

European Energy: The Southern Corridor and the Challenge of Alternative Gas Sources

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Global Energy Politics & Turkey
Istanbul, 17-19 October 2011

The Southern Gas Corridor: The EU's Geopolitical View

The EU's Raison d'Être

“From a long-term strategic perspective, the EU clearly needs to invest in direct contacts and firm contracts with Central Asian and Middle Eastern gas-producing states.

“Opening a fourth or Southern corridor enables the EU to directly link its gas market to the extensive reserves available in the Caspian region and the Middle East. It enables the EU to get connected to new sources, via new routes and hence significantly diversify its supplier portfolio. Key gas markets to be supplied by the Southern Corridor are southern Germany, Austria and Italy, as well as Southeastern Europe, which are physically very close to the gas reserves in the Caspian and Middle East but traditionally have been supplied by Russia. The Southern Corridor provides an opportunity to change this situation, to reduce the dominant position of Russian gas supplies and to introduce price competition on regional markets, which eventually will benefit local consumers.”

Source: Brendan Devlin and Katrin Heer: The Southern Corridor – Strategic Aspects for the EU

In: KRISTIN LINKE AND MARCEL VIËTOR (EDS.) | What is the Southern Corridor? BEYOND TURKEY, November 2010, Friedrich Ebert Foundation.

The Southern Corridor: Challenges

Current Supplies:

- **The Caspian and other prospective conventional sources**

Markets:

- **SE Europe or Central, Northern and Western Europe?**

Alternative Supplies:

- **Shale Gas in Europe**
- **The Levant Basin**
- **Russia**

Conventional Challenges: Potential Suppliers for the EU's Southern Gas Corridor 2011-2020

A Wide Range of Potential Availability

• Mid-2011:	Northern Iraq: Khor Mor & Chamchamal	5 bcm.
• 2011-2013:	Turkmenistan: Petronas Offshore	5, then 10 bcm
• c. 2014:	Northern Iraq (increase on above)	5 bcm
• 2015-20:	Turkmenistan: South Yoloten/Osman	10-20 bcm.
• c. 2016-7:	Iraq, Akkas	3-4 bcm.
• 2017-2019:	Azerbaijan: Shakh Deniz-2	16 bcm
• 2020-2022:	Azerbaijan	5-10 bcm
• 2017-2020:	Eastern Mediterranean	10-20 bcm
• 2018-2020:	Iraq (Baghdad-controlled) a further	15-35 bcm*
Total in or around 2020-22.		80-125 bcm

Note: No allowance is made for c. 20 bcm of currently shut-in Turkmen gas.

*** Iraqi Deputy Prime Minister Hussain al-Shahristani said that Iraq would have 30-50 bcm/y available for export in seven years (speaking to Platts in January 2011). This would have included Kurdish region and Akkas output, hence lower figures on list.**

Caspian Gas Potential

Current and projected export availabilities (in bcm)

	2008	2009	2010*	Official Projections
• Azerbaijan:	5.6	7.0	8.5	25-30 by 2020.
• Kazakhstan:	2.6	8.0	8.3	20 by 2015
• Uzbekistan:	13.5	16.5	13.6	35 by 2018
• Turkmenistan:	45.1	16.5	19.8	140 by 2020
• Caspian Region	66.8	48.0	50.2	220-225 in 2020?

* 2008-2010 from BP Statistical Review 2011

The Southern Corridor: The Core Commercial Elements

Azerbaijan's Cascading Series of Choices

The twin choice - supposedly by end-2011

- 1. With whom should the Shakh Deniz partners/ Azerbaijan open sale-and-purchase negotiations
- 2. Which pipeline should they choose?

In practice, the pipeline decision first requires the Shakh Deniz partners/ Azerbaijan to answer another question: Whether to go with Nabucco or an alternative to Nabucco

If non-Nabucco, then do the Shakh Deniz partners/ Azerbaijan choose ITGI, TAP or the BP capillary proposal -- or a combination.

If non-Nabucco, then is transit across Turkey to be secured by means of an expanded Botas system or by a stand-alone pipeline across Turkey. This decision is due to be made by mid -2012.

The Azerbaijani Challenge

What lies beyond SD2-?

- The ongoing development of SD-2. Could there be an SD-3?
- Umid. Proven reserve of some 200 bcm (SOCAR). First commercial production 2020-2022?
- Absheron. Proven reserve of some 350 bcm (SOCAR). Precise volumes have yet to be ascertained. First commercial production 2020-2022?
- Deep Level ACG. 300 bcm of recoverable reserves (SOCAR). 'Intense' negotiations under way with Shakh Deniz Consortium over prospective PSA. Could development timeframe could be made to mesh with Shakh Deniz schedule?

Southern Corridor Pipeline Options



AZERBAIJAN & TURKMENISTAN: WESTWARD GAS PIPELINE OPTIONS

The Challenge of Time

The development of South East European interconnectors

- The transportation system when SD-2 comes on line will look somewhat different from that in 2011. By then, no EU member state – and possibly no member of the European Energy Community – will be 100% reliant on delivery systems from Russia.
- The rise of South East Europe as a market in its own right.

The Challenges Posed by Uncertainties

Europe: A World of Doubt

- **Europe's Import requirements**
- **Russian supply**
- **Shale Gas**
- **External Challenges & Southern Corridor supply**
- **An uncertain political background**
- **Fallout on the Middle East**

World Gas 2008-10 (In bcm)

PRODUCTION

	2008	2009	2010	Change 08/09	Change 09/10
• US	570.8	582.8	611.0	1.0%	4.7%
• Russia	601.7	527.7	588.9	-12.3%	11.6%
• EU	189.4	171.5	174.9	-9.55%	2.0%
• World	3,062.1	2,975.9	3,193.3	-2.8%	7.3%

CONSUMPTION

	2008	2009	2010	Change 08/09	Change 09/10
• US	658.9	646.7	683.4	-1.9%	5.6%
• Russia	416.0	389.6	414.1	-6.3%	6.3%
• EU	489.7	458.5	492.5	-6.4%	7.4%
• World	3,026.4	2,950.2	3,169.0	-2.5%	7.4%

Source: BP Statistical Review of World Energy, June 2011 edition.

Gas Demand Uncertainty

The European Gas Balance 2005-2020

	2005	2020	2020	2020	2020
	Actual	Baseline	Baseline	New Energy Policy	New Energy Policy
Oil price		\$61/bbl	\$100/bbl	\$61/bbl	\$100/bbl
Total	516	585	514	462	400
Net Imports	298	452	383	337	284
Domestic	218	133	131	124	116
Import change 2005-2020		+154	+85	+39	-14
Source:	Second	Strategic	Energy	Review	
	EU	Brussels	November	2008	

SE Europe gas supply / demand to 2035 (in bcm)

Demand	1990	2008	2009	2015	2020	2025	2030	2035
SE Europe	59.1	40.8	35.2	45.2	49.4	52.7	57.1	60.0
Turkey	3.2	6.9	35.1	45.0	51.1	61.6	72.1	85.1
Total w/Turkey	62.3	77.7	70.3	90.2	100.5	114.3	129.2	145.1

SE Europe total comprises:

Romania, Bulgaria, Greece, Hungary, Slovenia, Croatia, Serbia, Montenegro, Bosnia & Herzegovina, Macedonia, Albania.

Source: IHS CERA

A New Challenge: Unconventional Gas

European Conventional Gas Reserves (BP):	14 tcm
(Includes Ukraine, excludes Russia and other CIS)	
Europe-14 (EIA, April 2011)	5.2 tcm

Unconventional Gas:

Old reserve paradigm:	(US NPC 2007)	34.7 tcm
	(CERA 2007)	3 - 4 tcm
New reserve paradigm:	(EIA April 2011) Europe-14	17.9 tcm
	(IHS CERA, March 2011)	Up to 173 tcm

IHS CERA's oil price assumptions place the cost of unconventional gas on par with the long-term average price of contract gas.

IHS CERA source: Breaking with Convention, March 2011.

European Shale Gas Potential - US EIA 5 April 2011

Estimated shale gas technically recoverable resources for select basins in 32 countries, compared to existing reported reserves, production and consumption during 2009

	2009 Natural Gas Market ¹ (trillion cubic feet, dry basis)			Proved Natural Gas Reserves		Technically Recoverable Shale Gas	
	Production	Consumption	Imports (Exports)	tcf	tcm	tcf	tcm
EUROPE	10.81	14.62		186.21	5.208	639	17.89
France	0.03	1.73	98%	0.2	0.0056	180	5.04
Germany	0.51	3.27	84%	6.2	0.1736	8	0.22
Netherlands	2.79	1.72	-62%	49	1.3720	17	0.48
Norway	3.65	0.16	-2156%	72	2.0160	83	2.32
U.K.	2.09	3.11	33%	9	0.2520	20	0.56
Denmark	0.3	0.16	-91%	2.1	0.0588	23	0.64
Sweden	-	0.04	100%			41	1.15
Poland	0.21	0.58	64%	5.8	0.1624	187	5.24
Turkey	0.03	1.24	98%	0.2	0.0056	15	0.42
Ukraine	0.72	1.56	54%	39	1.0920	42	1.18
Lithuania	-	0.1	100%			4	0.11
Hungary/Romania/Bulgaria	0.48	0.95	50%	2.71	0.0759	19	0.53

Shale Gas – European Perceptions

OLD:

- Little will happen in terms of production by 2015, or even by 2020. Although by 2015 perceptions of the impact of unconventional gas on future European gas perceptions will start to exercise a profound impact on assessments and planning for European gas supplies.

NEW:

- Scenario planning 1: Prospectively as much as 35 bcm in production by 2020 (Platts unconventional gas conference, September 2011).
- Scenario planning 2: 60-200 bcm around 2025 (IHS CERA, March 2011).
- UK: Cuadrilla 5.7 tcm of gas resources in place; a 20% recovery factor????

A New Challenge: Eastern Mediterranean Prospects - 1

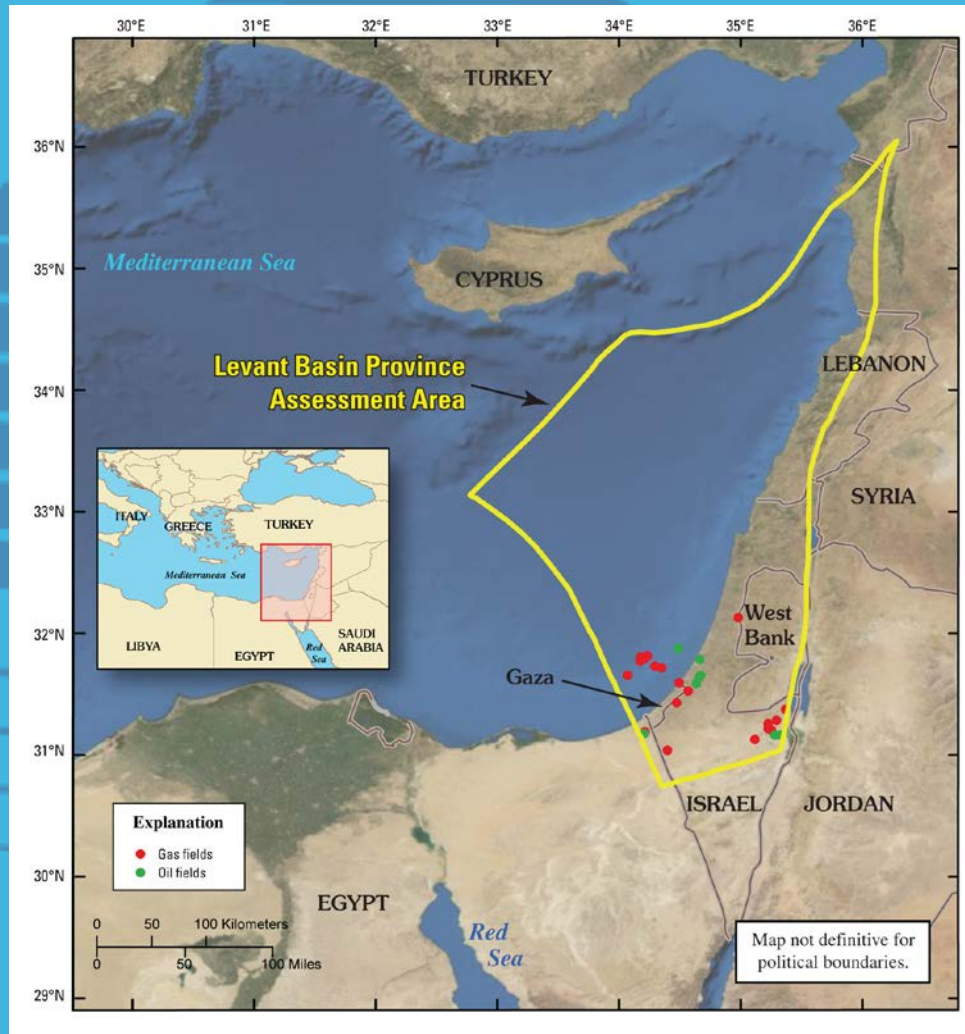
An estimated 122 trillion cubic feet (3.4 tcm) (mean estimate) of undiscovered, technically recoverable natural gas are in the Levant Basin Province, located in the Eastern Mediterranean region

“The Levant Basin Province is comparable to some of the other large provinces around the world and its gas resources are bigger than anything we have assessed in the United States,” said USGS Energy Resources Program Coordinator Brenda Pierce. “This assessment furthers our understanding of the world’s energy potential, helping inform policy and decision makers in making decisions about future energy supplies.”

USGS 8 April 2010

New Models: Eastern Mediterranean Prospects – 2

USGS Map April 2010



New Models: Eastern Mediterranean Prospects - 3

- **Israel: Offshore: Tamar (8.4 tcf) and Leviathan (16.4 tcf) discoveries. Combined reserve: c.700 bcm. Capable of yielding a 10-20 bcm/y output. 2016-2020.**
- **Cyprus: Indications of 10 tcf (c. 300 bcm) of natural gas deposits in Cypriot waters near Tamar and Leviathan. Cyprus could start producing gas in the next five years.**

Cyprus Energy Director Solon Kassinis, January 2011.

Issues:

- **The Cyprus issue – and Turkey**
- **Palestine's Maritime Rights**
- **Boundary disputes, exports by pipe or by LNG?**
- **Spillover from Egypt?**

Russian Thoughts on Shale Gas

From Gazprom CEO Alexei Miller:

- **Shale gas we know from the mass media, this is a very well planned PR campaign..... There are many PR campaigns like global warming and biofuels.”**
Press discussion, Moscow, 21 February 2011 (Daily Telegraph, 22 Feb 2011).

From Gazprom Deputy CEO Alexander Medvedev

- **... “Not every housewife is aware of the environmental consequences of the use of shale gasI don’t know who would take the risk of endangering drinking water reservoirs.”**

• 9 February 2010

Medvedev again....

- **The negative view: No reason yet to abandon target of 10% US market share: “Shale gas and LNG are competitive in one price range....The market will say who will be in the market and with what.”**

2 March 2010

Russia: Two Views of Natural Gas Output 2007 - 2030

Gas production in 2007: 646 bcm (IEA, WEO 2009)

Gas production in 2030: 760 bcm Up 114 bcm.

- ***Source: IEA. WEO 2009 Reference Scenario: Gas Table 12.1 (Page 429)***

Gas production in 2030: 885-940 Up 239-294 bcm

- ***Source: Energy Minister Sergei Shmatko 26 Nov 2009***

Russia's Goal 2011

- **Gazprom no longer considers Europe as its primary gas market, although it will honour existing and future contracts. Russia will instead expand its LNG production and seek new markets in Asia.**
- **“Now Gazprom does not find itself to be a primary supplier of gas to Europe due to the stance of some of our European partners”**

Source: Deputy Energy Minister Anatoly Yanovsky, in Paris, attending meeting with the International Energy Agency, 18 October 2011.

- **Where is the long-awaited Russia-China gas deal?**
- **What is the impact of China's drive for unconventional gas development?**

Questions?

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