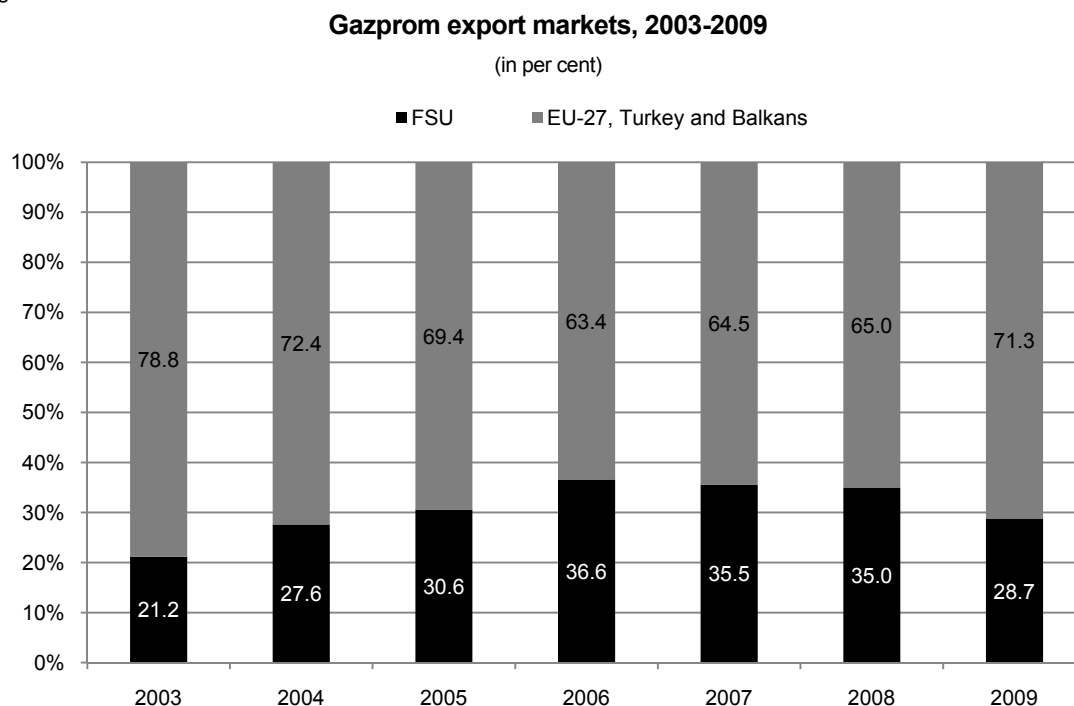
Source: Proprietary Calculations based on data from Gazprom's Databook 2010.

¹ BP Statistical Review of World Energy 2008 and 2009. All BP data used in this text are taken from the online versions of the annual 'Statistical Databooks'.

² Gazprom Databook 2010 (<http://www.gazprom.ru/f/posts/22/042553/data-book-2010.xls>, retrieved on 24 October 2010).

According to Gazprom data, exports to Europe increased by 17.9% from 2003 to 2008. Exports to FSU countries rose by 63.4% due to a marked economic rebound in many of those countries in the period 2004 to 2008. However, in 2009 exports to the FSU plummeted. The share of the European market in Gazprom's exports increased to 71.9% in 2009 – by and large the same as in 2004.

Figure 1



Source: Gazprom Databook (2010)

Gazprom gas production has increased slightly between 2000 and 2008, only to drop in 2009 as a consequence of lesser demand on both domestic and export markets due to the global financial and economic crisis. Total Russian gas production increased from 526.2 in 2001 to 601.7 bcm in 2008 (plus 14.4%); in 2009 production fell to 527.5 bcm.³ Gazprom's gas production between 2001 and the pre-crisis 2008 increased by 7.4% only.⁴

Between 2003 and 2008, Gazprom has managed to increase gas production, redirecting sales from domestic to external markets and increase sales prices on the FSU markets. EU-27 and other European markets, however, remain the most lucrative markets for Gazprom. It has to be mentioned, though, that Gazprom has been successful over the past few years to increase gas prices on the FSU markets, albeit without causing serious political

³ See: BP Statistical Review of World Energy 2010, Statistical Databook (http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2008/STAGING/local_assets/2010_downloads/statistical_review_of_world_energy_full_report_2010.pdf).

⁴ Gazprom Databook 2010 (<http://www.gazprom.ru/ff/posts/22/042553/data-book-2010.xls>, retrieved on 24 October 2010).

and economic frictions. With Ukraine being the single most important gas customer of Gazprom, price increases have been most contentious in the Ukrainian case (see below). Average gas prices on European markets are still much higher than the European Border Price for Gazprom gas. According to Gazprom data, prices on European markets in 2008 were about 110% higher than the average gas price on the markets of the FSU.⁵

Table 2

Gazprom sales prices on selected markets, 2005-2009

USD/mcm	2005	2006	2007	2008	2009 (est.)	2009 (proj.)
Russia industry	35.5	40.6	53.0	65.9	70.0	89.0
Russia households	25.6	31.7	41.6	52.0	51.0	63.0
Ukraine import prices	77.0	95.0	130.0	179.5	232.5	255.2
Belarus import prices	55.1	55.1	118.0	126.5	151.0	171.5
European border price	213.7	285.2	294.1	418.9	307.8	323.7

Source: Adapted from S. Pirani, J. Stern and K. Yafimava (2010), 'The April 2010 Russo-Ukrainian gas agreement and its implications for Europe', NG42, Oxford Institute for Energy Studies, June, p. 7.

Gas sales on the domestic market decreased from 309.1 bcm in 2003 to 292.2 bcm in 2008 and 273.5 bcm in 2009. Domestic sales in 2008 made up 51.4% of total gas sales; in 2003 it had still been 63.2%. In 2009 this share rose slightly to 55.4%.

So far, Gazprom exports the bulk of its gas by pipeline (except for a small amount of LNG in the Far East), though it envisages the share of LNG in its gas export to rise to 10% by 2020 and 15% in 2030.⁶ However, with the dismemberment of the Soviet Union, Gazprom no longer has direct access to the lucrative EU gas markets.⁷ Russia considers its dependence on transit countries for pipeline exports to EU markets as an Achilles' heel. This is due to the fact that Gazprom's gas exports to the EU are dependent on just three export routes: Until 1999, all Russian gas sales on European markets had to be shipped via the vast Ukrainian pipeline network with its large Soyuz and Brotherhood pipelines. This monopoly was broken only in 1999, when the Yamal–Europe Pipeline was commissioned, with the Blue Stream pipeline to follow suit in 2003.⁸

⁵ Gazprom in Questions and Answers (http://eng.gazpromquestions.ru/fileadmin/files/2008/ALL_eng_23_04_10.pdf, retrieved on 3 September 2010), p. 54.

⁶ Blagov, Sergei, 'Russia Plans Increased Energy Exports', *Eurasia Daily Monitor*, 24 September 2010 ([http://www.jamestown.org/programs/edm/single/?tx_ttnews\[tt_news\]=36909&tx_ttnews\[backPid\]=484&no_cache=1](http://www.jamestown.org/programs/edm/single/?tx_ttnews[tt_news]=36909&tx_ttnews[backPid]=484&no_cache=1), retrieved on 23 October 2010).

⁷ Certainly, the Soviet Union technically needed its satellite states in Eastern Europe for gas market access in the European Communities. With full political and military control of the eastern bloc, however, Russia had de facto direct access to its European markets.

⁸ The pipeline is owned on a parity basis by Gazprom and the Italian energy company ENI. The Turkish-Russian agreement on Blue Stream had been signed in 1997.

Yamal-Europe pipeline (commissioned 1999)



Source: <http://upload.wikimedia.org/wikipedia/commons/7/74/Yamal-europe.png>.

The Yamal pipeline is transporting gas from Russia's northwestern Siberian gas fields to Germany via Belarus and Poland. Its total throughput capacity, however, is 33 bcm/year only. The German section is managed by Wingas (a joint venture of Gazprom with Winterhall) and the Polish section by EuRoPolGaz (joint venture by Gazprom and PGNiG).⁹ At the end of October 2010, operative control of the Yamal pipeline on Polish territory was handed over to a new company – 'Gaz System'. So far, the ownership of this company has not been made public. Only the Belarusian section of the Yamal Pipeline is owned by Gazprom.

The 1213 km Blue Stream Pipeline is running from the Russian Black Sea Coast (Beregovaya Compressor Station) on the seabed of the Black Sea¹⁰ to Samsun in Turkey. This is Gazprom's first export pipeline bypassing third countries. Its total throughput capacity is 16 bcm/year, but so far it has not been in full use. In 2005 Russia proposed to build a parallel pipeline (Blue Stream II) to transport additional gas to Turkey and to the Middle East including Israel. This proposal was not endorsed by Turkey or Israel; when Israel announced huge gas finds off its Mediterranean coast, the rationale for building such a pipeline eroded.

⁹ In October 2010, Polish PGNiG extended its contract with Gazprom; The company agreed to buy 10 bcm/y of gas from Gazprom till 2037. Russian gas made up about 52% (7.15 bcm) of Polish gas consumption (13.7 bcm) in 2009. Despite objections raised by the European Commission, Poland pushed ahead with this contract. In order to meet new EU regulations, ownership of transmission lines and producers need to be unbundled. Therefore, Poland founded the company 'Gaz System' as the new operator of the Polish section of Yamal.

¹⁰ The off-shore section was built together with the Italian company ENI in 2001/02, which has remarkable expertise in off-shore pipeline construction.

Map 2

Blue Stream pipeline (commissioned 2003)



Source: Gazprom Questions and Answers (http://eng.gazpromquestions.ru/fileadmin/files/2008/ALL_eng_23_04_10.pdf, p. 60).

Meanwhile it can be ruled out that a second Yamal-Europe pipeline (Yamal II) – shipping gas via Belarus and Poland to the Czech Republic – will be built, despite the fact that it would have been much cheaper than the Nord Stream and South Stream projects (see below). The capacity of a second Yamal-Europe trunk was initially designed at 23 bcm/year.

Table 3

Ukraine’s gas and transit trade with Russia, 2005-2010 (bcm)

	2005	2006	2007	2008	2009	2010 (proj.)
Volumes imported	55.8	53.3	50.1	48.0	26.8	36.5
Volume transited to Europe	121.5	113.8	112.1	116.9	92.8	113.9
Volume transited to FSU	14.9	14.7	3.1	2.7	3.0	3.0
Total Russian gas sales Europe	151.3	151.5	147.5	154.4	132.9	–
<i>of which shipped via Ukraine (%)</i>	80.3	75.1	76.0	75.7	69.8	–

Data listed in the lines ‘Total Russian Gas Sales Europe’ and ‘of which shipped via Ukraine’ are proprietary calculations based on data of the BP Statistical Review of World Energy, 2006–2010).

Source: Adapted from S. Pirani, J. Stern and K. Yafimava (2010), ‘The April 2010 Russo-Ukrainian gas agreement and its implications for Europe’, NG42, Oxford Institute for Energy Studies, June, p. 9.

The gas transport capacity of Ukrainian export pipelines, however, is still unchallenged. Its total input capacity is about 290 bcm/y; total export capacity (output capacity) of the Ukrainian pipeline network is 178.5 bcm. However, actual transit volumes are much lower and are in decline (see Table 3). In 2008, Ukraine transited 116.9 bcm to European markets; in

2009, with demand volumes significantly down due to the global financial and economic crisis, it was about 92.8 bcm.¹¹

In 2005, when Russia started to ship gas to Turkey via Blue Stream (which had already been commissioned in 2003), 80.3% of total Russian gas exports to Europe (EU and non-EU Europe) were transited via Ukraine. This share has been in decline since then. In 2009 it was only 69.8%, which certainly still a very high share and a potential energy security risk for both Russia and Europe. The bulk of Russian gas to the EU exported via the Ukrainian pipeline network is shipped through the Slovakian SPP's pipelines by SPP's subsidiary Eustream.¹² In 2008, only about 18% of Russian gas was shipped by the Yamal pipeline and about 4% by Blue Stream. As these data underline, Ukraine is the most important single transit country for Russia. In terms of energy security, Ukraine is a major risk for Russia due to its hegemonial role in Russian gas exports to the most lucrative markets.

Map 3



Source: http://www.gasunion.org.ua/images/karta_GTS_eng.gif.

The reliability of Ukraine as a gas transit country is of utmost importance to Russia – as it is for the EU, for that matter. As the Russian-Ukrainian gas conflicts in 2006 and 2009 have utterly demonstrated, Russian gas supplies to Ukraine and Ukrainian transit of Russian gas to Europe are all but guaranteed. Disputes about the price of Russian gas sales in Ukraine, on transit fees, gas storage in western Ukraine, (alleged) Ukrainian illegal siphon-

¹¹ S. Pirani, J. Stern and K. Yafimava (2010), 'The April 2010 Russo-Ukrainian gas agreement and its implications for Europe', NG42, Oxford Institute for Energy Studies, June, p. 9.

¹² Gazprom in November 2008 signed a transit agreement with SPP lasting from 2009 to 2028. SPP (*Slovensky plynarensky priemysel*) is controlled by the Slovak state (51%); Gaz de France and E.On both own a 24.5% stake. The gas transit agreement is based on a far lower average throughput than the pipeline's capacity of 90 bcm/year.

ing of Russian transit gas and gas bills unpaid by the Ukrainian gas company Naftogaz Ukrainy have shattered trust in the reliability of both Russia and Ukraine in gas trade.

Russia is keen to lower its vulnerability in gas exports. This ought to be achieved by acquiring ownership of export pipelines (already the case with the Yamal-Europe gas pipeline through Belarusian and Polish territory,¹³ but not (yet) with the southern tier of the Druzhba pipeline running across Ukrainian territory¹⁴) and/or the construction of new gas pipeline routes which avoid transit transport to the extent possible.

If Gazprom was to own the export pipelines via Ukraine as it does with the Yamal pipeline on Belarusian territory, EU-bound exports and domestic supplies in Ukraine and Belarus would be separated. This, however, would provide Gazprom with enormous leverage on Ukraine. Seen from Kiev, this is all but unacceptable.

On 23 March 2009 the European Commission and then Ukrainian Prime Minister Timoshenko agreed in principle on a joint EU–Ukrainian effort to modernise the Ukrainian gas pipeline network. This included plans to expand the transport capacity of the transit pipelines. Russia was angered by the initiative from which it had been excluded (which was indeed astonishing as the proposal includes the possible expansion of the Ukrainian network's throughput capacities). Back in 2002, German chancellor Schröder and Vladimir Putin had offered Ukraine a tripartite consortium for revamping the transport lines. After the election of Viktor Yanukovich as the new president of Ukraine in February 2010, Ukraine reversed its position and proposed to include Russia in such an effort. In late April 2010, V. Putin proposed a merger of Gazprom and Naftogaz Ukrainy – an offer that was politely rejected by the Ukrainian side.

The core strategic objective of Gazprom, however, is building new export pipelines bypassing Ukraine and Belarus, allowing direct access to EU customers – first and foremost its most important EU customer Germany – and open new/maintain markets in Southeastern Europe. Gazprom is keen to acquire a northern and a southern flank option of exporting enormous volumes of gas – 'Nord Stream' linking Russia and Germany via the Gulf of Finland and the Baltic Sea and the huge South Stream gas project, pumping gas to the Balkans and to central Europe.

1.1 Nord Stream (Severny Potok) (a.k.a. North European Gas Pipeline, NEGP)

The purpose of the Nord Stream pipeline project launched in 2005 is to offer Russia an alternative option for its gas exports to EU customers. The first section of Nord Stream

¹³ The soil below the pipes is leased by Gazprom from the Belarusian state on a long-term basis.

¹⁴ This pipeline is owned by state-owned Naftogaz Ukrainy.

runs overland from Gryazovets CS (Compressor Stations) in Vologda province to Portovaya CS near Vyborg at the Gulf of Finland; the throughput capacity of both trunks is set at 55 bcm. The bulk of this gas will come from the Yuzhno-Russkoye field in western Siberia – close to the super-giant gas fields Yamburg and Urengoi – commissioned by Gazprom on 18 December 2007. The field is estimated to hold about 600 bcm of gas.¹⁵ The field reached its full production capacity of 25 bcm/year already in 2009. Up to 25 bcm of the field's annual production will be exported via Nord Stream.¹⁶ Yuzhno-Russkoye gas will be shipped to Vyborg via the Gryazovets-Portovaya pipeline with an annual capacity of 55 bcm, which is expected at the end of 2012.

Map 4

Gryazovets-Portovaya pipeline



Source: Gazprom (<http://www.gazprom.com/production/projects/pipelines/gvg/>, retrieved on 1 November 2010).

In a mid-term perspective gas from this field will not suffice; additional gas from the Shtokman gas field in the Barents Sea will be necessary (see below). However, it is hard to predict when production will start with the Shtokman gas field. On 12 February, Gazprom announced that LNG production in Shtokman will be postponed from 2014 to 2017. With the US market no longer set to expand for LNG due to large unconventional gas production in the US (shale gas) there is no longer any natural market for Shtokman LNG.

With the 1233 km pipeline section on the seabed of the Gulf of Finland and the Baltic Sea, Russia will have a direct link with major gas customers outskirting transit countries such as Ukraine, Belarus and Poland, as well as the Baltic countries, which have lobbied for the 'Amber Pipeline' instead.¹⁷ The first phase of the Nord Stream project includes a pipeline

¹⁵ See: Mihalescu, Andrea, 'Gazprom to start new field for Europe, *UPI Energy Watch*, 7 December 2007 (http://www.upi.com/International_Security/Energy/Analysis/2007/12/07/upi_energy_watch/4762/, retrieved on 8 December 2007).

¹⁶ Ibidem.

¹⁷ The 'Amber Pipeline' proposal suggests shipping Russian gas on-shore via Estonia, Latvia, Lithuania and Poland to Germany.

connection between Portovaya, close to Vyborg (Russia) and Lubmin, close to Greifswald (Germany) with a throughput capacity of 27.5 bcm. It is planned to build a second string with the same throughput, bringing the total transport volume up to 55 bcm/year.

Map 5

Nord Stream pipeline



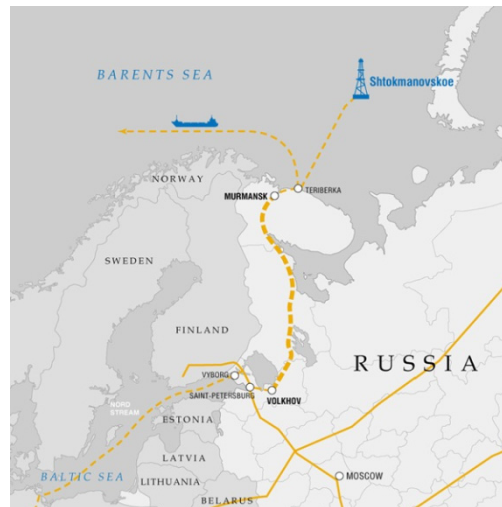
Source: www.gazprom.ru.

One interconnector pipeline – ‘Ostsee-Pipeline Anbindungsleitung’ (OPAL) – will be built from Lubmin via Mecklenburg-Vorpommern, Brandenburg and Sachsen to Olbernhau at the border with the Czech Republic. OPAL’s throughput capacity is 36 bcm/y. In addition, the North European Gas Pipeline (NEL) will transport to the gas storage site Rehden in Lower Saxony, which is owned by Wingas, a joint venture of Gazprom and Wintershall.

Initially, E.On and Gazprom had planned to build a gas-fired power plant in Lubmin close to Greifswald; in June 2009, however, both companies suspended the plan due to a decrease in gas demand caused by the global economic recession; it is unlikely that Gazprom and E.On will come back on this project any time soon.

Gas eventually will be delivered to Vyborg also via the Teriberka–Volkhov gas pipeline running on the Karelian coast. The construction of this pipeline by ‘Gazprom Promgaz’ has not started yet (initially it had been planned to start in 2010). Gazprom plans to start shipping gas with this pipeline in 2013. This pipeline will ship gas from the Shtokman gas field (which will, according to current plans, come onstream only in 2017) in the Barents Sea to Volkhov close to St. Petersburg, where it will link up to the Gryazovets-Portovaya pipeline. In Teriberka, Gazprom will build a LNG liquefaction plant.

Gryazovets-Portovaya pipeline



Source: Gazprom (<http://www.gazprom.com/production/projects/pipelines/gvg/>, retrieved on 1 November 2010.)

The Nord Stream project is a collaborative effort of Gazprom and the German companies BASF and E.On;¹⁸ the in-principle Agreement on Nord Stream was signed on 8 September 2006. Nord Stream AG is tasked with planning, construction and operation of the pipeline joint venture. Gazprom holds a stake of 51%, the remaining shares were equally divided between BASF via its subsidiary Wintershall Holding and E.On Ruhrgas, but later on their stakes were lowered to bring in new stakeholders (see below).

As part of the deal, Wintershall obtained a privileged share in the western Siberian gas field Yuzhno-Russkoye. The licence holder of Yuzhno-Russkoye is Severneftegazprom. In October 2008, E.On Ruhrgas and Gazprom agreed on an asset swap. E.On Ruhrgas was given a share package of 25% minus one share of Severneftegaz; E.On Ruhrgas decreases its shares with Gazprom from 6.43% to 3.5%. 2.93% of Gazprom shares had been held by Gerosgaz – owned jointly by E.On (49%) and Gazprom (51%). Gazprom now owns 100% of Gerosgaz.

The Dutch energy company Nederlandse Gasunie GV joined Nord Stream AG on 10 June 2008. Gasunie holds a 9% stake, which it obtained from both E.ON Ruhrgas and BASF Wintershall.¹⁹ Gazprom's stake will remain unchanged. Allegedly, Gazprom will acquire 9% of Gasunie's pipeline operator BBL in exchange²⁰, which currently is building a gas pipeline from Balgzand (Netherlands) to Bacton (UK). Nord Stream gas will be shipped by land-based pipelines to the Netherlands.

¹⁸ E.ON currently – February 2008 – holds 6.43% of the shares of Gazprom.

¹⁹ Gasunie together with other Dutch companies and RoyalDutch Shell is also interested to cooperate with Gazprom on gas exploration and production on the Yamal Peninsula and the Kara shelf.

²⁰ Before the transaction Gasunie held 60% of the stakes of BBL.

On 7 December 2008 Gazprom, Abu Dhabi National Energy and two other companies signed a MoU on building the largest European gas storage in the depleted Bergermeer field; it is close to the Zeebrugge gas hub and along the route of the Nord Stream extension to the Netherlands and the UK.

In December 2008 Gazprom started negotiations with French GDF Suez to join the project. The French company, which own the largest pipeline network in the EU, acquired a 9% stake in the Nord Stream AG in June 2010, with both E.On and Wintershall selling 4.5% of shares to the French company. Gazprom also offers a long-term contract on gas supplies to GDF. In exchange, GDF Suez sold its stake in VNG (Verbundnetz Gas AG), Germany's third largest gas importer, to Gazprom, doubling Gazprom's stake to 10.52%.²¹ If Wintershall, a close business partner of Gazprom, joins forces with Gazprom, both will have a blocking stake (26.31%) in the company.

Nord Stream AG is now owned by Gazprom (51% of the shares), E.On (15.5%), Wintershall (15.5%), Gasunie (9%) and GDF Suez (9%).

Total cost for Nord Stream's first string will be up to EUR 8.8 billion.²² The Nord Stream AG has asked the German government for credit guarantees of EUR 2.6 billion including EUR 1.6 billion of Hermes Export Credit Guarantees. The German company Europipe is one of the major pipe suppliers for Nord Stream. The Italian company Saipem will lay the pipes on the seabed; this is why Nord Stream AG has also asked for EUR 500 million credit guarantees from the Italian government. Finally, a pool of 26 banks granted Nord Stream AG loans of EUR 3.9 billion – among them Credit Suisse, Deutsche Bank, UniCredit, ING Bank and Raiffeisenbank.

The Nord Stream project had faced a myriad of political, technical and administrative hurdles. The start the off-shore section's construction has been repeatedly postponed. Initially the project operators had intended to start shipping gas by the end of 2010, but had to postpone this to midyear 2011. The project was long delayed by political objections and (environmental) security concerns of Finland, Sweden and Denmark. On 5 November 2009, however, both the Swedish and the Finnish governments approved of the pipeline project. Denmark gave its permission on 20 October 2009; the Danish state-controlled company DONG will import Russian gas via Nord Stream. In December 2009, Russia and Germany gave their final approval. Except for lawsuits by individuals, there are no more legal obstacles for the pipeline project. Construction started on 6 April 2010 and gas flows will start in late spring 2011.

²¹ VNG recently has expanded its activities in western Poland with its pipeline to Łásow, close to Zgorzelec.

²² Lando, Ben, 'Nord Stream gas line costs more than \$11B', *UPI Oil and Gas Pipeline Watch*, 31 March 2008 (http://www.upi.com/International_Security/Energy/Analysis/2008/03/31/analysis_oil_and_gas_pipeline_watch/9390/, retrieved on 6 April 2008).

It was the Baltic countries and Poland that opposed and to the extent possible obstructed the pipeline project. On the one hand, this obstruction is motivated by their financial and economic interests. All of them, most of all Poland, have a major interest in earning transit fees from Russian gas exports. Poland, for one, called for the expansion of the Yamal–Europe Pipeline by a second parallel string. Thus, Poland was to gain more of transit fees earning. Equally important, at least, Poland could enhance its supply security as Yamal–Europe transits Polish territory to the terminus point in Germany. This fact lessens the threat of a Russian gas cut-off to Poland as such a move would hurt German consumers as well. Nord Stream, however, could potentially harm Polish energy supply security, allowing Russia to bypass Poland with some of its gas exports. Polish opposition, however, was strongly supported by the US, which both shares Polish interests and concerns, and understands that Nord Stream was to enhance Russia’s diversification efforts. Bypassing Ukraine and lowering the volume of Russian gas supplies for European markets that needs to transit Ukraine weakens Ukraine’s geostrategic relevance and status.

1.2 South Stream (Yuzhnyi Potok) and Blue Stream II

With South Stream and/or Blue Stream II, Gazprom is planning to create a southern flank gas export route, which bypasses Ukraine and thus lessens Russia’s dependence on the Ukrainian gas pipeline network for its exports to the most lucrative European markets. In this regard, South Stream (and Blue Stream II) share the strategic objective of Nord Stream. However, there are more Russian interests linked with this effort. Russia has three strategic objectives in the Black Sea Region: to prevent EU access to central Asian gas, particularly Turkmen and Kazakh gas, undermine the economic and financial viability of EU pipeline plans like Nabucco (see below) and monopolize the gas supplies for Southeastern Europe.

Initially Russia proposed the ‘Blue Stream II’ pipeline project (a.k.a. South European Gas Pipeline, SEGP). This meant to transport Russian gas to Turkey via the ‘Blue Stream’ pipeline, which is already in use to expand Russian gas supply capacities for the rapidly growing Turkish gas market. Using Turkey as a transit country, Gazprom initially considered gas shipments to Bulgaria, Romania and Hungary. These plans were cancelled rather quickly. As an alternative option – and it is just this one Gazprom is still considering – is to transport gas from Turkey to Israel and other markets in the Levant region. However, in 2010 Israeli Prime Minister Netanyahu said Israel is no longer interested in Russian gas due to promising offshore developments in Israeli waters.²³

The South Stream project (Yuzhnyi Potok) was launched by Gazprom in 2007. On 23 June 2007, Gazprom and Eni signed a Memorandum of Understanding (MoU) on the construc-

²³ Gazprom considering Israeli gas? UPI Energy Analysis, April 14th, 2010 (http://www.upi.com/Science_News/Resource-Wars/2010/04/14/Gazprom-considering-Israeli-gas/UPI-72331271251963/).

tion of the South Stream gas route. On 22 November 2007, Italy and Russia agreed on joint venture to undertake a feasibility study for South Stream. The project is intrinsically linked with Russia's overall political and economic strategy for the Caspian and the South-eastern European theatre. This project is designed to make the Nabucco project (see below) futile and sustain Gazprom's market share in the EU.

Gazprom's partner in this effort is the Italian energy company Eni (Ente Nazionale Idrocarburi), which is to build the seabed section of South Stream in the Black Sea. The Yuzhnyi Potok project will enhance and deepen a strategic alignment between Gazprom and a crucial EU company. Gazprom and Eni initially each held 50% of the shares in the joint venture. Still, other companies could join the project: On 27 November 2009 Gazprom and Electricité de France (EDF) signed a Memorandum of Understanding on EDF's eventual participation in the South Stream AG. In July 2010, Gazprom, Eni and EDF signed a trilateral memorandum on EDF as new shareholder. Both Gazprom and Eni will cede a 10% stake each to EdF, taking effect in December 2010. Rumours in late 2010 have it that BASF subsidiary Wintershall will join the consortium as well.

Excursus: OAO Gazprom und ENI

Gazprom and Eni have established close links. An agreement between OOO Gazprom Eksport (OOO GE) and ENI (the Italian state controls about 30% of its stakes) in May 2005 had allowed OOO GE to gain direct access to Italian consumers. Gazprom was given the right to make direct sales to Italian customers – up to 3 bcm by 2010 – and signed a long-term gas delivery agreement, which lasts until 2030, in 2008 extended until 2035). Central Energy Italian Gas Holding (CEIGH), part-owned (33%) by Bruno Mentasti-Granelli, a close friend of Berlusconi, was meant to play a major role in the deal. CEIGH belongs to Centrex Group. ZMB, the German daughter company of OOO Gazprom Eksport holds 25% of CEIGH. Centrex Europe Energy and Gas AG holds 41.6% (for its role with CEGH see below). The deal, however, was vetoed by the Italian parliament.

In 2006 Gazprom and ENI signed a strategic partnership agreement. On 23 June 2007 both companies signed a MoU on implementing the South Stream gas project. On 18 January 2008 Gazprom and Eni created the South Stream AG Special Purpose Entity on a parity basis. The Italian company Saipem Spa is doing the feasibility studies.

In April 2008 Gazprom and Eni agreed to co-operate in the upstream sector in Libya on the basis of a yet undisclosed asset swap deal. In November 2008 Eni sold a one-third stake in its Libyan oil asset *Elephant*; this on-shore oil field discovered in 1997 holds proved reserves of 68 million tons of oil. In exchange, Gazprom agreed in transport and market sale of gas held by OAO *ArktikGaz* – a former subsidiary of Yukos oil company. *ArktikGaz*, UrengOjl, Neftegaztehnologiya and a 20% stake in Gazprom Neft was auctioned by Eni and Enel in April 2007 for USD 5.83 billion; it is only now that the Italian companies can make use of that asset. *ArktikGaz* is owned by *Severenergiya* (previously *Enineftegaz*), of which Eni holds a 60% stake; Enel owns the rest.

In late October 2008 Gazprom announced its intentions to buy the Italian companies' stake in Gazpromneft; despite financial constraints, Gazprom, which already held 77.6% of the shares, acquired the stake in April 2009 for an overpriced USD 4.2 billion. Gazprom still holds an option to buy a majority stake in both UrengOjl and *Arktikgaz*.

Enel holds a 59.8% stake in Russia's power generator OGC-5 (*Оптовая генерирующая компания*) and a 49.5 share package in RosEnergySbyt.

Eni is also interested in acquiring a stake in a large gas field in the Russian region of Astrakhan; its major competitor is the French Total, which has signed an agreement with Gazprom to take a 25% stake in the Shtokman gas field operating company. The Astrakhan field is among Russia's top ten gas fields and is supposed to supply the South Stream pipeline.

Current and future areas of cooperation between Gazprom and Eni

Eni holds a 50% stake in the Blue Stream operating company; Blue Stream, commissioned in 2003, transports Russian gas to Turkey.

Eni holds 50% of the shares of Green Stream which links Libyan shelf gas fields with Sicily. Eni has agreed with the Libyan state company NOC (*National Oil Corporation*) to expand the 8 bcm Green Stream pipeline by 3 bcm and build a huge gas liquefaction plant, which is supposed to liquefy 4 to 5 bcm of gas annually.

Gazprom's Libyan investments are considered a spring board for Gazprom activities in Spain and Portugal, in addition to its Italian activities. In December 2008 the Libyan and Italian government announced Libya's interest in acquiring a 5–10% stake in Eni.

In Egypt Eni holds a stake in the Damietta gas liquefaction plant and an exploration licence for the Bougaz bloc in the Mediterranean. Eni is currently in negotiations with Gazprom on cooperation in this bloc's development.

Eni's CEO Scaroni has offered to take part in Gazprom's LNG project on the Yamal peninsula.

South Stream will be launched from the Beregovaya compressor station near Yuga in Krasnodarski kray; its capacity was initially set at 31 bcm/year. At a meeting in Sochi on 15 May 2009, Gazprom and Eni agreed to boost the capacity to 63 bcm. This pipeline option will transport gas on the seabed of the Black Sea to Bulgaria (Varna port) with a southern spur to Italy via Greece and a second spur to Austria and Slovenia via Bulgaria, Serbia and Hungary. The off-shore section, which is about 900 km long, is technically difficult as the sea bed's depth is up to 2.100 meters. Gazprom needs the off-shore expertise of ENI, as it already did with the construction of Blue Stream I in 2001/02. In April 2010, Eni subsidiary Saipem was authorized to conduct a feasibility study for the project.

The cost of the pipeline was initially set at USD 14.8 billion;²⁴ in late July 2008, however, the Russian Energy Ministry raised the cost estimate to about USD 20 billion.²⁵ The pipeline is expected to be operational by the end of 2015 at the earliest.²⁶ Construction is about to start in the first half of 2012.

²⁴ See: Smolchenko, Anna and Miriam Elder, 'Putin, Prodi bless South Stream Deal', *The Moscow Times*, 23 November 2007, p. 5.

²⁵ UPI, 'South Stream cost rises by 5B\$', 31 July 2008 (http://www.upi.com/Energy_Resources/2008/07/31/South_Stream_pipeline_cost_rises_by_5B/UPI-16821217514382/).

²⁶ RIA Novosti, 'EIL-Machbarkeitsstudie für South Stream liegt im Februar 2011 vor' (<http://de.rian.ru/business/20100424/126057811.html>, retrieved on 23 April 2010).

South Stream (Yuzhni Potok)



Source: http://www.rferl.org/content/Putin_In_Turkey_Seeking_Approval_For_South_Stream_Route/1793851.html

Gazprom has not yet decided, however, whether the off-shore route will be built in Ukrainian territorial waters – the Ukrainian continental shelf the Black Sea – or in the territorial waters of Turkey. Art. 79 (3) of the United Nations Convention on the Law of the Sea ('Submarine cables and pipelines on the continental shelf') states: 'The delineation of the course for the laying of such pipelines on the continental shelf is subject to the consent of the coastal State.' Initial planning had it, to build the pipeline in Ukrainian waters, because the seabed topography in this sector of the Black Sea makes construction technically easier. On the other hand, international law allows Ukraine to bloc, or at least delay the pipeline construction. Given the fact that South Stream is a deliberate Russian effort to weaken Ukraine geoeconomically, it is very likely that Ukraine will use all means available to undermine the project.

This, for one, explains why Russia is considering to construct the off-shore section of South Stream in Turkish territorial waters. As a result of Putin's visit in Ankara on 5 August 2009, Turkey agreed to Gazprom's request to undertake geological explorations on the Turkish Black Sea continental shelf. The Turkish government's concession was linked to Russia's readiness, to aid construction of an oil pipeline from Samsun (Turkish Black Sea coast) to Ceyhan (Turkish Mediterranean coast), and to ship Russian and Kazakh oil via this pipeline to international markets, which is vital for the economic viability of this Turkish effort. The Samsun-Ceyhan oil pipeline is a joint venture of Eni with the Turkish company Çalık Enerji. Russian and Kazakh oil will be shipped by tanker from the Russian Black Sea port Novorossiysk to Samsun. The Novorossiysk-2 terminal is the terminus of the 'CPC Pipeline' – operated by the Caspian Pipeline Consortium²⁷ – which transports Kazakh oil from the Tengiz oil field (located in the Kazakh northern Caspian Sea coast) to the Black Sea.

²⁷ Russia, Oman, and Kazakhstan launched the project in 1992. Chevron, Mobil, LUKoil, Royal Dutch Shell, Rosneft and BP later joined the consortium.

Ceyhan is also the terminus of Iraqi pipeline oil shipments. Currently, about 0.5 million barrels/year of Iraqi oil are shipped to Ceyhan via the Kirkuk-Yumurtalik pipeline. In September 2010, the Turkish and Iranian governments extended the contract on Iraqi oil sales for another 15 years; total deliveries are supposed to reach 1 mb/d.

Map 8

Black Sea littoral states' territorial waters and South Stream route



Source: <http://www.eegas.com/southstream.htm>

Russia's support for the Samsun-Ceyhan oil pipeline all but wrecks its plans to build an on-shore oil pipeline from the Bulgarian port of Burgas to the Greek port of Alexandropoli. As the Bulgarian government of Prime Minister Borissov (elected in June 2009) has started to balk at a previous tripartite agreement based on ecological concerns, this project is about to falter anyway.

In November 2010, the Turkish Government will take a decision on Russian plans to construct the seabed section of the South Stream pipeline in Turkish waters.

Another element of Russian-Turkish energy cooperation is the construction of four nuclear power plants in Mersin at the Turkish Mediterranean coast by Russia. Total cost is estimated at USD 20 billion. Russia and Turkey agreed on this during the visit of Dmitri Medvedev to Turkey on 12 May 2010. According to the agreement, Russia will hold ownership of these plants and later on open the venture for Turkish and foreign investors up to a stake of 49%. Rosatom will sell the electricity generated by the plants on the Turkish market.

So far, Gazprom has been remarkably successful to promote its South Stream initiative. It has signed Intergovernmental Agreements with all transit and terminus countries:

- **Bulgarian Section:** In 2008, the Bulgarian governments and Russia signed an agreement of intent on Bulgaria's participation in the South Stream project. On 18 January 2009 Russian Gazprom and Bulgarian Bulgargaz (later renamed Bulgarian Energy Holding EAD) signed a preliminary agreement on a joint operating company for the South Stream pipeline's section on Bulgarian territory. Both companies will hold 50% of the shares.²⁸ However, the Bulgarian government of Boiko Borissov elected in June 2009 is balking on these agreements. The new government is weighing the options of sticking to South Stream on much better terms than Gazprom has so far accepted or revitalizing its role in the Nabucco project. Allegedly, Bulgaria is pressing for higher transit fees for Russian gas transported via Bulgaria to Turkey and Greece (to be renegotiated 2011) and to abandon intermediaries in Gazprom's gas sales to Bulgaria. In mid-June 2010 the Dep. Foreign Minister of Bulgaria stated that his country gives preference to the Nabucco pipeline. In addition, the 'Bulgarian Energy Strategy until 2020' published on 5 July 2010 does not mention 'South Stream' at all. On 6 July 2010, however, Bulgaria reiterated its commitment to participate in the South Stream project. On 17 July 2010 both parties agreed on a detailed schedule for the construction of the Bulgarian section of South Stream; in exchange, Gazprom agreed to lower prices for the gas sold to Bulgaria and abandon intermediaries in Gazprom's gas sales to Bulgaria no later than June 2011. The Bulgarian section will be built by a joint venture on a parity basis. In late October 2010, both sides agreed on a joint venture on drafting a feasibility study on the Bulgarian section of South Stream.

Bulgaria is important for Gazprom in transiting gas to Turkey, Greece and Macedonia. The transit agreement was extended until 2030 in 2006.

- **Serbian Section:** In 2008, Gazprom agreed to extend South Stream to Serbia with a filling capacity of 10 bcm and expand Serbia's gas storage Banatski Dvor (close to the Hungarian and Romanian borders) up to 3 bcm from its current capacity of about 800 million cm. Both objectives will be assigned to joint ventures between Gazprom and Serbia Gas. On 20 October 2009, Gazprom and Srbijegas signed an agreement to establish a joint venture to design, build and operate the Serbian section of the pipeline; Gazprom will hold 51% of the shares. Gazprom will hold also a majority stake (51%) of the modernized and expanded gas storage site.

The Russian-Serbian agreement on South Stream is part of a broader package of cooperation in the energy sector: On 25 January 2008 Gazprom agreed to buy 51% of the Serbian oil company Naftna Industrija Srbije (NIS) via its subsidiary Gazpromneft.²⁹ NIS owns two refineries and a large-scale fuel distribution network with filling stations all over Serbia. Allegedly Gazprom agreed to pay USD 565 million for a 51% stake and

²⁸ The agreement was approved by the Bulgarian parliament on 25 July 2008.

²⁹ The price of this acquisition was not made public but is estimated to be about 500 Mio.USD plus investment guarantees (particularly with refining assets) of the same volume.

promised to invest a further USD 539 million.³⁰ The agreements were ratified by the Serbian parliament on 9 September 2008, but only by late December 2008 the final documents were signed by the respective governments.

- Hungarian Section: On 28 February 2008, Hungary decided to join the South Stream project, when Gazprom and the Hungarian Development Bank (MFB) signed a preliminary agreement on the creation of a joint venture (South Stream Hungary Zrt.) on a parity basis which is to build and operate the Hungarian section of South Stream; a legal contract was signed on 29 January 2010. The pipeline can be extended from the Hungarian territory either to Austria or via Croatia and Slovenia to Italy. The Hungarian energy company MOL is not involved in this deal. Final documents on the joint company to build the Hungarian section of South Stream – South Stream Hungary Zrt. joint engineering company (JEC) – were signed on 29 January 2010.

The Hungarian government's decision was considered a major blow to the 'Nabucco' project (see below). At the signing ceremony on 28 February 2008, Putin ridiculed the Nabucco project: 'You can build a pipeline or even two, three, or five. The question is what fuel you put through it and where do you get that fuel. If someone wants to dig into the ground and bury metal there in the form of a pipeline, please do so, we don't object.' (...) 'There can be no competition when one project has the gas and the other does not.'³¹

- Austrian section: Intergovernmental negotiations between Russia and Austria on the latter's participation in the South Stream project officially started in November 2009. Given the fact that Austria's OMV (backed by the Austrian government) is a major partner in the Nabucco project, these talks were highly delicate. However, on 24 April 2010 Austria and Russia signed a State Treaty on the legal framework for the Austrian section of the South Stream pipeline. Gazprom and OMV Gas & Power will team up in a joint venture to build the short section of South Stream on Austrian territory.
- Croatian link to South Stream: Croatia has also expressed its interest to join the South Stream project. Croatian gas consumption in 2009 was 3.2 bcm/y, with about 60% covered by domestic sources; the remaining volumes are imported from Russia. Russia had offered Croatia to join in 2007, but then Croatian government declined. This position started to change by late 2009. Croatia joining South Stream requires a branch line, either from Serbia or from Slovenia. Gazprom wanted to link the decision to build the branch line to its vital interest in connecting the Druzhba and Adria oil pipelines (Druzhba-Adria Integration). With DAI Russian oil could be pumped via Hungarian and Croatian pipelines to the oil terminal in Omisalj. To this end, however, the 'Adria Pipeline',

³⁰ Data provided by: Mityayev, Oleg, 'Outside View: Russian-Serbian energy pact', UPI Energy Analysis, 28 January 2008 (http://www.upi.com/International_Security/Energy/Analysis/2008/01/28/outside_view_russian-serbian_energy_pact/9277/).

³¹ Quoted in: Socor, Vladimir, 'South Stream Gas Project defeating Nabuco by default', *Eurasian Daily Monitor*, 5 March 2008 (http://www.jamestown.org/edm/article.php?article_id=2372856, retrieved on 5 March 2008).

commissioned on 1990, needs to be used in reverse flow. Gazprom's major interest in Croatia's participation in South Stream was to make current Croatian plans to build an LNG terminal on Krk Island futile.

On 2 March 2010 Croatia and Russia reached agreement on a joint venture by Gazprom and Croatian Plinarco to build the Croatian section of South Stream.

Talks are underway in the fall of 2010 to include also Macedonia in the South Stream venture. In addition, Gazprom and Romanian Transgaz are considering Romania's participation in the pipeline project. On 14 October 2010 Gazprom signed a memorandum of intent to evaluate the feasibility of a Romanian section; results are expected for Q1 in 2011. Gazprom is considering either to direct the off-shore pipeline of South Stream to the Romanian port of Constanta and supplant the route to Varna (Bulgaria) or to build a branch line from Bulgaria to Romania.

Despite these achievements, it has to be noted that Gazprom so far has not identified a precise route for South Stream. It has not even provided any feasibility studies on the project. The latter is envisioned for February 2011. South Stream is a very cost intensive project and raises questions as to its financial and economic reasonableness. Initially, Russia's objective with South Stream may have been to undermine Nabucco Pipeline, which Russia sees both as anti-Russian move in geopolitical terms and a threat to Gazprom's position on the European gas markets. Some observers assumed that Gazprom may have wanted to get guaranteed access to the planned Nabucco pipeline.

Austria's OMV and Turkish Botaş (Boru Hatlari ile Petrol Tasima), both members of the Nabucco consortium, indicated that it might be worthwhile to grant Gazprom guaranteed access to Nabucco (third-party access).³² Nabucco Managing Director Mitschek in January 2008 announced that 'we would welcome (Russian) Bluestream gas into the Nabucco pipeline'.³³ EU Commissioner Piebalgs, however, on 6 May 2008 ruled out any Russian participation.³⁴ Allowing Gazprom guaranteed shipment of its gas via Nabucco would undermine the rationale of the project – to lessen EU dependence on Russian gas. Russia has always denied that there is a competition between the South Stream project and the EU's Nabucco. At the same time, Gazprom has always rejected proposals to merge the projects. On 9 March 2010 ENI CEO Scaroni proposed to merge part of South Stream and Nabucco (see below): 'Should all partners decide to merge the two pipelines for part of the

³² Turkish Foreign Minister Babacan made such a proposal during his visit to Moscow on 21 February 2008. Already in January 2008, Nabucco Pipeline International Managing Director Mitschek and Austrian Minister of Economics Bartenstein had indicated as such.

³³ Quoted by: UPI Energy Analysis, 'South Stream deal reached, puts Europe on edge and Nabucco in doubt', 21 January 2008 (http://www.upi.com/International_Security/Energy/Analysis/2008/01/21/analysis_oil_and_gas_pipeline_watch/4156, retrieved on 25 February 2008).

³⁴ Lando, Ben, 'Europe ties Nabucco deals with Turkey and Arab gas, says Russia not involved', *UPI Oil and Gas Pipeline Watch*, 6 May 2008 (http://www.upi.com/International_Security/Energy/Analysis/2008/05/06/analysis_oil_and_gas_pipeline_watch/1982/).

route, we would reduce investments, operational costs and increase overall returns.³⁵ This proposal was immediately rejected by Russian Energy Minister Shmatko.³⁶

2 The EU's South European gas corridor: options for guaranteed long-term gas supplies at reasonable cost

The Russian-Ukrainian gas crises have had a major impact on energy security debates in the EU. Initially, the discussions focused on three essential objectives:

- Determined efforts to attract additional gas suppliers for the EU markets (supply diversification), which, in turn, required the construction of new gas pipelines. The strategic goal was to lower or, at least, prohibit an even stronger Russian share in EU gas consumption. This long-term objective is supported by some EU countries as a means to increase energy supply security, by some others, however, this objective is also seen as a key instrument to weaken Russia in geopolitical terms.
- Programmes to lower the share of natural gas in the fuel mix of EU countries.
- Incentives for energy companies to invest in interconnector pipelines linking EU member states as part of an EU 'energy solidarity initiative'.

The '2009 Russian-Ukrainian gas crisis' added another element to the EU energy planning. Based on a more sober analysis of Ukraine's role in the gas crises, the EU started to re-view Ukraine's position as the core transit country for EU gas supplies. With about 20% of EU gas consumption shipped through Ukrainian pipelines, it has been accepted that the EU also needed supply route diversification. Supplier diversification might often go together with supply route diversification. However, various EU countries, first and foremost Germany and Italy, also called for additional pipelines to ship Russian gas to EU markets as a means of promoting reliable gas supplies.

The EU is keen to attract new gas suppliers, with the countries of the Caspian Sea Basin and the Middle East at the very centre of the EU's efforts. In order to get access to the Caspian gas volumes *and* to lessen the EU's dependence on Russia which currently transports large volumes of Caspian gas to Europe via its own pipeline network, new transport corridors have to be built. This EU objective goes along with the Caspian countries' aspiration to create alternative export routes for their oil and gas that bypass Russia. The littoral states of the Caspian Sea need multiple export pipelines to lower their dependence on the Russian pipeline system. In addition, new pipelines increase their bargaining position with Russia over the price for its gas sales to Russia. Just by publicly debating

³⁵ Speech by Paolo Scaroni at the CERAWEEK conference in Houston on 9 March 2010. For the text of his speech see: http://www.eni.com/en_IT/attachments/media/news/speech_Scaroni%20.pdf (retrieved on 20 March 2010).

³⁶ See: *RIA Novosti*, 15 March 2010 (<http://de.rian.ru/business/20100315/125476127.html>, retrieved on 17 March 2010).

alternative export options for the Caspian countries increases pressure on Russia's Gazprom.

The core of the EU's initiatives to enhance EU's energy security is 'Southern Gas Corridor' (SGC) allowing for oil and gas shipments from the Caspian to EU markets bypassing Russia. The SGC initiative identifies four major projects capable of achieving this strategic goal:

- The Nabucco pipeline project set up by the consortium 'Nabucco Gas Pipeline International' of currently six companies (OMV Gas and Power, Hungarian MOL, Romanian Transgaz, Bulgargaz/now Bulgarian Energy Holding and the Turkish company Botaş) with Austria's OMV in the lead position. Nabucco is supposed to stretch from Erzurum (Turkey) – the terminal point of the South-Caspian Gas Pipeline (a.k.a. Baku–Tbilisi–Erzurum Pipeline, BTE) – to Baumgarten (Austria),³⁷ which will become its terminal point and major distribution centre. Erzurum is the terminus of both the BTE and the Tabriz (Iran)–Erzurum pipeline.

On 5 February 2008, the German RWE (Rheinisch-Westfälisches Elektrizitätswerk) joined the consortium, with all six members now holding 16.67% of the shares. Gaz de France's interest in joining has long been opposed by Turkey, due to the French position on the Armenian genocide in the Ottoman Empire (1915). This position has changed as of late and Gaz de France will most likely join the consortium within the next months.

- The 'Interconnector Turkey-Greece-Italy (ITGI, a.k.a. South European Gas Ring)', which is supposed to ship gas from the Caspian to southern Italy. This pipeline project was launched by Greece and Italy on 27 July 2007 in Rome.³⁸ ITGI will transport 8 bcm/year of Caspian gas to Italy. So far, however, no Inter-Governmental Agreement on the pipeline has been signed. The off-shore section ('Poseidon-Pipeline') will be built by the companies Edison SpA (Italian) and DEPA (Greek).³⁹

On Turkish territory, ITGI will make use of already existing pipelines. In November 2007 Turkey and Greece opened a pipeline from Karabatey (Turkey) to Komotini (Greece) which will carry up to 11–12 bcm/year by 2012. 3.5 bcm/y are contracted from SD-1 production. 8–9 bcm/year of ITGI's total capacity are reserved to ship gas via the 'Poseidon pipeline' to Italy,⁴⁰ about 3 bcm will be consumed by Greece. The start-up capacity however will be much lower – about 0.25 bcm/year.⁴¹ This pipeline will be extended

³⁷ The project was launched by OMV and Botaş in 2002.

³⁸ A concluding statement between the European Commission, Turkey and Greece had already been signed in 2000.

³⁹ In June 2008 the company IGI Poseidon SA was launched to build the pipeline.

⁴⁰ See: UPI Energy Analysis, 13 November 2007 (http://www.upi.com/International_Security/Energy/Analysis/2007/11/13/analysis_oil_and_gas_pipeline_watch/1758/, retrieved on 13 November 2007).

⁴¹ Sariibrahimoglu, Lale, 'Europe to start buying Azeri gas via Turkey bypassing Russia', *Eurasia Daily Monitor*, 15 November 2007 (http://www.jamestown.org/edm/article.php?article_id=2372595, retrieved on 16 November 2007).

to Italy until 2012. The Greek second stage runs to Igoumenitsa; the Poseidon pipeline is the project's third phase, an under-sea pipeline running from the Greek Ionian Sea Coast to Italy.

In July 2009, the state-owned Bulgarian Energy Holding, Edison and DEPA signed a memorandum to build a stretch from Komotini to Stara Zagora (Bulgaria) to import 1 bcm of Azerbaijani gas via the ITGI starting in 2012. Total capacity of this link will be 3 bcm/y; commissioning the line is expected in 2013. In January 2009, Bulgaria had already signed an agreement with Azerbaijan to import 1 bcm/year of Azerbaijani gas, which will be transported via the BTE and the Turkey–Greece pipeline. Bulgaria needs to build just a very short section to link up to the latter gas pipeline. In August 2010, the Bulgarian government announced it will start construction of this pipeline within a year.

- The 'Trans-Adriatic Pipeline (TAP)' (length: 520 km) will ship Caspian (and Iranian) gas via Greece and Albania to Italy's Puglia province. TAP is a joint venture of the Swiss EGL (Elektrizitätsgesellschaft Laufenburg) and Norwegian StatoilHydro; in April 2010 the Italian company Enel's subsidiary Axpo joined the consortium. In May 2010, E.ON Ruhrgas joined the consortium with 15% of the equity; EGL and Statoil now each hold 42.5% of the shares. TAP shall be linked to the Turkish pipeline system and transport both Azerbaijani and eventually Iranian gas.⁴² TAP will start in Thessaloniki and will include a short off-shore section linking Albania with Italy (length: 151 km). The cost of TAP is much lower than the ITGI and Nabucco projects; it is estimated at EUR 1.5 billion.

The planned capacity of this pipeline is 10 bcm of gas annually, with a possible upgrade to 20 bcm/year. StatoilHydro's support for the TAP is crucial, because it holds a 25.5% stake in the huge Azerbaijani gas field of Shah Deniz (see below). Both Nabucco and ITGI depend on that gas as well. Similar to ITGI, no Intergovernmental Agreement has been signed yet. TAP investment decisions are not expected earlier than 2011. The pipeline could be on stream by 2015.

- In November 2008, the EU Commission included 'White Stream Pipeline' in the EU's Southern Gas Corridor initiative. It cannot, however, claim the same support as the previously mentioned pipeline projects. White Stream is a private venture of several small companies based in London like 'Pipeline Systems Engineering' (PSE) and Radon-Ishizumi. Initially, 'White Stream' was proposed by Julia Timoshenko in 2005, when she headed the Ukrainian government. The pipeline should be built on the seabeds of the Caspian and Black Sea and on-shore via Georgia (Supsa) to bring Azerbaijani and Turkmen gas to the Romanian port of Constanta. From there gas would be shipped to EU countries or Ukraine.⁴³ The pipeline is planned to branch off from the BTE line in

⁴² EGL contracted Iranian gas (5.5 bcm/year starting with 2012) despite strong US objections in 2007. Due to multilateral and bilateral sanctions against Iran, TAP is, however, not considering Iranian gas at the moment.

⁴³ In an earlier version, gas was supposed to be shipped to Crimea and transported further via the Ukrainian pipeline network.

western Georgia. The project envisages 4 parallel seabed pipelines with a throughput capacity of 8 bcm each. From Constanta, the gas pipeline could run along the 'pan-European Oil Pipeline' to Italy.

Within the EU, however, there is no consensus as of yet, on which projects actually make up the Southern Gas Corridor, let alone which one should be prioritized. All four projects in common is their dependence on Caspian gas.

2.1 Gas resources in the Caspian region

Proven gas reserves of the Caspian Sea's littoral states excluding Russia (which holds 43.3 trillion cm proven gas reserves in 2008) – Kazakhstan (1.82 trcm), Turkmenistan (7.94 trcm) and Azerbaijan (1.2 trcm) – are rated at 10.96 trillion cm in 2008. Uzbekistan (which is not a littoral state of the Caspian Sea) adds another 1.58 trcm.⁴⁴ With the exception of Uzbekistan, these gas fields are quite young in terms of production. The exhaustion rate of Kazakh gas field is estimated at only 5%, the Azeri rate at 12%, Turkmenistan 17% and the highest exhaustion rate with Uzbekistan at 35%.⁴⁵

Total production of the four Caspian Basin countries in 2008 was 173.2 bcm; in 2009, with demand volumes down due to the economic crises and the de facto embargo of Russia on Turkmen gas, it was 147.8 bcm. Turkmenistan is the largest producer; its share of total 2008 production was 38.2%. Uzbekistan's share was 35.9%. Kazakhstan trailed behind with 17.4% and Azerbaijan with just 8.5%. Until the mid-nineties, Turkmenistan was the largest gas producer in the Caspian Basin. Its production, however, had started to decrease since the late eighties and plummeted in the nineties. So Uzbekistan took the lead as the largest gas producer. In 2005 Turkmen gas production outstripped Uzbekistan's production. Kazakhstan has seen a steep rise in its gas production since 2003, but with 30.2 bcm/year is still a distant third. Azerbaijani gas production has increased strongly since 2006; only in 2007, production volumes equalled the numbers of the year 1985.

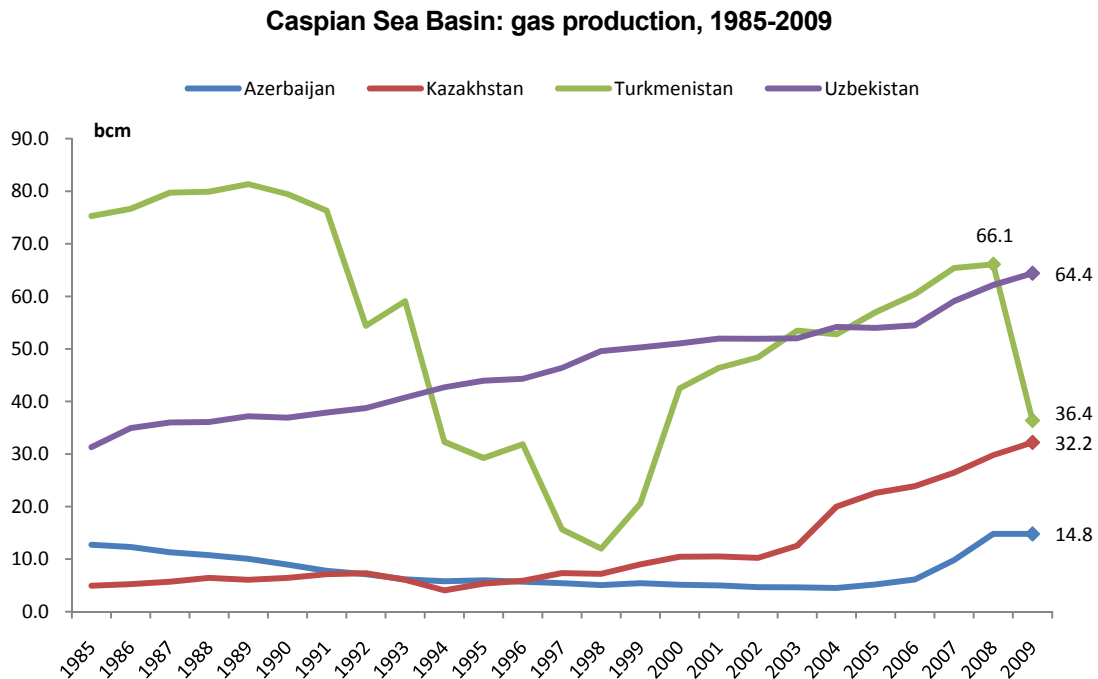
All major Kazakh oil fields – Tengiz, Kashagan and Karachaganak – also contain enormous gas reserves. According to current estimates (2009), Kazakh gas reserves are about 1.8–2.1 trillion cm. Almost all Kazakh gas, however, is associated gas, which is pumped back to pressurize oil fields and thus boost oil extraction. In addition, Kazakh gas contains a lot of sulphur and carbon dioxide, which requires cost-intensive reprocessing. Kazakhstan has contracted almost all Kashagan gas with Gazprom for the next 15 years; in addition, Kazakhstan will start exporting 10 bcm of natural gas annually to China.

⁴⁴ BP Statistical Review of World Energy 2009 (www.bp.com/statisticalreview), retrieved on 23 August 2009.

⁴⁵ See: Götz, Roland, 'Europa und das Erdgas des Kaspischen Raumes', Discussion paper of the SWP Berlin, FG 5 (August 2007), p. 3.

A major problem for retrieving the hydrocarbon fossils from the Caspian Sea, however, is the still unsettled problem of the legal status of the Caspian Sea. Its status is currently defined by the Treaties of 1920 and 1941, signed by Russia/USSR and Iran. Among the littoral states it is only Iran demanding the condominium use of the Sea, or, as a major concession (as Iran sees it), an equity division of the Caspian waters, which would give each littoral state a 20% share.

Figure 2



Source: BP Statistical Review of World Energy 2010

Russia, Azerbaijan und Kazakhstan, less so Turkmenistan, oppose the Iranian approach and demands the Caspian Sea to be 'divided along a median line into five sectors based on each state's respective shoreline length'.⁴⁶ The surface of the Caspian Sea should remain in common use. This model would leave Kazakhstan with 27%, Turkmenistan with 23%, Russia with 19% and Azerbaijan and Iran with 18% and 13% of the Caspian Sea's bed respectively. Iran thus would be left with smallest portion of the Caspian Sea, which, in addition, is considered to be the least energy rich.

The two conflicting option are based on the different legal interpretations of the nature of the Caspian as a Sea or a Lake. If it is a sea, control of the seabed (and the waters) is based on the length of the coastline. An equal sharing of the seabed would be possible, if the Caspian Sea is defined as a lake. Iran, for the above-mentioned reasons, is the sole

⁴⁶ 'Scene-Setter: Russia's Putin to Visit Iran for Caspian Summit', *BBC Monitoring Service*, 15 October 2007. Provided by Johnson's Russia List, 15 October 2007, # 26.

promoter of that legal interpretation, with Turkmenistan most often wavering between the two legal approaches.

The undefined borders have fuelled tensions between Turkmenistan and Azerbaijan, with the former claiming part-ownership of oil fields (Azeri, Chirag and Kapaz) currently exploited by the 'Azerbaijan International Operating Company'; Turkmenistan names these fields as Omar, Osman and Serdar fields.⁴⁷ Azeri and Chirag fields are already being developed by a consortium led by BP. In late July 2009, the Turkmen government announced to bring the case to an unnamed international court of arbitration.

The heads of state of all five littoral states first met in 2002 to settle the dispute; the meeting ended without any breakthrough. On 16 October 2007, a second meeting on the level of presidents took place in Tehran, which did not solve any of the contested issues.⁴⁸ Iran will most likely stall the negotiations; this is not only due to its loss of control of a sizeable part of the Caspian Sea's seabed, but also because accepting such a division would enable Turkmenistan to go on with a trans-Caspian seabed pipeline ('Trans-Caspian Gas Pipeline', TCGP) linking Turkmen gas fields via Turkmenbashi (Krasnovodsk) with Baku bypassing Russia as well as Iran (see below). If TGCP were to be built, Iran suffered a serious blow in the regional energy equation.

Iran's position also serves Russia's best interests, as Russia uses all means to block seabed pipelines linking Kazakhstan and Turkmenistan with Baku. At the Caspian countries summit in Tehran on 16 October 2007, Vladimir Putin reiterated Russia's position that any decision on constructing a seabed-pipeline in the Caspian has to be taken by consensus of all littoral states, because such a pipeline allegedly is a serious ecological risk for the Sea. Azerbaijan, Kazakhstan and Turkmenistan for obvious reasons do not subscribe to this argument.

2.2 Gas export potential in the Caspian and the Middle East and its impact on the EU's Southern gas corridor

The focus of this section is on the Nabucco Consortium's efforts to secure guaranteed gas volumes at reasonable prices to make the Nabucco pipeline economically viable.

The Nabucco pipeline project was launched in 2002 by OMV and Botaş (initially with the objective to bring Iranian gas to the EU) and is now managed by the consortium 'Nabucco Gas Pipeline International' (OMV Gas and Power, Hungarian MOL, Romanian Transgaz, Bulgargaz/now Bulgarian Energy Holding, Turkish company Botaş and German RWE).

⁴⁷ Ibidem.

⁴⁸ The Heads of States only agreed to meet annually to address the open questions.

With a total length of 3.320 km, Nabucco is supposed to stretch from Erzurum (Turkey) – the terminal point of the Baku–Tbilisi–Erzurum Pipeline, BTE – to Baumgarten (Austria), which will become its terminal point and major distribution centre. Gas transport via the Baku–Tbilisi–Erzurum pipeline (BTE) to Turkey started in July 2007. Its current capacity is 20 bcm/year. OMV’s Baumgarten compressor station currently transmits about one third of all Gazprom’s exports to Western Europe.

On 5 November 2008, OMV, Gazprom via Gazprom Germania, Vienna Stock Exchange (Wiener Börse AG), and Centrex Europe Energy and Gas AG (CEEGAG) agreed in principle on the development of the Central European Gas Hub (CEGH), currently a 100% subsidiary of OMV Gas and Power, in a deal expected to close in 2009. OMV and Gazprom are supposed to hold a 30% stock each; Wiener Börse and CEEGAG each own a share package of 20%. CEEGAG, which is owned by Centrex Group, was founded by ZAO AB Gazprombank. According to other sources, CEEGAG is a company owned by GH Gas Holdings, Ltd., in Cyprus and RN Privatstiftung, Austria (owner is Robert Nowikovsky).

When the CEGH Gas Exchange at the Vienna Stock Exchange opened on 11 December 2009, however, OMV still held full ownership of the CEGH. Talks on the above mentioned ownership restructuring are still going on the EU level. Currently (2009), CEGH is trading up to 24 bcm/year.

Map 9

Turkmen oil and gas deposits



Source: <http://www.nabucco-pipeline.com/project/project-description-pipeline-route/index.html>

Total construction costs are estimated at about EUR 7.9 billion. The Consortium expected a final investment decision to be taken at the end of 2010. Indeed, on 6 September 2010 the consortium achieved an indicative commitment (mandate letter) by the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD)

and the International Finance Corporation (IFC) to provide EUR 4 billion for the pipeline project. If sufficient investment will be secured and – most importantly – supply contract will be signed, construction will start in 2011. The first stage of the pipeline will be commissioned in 2015, pumping about 18 bcm/year; its second stage should be finished by 2019 and ship up to 31 bcm/year.

A major step for the Nabucco project was the Intergovernmental Agreement (IGA) signed by the governments of Austria, Hungary, Romania, Bulgaria and Turkey on 13 July 2009. The IGA sets the regulatory framework for the project. Up to 50% of the transport capacity is reserved for the members of the consortium on a parity basis in principle;⁴⁹ the remaining volumes have to be traded on the market ('third party access'). All gas shipments will be handled by a single company – the Nabucco International Company (one-stop-shop principle). This is a crucial decision, which does away with Turkey's strategic objective to become a gas trading hub within the Nabucco framework. It was a major success that the Turkish parliament ratified the IGA in March 2010.

None of the members of the consortium is a major gas producer but doing in gas transit and distribution. If construction should start anytime soon, Nabucco needs to contract sufficient volumes of gas. Lacking gas, the operators will not succeed to raise the funds needed to start with construction. At the same time, with sufficient funds not guaranteed, gas producing countries in the Caspian Basin are reluctant to contract gas with Nabucco. One third of the financial investment need will be raised by the consortium; another third will be financed by the EBRD, the EIB and – maybe – the World Bank. The remaining EUR 2.5 billion have to be raised on the capital markets.

As major gas suppliers, the Nabucco operators see Azerbaijan, Turkmenistan, Iraq, Egypt, and in a mid-term perspective also Iran.

2.2.1 The role of Azerbaijan

Azerbaijan is a crucial supplier for the EU's South European Gas Corridor. Azerbaijani gas reserves are estimated at about 1.2 trillion. In 2008, Azerbaijan's produced 14.7 bcm, with domestic consumption at 9.3 bcm. Production stagnated at 14.8 bcm in 2009 due to lower demand on the domestic and external markets. Only in 2007, Azerbaijan had become a gas net exporter. Azerbaijan's total export volume in 2008, however, was only 5.4 bcm. Its 2009 export potential is 7.1 bcm.⁵⁰ Azerbaijan's produces a lot of sour gas, which fosters early corrosion of the pipelines if the gas is not refined.

⁴⁹ The six parties can redistribute shares as they wish.

⁵⁰ BP Statistical Review of World Energy 2010 (www.bp.com/statisticalreview, retrieved on 23 October 2010).

Current and future gas production will rest on the huge gas field Shah Deniz, which was discovered in 1999. Production at Shah Deniz with an estimated 1.2 trillion cm of proven gas reserves was launched in late 2006. In its first phase, Shah Deniz, which is operated by British Petroleum (BP), is about to produce up to 15 bcm/year, a target which will be achieved in 2012 at the earliest. Production was 8.5 bcm in 2008 and will increase to 9 bcm in 2009.⁵¹ The main developers of Phase I are StatoilHydro (25.5% of the shares), BP (25.5%) and SOCAR (10%), which also own the Baku (gas terminal of Sanchagal)–Tbilisi–Erzurum pipeline (BTE). Other members of the consortium are Total (10%), LukAgip⁵² (10%), Iranian OIEC (10%) and Turkish TPAO (9%).⁵³

In 2016, phase II of the Shah Deniz production – operated by British Petroleum – will be launched. Shah Deniz II (dubbed SD-2) will add another 12–16 bcm of gas for export. As the transport capacity of the BTE is limited to 20 bcm (if new compressor stations will be installed), SD-2 exports to Western markets are limited to 12 bcm anyways.

On 6 October 2010, BP and Azerbaijani SOCAR agreed on exploring and developing the Shafag-Asiman gas field to the southeast of Baku; this field's reserves are estimated at 300–500 bcm of gas plus considerable volumes of gas condensate (about 65 million tons). According to the PSA, both parties hold 50% of equity. In a mid-term perspective, Azerbaijan could tap the huge gas layer below the Azeri-Chirag-Güneshli oil field. In addition, huge volumes of gas are also expected in the vicinity of the Apsheron Peninsula.

Azerbaijan's domestic consumption is on the rise as well (up 16% in 2008 over 2007), which reduces its gas export potential. Due to the economic recession, domestic demand dropped to 7.7 bcm. Domestic demand, however, can be satisfied with associated gas at oil production wells.

Azerbaijan currently exports gas to Turkey and Georgia and Iran, with Turkey exporting some of it to Greece. With Georgia, Azerbaijan signed an agreement in November 2008 on supplying Georgia with 80% of its gas needs for the next five years. In 2008, Azerbaijan exported about 542 million cm of natural gas to Georgia. In 2009, Georgia was to receive 448 million cm of gas from Azerbaijan (which is expected to be as much as 85% of Georgia's total gas demand).

Azerbaijan exports most its gas from the field Shah Deniz 1 (SD-1) to Turkey. Turkey has contracted 6.6 bcm of Azerbaijani gas production at the Shah Deniz I field in 2007. The

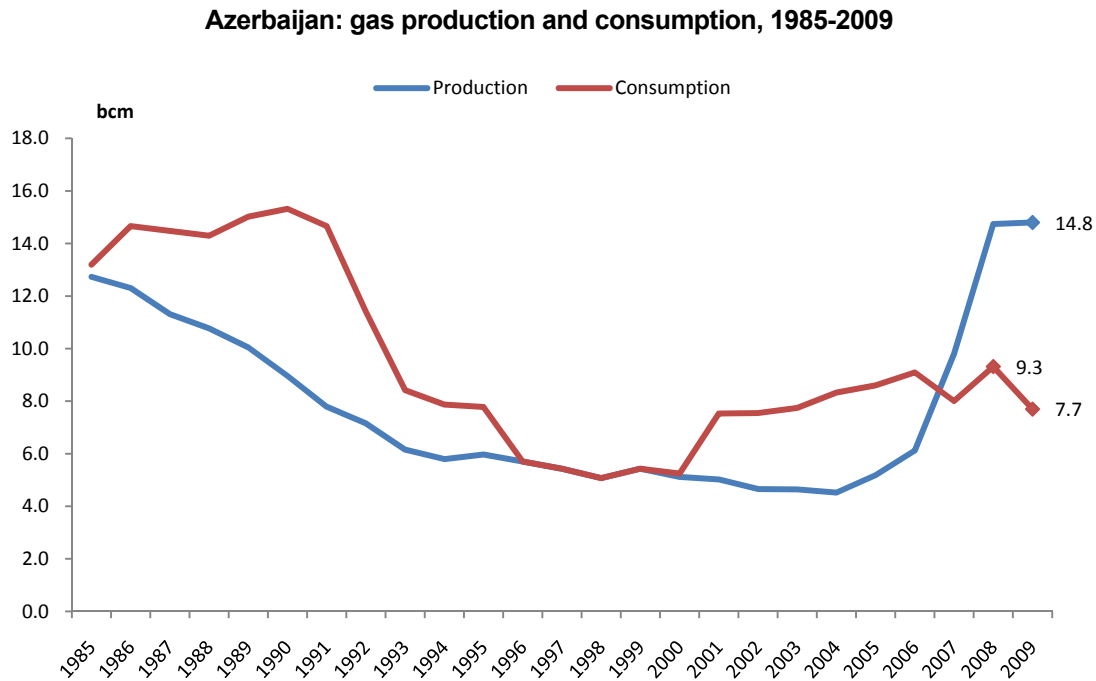
⁵¹ Socor, Vladimir, 'Azerbaijan Looking at Narrow Gas Export Options', *Eurasia Daily Monitor*, No. 84, 2009 ([http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=34936](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=34936), retrieved on 17 April 2010).

⁵² LukAgip is a joint company of Italian Eni and Russian LukOil.

⁵³ It has to be mentioned that the US does not object to the fact that Iranian state-owned firms are part of the consortium exploiting the Azerbaijani gas field Shah Deniz.

price Turkey had to pay for this gas until 2008 was significantly below the average prices on EU markets (120 USD/thousand cm). Azerbaijan and the SD-1 consortium insisted on much higher sales prices and bilateral relations between Turkey and Azerbaijan turned sour.⁵⁴

Figure 3



Source: BP Statistical Review of World Energy 2010

In 2010 Turkish import was 6.6 bcm. When SD-2 gas production will start in 2016, in addition to Turkey's demand, about 4.5 bcm/year and 8 bcm/year of gas from this field are contracted by Greece and Italy respectively. Georgian imports are expected to rise up to 2 bcm when Shah Deniz II will be on stream. This will leave about 3.5 bcm of gas supplies for the Nabucco project by 2016.

Turkish-Azerbaijani relations have been strained as of late. (...) Azerbaijan complains that transit fees Turkey wants to charge for Azeri gas pumped to European markets are too high and the purchase prices offered are far too low. In April 2008 Azerbaijan demanded negotiations on a new price. Turkey, however, demands delivery-at-frontier arrangements, which would allow Turkey to resell the gas to third parties. Azerbaijan demands retrospective compensation for gas sales at an unacceptable price. On 28 April 2010, Turkish energy minister Taner Yildiz announced that both sides had agreed on the revision of the price Turkey pays for SD-1 gas as well as sale's prices and on volumes of SD-2 gas to be

⁵⁴ These relations had further deteriorated due to the rapprochement between Turkey and Armenia. In October, 2008 both parties signed two protocols on the normalization of bilateral relations.

sold to Turkey. No agreement has been reached though on transit tariffs.⁵⁵ The details, however, were not disclosed. Anyhow, Azerbaijan insisted on a package solution which solves all pending issues.

On 7 June 2010, Azerbaijan and Turkey signed an agreement on the price for Azeri gas from Shah-Deniz 1 and on volumes (6–7 bcm) for gas deliveries from SD-2, where production will start in 2017. In addition, Azerbaijan agreed to Turkish demands to get the right to re-export Azeri gas at its own price. This was made possible by the Turkish concession that re-exporting gas will be handled by the largest petrochemical company in Turkey – Petkim. The Azerbaijani state-owned SOCAR holds a majority stake in this company.

The multiple delays of the Nabucco project puts pressure on Azerbaijan. With Shah Deniz to be commissioned in 2016, Azerbaijan needs to decide rather soon, where and how to export this gas. If a decision on Nabucco is not made soon, Azerbaijan may have to look for other export opportunities beyond the EU's Southern Corridor Initiatives. The AGRI project can be considered the most attractive alternative option:

On 15 April 2010, Romania, Georgia and Azerbaijan signed a Memorandum on Cooperation on energy projects which mentions LNG facilities to ship Azeri gas from the Georgian Black Sea coast (port in Kulevi⁵⁶) to Romania (Constanta). Hungary later joined the project. The pipeline for transporting Azerbaijani gas (close) to Kulevi is already existing. Both in Kulevi and in Constanta LNG liquefaction and regasification are yet to be built. In addition, LNG tankers have to be acquired. This gas could be further shipped to Hungary via the pipeline from Arad to Szeged (109 km) which connects the Hungarian and the Romanian pipeline systems. This pipeline was commissioned on 15 October 2010, will be equipped for bi-directional use. So far, this pipeline will transport gas to Romania with a capacity of up to 3 bcm/y. Total annual shipments might be up to 20 bcm; initial throughput, however, will be about 2.5 bcm/y. The venture is currently named AGRI (Azerbaijan–Georgia–Romania Interconnector). On 12 May 2010, the energy ministers of these countries signed a protocol on a joint venture for LNG exports. On 13-14 September 2010, the governments of all four countries confirmed their commitment to the project. In mid-2011, a feasibility study for the project is about to be finished.

In addition, talks are held between Azerbaijan, Georgia and Bulgaria about shipping CNG (Compressed Natural Gas) from the Georgian Black Sea Coast to Bulgaria.

In late October, 2010 Ukraine and Azerbaijan set up a working group to draft an agreement on Azerbaijani exports of energy resources to Ukraine.

⁵⁵ Turkish minister says gas deal reached with Baku (<http://www.news.az/articles/14263>, retrieved on 1 May 2010).

⁵⁶ Azerbaijan owns an oil port in Kulevi.

It was a serious setback to the Nabucco consortium when Russia on 29 June 2009 signed a framework agreement with Azerbaijan to buy 500 million cm in 2010 with the option of raising the volumes. Russia allegedly will pay 350 bcm for the gas as a base price. Gazprom will export this gas to Europe, but will make a huge loss on it at current gas prices. For the Russian side, the major bargain was Azerbaijan's decision to give the Russians preferential access to Shah Deniz II gas. In late December 2009 it was announced that Azerbaijan would sell 1 bcm of gas to Russia in 2010. In 2011, a total of 2 bcm will be shipped to Russia. Gazprom CEO Miller said there was no upper limit for Gazprom's purchase volumes of Azerbaijani gas.⁵⁷ Back in 2007, Azerbaijan still had imported gas from Russia.

After major repairs to the infrastructure, the Azerbaijani SOCAR company will start pumping gas to Iran via the Kazi Magomed (Azerbaijan)–Astara (Iran) gas pipeline by 2010. This pipeline was first commissioned in 1970. Its total capacity is about 10 bcm per year. Azerbaijan and Iran signed a final agreement on the deal in December 2009. In 2010, however, no more than 2 bcm will be pumped to Iran. In April 2010, Azerbaijan started the construction of the Sangachal-Azadkend-Astara pipeline; it will be commissioned by the end of 2012. Total throughput is set at 6.57 bcm/y. Azerbaijan and Iran also have swap agreements, with Iran delivering gas to the Azerbaijani exclave of Nakhichevan.

Crucial for the economic viability of the Nabucco project, however, is the inclusion of either Iranian gas (see below) or Turkmen gas.

2.2.2 *The role of Turkmenistan*

There are no independent, let alone public audits of Turkmenistan's gas reserves. Reserves are considered to range from 2.1 to 7 trillion cm,⁵⁸ much lower than the 22 trillion late-president Niyazov had boasted about. Turkmen gas production had peaked in 1989 (81.4 bcm), but plummeted during the nineties due to a collapse of demand on the Russian market – the sole export market for Turkmen gas – and serious underinvestment in the Turkmen gas industry. Gas production bottomed out in 1998 with only 12 bcm. Ever since gas production has increased. In 2008 Turkmenistan produced 66.1 bcm, with domestic consumption in 2005 at 19 bcm.⁵⁹ In 2008, Turkmenistan exported 45–50 bcm to Russia, to Ukraine (via Russian pipelines) and Iran annually. Under the leadership of President Berdymukhamedov, successor to the late Niyazov, Turkmenistan follows a smart policy of

⁵⁷ UPI, 'Gazprom secures major Azeri gas deal' (http://www.upi.com/Science_News/Resource-Wars/2010/01/22/Gazprom-secures-major-Azeri-gas-deal/UPI-26111264184228/, retrieved on 23 January 2010).

⁵⁸ Daly, Jonathan C. K., 'Analysis: Turkmenistan sides with the Kremlin', *UPI Energy Analysis*, 30 November 2007 (http://www.upi.com/International_Security/Energy/Analysis/2007/11/30/analysis_turkmenistan_sides_with_kremlin/7234/, retrieved on 1 December 2007).

⁵⁹ Daly, John C.K., 'Energy Analysis: China and Turkmen energy', *UPI Energy Analysis*, 4 January 2008 (http://www.upi.com/International_Security/Energy/Analysis/2008/01/04/analysis_china_and_turkmen_energy/4323/, retrieved on 5 January 2008).

- diversification of its export pipelines targeting the Chinese and EU gas markets;
- promoting Turkmen-Iranian ties to export Turkmen gas via the Iranian pipeline network with Turkey as a major future customer;
- attract foreign investment to modernize the country's gas transport infrastructure, explore and develop new gas fields (such as the huge Osman-South Yolotan field);
- link gas co-operation to foreign investment in other sectors of the Turkmen economy.

This grand strategy is pursued by the Turkmen leaders on the background of intense rivalry between the EU, Russia, China and Iran for Turkmen gas.

Russian-Turkmen gas trade

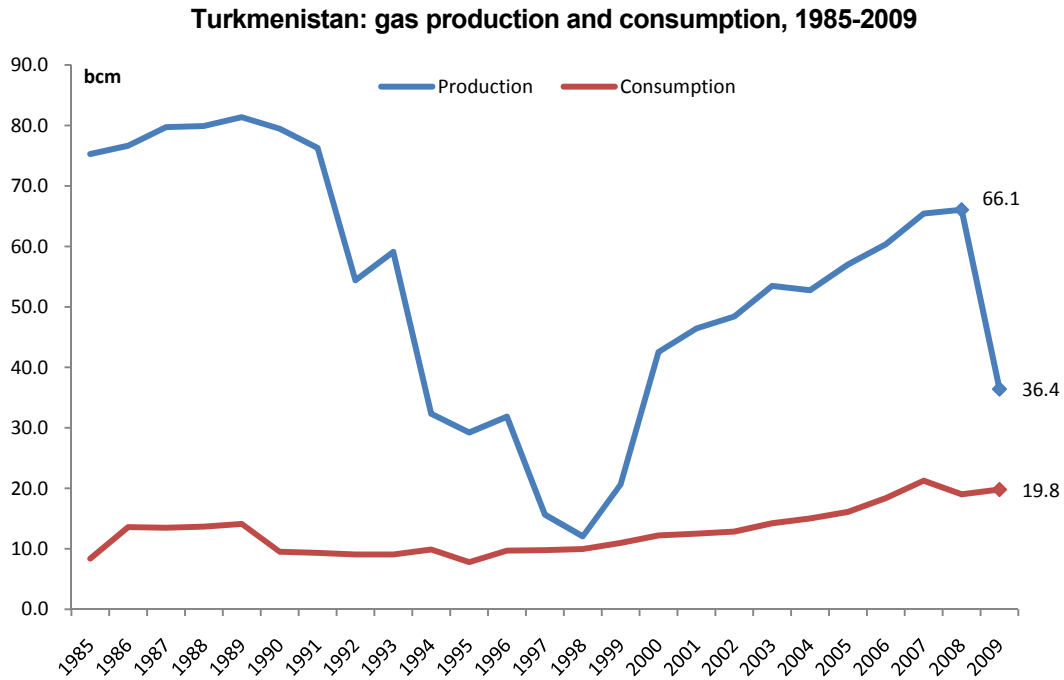
Russian-Turkmen gas cooperation is based on a *contract* signed in 2003. The legal nature of this document is disputed. It sometimes is referred to as an Agreement of Intent.⁶⁰ This agreement regulates Russian-Turkmen gas trade till 2028 and envisages a gradual increase of Turkmen gas exports starting at about 40 bcm and rising to 90 bcm around 2020. Turkmen exports are transported via the Soviet built Central Asia-Centre gas pipelines 1, 2, 4 and 5. These pipelines need, like all other Turkmen pipelines, huge investment in repair and modernization. In December 2007, Russia offered Turkmenistan interest-free loans to modernize gas extraction and pipelines as one further incentive to tie Turkmenistan's gas sector to Russia.

These Soviet-built pipelines, however, do not have sufficient capacities to transport the huge volumes of Turkmen (and Kazakh) gas to Russia. Therefore, in May 2007, Russia, Kazakhstan and Turkmenistan on presidential level agreed in principle to build a new pipeline on the eastern coast of the Caspian Sea (Prikaspiski Pipeline) to transport Turkmen gas to the Russian pipeline network. In the following months, however, talks on a contract and gas export prices stalled and a final governmental agreement was signed only on 20 December 2007 in Moscow.⁶¹ Each party to the agreement – which is to last until 2028 – commits itself to build the pipeline section on its own territory, which obliges Kazakhstan to build the longest section and leaves Russia with only a short section to construct. However, the agreement does not include a clause calling for *obligatory* supply of gas to be transported via the new pipeline. The pipeline's capacity will be 40 bcm, with Kazakhstan providing 10 bcm and Turkmenistan 30 bcm. The bulk of the Turkmen gas will be produced at the super giant gas fields of Osman and Ýolöten (South Yolotan); an independent audit by British *Gaffney, Cline & Associates* in 2007 put the field's reserves at 4 trillion cm (trcm) at minimum, with the best estimate at 6 trcm.

⁶⁰ Socor, Vladimir, 'Russia Resuming Gas Imports from Turkmenistan on a Small Scale', *Eurasia Daily Monitor*, Vol. 7, No. 1, 4 January 2010
([http://www.jamestown.org/programs/edm/single/?tx_ttnews\[tt_news\]=35866&tx_ttnews\[backPid\]=407&no_cache=1](http://www.jamestown.org/programs/edm/single/?tx_ttnews[tt_news]=35866&tx_ttnews[backPid]=407&no_cache=1))

⁶¹ The agreement was ratified by Russia on 26 December 2008.

Figure 4



Source: BP Statistical Review of World Energy 2010

Map 10

Existing and future gas pipelines linking Turkmenistan and Russia



Source: Gazprom (<http://www.gazprom.com/fi/posts/85/812650/central-asia-map.jpg>)

In addition, Russia, Turkmenistan and Kazakhstan agreed, to repair, modernize and expand central Asian gas and oil export pipelines to Russia (Central Asia-Centre Pipeline SATS-4) until 2011. Its current capacity of about 45–52 bcm was to be expanded to 75-90

bcm in 2010.⁶² Russia obtained Uzbekistan's commitment to Russian companies modernizing the Central Asia-Centre pipelines 1 and 2 during Vladimir Putin's visit in Tashkent on 2 September 2008. Uzbekistan agreed to export 15.3 bcm of gas to Russia in 2010.

Map 11

Gas pipeline network in Central Asia



Source: OSW, East Week 43 (193), 16 December 2009, p. 5.

The implementation of the accord stalled, however, in March 2009, when Turkmenistan refused to sign a pipeline construction agreement with Russian Zarubezhneftegaz. The Russian company was also interested to build a new pipeline linking gas fields in the east of Turkmenistan with the new Coastal Pipeline. Snubbing the Russian leadership, the Turkmen government launched preparations for an *international* tender for the modernization of Turkmen gas infrastructure on 27 March 2009.

Russian imports of Turkmen gas increased from 3.8 bcm/y in 2003 to 42.3 bcm/y in 2008.⁶³ In early April 2009 Gazprom halted imports of Turkmen gas after an explosion had wrecked a section of the 'Central Asia-Centre 4' pipeline (Davletbat–Daryalik pipeline). Both sides blamed each other for the incident. Obviously, however, Gazprom no longer wanted to buy Turkmen gas at EU-market netback parity prices (it had agreed to in March 2008, starting with 2009), when gas sale prices on Gazprom's EU markets plummeted.

⁶² Daly, John C.K., 'Analysis: U.S. irked by Turkmen gas policy', *UPI Energy Analysis*, 23 November 2007 (http://www.upi.com/International_Security/Energy/Analysis/2007/11/23/analysis_us_irked_by_turkmen_gas_policy/1334/, retrieved on 24 November 2007).

⁶³ Data provided by Gazprom (<http://www.gazprom.com/production/central-asia/>, retrieved on 28 October 2010).

The suspension of gas trade cost the Turkmen economy dearly (about EUR 5 billion). Gazprom had contracted imports of 42 bcm of gas in 2009; till the disruption in April it had bought just 11.3 bcm.⁶⁴ The pipeline shut-down caused major financial losses for Turkmenistan and almost halved its gas production in 2009.

Only in December 2009, when Russian President Medvedev made an official visit to Turkmenistan, both sides agreed to resume gas trade, albeit on a much lower scale as before the shut-down. Starting in 2010 (9 January), Gazprom will import *up to* 30 bcm of Turkmen gas, well below the pre-crisis level of 50 bcm, let alone the previously targeted 60 bcm in 2010. In fact, Russia will buy no more than 10 bcm in 2010. Imports rose to 7.8 bcm by the end of October 2010.⁶⁵ Both sides did not disclose the price Gazprom will pay for Turkmen gas, let alone a detailed price formula. It is likely, though, that pricing will be set at EU market levels on a netback parity basis. The agreement is coined as an 'addendum' to the 2003 basic agreement between Gazprom and Turkmengaz.

Besides, the Turkmen government confirmed its adherence to the Prikaspiski pipeline project agreement of 2007. However, only declarations of intent were signed on this project; the same holds true for a pipeline linking the gas fields in eastern Turkmenistan with the coastal regions. This link is to transport gas from Turkmenistan's eastern gas fields to the Prikaspiski pipeline.

Construction work on the East-West Pipeline started on 31 May 2010 at the compressor station Shatlyk. The throughput capacity will be 30 bcm/y. Its western terminus is Belik-1; it will be commissioned in June 2015. Both Shatlyk and Belik-1 are currently compressor stations on two Central-Asia-Centre pipelines leading north to Russia (Dauletabad-Degtyarlik and Caspian Littoral Pipeline respectively).

Turkmen–Chinese cooperation in the gas sector

Already in April 2006, Turkmenistan and China had signed a framework agreement on cooperation in the oil and gas sector with the prospect of long-term Turkmen gas exports to China. Chinese CNPC and its Turkmen counterpart signed a memorandum of understanding in July 2007 to build a gas pipeline from Turkmenistan to China – the 'Central Asia–China Pipeline'. The full capacity of the pipeline to be financed and operated by CNPC (via CNPC subsidiaries) will be around 30–40 bcm/year (30 bcm Turkmen⁶⁶ and 10 bcm Kazakh gas⁶⁷) and export gas from the Turkmen gas field Bagtyarlik – the licence of which

⁶⁴ ITAR TASS, 22 December 2009.

⁶⁵ Medvedev in Ashgabat for Energy talks (http://www.upi.com/Science_News/Resource-Wars/2010/10/22/Medvedev-in-Ashgabat-for-energy-talks/UPI-14601287754924/, retrieved on 22 October 2010).

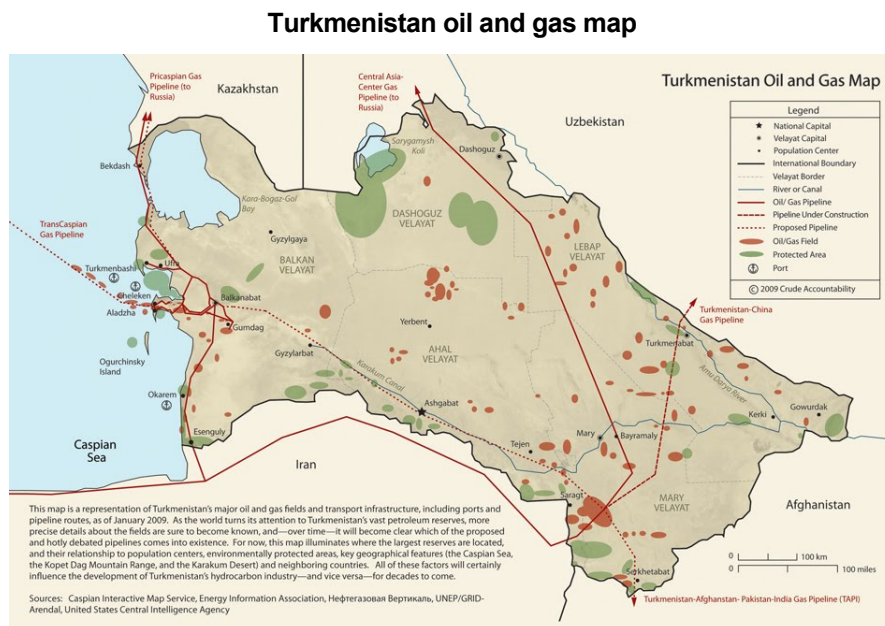
⁶⁶ In July 2009 Turkmenistan and China signed a 'Additional Purchase and Sale Agreement', which increased the volume of Turkmen gas deliveries to China to 40 bcm for the full contract duration.

⁶⁷ Kazakh supplies require a pipeline link from western Kazakhstan, which will most likely be partially financed by China.

CNPC acquired in 2007.⁶⁸ According to current plans, the full capacity of the pipeline will be used in 2013. At the time, only China was granted the right to develop Turkmen on-shore gas fields. Only in August 2010 another foreign company – Italian Eni – was allowed to develop the Nebit-Dag oil and gas field. The pipeline with a total length of 1.833 km running on the territory of Kazakhstan and Uzbekistan to the Chinese province Xinjiang (with Khorgos as the pipeline’s terminus) was finally commissioned on 14 December 2009. In 2010, only about 10–12 bcm of Turkmen gas will be exported to China. Its throughput capacity stands at 40 bcm, which is expected to be fully used by 2012. The second, parallel line (construction has not yet started, August 2010) will be commissioned in 2013. The contract signed is to last for 30 years.

Uzbekistan is in full support of the project, because it offers the country an alternative outlet for its own (modest) gas exports and considerable earnings in transit fees (which are not made public so far). In 2008 Uzbekistan produced 62.2 bcm of natural gas, with little more than 10 bcm left for export.⁶⁹ As of today, it is highly unlikely that Uzbekistan will be able to significantly increase its gas production given the degree of field exhaustion.

Map 12



Source: <http://www.energy-pedia.com/article.aspx?articleid=138419>

In July 2009 the Chinese State Development Bank granted a USD 4 billion credit line for Turkmenistan to explore and develop the super giant gas fields Osman and the Ýölöten

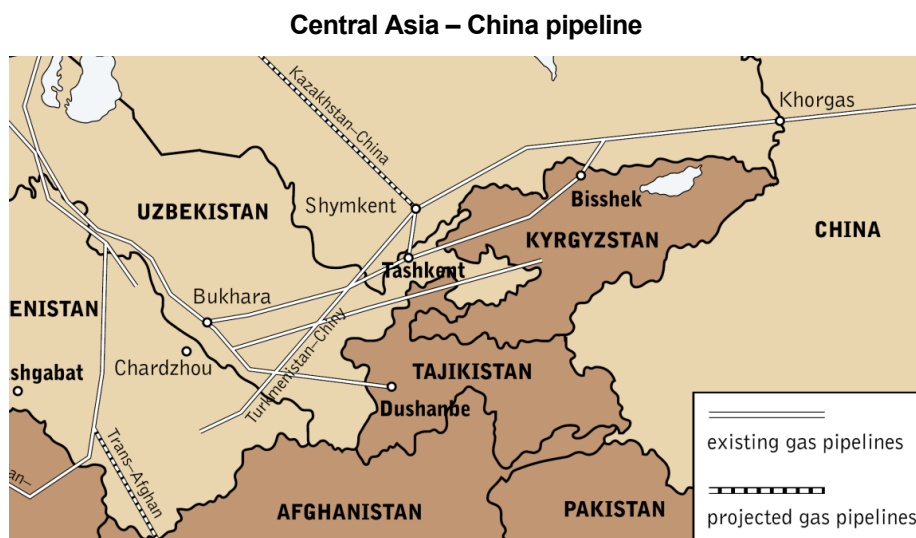
⁶⁸ CNPC so far is the only foreign company allowed to produce gas in Turkmenistan.

⁶⁹ Daly, John C.K., 'Analysis: Uzbek and Tajik energy', UPI Energy Analysis, 4 January 2008 (http://www.upi.com/International_Security/Energy/Analysis/2008/01/04/analysis_uzbek_and_tajik_energy/8258/, retrieved on 5 January 2007). Data for 2008 taken from: BP Statistical Review of World Energy 2009.

Gas Field ('South Yolotan')⁷⁰ in the Turkmen province of Mary. Furthermore, both sides agreed to expand co-operation in the regions east to the Amu-Darya, first and foremost in the Bagtyarlik region. Part of the gas produced in these fields will most likely be exported to China as well. At the end of December 2009, Turkmengaz signed servicing contracts with CNPC on the Ýolöten Gas Field, the Korean companies LG and Hyundai on de-sulphurification plants; the United Arab Emirate's Petrofac will work on similar plants and gas facilities, together with the UAE's Gulf Oil & Gas FZE. None of the major Western contenders has managed to enter Turkmen onshore gas-business. Annual production at Ýolöten is planned at 30 bcm.

In August 2010, Turkmenistan announced to ask for another USD 4.18 billion loan by China linked to deepening gas trade between both countries.⁷¹ With this loan, Turkmenistan wants to develop its South Yolotan field.

Map 13



Source: OSW, *East Week* 43 (193), 16 December 2009, p. 5.

Russia's position on China's engagement with the Turkmen gas sector is ambivalent. On the one hand, Turkmen gas sold to China decreases potential Turkmen supplies to the Nabucco project, which rivals the Russian South Stream project. With no Turkmen gas left for Nabucco in the short run, Nabucco gets less viable, even futile. On the other hand, Russia got to maintain access to sufficient amounts of Turkmen gas to meet its export obligations with EU consumers, as soon as gas demand will rise again in these countries. In addition, with China getting hold of Central Asian gas reserves, its need to buy Russian gas might decrease.

⁷⁰ The discovery of this gas field was announced in November 2006.

⁷¹ Turkmenistan warms to the US, hugs China (<http://www.energytribune.com/articles.cfm/5058/Turkmenistan-Warms-to-US-Hugs-China>).

Turkmenistan and the EU's Nabucco project

The Turkmen leadership is also considering the option of selling gas to the Nabucco consortium. The tricky questions however is how to bring its gas to Erzurum in Turkey, where Nabucco is about to start. Basically there are two options: Either a seabed-pipeline is to be built from Turkmenistan to Azerbaijan or a land-based pipeline from Turkmenistan to Turkey via Iran. The latter option is vehemently opposed by the US, whereas the first option faces legal challenges.

The Caspian Sea seabed-pipeline option faces serious hurdles too. This is due to the fact that the five littoral states of the Caspian Sea have so far not agreed on the status of the Sea under international law and its impact on how to divide the Sea among the littoral states. A seabed pipeline will face stiff opposition by Iran and Russia most likely will, for different reasons though, come out in support of the Iranian position.

The construction of a trans-Caspian gas pipeline is technically feasible – particularly if the Turkmen offshore gas-field Bloc 1 could be linked with Baku – but currently seems blocked by both Turkmen lack of interest and Iranian objections based on the above-mentioned disputed legal status of the Caspian Sea. In addition, there is a long-standing feud between Turkmenistan and Azerbaijan on a large off-shore oil field dubbed Kyapaz in Azeri and Sardar by Turkmenistan.

Map 14

Trans-Caspian gas trading options



In December 2008 OMV Gas and Power and RWE Supply and Trading founded the 'Caspian Energy Company' (CEC), which aims to establish a pipeline connection of the Caspian Sea with Turkey and the EU. The CEC, established on a parity basis between OMV and RWE will be open to any 'qualified partner'. A trans-Caspian pipeline should be operated under the CEC's ownership and link gas from the eastern Caspian shore either with the current BTE or build new routes to link up with the 'Nabucco' pipeline. No Western energy company holds any on-shore gas exploration and production licences in Turkmenistan.

On 16 April 2009, however, RWE scored a major success in signing an agreement with Turkmenistan on exploration and development of off-shore gas fields in Turkmenistan's continental shelf. Bloc 23 (out of 32 sections) in that area is the first to be assigned to RWE. In addition, both sides agreed to consult on Turkmen gas deliveries to Germany. This makes RWE the only company of the Nabucco consortium with production capacities in the region. So far (2010), only 5 Production Sharing Agreements (PSA's) on exploring off-shore fields have been awarded by the Turkmen government, with Russian Itera holding one of them. Energy companies so far have shown little interest in developing off-shore fields. However, Turkmen president Berdymukhamedov invited ConocoPhillips, Chevron, TX Oil and Mudaba (United Arab Emirates) to develop gas fields in the continental shelf of Turkmenistan.

Turkmenistan and Iran

Finally, Turkmenistan is also selling gas to Iran via the 'Korpedzhe-Kurt Kui' pipeline built in 1997 linking western Turkmenistan with the north of Iran. The supply-contract was concluded for duration of 25 years. In 2007 4.5 bcm were exported to Iran; the pipelines capacity is 8.4 billion cm.⁷² in 2007, about 5% of Iranian gas consumption was imported from Turkmenistan. From Kurt-Kui' gas is exported via the Iranian gas network to Turkey.

On 12 July 2009 Iran and Turkmenistan agreed to raise Turkmen gas exports to Iran up to 14 bcm/y. In November 2009, the construction of a new pipeline (agreed upon between the countries only in July 2009) linking the Turkmen Dauletabad field (in the east of Turkmenistan) with Iran was completed (Dauletabat-Sarakhs—Khangiran pipeline);⁷³ the 182 km long pipeline terminates in the Khangiran, a major gas processing centre in the province of Khoristan; it will transport up to 12 bcm in its second stage, but starts with 8 bcm only. The pipeline was commissioned by both countries' presidents on 6 January 2010. Total Turkmen export capacity to Iran via two pipelines will be 20 bcm/y. Turkmen gas will be consumed in the Iranian Caspian coastal regions.

⁷² Daly, John C.K., 'U.S. irked by Turkmen gas policy', *UPI Energy Analysis*, 23 November 2007 (http://www.upi.com/International_Security/Energy/Analysis/2007/11/23/analysis_us_irked_by_turkmen_gas_policy/1334/, retrieved on 24 November 2007).

⁷³ The pipeline is also dubbed Dauletabad–Salyp Yar.

The Turkish government has indicated interest in this project. The Iranian pipeline network could transport Turkmen gas to Turkey – either by direct transport or based on swap-deals. In principle, Iran could turn into a major outlet for Turkmen gas to world markets.

Gas trade between Turkmenistan and Iran, however, has not been without frictions. At the turn of 2007/08 Turkmenistan halted its gas exports to Iran of about 23 million cm/day allegedly due to technical problems and delayed Iranian payments.⁷⁴ The real reason, however, was a price dispute between the two countries. Reportedly, Turkmenistan had demanded to increase the gas price from 75 USD/tcm to 140 USD/tcm.⁷⁵ The halt in gas shipments had negative effects on the amount of gas delivered by Iran to Turkey. Initially Iran lowered its deliveries to Turkey and stopped it altogether on 7 January 2008. In turn, Turkey halted Azerbaijani gas shipments to Greece. Gazprom agreed to increase its deliveries to Turkey (and Greece) up to 40 million cm/day in order to make up for part of this loss.⁷⁶ The Turkmen-Iran gas dispute was solved only in April 2008 when Iran agreed to pay a higher price for Turkmen gas.

Map 15

The Russia–China–Iran energy nexus



Source: Asia Times (http://www.atimes.com/atimes/Central_Asia/LA08Ag01.html)

⁷⁴ See: <http://news.bbc.co.uk/2/hi/asia-pacific/7186402.stm> (14 January 2008).

⁷⁵ Ibidem.

⁷⁶ Allegedly, Turkmenistan also lowered its gas deliveries to Russia in January 2008.

Furthermore, Turkmenistan might be interested to consider the Turkmenistan–Afghanistan–Pakistan pipeline (TAP) to export gas from the Dauletabad gas field⁷⁷ to Pakistan (and India). This project was launched in 1996 by a consortium led by Unocal; it was approved by the Taliban leaders of Afghanistan in January 2007. Subsequently, however, TAPI was dropped due to Taliban Afghanistan's instability. TAP could well be expanded to India, (TAPI), which is in dire need of energy supplies. The projected trunk leads from the Dauletabad gas field in Turkmenistan via Herat/Kandahar (Afghanistan), Quetta/Multan (Pakistan) to Fazilka (India). Despite the interests of both Turkmenistan and the consumer countries, this project still seems unlikely due to the persistent violent-prone situation in Afghanistan. Current estimates put the capacity of TAPI at 33 bcm. In 2005, the Asian Development Bank announced to finance a feasibility study for the project. In April 2010, Turkmenistan invited the interested parties to Ashgabat (Aşgabat) to revive discussion about the TAPI pipeline.

In August 2010, Berdymukhamedov, who had visited India in June 2010, reiterated Turkmenistan's interest to go ahead with the TAPI project. On 30 August 2010 Turkmenistan and Afghanistan signed an Intergovernmental Agreement on construction the pipeline.

If Turkmenistan were eventually to export up to 40 bcm natural gas to the PRC, meet its 2003 contract obligations to Russia and its delivery commitments to Iran, the Turkmen gas production volume has to be raised substantially.

2.2.3 *The role of Turkey*

Natural gas is the major source of primary energy in Turkey making up 31.9% in 2008, and 31.3% in 2009; oil and coal (31.0% and 29.3% respectively in 2009) come close behind. Gas is particularly important in Turkey's electricity sector. With no indigenous gas production, Turkey is totally dependent on external supplies. Gas imports started in 1987, with the USSR as the exclusive supplier till 1994. Gas consumption has grown with economic modernization and urbanization. Most of the imported gas is pipeline gas (27.5 bcm in 2009), with LNG trailing behind (5.7 bcm in 2009), which is a ratio of 82.8:17.2. Russia is still the main supplier with a share of 52% in 2009 (17.3 bcm). Iran comes in second in 2009 (15.8%; 5.3 bcm), with Azerbaijan close up (15%; 5 bcm), followed by Algerian LNG (12.7%; 4.2 bcm). In 2008, Turkey imported 37.8 bcm of natural gas; in 2009 it was 33.2 bcm.⁷⁸ Turkey has contracted up to 30 bcm of gas with Russia, 10 bcm with Iran, 6.6 bcm

⁷⁷ This gas field is located in the Amu-Darya Basin in eastern Turkmenistan. Production had started in 1982, when the field was named Sovietabad.

⁷⁸ Data for 2008 taken from: Yiğitgüden, Yurdakul, 'Turkey – Turning the European Periphery into an Energy Hub?', in: Kristin Linke and Marcel Viëtor (eds), *Prospects of a Triangular Relationship? Energy Relations between the EU, Russia and Turkey. International Policy Analysis*, April 2010, pp. 12-18, see p. 12. Data for 2009 are taken from: BP Statistical Review of World Energy 2010 (Statistical Databook (http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_r

with Azerbaijan and 4 bcm with Algeria.⁷⁹ Analysts hold that, with these contracted volumes, Turkey will remain oversupplied with gas until 2018.⁸⁰

Table 4

Gas imports of Turkey, 2009 (in bcm)

	Total	Russia	Iran	Azerbaijan	Algeria	Others
Pipeline gas	27.42	17.26	5.25	4.96	–	–
LNG	5.71	–	–	–	4.20	1.50

Source: BP Statistical Review of World Energy.

The major supply lines of natural gas to Turkey are the Trans-Balkan Gas Pipeline (capacity of 14 bcm/y), the Blue Stream pipeline (operational since 2003 with a capacity of 16 bcm), the Iran-Turkey Gas Interconnector (IGAT-4) built in 1997-2001 with an initial capacity of 14 bcm and the BTE pipeline with 7 bcm.⁸¹

Azerbaijan exports most its gas from the field Shah Deniz 1 (SD-1) to Turkey. The gas is shipped via the 'South Caucasus Pipeline' (SCP) from Baku (oil and gas terminal Sangakhal) to Erzurum in Turkey. The pipeline, commissioned in 2007, runs along the Baku-Tbilisi-Ceyhan oil pipeline (BTC). The price Turkey had to pay for this gas until 2008 was significantly below the average prices on EU markets. Azerbaijan and the SD-1 consortium insisted on much higher sales prices and bilateral relations between Turkey and Azerbaijan turned sour.⁸² On 7 June 2010, however, Azerbaijan and Turkey signed an agreement on the price for Azeri gas from Shah-Deniz 1 and on volumes (6–7 bcm) for gas deliveries from SD-2, where production will start in 2017. In addition, Azerbaijan agreed to Turkish demands, to get the right to re-export Azeri gas at its own price.

Turkey contracted Iranian gas deliveries (of up to 10 bcm/y) in 1996, when an Islamist government was formed led by Necmettin Erbakan. Iranian gas deliveries started in December 2001 via the Tabriz–Ankara pipeline. Gas supplies, however, had more often than not interrupted due to disputes on both prices and volumes of deliveries; in addition the pipeline has been targeted by PKK terrorism. Turkey's relations with Iran have improved with the AKP government led by Recep Tayyip Erdoğan since 2002. Its senior foreign policy architect Ahmet Davutoğlu has promoted a close relationship with Iran despite serious

http://www.bp.com/presscentre/2010/downloads/statistical_review_of_world_energy_full_report_2010.pdf, retrieved on 28 October 2010).

⁷⁹ Kinnander, Elin, 'The Turkish-Iranian Gas Relationship: Politically successful, commercially problematic', NG 38, Oxford Institute for Energy Studies, 2010, p. 17.

⁸⁰ Ibidem, p. 17.

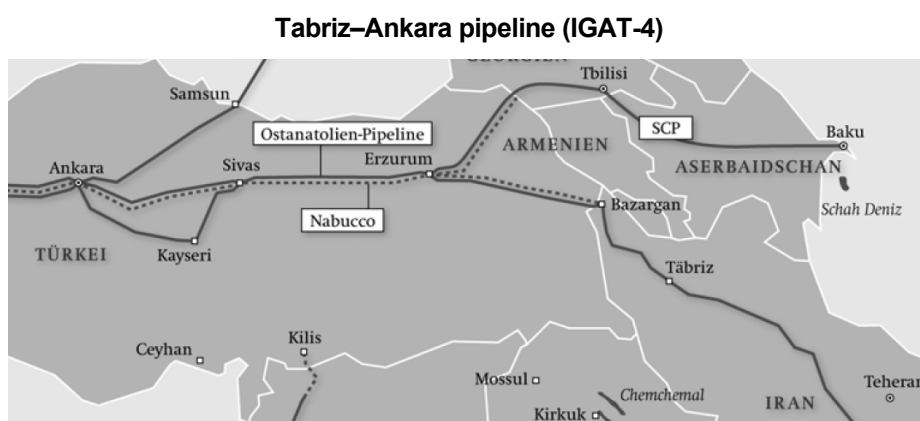
⁸¹ Yiğitgüden (2010), pp.12–13.

⁸² These relations had further deteriorated due to the rapprochement between Turkey and Armenia. In October 2008 both parties signed two protocols on the normalization of bilateral relations.

objections by the USA under the Iran Sanctions Act (1996)⁸³ and the European Union. Gas supplies so far peaked in 2007 with 6.2 bcm, after rapid increase in the years before (see Table 5).

In late 2007, Turkey and Iran agreed to build 2.000 mega-watt thermal power plants in both Iran (2) and Turkey (1) – a deal estimated to be worth around USD 1.5 billion. In addition, Turkey agreed to build hydroelectric power plants in Iran with a capacity of about 10,000 megawatt and modernize the electricity grid between the two countries.⁸⁴

Map 16



Source: Kramer, Heinz. Die Türkei als Energiedrehscheibe. Wunschtraum und Wirklichkeit. Studie S8 der Stiftung Wissenschaft und Politik, 2010.

In November 2008 Turkey and Iran signed an MoU on joint development of South Pars field blocs (bloc 22, 23 and 24; South Pars’ gas reserves are estimated at 53.8 bcm.⁸⁵) and the construction of a new pipeline to Turkey for domestic use and future gas exports to the EU (with both sides still deliberating, which route to choose – Nabucco, IGAT-9 or the ‘Persian Pipeline’). Only in October 2009, however, Turkey started detailed talks with the Iranian side, which have meanwhile bogged down.

Table 5

Turkey’s gas imports from Iran, 2001-2009 (in bcm)

2001	2002	2003	2004	2005	2006	2007	2008	2009
0.11	0.67	3.52	3.56	4.32	5.69	6.16	5.8	5.25

Source: BP Statistical Review of World Energy, 2002–2010

⁸³ The Iran Sanctions Act threatens any company – including foreign companies – to be targeted by US sanctions, if they invest more than USD 20 million in Iranian gas and oil industries. See: <http://www.fas.org/sgp/crs/row/RS20871.pdf>.

⁸⁴ Joh C. K. Daly, ‘Analysis: Turkey-Iran Energy Ties’, UPI Energy Analysis, 30 November 2007 (http://www.upi.com/International_Security/Energy/Analysis/2007/11/30/analysis_turkey-iran_energy_ties/2595/, retrieved on 30 November 2007).

⁸⁵ Daly, John C.K., ‘Turkey moves to position itself as a strategic transit corridor for Caspian hydrocarbons’, *Eurasia Daily Monitor*, 17 August 2007 (http://www.jamestown.org/edm/article.php?article_id=2372384).

Turkey is a major gas consumer (share of gas with Turkish TPES in 2009). Its most important objective is to become a major gas transit corridor *and* a major gas hub, i.e., a reseller of imported gas to third parties. Turkey's ambition is to attract the bulk of gas exports of Caspian Sea countries, northern Iraq and considerable volumes of Iranian gas (with Egyptian gas as a small additional input).

2.2.4 *The role of Iraq*

Iraq's proven gas reserves are estimated at 3.17 trillion cm in 2009; its current production is negligible and most of it is flared or utilized to boost oil extraction.⁸⁶ The largest chunk of gas reserves is located in the south of Iraq, in the province of Basra. Most of Iraq's gas is 'associated gas', linked to its vast oil fields. Most of the non-associated gas is located in the Kurdish province in Iraq's north. On 18 January 2010, the European Commission and Iraq signed a Memorandum on a Strategic Energy Partnership. The EU will invest in Iraq's energy sector, Iraq will supply gas for the EU's Southern Gas Corridor programme. In a medium-term perspective, Iraq could supply up to 8 bcm of gas for the Corridor.

Gas production at the Akkas gas field in western Iraq shall be exported to Syria, link up with the Arab Gas Pipeline, which runs from El-Arish in Egypt to the Syrian city of Homs and transported to Turkey. Iraq and Turkey have also signed a MoU in Ankara in August 2007 that Turkey will do a feasibility study to transport Akkas gas to Turkey. On 20 October 2010, Korean Kogas and Kazakh KazMunaiGaz acquired development rights for the Akkas field in an auction by the Iraqi government.⁸⁷ Thus, no energy company linked to the Nabucco consortium is part of the Akkas deal. Edison had been interested to use Akkas gas for its ITGI project; Turkish TPAO wanted to get control of Akkas gas production to feed the Nabucco line.

Development rights for the Siba gas field in the southern Iraqi province of Basra were sold to Turkish TPAO and Kuwait Energy; the gas field Mansuriyak in the eastern Iraqi province of Diyala to Koas, TPAO and Kuwait Energy.

The control of natural gas and oil resources is highly contested between the ethnic and religious communities in Iraq. The central government in Baghdad opposes Kurdish leaders' plans to sell gas on their own initiative. In August 2010, the Kurdish regional government signed an agreement with RWE on upgrading gas infrastructure in Kurdistan and on possible supplies of Kurdish gas to the Nabucco consortium. This deal was immediately rejected by the Iraqi government, insisting on the central governments exclusive prerogative to sign

⁸⁶ BP Statistical Review of World Energy 2009 (www.bp.com/statisticalreview), retrieved on 23 January 2010.

⁸⁷ A previous action in June 2009 had failed. Interest of global energy companies was rather low due to the underdeveloped Iraqi gas infrastructure and, above all, the dismal security situation in most parts of Iraq. Furthermore, the Iraqi government's price targets were highly unrealistic.

agreement on oil and gas exports. In 2010, OMV acquired 10% of stakes of Pearl Petroleum, which develops two blocs in the Chemchemal and Khor-Mor gas fields in eastern Kurdistan.⁸⁸ Part of this gas could be exported to a new gas pipeline to Turkey) and linked with a feeder line to Nabucco. OMV considers production of 30 bcm of gas possible by 2015.⁸⁹ On 31 October 2010, Iraqi government officials stated that Iraqi gas could be shipped by Nabucco only in 6-7 years, as Iraq needs its gas for domestic consumption.⁹⁰

Besides, the security situation in Iraq is still volatile, albeit somewhat better in Kurdistan. Anyways, it is highly unlikely that Kurdish gas can be exported any earlier than 2017.

2.2.5 *The role of Iran*

Iran holds 16% of global proven gas reserves.⁹¹ Total gas production in 2008 was 116.3 bcm, while domestic consumption stood at 117.6 bcm.⁹² Production increased to 131.2 bcm in 2009, consumption did as well (131.7 bcm). More than a third of domestic consumption is used for boosting oil production by pumping gas into maturing oil fields. Gas prices in Iran are very low both for industrial and household consumers. The existing national gas infrastructure, however, is ageing. The share of natural gas with Iranian TPES has increased strongly in the past 10 years. In 2000, the usage of gas for the first time exceeded that of oil. In 2009, natural gas had a share of 57.9% of total energy supplies, oil was down at 40.8%.

Furthermore, Iran is in dire need of external expertise and investment in gas field exploration and development. If recent trends in natural gas usage in power generation new Iranian gas fields need to be developed. However, foreign investment is all but blocked due to US bilateral sanctions based on the Iran Sanctions Act (1996), sanctions imposed by the UN and the EU. The US puts pressure on energy companies to divest in Iranian gas. In June 2008, Royal Dutch Shell and Total halted their activities in Iran; on 31 July 2008, Norway's StatoilHydro announced to withhold any further investment in Iran for the time being. The decision affected Norwegian investment in the Azar field, but might eventually be expanded to the company's activities with South Pars.⁹³

⁸⁸ OMV bought this share from Crescent Petroleum and Dana Gas.

⁸⁹ OMV beteiligt sich im Nordirak (<http://www.exaa.at/service/news/3486934678>, retrieved on 29 October 2010).

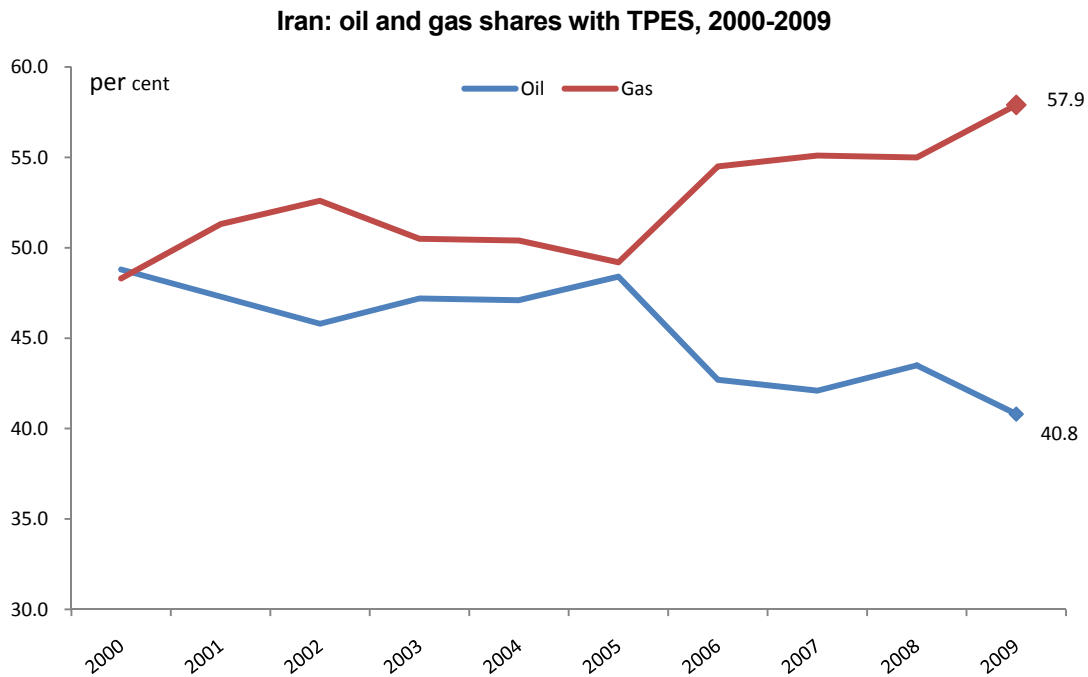
⁹⁰ 'Gaslieferung aus Irak an Nabucco-Pipeline frühestens in sechs Jahren' (<http://www.boerse-express.com/pages/915899/newsflow>, retrieved on 31 October 2010).

⁹¹ BP Statistical Review of World Energy 2009 (http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2008/STAGING/local_assets/2009_downloads/statistical_review_of_world_energy_full_report_2009.pdf).

⁹² Ibidem.

⁹³ The decision affected Norwegian investment in the Azar field, but might eventually be expanded to the company's activities with South Pars. UPI, 'Statoil bows to U.S. pressure, leaves Iran', 1 August 2008 (http://www.upi.com/Energy_Resources/2008/08/01/Statoil_bows_to_US_pressure_leaves_Iran/UPI-26741217612980/, retrieved on 1 August 2008).

Figure 5



Source: BP Statistical Review of World Energy 2001-2010, Proprietary Calculations

Iran's largest gas field is South Pars field, which borders the Qatari North Field (see below). The whole gas field holds about 51 trillion cm of proved reserves and some 50 trillion cm of condensate gas. Most of the sectors which are developed now are supposed to meet increasing domestic demand and sustain oil production. All major global energy companies have divested in the Iranian field. Turkey is interested to import gas from South Pars via the 'Persian Pipeline' – a pipeline project linking South Pars with Bazargan at the Iranian-Turkish border.

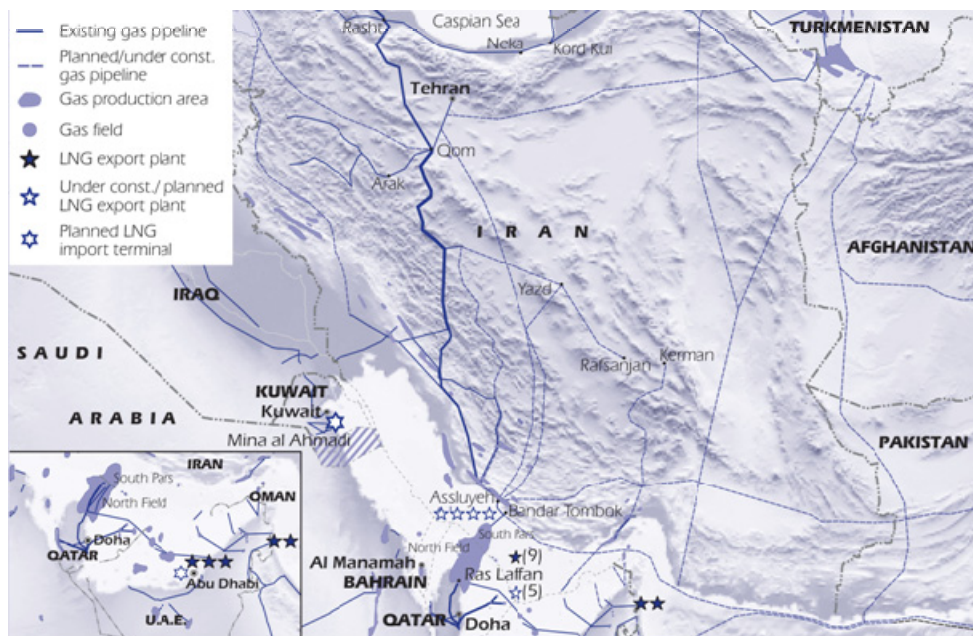
In recent years, gas rich Iran had been a net importer of gas. Iran imports Turkmen gas from the Dauletabad field to power its industries and households in the northeast of the country. Gas trade relations with Turkmenistan, however, have not been without friction. Due to price disputes Turkmenistan even stopped supplies in late 2007. Deliveries were only resumed in April 2008. Iran also exports gas to Turkey. Volumes are still low (October 2010), but both Turkey and Iran have pledged to increase gas trade and electricity sales by Turkey to Iran. Due to price disputes, Iran has more than once interrupted gas sales to Turkey. During the Turkmen-Iranian gas trade frictions in the winter of 2007, Iran shut down any gas export to Turkey. When Iran stopped gas sales, it ordered more gas from Gazprom via the Blue Stream Pipeline.

The relations between Turkey and Iran are quite close and reflect Turkey's foreign relations formula of 'zero problems with neighbours'. Turkey has also not succumbed to the international sanctions regime against Iran. Iran is the second major supplier of gas to Turkey

after Russia; gas deliveries are based on a 25-year contract signed in 1996; it entered into force in December 2001.⁹⁴ This gas is transported via the Tabriz–Bazargan pipeline to the border with Turkey and linked with the East Anatolian Gas Pipeline. Turkey is the only recipient of Iranian gas besides Armenia.

Map 17

Iranian and Iraqi gas infrastructure



Source: IEA, Natural Gas Market Review 2009, p. 55.

In a preliminary agreement signed on July 2007 Turkish state gas company Botaş is to invest some USD 3 to 3.5 billion in the next seven years in the development of the Iranian South Pars gas field⁹⁵ and transport by pipeline to Turkey. Those talks were cancelled, however, in July 2010.

Iran is also planning to export gas to Syria via Turkey, which Syria is keen to start as soon as possible. Syria in July 2009 has also voiced interest in participating in the Nabucco pipeline project. In June 2010, however, Iraq agreed with Iran on transiting Iranian gas to Syria on its territory and on Iranian gas supplies to Iraq. Iraq needs gas for electricity production.

Iran continues to promote its pipeline project (IGAT-9, Iranian Gas Trunkline) to bring Iranian gas to European markets. In phase 1, gas of the South Pars field will be transported to Turkey; it will run from Assaluyeh to Bazargan at the Iranian-Turkish border. In a second

⁹⁴ Sariibrahimoglu, Lale, 'Ankara willing to risk U.S. sanctions for cheap Iranian electricity', *Eurasia Daily Monitor*, 8 November 2007 (http://www.jamestown.org/edm/article.php?article_id=2372575).

⁹⁵ In February 2008 the Russian state gas monopoly Gazprom concluded agreements with Iran to take part in exploring and producing various phases of the South Pars gas field. Besides, Gazpromneft will take part in oil production projects in Iran.

phase Iranian will be shipped to EU markets using the Turkish pipeline network. The line is supposed to run from Turkey to Greece and Italy and then is bound to run north to Central European markets. The planned annual capacity is very high – about 40 bcm. On 23 July, the Iranian Oil Ministry announced a deal between the Iranian National Gas Company and the Turkish company Sem Petrol to construct the Iranian section. The Turkish government denied any involvement in this venture.⁹⁶

Iran is involved in the project 'Trans-Adriatic Pipeline' (TAP) as well. In 2008, the Swiss company EGL contracted 5.5 bcm gas annually in a 25 year contract. EGL wants to feed this gas into its TAP project, which is a major competitor to the ITGI project. This requires construction of a new pipeline to Bazargan at the Iranian-Turkish border. EGL, Statoil and Edison – both TAP stakeholders – have not been able so far, to win Turkey for this project. Iranian gas for TAP, however, needs to be shipped via the Turkish gas pipeline network.

In May 2009 Iran started gas sales to Armenia, but volumes are still low (0.88 bcm in 2008). The gas will be used by Armenia to produce electricity, which will be sold to Iran.

Another major export effort of Iran is to export gas to Pakistan and India via an on-shore pipeline dubbed 'Iran–Pakistan–India' (IPI, also named 'Peace Pipeline'), which might eventually be expanded to China.⁹⁷ In August 2010, Iran offered the government of Bangladesh to hook up to the IPI project.

This project was launched back in 1995. It is obvious that the US is eager to prevent any substantial export outlet for Iran. It pressurizes Pakistan not to take part in the IPI project but to import LNG instead. Since 2008, India has not taken part in the negotiations on the pipeline. Rumour has it that India is balking at an agreement with Iran after the US committed itself to sell nuclear fuel for India's nuclear energy sector despite India's refusal to join the Non-Proliferation Treaty (NPT) as a non-nuclear nation. Still, India has not officially withdrawn from the IPI-project. However, there are a bulk of financial and security issues still unresolved: India prefers buying Iranian gas only at its border with Pakistan. Besides, India rejects Iranian demands for price negotiations every three years.⁹⁸

In June 2009, Pakistan and Iran had agreed in principle on a 25-year supply contract of about 7.5 bcm/annually. The final agreements were signed by Pakistan and Iran on 16 March 2010. Gas transport is scheduled for 2014. Iran finished construction of the pipeline from its Asalouyeh gas field to Iranshar in the southeast of Iran. In January 2008 Iran

⁹⁶ 'Iran reports Turkey gas deal, Ankara stands back' (<http://uk.reuters.com/article/idINLDE66M18V20100723>, retrieved on 12 August 2010).

⁹⁷ Besides, Gazpromneft is enhancing its co-operation with Iran's oil companies.

⁹⁸ Pant, Harsh V., 'Energy Security Multipolarity: Iran's Role in India's Energy Calculus', *Journal of Energy Security*, July 2010 (http://www.ensec.org/index.php?option=com_content&view=article&id=251:energy-security-multipolarity-irans-role-in-indias-energy-calculus&catid=108:energysecuritycontent&Itemid=365).

and India revived a 25-year contract of 2005 on Iranian LNG deliveries to India of 5mt LNG/day. The investment costs are estimated at USD 22 billion. So far – as of November 2010 – this project is still stalled.

Recently, the multinational joint venture SAGE has pushed the idea of a deep-water pipeline linking Oman and India. The throughput is currently envisaged at 11.5 bcm/y. The project envisages gas deliveries by Turkmenistan, Iran and Qatar. It is supposed also to supply gas to Oman and the United Arab Emirates.⁹⁹

It is in Russia's vital interest that Iran does not turn into a competitor on the EU gas markets. EU and US companies' refusal to trade gas with Iran due to its presumed nuclear weapons programme actually serves Gazprom's interest. Russia is keenly interested to direct Iran's future gas exports to consumers in the East – countries such as Pakistan, India or China. It is this strategic interest which (partly) explains Gazprom's interest to develop Iranian gas fields – most notably South Pars – and finance Iran's ambitious export pipeline 'Iran–Pakistan–India'.¹⁰⁰

2.2.6 *The role of Egypt*

Egypt is considered a potential, but marginal supplier of Nabucco. Its proven gas reserves are estimated at 2.19 trillion cm.¹⁰¹ With its oil production in decline since the peak in 1996, Egypt is forcing its gas production.¹⁰² Gas is the major fuel; its TPES share in 2009 was 50.2%.¹⁰³

Egyptian gas is exported via the Arab Gas Pipeline (AGP) to Jordan, Syria and Lebanon. The current volumes are only sufficient to supply those countries. So far, no additional gas is available for Turkey (and the EU). Syria buys about 1 bcm/y of Egyptian gas. Its own gas reserves are about 280 bcm only. In 2009, Egypt exported 12.82 bcm of LNG,¹⁰⁴ with its main customers being the US and Spain, and 5.5 bcm of pipeline gas, with Israel as its most important customer.¹⁰⁵ Gas to Israel is shipped via the Aris–Ashkelon pipeline, which spurs from the AGP in the Sinai Peninsula.

⁹⁹ Gasbereich: Indien und Oman wollen transnationale Unterwasser-Pipeline bauen (<http://de.rian.ru/business/20100920/257307866.html>, retrieved on 20 September 2010).

¹⁰⁰ Besides, Gazpromneft is enhancing its co-operation with Iran's oil companies.

¹⁰¹ BP Statistical Review of World Energy 2010.

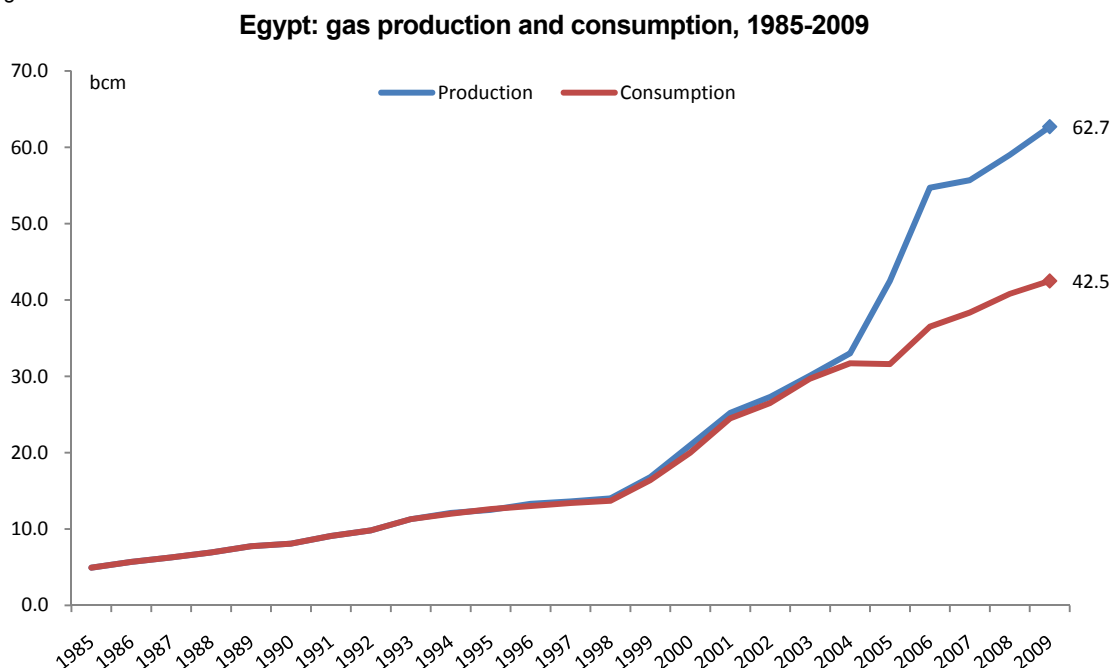
¹⁰² Energy Information Administration. Country Analysis Briefs: Egypt. June 2010 (<http://www.eia.doe.gov/cabs/Egypt/pdf.pdf>, retrieved on 29 October 2010).

¹⁰³ Proprietary calculations based on data from the BP Statistical Review of World Energy 2010.

¹⁰⁴ Liquefaction plants are located in Idku and in Damietta.

¹⁰⁵ Data taken from BP's Statistical Review of World Energy 2010.

Figure 6



Source: BP Statistical Review of World Energy 2010

In a Joint Statement of Egypt, Jordan, Lebanon, Syria (Mashreq countries), the EU, Turkey and Iraq on 5 May 2008 all parties agreed on the 'rapid completion of the Arab Gas Pipeline project and its connection to Turkey, Iraq and the EU.'¹⁰⁶

2.2.7 The role of Qatar

Qatar holds the third largest proven gas reserves on the globe. Its proved gas reserves are estimated at 25.4 trillion cm in 2009. This is about 13.5% of the world total, close behind Iran, which holds 15.8% and Russia, which holds 23.7%.¹⁰⁷ Qatar relies only on oil and gas for its primary energy supply. Gas makes up 69.9% of its TPES. Qatar profits from the fact that most of its gas reserves is non-associated gas and with its North Field – the Qatari part of the gas field, which is called South Pars in the Iranian territorial waters. Until 1996 Qatar used gas only for domestic consumption. In the past 13 years, however, it expanded its gas exports massively. Its export potential in 2009 was 69.2 bcm.¹⁰⁸

Qatar exports most of its natural gas as LNG. 44.9 bcm of LNG were exported in 2009; LNG exports made up 64.9% of total exports. Major consumers of Qatari LNG are Japan (20.8% of total Qatari LNG exports in 2009), South Korea (18.8%), India (16.7%), Belgium

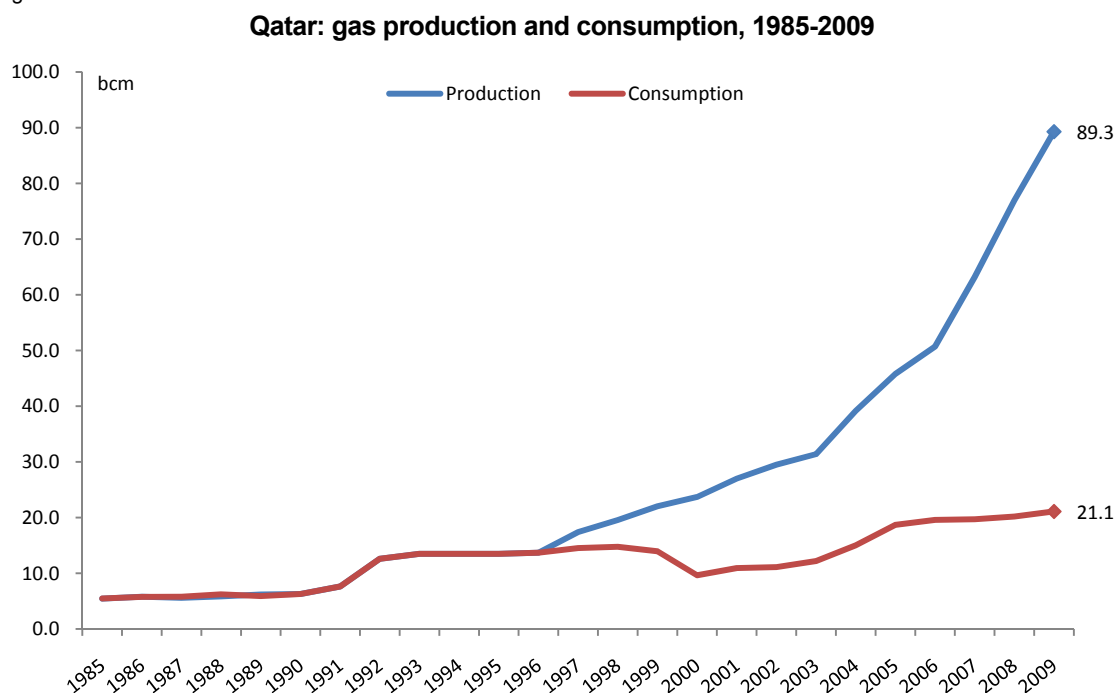
¹⁰⁶ See: <http://www.eamgcc.org/index.php?p=186&id=566> (retrieved on 30 October 2010).

¹⁰⁷ For these data see: BP Statistical Review of World Energy 2010.

¹⁰⁸ Ibidem.

(12.2%), the UK (11.6%) and Spain (10.1%). In total, 38% of Qatari LNG exports were shipped to countries of the EU in 2009. This is 27.2 of EU total LNG imports in 2009.¹⁰⁹

Figure 7



Source: BP Statistical Review of World Energy 2010

With the Dolphin pipeline gas is shipped off shore to the United Arab Emirates (UAE) and to Oman. Given the geographical distance, there is no Qatari pipeline gas shipped to the EU. Plans to build a land pipeline from Qatar to Turkey and further on to EU markets are very unlikely.

3 The role of the Maghreb countries for EU gas supplies

3.1 Algeria¹¹⁰

Algeria is the largest gas producer in Africa (39.9% of total African production in 2009¹¹¹). In terms of proved gas reserves (4.5 trillion cm) it is behind Nigeria though, which commands 5.25 trillion cm in 2009. With its proved reserves, Algeria ranks eighth globally (2009). In 2009 it produced 81.4 bcm of gas (in the pre-crisis year 2008 it was 85.8 bcm). Its domestic consumption has been steadily increasing since 2000 (primarily in the industrial and power generation sectors), it still has an enormous export potential: In 2009 it ex-

¹⁰⁹ Ibidem.

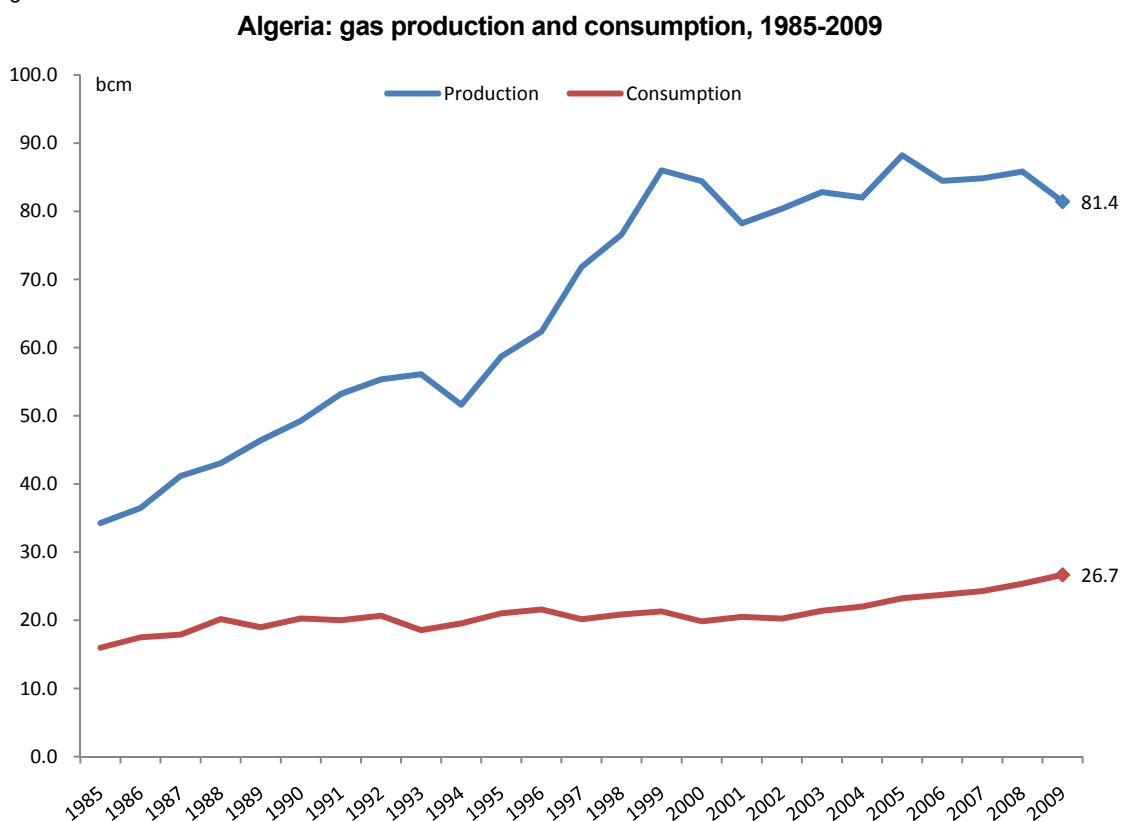
¹¹⁰ All data if not indicated otherwise are taken from the BP Statistical Review of World Energy 2010.

¹¹¹ Africa – of course – includes Egypt, which was addressed above.

ported 44.7 bcm of gas (54.9% of its gas production (in 2008 it was 60.4 bcm; 70.4% of total gas production). Of all its exports, LNG made up 38.2%, pipeline gas 61.8%).

Algeria exported 30.02 bcm of pipeline gas to the EU; that is 94.5% of its total pipeline gas exports. Its major EU customer of pipeline gas is Italy, with 21.4 bcm imported in 2009. Spain is trailing Italy with 6.9 bcm. Algeria was the first country to start LNG production (in 1984). In 2009, Algeria exported 16.94 bcm of LNG to the EU; that is 78.6% of its total LNG exports. Its major EU LNG trading partners are France and Spain, its major non-EU customer is Turkey.

Figure 8



Source: BP Statistical Review of World Energy 2010

In 1983, Algeria commissioned its first EU bound pipeline – the Trans-Mediterranean Pipeline (TransMed, also dubbed as ‘Enrico Mattei’). This pipeline starts in the largest Algerian gas field Hassi R’Mel; it ships gas via Tunisia and Sicily to mainland Italy. In 1994 a second leg of the TransMed was finished. Its total annual capacity is 28 bcm. In 1996, a pipeline from the Hassi R’Mel field to Spain (Cordoba) via Morocco was completed and named Maghreb-Europe Pipeline (MEG). Portugal receives gas from that pipeline via the Spanish gas network. In February 2010, a third pipeline was commissioned – dubbed MedGaz – which links Beni Saf (Algeria) and Almeria (Spain). Its throughput capacity is 11 bcm.

Algerian gas pipelines to Europe in 2010

Orange Line: Maghreb-Europe Pipeline
Blue Line: MedGaz

Purple Line: Trans-Mediterranean
Red Line: Galsi (not completed)



Source: http://en.wikipedia.org/wiki/File:Gas_pipelines_across_Mediterranee_and_Sahara_map-en.svg

On 14 November 2007, Italy and Algeria signed an Intergovernmental Agreement on the construction of the Galsi Pipeline (Gasdotto Algeria-Sardegna-Italia), which links gas hub Hassi R'Mel via Koudiet Draouche on the Algerian Mediterranean coast with Porto Botte in Sardinia. The onshore-section runs to Olbia; from there gas is shipped in an off-shore section to Piombino in Tuscany. Its annual capacity will be 8 bcm. Galsi will be used for Algerian gas sales to France as well. Construction should start in 2011; the pipeline should be completed by 2014; the completion date has been delayed already several times due to technical and regulatory hurdles due to the potential seismic threats to the line. Its major shareholders are Algerian Sonatrach¹¹² (41.6%), and the Italian companies Edison (20.8%), Enel (15.6%), Sfirs (11.6%) and Hera Trading (10.4%). According to some experts, Gazprom might join the venture alongside Sonatrach.¹¹³ In that case, EU's efforts of supplier diversification would face a grave backlash.

¹¹² On Sonatrach's upstream and downstream business development see: El-Katiri, Mohammed. *Sonatrach: An International Giant in the Making*. Special Series of the UK Defence Academy 2005.

¹¹³ GALSI Pipeline Delayed Yet Again (<http://store.businessmonitor.com/article/306627>, retrieved on 31 October 2010).

Finally, the Trans Sahara Gas Pipeline Project needs to be mentioned. The proposal to link Nigerian gas fields with the Algerian gas hub Hassi R'Mel was made already back in 2002, when Algerian Sonatrach and the Nigerian National Petroleum Corporation signed a memorandum of understanding on such a pipeline link. Nigerian gas – Nigeria holds the largest proved gas reserves in Africa (2009) – is to transit Niger and to be shipped via Algerian pipelines to Mediterranean EU countries. A feasibility study was completed in 2006. An Intergovernmental Agreement on this project was signed by Algeria, Nigeria and Niger

Map 19

Trans-Sahara gas pipeline



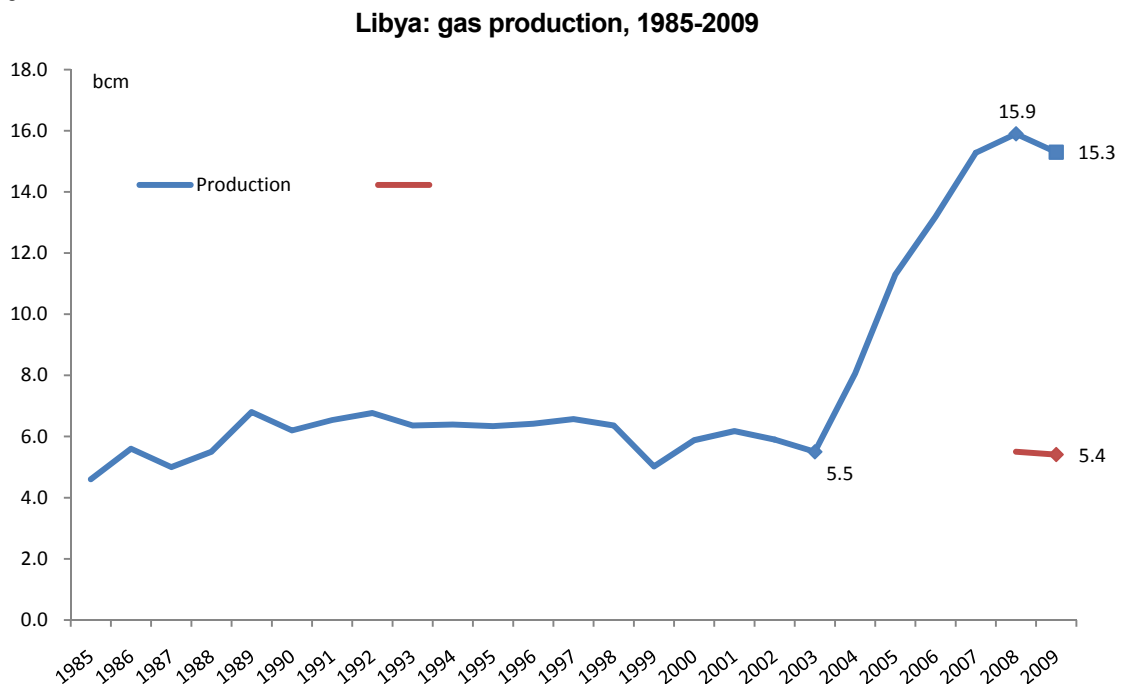
Source: http://en.wikipedia.org/wiki/File:Gas_pipelines_across_Mediterranee_and_Sahara_map-en.svg.

in July 2009. According to the agreement, the annual capacity of the pipeline will be 30 bcm. Despite the technical feasibility and economic viability, the project suffers from the dismal security situation in Nigeria. Anti-government rebels have threatened numerous times, to attack and blow up the pipeline. In addition, with the current gas glut in the EU, the EU is not eager to push this project, let alone inclined, to lend it financial support.

3.2 Libya¹¹⁴

Libya is the fourth largest gas producer in Africa (7.5% of total African production in 2009). In terms of proved gas reserves it is at the fourth spot as well (1.54 trillion cm). In 2009 it produced 15.3 bcm of gas (in the pre-crisis year 2008 it was 15.9 bcm). Within only 6 years – from 2003 to 2008 – Libyan production increased threefold. Consumption volumes are rather low; in 2009, 5.41 bcm (35.4% of total production) of natural gas were sold on the domestic market. Most of the natural gas – 64.6% of total production – is exported. This will change, however, in the coming years. Libya is encouraging natural gas for electricity generation.

Figure 9



Source: BP Statistical Review of World Energy 2010.

In 2009, Libya exported 9.17 bcm of natural gas by pipeline; Italy is its only consumer. Only 0.72 bcm were sold as LNG to Spain – that's 7.3% of total production. Libya exports its gas only to the EU. Its major EU customer is Italy, which buys 92.6% of all Libyan exports. The

¹¹⁴ All data if not indicated otherwise are taken from the BP Statistical Review of World Energy 2010.

Italian energy major Eni is the dominant foreign investor in Libya's upstream business. Eni has teamed up with Gazprom in Libya's oil sector. In an asset swap, Gazprom will acquire half of Eni's stake in the 'Elephant' oil field (a.k.a. 'El Feel'), which allots a third of the equity to Gazprom. In exchange, Eni will be allowed to develop northwestern Siberian gas fields owned by the Arctic Gas Company.

Gas is exported to Italy via the 'Green Stream Pipeline'. Construction of the off-shore pipeline started in 2003. It was commissioned on 7 October 2004. It connects Mellitah in Libya with Gela in Sicily. Its current annual capacity is 11 bcm. Owner of the pipeline is Agip Gas – a joint venture of the Libyan 'National Oil Corporation' and Italian Eni. LNG is produced in the liquefaction plant in Marsa El Brega, which has an annual capacity of about 4 bcm.

Map 20



Source: http://en.wikipedia.org/wiki/File:Gas_pipelines_across_Mediterranee_and_Sahara_map-en.svg.

4 Conclusions

It is of vital importance for any state and the EU for that matter, to aim for security in a major policy area, which energy supplies certainly are. Energy security includes reliable supplies of demand volumes at reasonable cost. It is essential to diversify suppliers and supply routes, to ward off supplier's pressure and leverage as well as technical or terrorist supply interruptions.

The EU still relies heavily on fossil fuels. Except for coal, the dependence on imports of those fuels will increase over the next decades, even in a best case scenario of decreasing the share of oil and gas in the EU's primary energy supply. Due to this scenario, vigilance and diligence need to be the core features of EU's or EU member states' energy policies. However, reasonable prognoses on demand of fuels (oil, gas, coal, nuclear energy, renewables) are utterly difficult, as there many variables to be considered (energy efficiency, climate change policies, price levels of fuels etc.)

Contrary to many public statements, the EU has been enhancing its energy security. On an aggregate level, diversification of suppliers with natural gas – pipeline gas, LNG or CNG – is quite substantial; dependency is certainly below a critical level. It goes without saying that the situation is different on the level of member states, which are in a delicate situation, when the fuel mix is imbalanced (too large a share of a single fuel in the total fuel mix) and a dominant role of a single supplier.

In this report, the author has addressed diversification efforts in natural gas trade by Russia, the EU and individual EU member states. It has been a core interest to illustrate, how these objectives collide with tensions, mistrust and disaffection as a logic result of these efforts. The report illustrated that both actor's strategies to enhance energy security are only partly complementary; in most cases, however, we see a zero-sum-game at place. This actor's constellation and strategic orientation seems weird given the mutual dependency of both the EU and Russia in the natural gas business.

At the very centre of the EU's route diversification efforts is the Southern Corridor Initiative. As illustrated in this report, the Southern Corridor strategy is still not very coherent, with many competitive and mutually exclusive options in play at the same time. At the very core of the Southern Corridor (particularly in political debate and public perception) is the Nabucco Pipeline project.

So far, the Nabucco consortium has been unable to contract sufficient gas for the venture. Azerbaijani gas production will be crucial for the viability of Nabucco, but not sufficient to make Nabucco economically viable. Turkmen gas is needed, but it is still uncertain when, how much, and how Turkmen gas can be made usable for Nabucco. Egyptian gas volumes are limited and much of it is consumed in the region (maybe including even Turkey in

the future). Iraqi gas deliveries from the Akkas field in western Iraq or from Iraqi Kurdistan are strained due to an unstable security environment and tensions between the ethnic and religious groups in Iraq. Qatar is highly unlikely to enter the Nabucco arena.

Nabucco could also be rendered viable in a mid-term perspective with including Iranian gas in this calculation. As shown in this report, Iran does not have any gas exports capacities. It is in dire need of foreign investment and technological assistance to develop its massive gas fields. Multilateral sanctions imposed on Iran for its lack of comprehensive cooperation with the IAEA regarding the nature of Iran's nuclear programme as well as bilateral sanctions of the EU and the US – based on the Iran Sanctions Act – forced energy majors from the OECD to divest in the Iranian gas sector.

However, the Turkish and the Iranian governments are keen to go ahead with their cooperation on developing the large South Pars gas field and transport part of the produced gas to Turkey. In case Turkey and Iran will eventually sign an agreement on the joint development of South Pars, the produced gas will be exported to Turkey via existing pipelines and could feed the Nabucco pipeline. However, it could also be liquefied and exported by tanker via Ceyhan.

In a long-term perspective, Nabucco, ITGI, and TAP – the core of the Southern Corridor – need to engage with Iran. The EU can't afford to wait for regime change in Iran for tapping Iranian gas reserves. If it is not the EU, many major economic players are keen to buy Iranian gas, particularly India and China. Rerouting Iranian gas exports to the east, however, is in the vested interest of Russia.

Excluding Iranian gas for the EU market means deepening the EU's gas dependence on Russia; it is convenient for Gazprom that the EU is preventing a competitor for the Russians to enter the European gas market

In addition, the author still considers a merger of the northern branch of South Stream and Nabucco an option worth considering. This would help the EU to bring gas from additional suppliers to the market and provide Russia with an alternative outlet for its gas exports to EU markets. This could lessen the risk of unreliable gas transit countries for both sides. This approach should be complemented with a trilateral effort – EU, Ukraine and Russia – to modernize the Ukrainian gas pipeline network and agree on some form of tripartite operative control.

Gas supply security ought to be less about geopolitics, but based on pragmatism and practical solutions.

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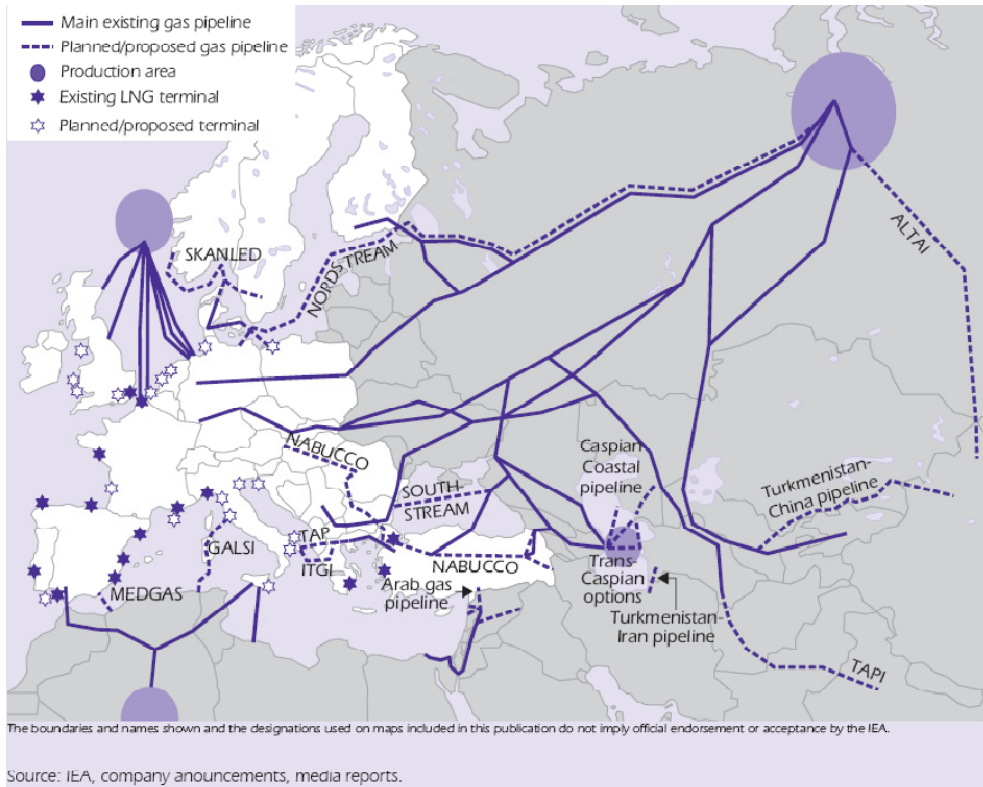
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Annex

Map A1

Main transmission projects in Eurasia until 2015 (IEA)



Source: IEA Natural Gas Market Review 2008, pdf version, p. 58.

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