

# Development Investment

- Azerbaijan
  - Oil
  - Gas
    - Nabucco
    - Shah Deniz
    - Absheron
    - Babek-Umid
    - Nakhichevan
    - Other
- Georgia
- Saudi Arabia
  - Oil
    - Refining
  - Gas
  - Nuclear
- United States
  - Oil
    - Offshore
      - Macondo
    - Domestic Shale
    - Canada and Mexico
  - Gas
- Russia
  - Arctic
    - Oil
    - Gas
  - North Caspian
    - Oil
    - Gas
  - Eastern Siberia
    - Oil
    - Gas
  - Pipelines
- Germany
  - Germany Nuclear
  - Renewable Energy
  - Natural Gas
    - Nord Stream
- Iraq
  - Oil
    - Main oil projects:
    - Refining
    - Oil Infrastructure
  - Gas
- Iran
  - Oil
  - Natural Gas
  - Electricity
  - Pipelines
- Sources

## Azerbaijan

### Oil

Development in the Azeri-Chirag-Guneshli (ACG) formation continues to progress. The West Chirag platform is projected to be completed in Q4 2012 and the first oil should be produced in Q4 2013. The operations manager of the Chirag Oil Project (COP) Ilgar Mamedov in July 2011 projected the daily flow rate at 160 to 185 kbpd. (*Tendersinfo News*, 2011), but these kinds of incremental increases wont significantly impact national production which the IEA projects should remain capped at 1.1 to 1.2 mbpd through 2016. (*IEA*, 2011, p. 70, 74)

### Gas

Azerbaijan's prospects for expansion of natural gas production are significant. In June 2011 SOCAR Vice President Vitaly Baylarbayov projected Azerbaijan's total natural gas production at 50-55 bcm/y sometime between 2020-2025. (*Platts*, 2011) Thus the main problem Azerbaijan faces is

not production; it's transport.

The obvious destination for Azerbaijan's additional production is the large, relatively stable consumer markets of Europe. Numerous competing transport proposals are vying for the open southern corridor into these markets: Nabucco, ITGI, TAP and AGRI in the Caspian basin and South Stream coming out of Russia.

The problem for these proposals is that Europe's 425 bcm/y of pipeline capacity and 180 bcm/y of regasification capacity already cover future demand. Southern corridor transport represents a supply diversification decision rather than a critical import need, and thus these projects are mostly stalled. (IEA, 2011, p 261)

## **Nabucco**

The proposed 31 bcm/y Nabucco pipeline would diversify European gas supply away from Russia by importing Caspian basin and Middle Eastern gas to the Baumgarten hub in Austria and then onward to Western Europe.

Originally slated to come online in 2014, it has been continually delayed and is now scheduled to begin operating in 2017. (STRATFOR, 2009; IEA, 2011, p 260) Numerous problems and technicalities plague the large and complex project. For one, sources have reported that cost estimates have grown to 12 – 15 billion euros from previous estimates of 7.9 billion euros leading consortium members to delay investment decisions until 2012 at the earliest. (Reuters, 2011)

Feasibility studies have led to a two-stage construction plan. The first phase, starting in 2011, calls for 2,000 km of pipe between Ankara, Turkey, and Baumgarten, allowing 8 bcm/y of gas from the existing Turkish pipeline network to be transported through the line by 2014. Second-stage construction would begin in 2012 and build eastward from Ankara to the Iranian and Georgian borders, bringing total pipeline length to 3,300 km. Uncertainty remains about the prospects for the proposed 31 bcm/y Nabucco pipeline. Azerbaijan does not produce enough natural gas to unilaterally fill the pipeline, and it is unclear that other natural gas producers in the region could be stable suppliers for the rest of the capacity.

Russian ally and customs union partner Kazakhstan is not interested in participating, and Turkmenistan needs a Trans-Caspian link built first. (STRATFOR, 2009) Turkmenistan continues to build a pipeline connecting major southern fields to the Caspian coast, but it remains unclear what direction it will take from there. (OGJ, 2011)

Using Iranian gas for Nabucco has seen some support from Turkey, and Iran continues to advance the 37 bcm/y IGAT 9 trunk line – aka the Europe Gas Export Line. Though the United States would most likely exert pressure on its European and Turkish allies to prevent this from happening, STRATFOR has argued that US accommodation of Iran is conceivable and thus Iranian supplies cannot be ruled out entirely. (STRATFOR, 2010; OGJ, 2011; IEA, 2011, p 260)

## **Shah Deniz**

Phase one of the Shah Deniz gas field currently yields about 8.4 – 9 bcm/y (MEES, 2010; [Trend]#az\_gas\_trend\_jul\_2011, 2011). The government is actively taking bids on the development of Shah Deniz Phase 2 until Oct 1, 2011 which is expected to yield 16 bcm/y (6 bcm/y to Turkey and an additional 10 bcm/y earmarked for Europe via an as-yet undecided transport route). (Platts, 2011) This natural gas is tentatively projected to become available in 2017, pending an agreement on and development of a transport route to Europe's consumer markets. (IEA, 2011, p. 234)

Additionally, numerous fields outside the Shah Deniz area are under active exploration and development including deep structures within the ACG oilfield that may contain large volumes of natural gas. It is increasingly plausible that these developments could collectively rival Shah Deniz.

Based on statements made by Baylarbayov, Platts estimates that Azerbaijan expects an additional 8 – 13 bcm/y from four projects to come online between 2020 and 2025. Those projects are the Babek-Umid, Absheron and Nakhchivan fields and the deep level of the ACG oil field. (Platts, 2011)

## **Absheron**

Total began a 200 day drilling campaign at the first well in the large Absheron structure in December 2010. The program is expected to be completed in November 2011. Estimates of potential reserves there are still somewhat preliminary, but SOCAR has variously estimated them at anywhere from 300 bcm to 1 tcm. (Platts, 2010; Trend, 2011), but President Aliyev put reserves at the more conservative 300 bcm. He also said he expects this field to be online before 2016. (MEES, 2010).

## **Babek-Umid**

In November 2010 SOCAR doubled the proved reserves at the Babek gas field by completing its initial exploration stage at the Umid field, itself estimated to contain 200 bcm of natural gas and 40 million tons of condensate. As of June 2011, a second exploratory well is being drilled at Umid. (Trend, 2011; Platts, 2011)

## **Nakhichevan**

SOCAR and Germany's RWE plan to sign a product sharing agreement for the Nakhichevan gas fields in the Caspian Sea by the end of 2011. Vagif Aliyev, head of SOCAR's investment directorate told reporters that an MoU had been signed and the PSA is being drafted. He said the contract "will be signed by the end of the year, perhaps even much sooner." SOCAR expects to tap reserves of about 300 bcm associated with 40 million tons of condensate (Kazakhstan Oil & Gas Weekly, 2011).

## Other

BP and Socar plan to explore and develop the Shafaq-Asiman deep-water structure, which Socar says could hold 300 – 500 bcm of natural gas and could yield up to 12 bcm per year. ([Petroleum Economist](#), 2010)

## Georgia

Hydro power is a key part of Georgia's energy strategy. They have a number of projects designed to add more than 2 GW of hydropower by 2015. [Source](#)

Georgia would also like to increase its role as an energy transit state. The proposed Nabucco pipeline from Turkey into Europe still does not have a clear source of natural gas, but if Azerbaijani or Turkmen gas was used it would almost certainly involve building increased natural gas pipeline capacity through Georgia.

The Azerbaijan-Georgia-Romania Interconnector is another potential gas pipeline route that is being considered. Its initial capacity is expected to be 8 bcm. [Source](#)

## Saudi Arabia

### Oil

The IEA projects that Saudi production will not break out of a 11.5 – 12.0 mbpd range through at least 2016. ([Source p 80](#))

Phase one of the Manifa project, projected to generate 500 kbpd, is scheduled to commence sometime in 2013. Commencement of the 400 kbpd second phase of the Manifa project has been moved to 2014 from 2024. These 900 kbpd of new production are largely spoken for by domestic refiners. ([Source p 80](#))

A drilling program in Ghawar will be ramping up through 2011.

In 2012 a CO2 injection project will attempt to alleviate the need to reinject natural gas to maintain well pressure.

The IEA cites six other projects as likely to increase Saudi oil production capacity: Berri, Khurais, Manifa, Shaybah, Safaniya, and Zuluf.

A contract was awarded in late 2010 to GE to help expand Shaybah's processing facilities from 750 kbpd to 1 mbpd.

([Source p 81](#))

### Refining

Saudi Arabia is planning to increase its refining capacity through 2015, with four large projects planned.

- Saudi Aramco's 400,000 bbl/d joint venture export refinery with Total in Jubail, which is expected to be fully operational by end-2013. It will run mainly Arab Heavy crude, and maximize production of diesel and jet fuel.
- Saudi Aramco 400,000 bbl/d Yanbu refinery project, scheduled for startup at end-2014. Conoco-Phillips was originally to have been a joint venture partner in this project, which will process heavy oil from the planned Manifa project.
- Saudi Aramco has decided to relocate its joint petrochemical project with Dow Chemical from Ras Tanura to Jubail.
- Saudi Aramco is moving ahead with its first venture into the petrochemical business, a \$10 billion expansion at its integrated PETRO Rabigh Refinery and petrochemical joint venture with Sumitomo.
- Saudi Aramco is proposing to re-launch its 400,000 bbl/d Jazan refinery project without any petrochemicals component.

Source: <http://www.eia.gov/countries/cab.cfm?fips=SA>

### Gas

Most of Saudi Arabia's gas is associated, and therefore it is difficult to increase production independent of oil production. They do have plans to bring a few non-associated fields online by 2016.

- The 18 bcm a year Karan gas field, discovered in April 2006, is Saudi Arabia's first offshore non-associated gas development. Karan is expected to come online in 2011-2012.
- The 10 bcm a year Arabiyah gas field, expected online within 5 years.
- The 8 bcm a year Hasbah gas field, expected online within 5 years.

<http://www.eia.gov/countries/cab.cfm?fips=SA>

### Nuclear

Saudi Arabia is planning to build as many as 16 nuclear reactors through 2030, to add up to 40 GW of electrical generation capacity.

<http://www.arabnews.com/saudiArabia/article445147.ece>

<http://www.reuters.com/article/2010/10/04/us-saudi-nuclear-idUSTRE69339H20101004>

## United States

# Oil

## Offshore

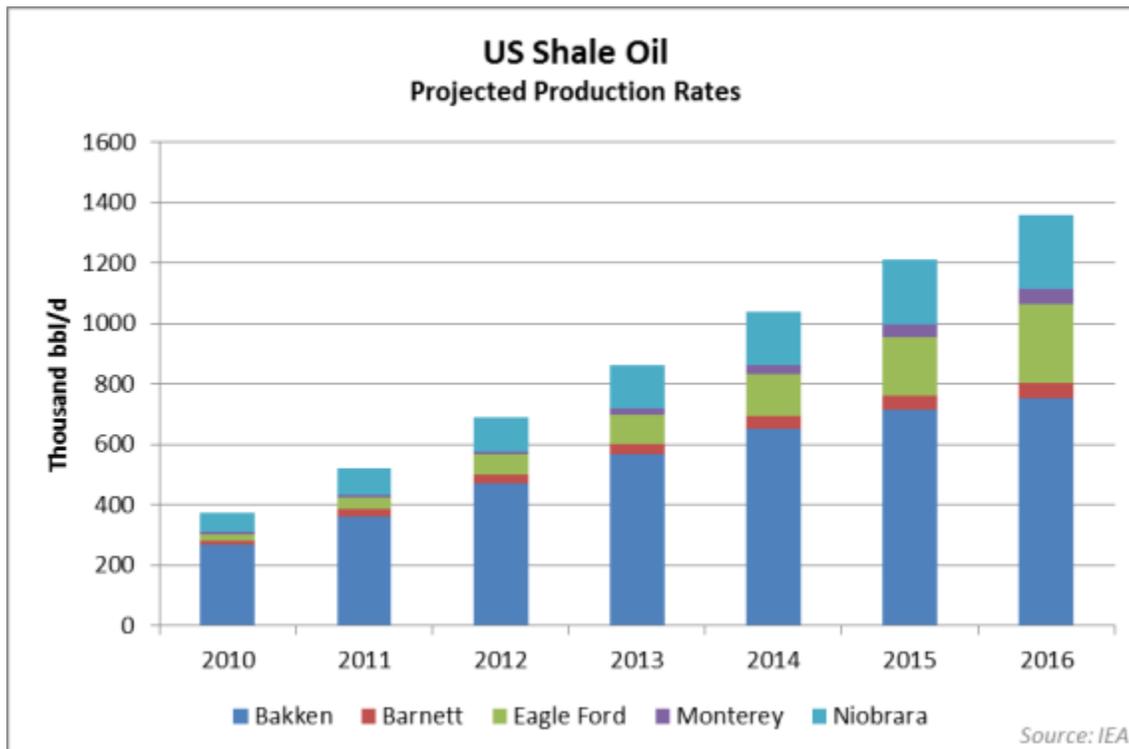
### Macondo

Despite many uncertainties, the impact of the Macondo disaster on deep water activity has so far been limited. Due to the Republicans' gains in the 2010 mid-term elections, and against a background of jittery economic recovery and high oil prices, political momentum to boost US domestic oil production has grown.

President Obama recently reversed his previous position and called for the opening up of new areas in the GoM, but also offshore Alaska, with a view to reduce dependence on crude oil imports. (Source, p 67)

## Domestic Shale

The IEA projects that the US will produce 1.36 million bbl/d from domestic shale oil by 2016.



(Source, p 72)

## Canada and Mexico

The IEA projects Canada's oil production to increase by 1.3 mbpd by 2016, offsetting a decline of 400 kbpd in Mexican production. (Source, p 72)

## Gas

Several companies have plans to build LNG export terminals in the US. None have begun construction at this point. Here is the current status:  
Already filed to begin construction:

PROJECT	STATE	COMPANY	START UP	SIZE (bcm/y)
Sabine Pass	Louisiana	Cheniere Energy	2015	10 to 21
Lake Charles	Louisiana	Southern/BG	TBD	21
Freeport LNG	Texas	Freeport/Macquarie	2015	15

Under Consideration

PROJECT	STATE	COMPANY	START UP	SIZE (bcm/y)
Cove Point	Maryland	Dominion	2015	TBD
Jordan Cove	Oregon	Fort Chicago/Energy	2016	TBD

[Source](#)

## Russia

### Arctic

#### Oil

Russia has several oil fields in the far north that it plans to bring online by 2020. Some of the largest are the Prirazlomnoye, Trebs and Titov fields, the first of which is offshore in the Barents sea. Combined they are expected to produce around 250,000 barrels a day at their peak. [Source: Russia's Arctic Investment Push](#)

#### Gas

Two of Russia's largest planned energy projects are the Yamal and Shtokman gas fields. The Yamal project is onshore in the Yamal peninsula, and the Shtokman project is offshore in the Barents Sea. The Yamal project has a large number of geological and climactic difficulties, but estimates of peak production range from 180 to 360 bcm a year. ([Source](#) p.148 [Source2](#) p.5) Shtokman is expected to produce up to 70 bcm annually by 2030. [Source](#) p. 148

### North Caspian

#### Oil

The north Caspian region is one of the main regions that Russia is exploring for oil growth. Production in Russia's section of the Caspian Sea only began in 2010. Russia plans to increase its production from the Caspian and North Caucasus from 90,000 b/d to ~420,000 b/d by 2030. Through 2020, the main sources for this increase are expected to be the Filanovskoye and Korchagin fields, which are expected to contribute 230,000 b/d of crude production between them, as they reach their production peaks in 2018 and 2011 respectively. Lukoil estimates that by 2020 production in the Russian portion of the Caspian could be 320,000 b/d, from somewhere under 50,000 b/d in 2010 ([IEA World Energy Outlook 2010](#) p.521).

#### Gas

Russia is planning to increase their gas production from the Caspian Sea region from essentially no production in 2010 to 20-22 bcm by 2020. ([Source](#), p148)

### Eastern Siberia

#### Oil

Russia is hoping to increase their oil output from eastern Siberia and expect it to account for about 20% of total oil production by 2030, from 2% in 2008. (Russian Government Strategy, 2009, p148) They are constructing the second stage of the ESPO (Eastern Siberia Pacific Ocean) pipeline, which is expected to be completed by 2013-14. It is expected to send 1.6 million barrels a day to the Pacific by 2016. [Source](#)

#### Gas

The Sakhalin oil and gas project is the most important part of Russia's plans to increase its production in the eastern part of their country. Sakhalin has an LNG export terminal and is expected to more than double its gas production, from 25 bcm in 2011 to 55.5 bcm in 2018. [Source](#)

### Pipelines

#### Southstream

Planned pipeline that would carry Russian gas across the Black Sea to the Balkans and central Europe, it is scheduled to be completed in 2015, with construction commencing in 2013. The expected final capacity is 63 bcm annually. [Source](#)

#### Nordstream

The second line of the Nordstream pipeline is expected to be completed in late 2012, bringing its total capacity to 55 bcm per year. [Source](#)

## Germany

### Germany Nuclear

Until March 2011, ¼ of German energy (28% of electricity) came from 17 nuclear reactors, all to be shut down by 2022. Coal provided 2/3 of electricity, natural gas 13%, wind 6%. [Source](#)

Plant	MWe (net)	Operator	March 2011 Shutdown Sched
Biblis-A	1167	RWE	Shutdown
Neckarwestheim-1	785	EnBW	Shutdown
Brunsbüttel	771	Vattenfall	Shutdown
Biblis-B	1240	RWE	Shutdown
Isar-1	878	E.ON	Shutdown
Unterweser	1345	E.ON	Shutdown
Phillipsburg-1	890	EnBW	Shutdown
Grafenrheinfeld	1275	E.ON	2015
Krummel	1260	Vattenfall	Shutdown
Gundremmingen-B	1284	RWE	2017
Gundremmingen-C	1288	RWE	2021
Gröhnde	1360	E.ON	2021
Phillipsburg-2	1392	EnBW	2019
Brokdorf	1370	E.ON	2021
Isar-2	1400	E.ON	2022
Emsland	1329	RWE	2022
Neckarwestheim-2	1305	EnBW	2022

### Renewable Energy

Renewables are supposed to reach 35% of power generation by 2020, 50% by 2030, 60% by 2040, 80% by 2050 (sped up Energy Concept goals after Fukushima) [Source](#)

### Natural Gas

#### Nord Stream

Natural gas from Yuzhno-Russkoye oil and gas reserve, Yamal Peninsula, Ob-Taz bay and Shtokmanovskoye fields; 55 bcm/yr projected: 27.5 mcm from first pipeline by 2011, rest from second pipeline by 2012 [Source](#)

## Iraq

### Oil

Iraq is currently producing at well below their potential capacity, and expects to dramatically expand production in the coming years. Estimates vary greatly, the IEA estimates that Iraq's oil production will increase from 2.4 million b/d in 2010 to 4.1 million b/d in 2016. The Iraqi government expects production to reach 6.5 mb/d in 2014. [Source](#) p83

#### Main oil projects:

<b>Results of Oil Field Bidding Rounds</b>					
<b>First Bidding Round (brownfields)</b>	<b>Operators</b>	<b>2009 Prod. 1,000 bbl/d</b>	<b>Target Prod. 1,000 bbl/d</b>	<b>Target Incr. 1,000 bbl/d</b>	<b>Reserves (billion bbl)</b>
Rumaila	BP, CNPC, SOMO	1,000	2,850	1,850	17.8
West Gurna, Phase I	ExxonMobil, Shell, NOC	270	2,325	2,055	8.6
Zubair	Eni, Occidental, Kogas, Misan Oil	205	1,200	995	4.0
<b>First Round Total (billion barrels)</b>		<b>1,475</b>	<b>6,375</b>	<b>4,900</b>	<b>30</b>
<b>Second Bidding Round (greenfields)</b>					
West Gurna, Phase II	LUKOil, Statoil, Oil Exploration CO.	0	1,800	1,800	12.9
Majnoon	Shell, Petronas, Misan Oil	55	1,800	1,745	12.6
Halfaya	CNPC, Petronas, Total, South Oil	3	535	532	4.1
Gharaff	Petronas, JAPEX, North Oil	0	230	230	0.8
Badra	Gazprom, KOGAS, Petronas, TPAO, Midlands	0	170	170	0.1
Gayarah	Sonangol, Nineveh	2	120	118	0.9
Najmah	Sonangol, Nineveh	0	110	110	0.9
<b>Second Round Total (billion barrels)</b>		<b>60</b>	<b>4,765</b>	<b>4,705</b>	<b>32</b>
<b>Totals - Rounds 1 &amp; 2</b>		<b>1,535</b>	<b>11,140</b>	<b>9605.0</b>	<b>62.7</b>

<http://www.eia.gov/countries/cab.cfm?fips=IZ>

## Refining

Iraq currently does not have enough refining capacity to meet domestic demand. They have plans to construct four new refineries and upgrade two others by 2017 to approximately double their capacity to 1.5 mb/d.

<b>Existing Refineries in Iraq</b>			
<b>Refinery</b>	<b>Location</b>	<b>Capacity (bbl/d)</b>	<b>Notes</b>
Baiji	North-Central Iraq	310,000	Improvements in operational issues
Basrah	Near Basrah	150,000	Considering adding 70,000 bbl/d distillation tower
Daura	Baghdad	110,000	Considering adding 70,000 bbl/d distillation tower
Erbil	Erbil	40,000	
K-3 Haditha, Kirkuk, Khanaqin, Muftiah, Najaf, Nassiriyah-Samawah, Qaiyarah-Mosul	Scattered	< 20,000 each	Topping plants making low-grade diesel and kerosene

<http://www.eia.gov/countries/cab.cfm?fips=IZ>

## Oil Infrastructure

Iraq's infrastructure is a hindrance to increases in production. They do not have the ability to export more than around 2.5 mb/d. Source [MTOG 2011 p83] They are upgrading their port export capacity and are considering a number of possible pipelines.

Oil Infrastructure				
Ports	Upgrades	Status	Capacity (Thousand bbl/d)	Effective Capacity (Thousand bbl/d)
Basra	developing plans to add at least 3.2 million bbl/d	operational	1,600	1,300
Khor al-Amaya		operational	700	200
Export Pipelines	Route	Status	Capacity (Thousand bbl/d)	Effective Capacity (Thousand bbl/d)
IPSA	Iraq-Saudi Arabia	closed	1,650	0
Iraq-Turkey	Kirkuk-Ceyhan	operational	1,600	1,000
Heavy Oil via Turkey	Majnoon-Turkey	proposed	1,500	0
Iraq-Syria	Haditha -Syria	proposed	1,250	0
Iraq-Turkey	Haditha-1T1A depot-Turkey	proposed	1,000	0
Iraq-Syria-Lebanon	Kirkuk-Banias-Tripoli	closed	700	0
Iraq-Jordan	Haditha-Aqaba	proposed	500	0
Internal Pipelines	Route	Status	Capacity (Thousand bbl/d)	Effective Capacity (Thousand bbl/d)
Strategic	Haditha-Rumaila-Basra	limited usage	800	200

<http://www.eia.gov/countries/cab.cfm?fips=IZ>

## Gas

Iraq has an underdeveloped gas sector, though they have substantial reserves, as of 2010 Iraq used 2 bcm domestically, and flared 7 bcm, largely due to the absence of the infrastructure to capture and transport this gas to a market.

Most of Iraq's gas reserves are in associated fields in the south of the country, since associated gas is found and produced along with crude oil, this makes increasing or decreasing gas production more difficult. The majority of Iraq's non-associated gas is found in the north. It is estimated that gas production from the Kurdistan region of Iraq could reach 30 bcm. Gas from northern Iraq is one of the possible sources for the Nabucco pipeline. Source p241

## Iran

### Oil

Iran plans to invest \$18 billion by 2015 to boost output from the oil-rich south to as much as 3 million barrels per day, and expects its Yadavaran field there to start production in 2011. The Yadavaran oil field, being developed by Iran's National Oil Company and China's Sinopec, will start production in autumn 2011 at around 20,000 barrels per day and climb to its expected ceiling of 85,000 barrels per day over the next two years, according to official sources.

(Arabian Business, 2011, UPI, 2011, Steel Guru, 2011)

In January 2009, China National Petroleum Corporation signed a buyback contract with Iran to develop the northern Azadegan field (in western Iran) in two phases. Phase one, expected to be completed January 2013, will add approximately 30,000 barrels per day of production. Phase two is expected to take 42 months to complete upon phase one's completion, and will add 75,000 barrel per day, bringing Azadegan's total production to 150,000 barrels per day.

(EIA, 2010)

In addition, production at the Agha-Jari oil field will be increased from 140,000 barrels per day to 200,000 barrels per day after a gas reinjection program which began in June 2009 reaches full capacity. An Iranian official indicated that, as of July 2011, approximately 1.06 billion cubic feet of gas had been injected, or just over one-third of the reinjection program's target. Holding other factors constant, and assuming that the program continues at this pace, the 200,000 barrels per day goal can be reached by mid-2015.

(EIA, 2010, Gulf Oil & Gas, 2011)

In total, according to the five year development plan it submitted to the Iranian parliament in January 2010, the government plans to increase oil production capacity to 5.1 million barrels per day by 2015, up from 4.1 million b/d in 2010. Foreign assistance will likely be necessary to reach this goal.

(EIA, 2010)

## Natural Gas

Iran plans to invest over \$16 billion through March 2012 to continue developing the South Pars gas field. Its goal is annual production of 250 bcm (Annual production is currently around 70 bcm). Western firms have pulled out of the initiative amid new sanction threats against Iran, delaying the project. President Ahmadinejad demanded in June 2010 that all work be completed in the next 35 months, but one source indicated that this could be difficult to achieve.

(Arabian Oil & Gas, 2011, Payvand Iran News, 2011, The Washington Post, 2010)

In addition, Dubai-Khatam al-Anbiya, the construction arm of Iran's powerful Revolutionary Guard, was awarded a \$1 billion contract to develop the Halegan and Sefid Baghoun gas fields. The Halegan field has an estimated 351 billion cubic meters, while the Sefid Baghoun field has estimated in-place reserves of 170 billion cubic meters. The two fields will produce 196 billion cubic meters per year. Available sources were not clear on when the projects will become operational, but the government has said it intends to fast-track gas production.

(Platts Energy Week, 2011)

In April 2008, Oman and Iran signed an agreement to develop Iran's offshore Kish field, with estimated reserves of 1.4 trillion cubic meters. Oman will invest \$7 billion in the project to produce 31 billion cubic meters annually. Phase I, tentatively scheduled for first delivery to Oman by 2013, will produce approximately 21 bcm. 65% of production will remain in Iran, with the remaining 35% going to Oman. Phase II of the project will produce 10 bcm to be used for Iranian purposes.

(EIA, 2010)

In November 2008, Iran announced that it was partnering with an Indian firm extract gas reserves estimated at 360 billion cubic meters from the Farsi Block gas field. However, as of May 2011, this project had not yet been developed. The exact reasons for this are not immediately clear. Iranian officials seem to be taking an extended time to give final approval, while their Indian counterparts at one point postponed a meeting over the matter. Most recently, an Indian consortium submitted a reworked master development plan for the gas field, but it is not clear if anything has yet come from this.

(EIA, 2010, Livemint, 2010, Livemint, 2011)

## Electricity

As of 2010, Iran had attracted more than \$1.1 billion in investment to build three new power plants. In May 2011, the Energy Minister announced that \$2.2 billion in bonds would be issued to fund further power plant projects. It is not clear if the bond issuance has occurred yet, and the minister stated only that they would be issued "in the near future." Nor is the amount of power to be generated by these projects available. However, Iran has a total annual electricity generation capacity of approximately 60,000 megawatts, and plans to add 5,000 megawatts of capacity to the grid annually. One source indicates that there were 54 power plants under construction in 2010, with a capacity to produce 34,129 megawatts of power, as well as a further five contracts for private plants with a capacity of 4,267 megawatts, but this cannot be fully confirmed.

(PressTV, 2011, PressTV, 2011, Khaleej Times Online, 2010)

## Pipelines

On July 22, 2011, Iran signed a memorandum of understanding with Iraq and Syria for the construction of pipelines designed to deliver natural gas to the two countries.

The project calls for the construction of a 56 inch pipeline with a capacity of 110 million cubic meters per day, connecting Assalouyeh to Iraq and then to Syria, with the possibility of extending to Lebanon and Europe.

The construction of the pipelines, which will stretch for several thousand kilometers, is expected to take three to five years once funding is secured. The estimated cost of the project is \$10 billion.

Iraq should initially receive about 20 million cubic meters per day for its power plants, and Syria between 20 and 25 million cubic meters per day. According to officials, Iran ultimately plans to use the Iraq-Syrian pipeline to export gas to Europe. If the project is implemented, Europe could receive up to 40 billion cubic meters of gas per year through it.

(AFP, 2011, The Voice of Russia, 2011)

Iran and Pakistan earlier this year signed an agreement to build a pipeline to provide Pakistan with 740 million cubic feet of gas per year beginning in 2014. Iran's natural gas will be pumped to Pakistan from the South Pars gas field. Iran has already constructed between 900 and 1,100 kilometers of the pipeline (different reports use divergent figures, but it is definitely within this range), and talks with different companies for laying the pipeline on the Pakistani side are in progress, according to an Iranian official.

(AFP, 2011, Pakistan Observer, 2011, FT, 2011)

Iran also expects to deliver natural gas to Oman by March 2012 via a pipeline through the Persian Gulf. Natural gas will flow through the 124 mile pipeline along the floor of the Gulf.

(UPI, 2011)

## Sources

**IEA: "Medium Term Oil & Gas Markets 2011"**

<http://www.iea.org/w/bookshop/add.aspx?id=404>

**BP gas deal boosts Azerbaijan export options**

28 October 2010

<http://www.petroleum-economist.com/Article/2730911/Search/BP-gas-deal-boosts-Azerbaijan-export-options.html>

BARELY settled in his job as BP's new boss, Bob Dudley has made his mark. A new exploration deal in Azerbaijan could put his company in the middle of a battle for the country's gas exports.

In Baku, on 7 October, Dudley agreed a production-sharing agreement that will see BP join state-owned Socar to explore and develop the Shafaq-Asiman deep-water structure, 125 km southeast of Baku. Socar says the field could hold 300bn-0.5 trillion cubic metres (cm) of natural gas. BP says its knowledge of the basin suggests the structure would hold gas, not oil.

The deal followed a July heads of agreement and its signing further strengthens BP's presence in the country: it holds a 25.5% stake in the huge, 1 trillion cm Shah Deniz gasfield; and operates the AIOC venture producing the 1m barrels a day (b/d) Azeri-Chirag-Guneshli oilfield, the country's largest oil development, and the 1m b/d Baku-Tbilisi-Ceyhan pipeline, which delivers oil from Azerbaijan to the Mediterranean.

Shafaq-Asiman lies in water depths of around 700 metres with a reservoir depth of around 7,000 metres. The deal boosts Azerbaijan's already considerable gas-production prospects, which include the 16bn cm/y planned for the phase-two development of Shah Deniz. The first phase is already producing 8bn cm/y. Shah Deniz's reserves are just shy of 1 trillion cm. With that field's output figures in mind, Shafaq-Asiman could yield production of as much as 12bn cm/y.

That prospect will heat up the battle for control of Azerbaijan's exports. The consortium behind the Nabucco project, a proposed 31bn cm/y pipeline to import central Asian and Middle Eastern gas into Europe, wants Azerbaijan to be one source to support its infrastructure. Analysts continue to doubt that the Nabucco partners, led by Austria's OMV, will find sufficient gas to fill the remainder (PE 10/10 p40).

Russia's Gazprom, reluctant to cede any of its market share in central Europe to Nabucco, also wants to handle Azerbaijan's growing exports. With rising demand for natural gas in Russia, Gazprom needs to sew up supply agreements with Central Asian producers if it is to make more gas available for its own proposed export projects to Europe (PE 9/10 p24). These include the second phase of the Nord Stream pipeline through the Baltic Sea to Germany and the planned \$35bn South Stream project, which would export 63bn cm/y to customers in central Europe – the same market targeted by Nabucco.

In September, Socar agreed to double its sales to Gazprom from next year to 2bn cm/y. Although, in 2008, Azerbaijan's President Ilham Aliiev turned down Russia's offer to buy all the country's future gas production, Gazprom has since claimed that the country "gives priority to increasing its export volumes for Russia".

The tussle for future Caspian gas will, for now, be focused on output from Shah Deniz phase two, which both Russia and the Nabucco partners claim will flow their way. With the prospect of future output from Shafaq-Asiman, Azerbaijan's centrality to the strategic battle for Europe's gas needs will only grow.

{AZERBAIJAN : Platform for Chirag Oil Project to be ready by 2012\*\*  
July 14, 2011 Thursday 6:30 AM EST  
Tendersinfo News

Building work began on the West Chirag support platform at the Bakinskiy deep water structures facility. The platform will be set up for the Chirag Oil Project for raising extraction at the Azeri-Chirag-Guneshli oil field in Azerbaijan's portion of the Caspian Sea.

Chirag Oil Project manager Ilgar Mamedov stated that the platform would be provided to the site at sea in the fourth quarter of 2012.

"The West Chirag platform will be built between existing the Deepwater Guneshli and Chirag-1 platforms and will be aimed at extracting 360 million barrels of oil with a daily flow of 160,000-185,000 barrels. West Chirag will be the biggest platform in the Azeri-Chirag-Guneshli field. The first oil from the platform is to be produced in the fourth quarter of 2013", Mamedov explained.

#### **At the Wellhead**

December 6, 2010 Monday  
Platts Oilgram News

Azerbaijan believes it is on the verge of a brand new era in the development of its natural gas sector---and it's not just the expansion of its giant Shah Deniz field that will usher in the latest chapter in the country's gas story.

What's happening is that a whole cluster of offshore Caspian prospects--~~Umid, Absheron, Shafaq/Asiman, Nakhichevan and deep level Azeri-Chirag-Guneshli~~--are increasingly regarded as genuinely commercial propositions that could collectively rival Shah Deniz.

Rovnag Abdullayev, the CEO of Azerbaijan's state-owned Socar, recently described Umid as the country's second-largest, post-independence gas field, saying that only Shah Deniz is larger.

Curiously, he estimated Umid's recoverable reserves at just 200 billion cubic meters of gas and 30-40 million mt of condensate, much the same figures as Socar cited last June, before the first Umid well was drilled.

Platts understands that although samples have indeed disclosed the presence of both gas and condensate, testing of actual flow rates is still a few weeks away. The key point here, though, is that to Azerbaijan, Umid now has been transferred from the probable to the proven reserve category.

But of greater longer-term interest are the remaining probables, the next being Absheron. The drilling rig Maersk Gaidar Aliiev is due to start drilling the first Absheron well on December 22, a task expected to last some 200 days and to cost around \$200 million.

Total, the junior partner to Chevron in a 1997 PSA that encountered gas shows when it was looking for oil, came back to the field with a fresh PSA in 2009, this time hunting for gas. In June, Socar put Absheron's recoverable reserves at 300 Bcm of gas and 45 million mt of condensate. Previously, Socar had touted estimates of up to 1 Tcm, and Azerbaijani Energy Minister Natiq Aliiev said at the time that Baku was ratifying the Total PSA in May 2009: "Earlier received data give a ground for optimism on the occasion of discovery of gas fields in deep strata. Absheron structure is quite large. Gas reserves on it can even exceed reserves on the main offshore gas field in the Caspian---Shah Deniz."

Similar comments were made on the eve of Chevron's abortive well in 2001. Shah Deniz itself is currently reckoned to hold between 1.2 Tcm (BP's estimate) and 2 Tcm (Socar's assessment).

Then there's Shafaq/Asiman, for which BP signed a PSA in October. Of course it's far too early to say what success BP will have, but, as one oilman in Baku told Platts: "One should assume it's gas and condensate."

The field is in deep waters of around 650-800 meters and the gas is assumed to be under high pressure. In June, Socar, a partner in all these projects, said it believed the field contains 500 Bcm of recoverable gas and 65 million mt of condensate.

At a still more preliminary stage are the negotiations concerning development of the Nakhichevan field, for which Germany's RWE signed a memorandum of understanding last March. If the Shafaq/Asiman negotiations are any guide, the government should be ready to sign a heads of agreement with the Germans next summer and a full PSA next autumn.

Actual drilling will obviously depend on the limited rig availability in the Caspian. Socar considers recoverable reserves to be 300 Bcm of gas and 38 million mt of condensate.

In recent months, the Azeri authorities have highlighted the country's gas prospects particularly strongly, possibly to convince skeptics in both Turkey and the EU that there's more to Azerbaijan than the need to develop pipeline outlets--such as Nabucco, the Turkey-Greece-Italy Interconnector or the Trans-Adriatic Pipeline--just to serve the requirements of Shah Deniz.

Yet even if there is some hype in the Azerbaijani approach--and after all, the country is quite naturally trying to secure whatever advantages it can in its current drive to sell Shah Deniz phase 2 gas--the nature and level of foreign investment shows that quite a few international companies now take at least some of these prospects very seriously indeed.

Whether these developments will in time collectively rival Shah Deniz will likely be determined by the fate of two structures. One is Absheron, the other is deep-level ACG.

Under the giant 1 million b/d ACG oil field lies a gas reservoir whose existence is already been proven by drilling, but which lies below the 6,000 meter level that is the cutoff level for recovery allowed under the 1994 ACG PSA.

The BP-led consortium developing ACG has discussed deep-gas development with Socar for some years, but although some Socar officials have spoken of their hopes that a PSA will be signed soon, there is no indication when this might come about.

The bottom line is simple. As the Baku oilman told Platts: "Quite a few structures are beginning to look as though they are confirming gas, and there are several others that could do."

#### **SOCAR: Azerbaijan to create opportunities to strengthen Europe's energy security**

July 15, 2011 Friday 11:19 AM GMT +4

Trend Daily Economic News

Azerbaijan's proved hydrocarbon reserves are estimated at 4.2 billion tons of fuel, the Head of the State Oil Company of the Azerbaijan Republic (SOCAR) Rovnag Abdullayev said at a conference "Caspian Gas: Current Directions and Future Scenarios."

The conference is organized by SOCAR and Azerbaijan Diplomatic Academy.

Azerbaijan's hydrocarbon reserves are estimated at 10 billion tons of standard fuel, he said.

Moreover, Abdullayev said that ensuring energy security, integration into the global energy market, and gradual diversification of supply routes of the country's oil and gas resources are among the company's priorities.

Azerbaijan has turned from being a gas importer into a gas exporter within a short period of time. The country's gas is supplied to Georgia, Russia, Turkey, Greece and Iran. The country's gas production has increased 5.2 times over six years, from 5 to 26 billion cubic meters a year between 2004 and 2010.

Abdullayev said SOCAR is now working both independently and jointly with foreign partners to increase the country's production of gas production. Preparations are underway to launch the Shah Deniz-2. Currently about 23 million cubic meters of gas and 5,000 tons of condensate per day are produced from the Shah-Deniz field.

Work is also underway at other fields and promising structures, he said. SOCAR, together with France's Total, is drilling an exploration well on the Absheron field and preparing to start work on the Nakhchivan field in conjunction with Germany's RWE. In general, these two fields' reserves are estimated at 600 billion cubic meters of gas. The issue of deep-gas production from the Azeri-Chirag-Guneshli fields is also under consideration.

In addition to cooperation with foreign companies, SOCAR carries out the independent development of fields in the Caspian Sea. The company opened a new field "Umid" in the Azerbaijani sector of the Caspian Sea in 2010. Its reserves are estimated at 200 billion cubic meters of gas and 40 million tons of condensate.

Abdullayev said the opening of this field has become part of a new stage of SOCAR's development and increased the prospects and possibilities for new discoveries. It allowed to assess the Babak field's reserves at 400 billion cubic meters of gas and 80 million tons of condensate.

According to estimates, Azerbaijan's natural gas production will increase to 30 billion cubic meters per year by 2015, which will ensure the energy security of Azerbaijan and the region as a whole, as well as create opportunities to strengthen the energy security of Europe, Abdullayev said.

He stated that Azerbaijan has about 40 structures ready for drilling.

#### **At the Wellhead**

June 20, 2011 Monday

Platts Oilgram News

It is common knowledge that Azerbaijan has set October 1 as the date for the submission of bids to carry output from the second stage of its giant Shah Deniz gas field to markets in Europe.

What is less well known is that it is not just the output from the second phase of Shah Deniz that Azerbaijan wants to see reaching European markets, but output from a host of other Caspian Sea gas fields. For Azerbaijan's state Socar, the opening of a new gas link to Europe--~~or the expansion of existing systems~~--should prove the catalyst for a fresh round of drilling in its section of the Caspian.

It wants to use the guarantee of an export route as a lure to attract investors into more upstream projects, particularly since recent offshore experience in both Azerbaijan and Turkmenistan seems to indicate the southern Caspian may be more likely to yield gas than oil.

"It is not only Shah Deniz Phase 2 and its 10 billion cubic meters/year of gas that we are going to supply to our future buyers," Socar Vice President Vitaly Baylarbayov said this month. "We are talking about 50-55 Bcm of gas coming on stream somewhere in the period between 2020-2025."

In effect, with Azerbaijan saying it produced some 26 Bcm in 2010, and with Shah Deniz 2 expected to produce some 6 Bcm/year for Turkey as well as the 10 Bcm/year mentioned by Baylarbayov likely bound for Europe, this means Socar is anticipating an extra 8-13 Bcm/year to come on stream between 2020 and 2025.

Baylarbayov specified that additional gas was expected to flow from four projects: Umid, Apsheron, Nakhchivan, and the deep level of the giant Azeri-Chirag-Guneshli (ACG) oil field, where a BP-led consortium is producing more than 800,000 b/d of oil under a contract which, curiously, excludes development of deep gas.

Drilling by Socar last November proved the existence of a 200 Bcm field at Umid, where a second exploratory well is under way. At Absheron, where Socar postulates reserves of 300 Bcm of gas and 45 million mt of condensate, France's Total may complete drilling its first well by year-end, possibly in time to influence the size of the pipeline Azerbaijan will adopt to carry Shah Deniz 2 gas. At Nakhichevan, where Socar estimates the presence of 300 Bcm of gas and 38 million mt of condensate, Khoshbakht Yusifzadeh, Socar senior vice president for geology, said in May a contract with Germany's RWE would be concluded "soon."

---

Then there are some intriguing questions on gas from ACG. BP runs the operation to produce oil there, but also is playing a major role in the question of which export pipeline system to choose because it operates both Shah Deniz and the crucial South Caucasus Pipeline (SCP). One of the key issues in the export pipeline choice is the extent to which the SCP will have to be expanded to carry the increased volumes of Azerbaijani gas to the Georgia-Turkey border.

What happens after the Georgia-Turkey border constitutes the heart of the competition between the rival pipeline bidders--~~the developers of the Nabucco, Trans Adriatic Pipeline (TAP) and the Interconnector between Turkey, Greece and Italy (ITCI)~~--whose collective fates will be decided after the October 1 submission deadline.

BP already produces gas at ACG, where the existing field contains some 280 Bcm in proven reserves. But Yusifzadeh said in May that "Socar and BP have been conducting negotiations on the project for the development of deep-laying gas" at ACG and that "projected gas extraction will possibly be started in 2017." Deep ACG reserves are estimated at 200-250 Bcm. Moreover, although Shah Deniz 2 is officially termed the "Full Field" development project, there is a possibility Shah Deniz might yet witness a third phase.

Yusifzadeh has noted Socar is insisting new exploratory wells be drilled "to check reserves of the lower section of the post-Kirmaki suite" raising the likelihood of a further phase.

Finally, on May 6, BP signed Azerbaijan's latest production sharing agreement for exploration and anticipated development of the Asiman-Shafeg field complex to the southeast of Shah Deniz and thought by Socar to possess as much as 500 Bcm of gas and 65 million mt of condensate.

With Baylarbayov also saying Azerbaijan possesses "other structures, which we are absolutely certain will be producing" though not until 2025 at the earliest, Socar is saying any pipeline seeking to carry Azerbaijani gas to market must possess scaleability, defined by Baylarbayov as "the potential to expand, the potential to grow."

And, in the background, posing yet another problem as the pipeline project developers consider their final submissions: What happens if Turkmenistan and its suitors finally come up with a workable program in the next few months to transport to Azerbaijan some 10 Bcm/year of otherwise stranded gas that Malaysia's Petronas Carigali is starting to produce from its fields just on the other side of the Azerbaijan-Turkmenistan maritime median line?---John Roberts in Edinburgh

### **Minister Aliyev Outlines Azerbaijan's Gas And Oil Export Prospects**

*This interview first appeared in the Middle East Economic Survey of 05/07/2010*

[http://www.ekemeuroenergy.org/en/index.php?option=com\\_content&view=article&id=51:aliyev-outlines-azerbajians-gas-and-oil-export-prospects-8](http://www.ekemeuroenergy.org/en/index.php?option=com_content&view=article&id=51:aliyev-outlines-azerbajians-gas-and-oil-export-prospects-8)

Synopsis: Azerbaijan's Minister for Energy and Industry Natiq Aliyev provided the following overview of prospects for Shah Deniz Phase 2 and other gas and oil field developments in the Caspian Sea, in an interview with Dr. Theodoros Tsakiris in Athens on 30 June alongside the 2010 Mediterranean Oil and Gas Conference.

Q: When talking about Azeri gas strategies, the focus of the international oil and gas industry, not to mention every government from the Caspian Sea to through Europe, seems to have been nearly exclusively identified with Shah Deniz 2. Nevertheless, there are confirmed resources within Azerbaijan, such as Absheron, Umid, Babek and the AGC Deep reservoirs, which could significantly increase the country's export capacity to European markets beyond the 10 bcm/year that has been reserved for the EU, following the 7 June Azeri-Turkish agreements (MEES, 14 June). Do you think that these fields could produce enough gas by the time 2016 Shah Deniz 2 exports are ready to begin?

A: I think you are right. Our main priority, our main perspective, is linked with Shah Deniz 2, which is a world class field with an estimated recoverable capacity that exceeds 1.2 trillion cu ms. So far we have only developed Phase 1, which amounts to 9 bcm/y and is channeled to two countries -- Georgia and Turkey. Shah Deniz 2 will produce an additional volume of 16 bcm/y, of which 6 bcm/y would go to Turkey and around 10

bcm/y would be transited to Europe via ITGI Interconnector Turkey-Greece-Italy, Nabucco or TAP Trans-Adriatic Pipeline. What I want to emphasize is that as new market opportunities arise in Europe and the Middle East, especially in Syria and Jordan, Azerbaijan would be able to increase its gas production at relatively short notice. These are a variety of fields that would allow us to do so. We first have the associated gas production in Azeri-Chirag-Guneshli ACG as well as the deep gas deposits of ACG. We also have ongoing exploration work in Babek. Total signed recently an agreement for Absheron and will start exploratory drilling by September. This is major structure which could contain up to 300 bcm.

Q: Do you think that the fields you just mentioned will be ready to produce and export gas before or after 2016?

A: I think that they would be ready before 2016, before Shah Deniz 2

Q: That would be a game changer, since you could export to any destination without having to depend on Shah Deniz 2 developments.

A: Yes I would agree with that estimate, but I want to stress that we would have to start with small volumes and gradually built on that as demand rises in Europe. We are assessing the medium term demands of these markets and once we start selling gas to Europe we may be creating new structures and forms of joint ventures between Socar and European companies in the midstream and downstream sectors. We have already done this in Georgia, where we own part of the oil and gas distribution infrastructure, and we could repeat in Europe as our exports to that region increase.

Q: What were the main components of these agreements you signed on 7 June with Turkey? And how significant were they for the future of Azeri gas exports to European market?

A: Let me answer this question in some detail. The first agreement defines the exact price for Shah Deniz 1 quantities already exported to Turkey. In 2002, when Socar and Botas signed the supply agreement on these quantities, we linked the price of gas with a crude oil and products index that also gave us the right to increase the price from its original level of \$120/1,000 cu ms if there was an increase in crude oil prices. Since April 2008 we had the ability to exercise this right and we were negotiating a settlement with Turkey over this issue for more than two years. We have now reached a final agreement on the new pricing formula.

The second agreement refers to the Azeri gas 'right of transit' via Turkey to all directions including European markets. We agreed on the terms and conditions that constitute a major step in our efforts to deliver Azeri gas to Europe. The third agreement defined the Shah Deniz 2 gas volumes that would be transited to Europe and also be directly sold to the Turkish market. We agreed that in the first year of Shah Deniz 2, namely 2016, we will deliver to Turkey 2 bcm, thereafter increasing our exports by an annual of 2 bcm until 2018, when Turkish imports would rise to the limit of 6 bcm/y.

I want here to stress that Socar will have the right to sell directly to Turkish final consumers any amounts of gas they may require. In this context we have already decided to directly sell 1.2 bcm/y to Petkim. Overall the significance of these agreements is strategic. I think that now the timing is right to negotiate with other countries like Greece, Bulgaria and all interested parties/companies in the ITGI, IGB Interconnector Greece-Bulgaria, TAP and Nabucco pipeline projects.

Q: Do you think that Turkey would be willing to request a re-exporting right for the aforementioned 6 bcm/y?

A: I think it would make no sense to re-export this gas because the price of gas will be tailored to the needs of the market. From a commercial point of view it would make no sense to re-export it, because Socar would be the free seller of its gas in these markets in a direct manner, as I have already mentioned.

Q: As a consequence of backdating – to April 2008 – the implementation of the new price formula on Shah Deniz 1 exports to Turkey, Botas would have to repay an amassed 'debt' of around \$1bn. How soon would such a commitment be implemented?

A: Once the agreements are ratified by the respective parliaments, their implementation should start immediately after that. These agreements would be put into effect by the end of this year at the latest.

Q: Would this timetable apply for the start of the negotiations for Shah Deniz 2 supply contracts to Europe?

A: I believe so. The tendering process for Shah Deniz 2 gas supply contracts could start within the first half of 2011.

Q: One of the most interesting aspects of your strategy is the possibility to export 1-1.5 bcm/y to Syria through a 3 bcm/y Turkish-Syrian gas interconnector, which would be ready by 2011-12? How is this plan developing?

A: This is indeed an interesting proposal from the part of the Syrian government, but it is not the deal of the next day. Syria and Turkey have just started to connect their gas pipeline networks. Once this infrastructure is in place and we have concluded all transit talks with Turkey and price talks with Syria, we would be ready to start exporting our gas. What the Turks and the Syrians would also have to clarify is whether this interconnector will constitute part of the greater Trans-Arabian Gas Pipeline that wants to export Egyptian gas via Jordan and Syria to Turkey and via Turkey to Nabucco and Europe. If this is the case then they would need to build it with a reverse flow capacity so that we would be able to reach the Syrian market through Turkey.

Q: As I understand it the "deal of the next day", as you just mentioned, where your immediate interest would lie, is the utilization of existing infrastructure in Greece through the ITG and after 2013 through the IGB to Bulgaria and Southeast Europe...

A: This is correct. IGB is a very interesting project for Azerbaijan, because it is opening new opportunities for us to access these markets. The Greek market is in itself limited. Already Greece imports via ITG, through its supply contract with Botas, 0.75 bcm/y. When I have asked Greek officials how much more do you need they told me that the total volume would be up to 1 bcm/y. From our perspective we expect to add to Greece just 0.25 bcm/y over its existing supplies. This is not a sufficient volume to justify a strategic interest on our part. That is why we are looking forward to the completion of projects such as IGB and Poseidon in order to deliver gas to these markets.

Q: Another interesting project that has appeared over the last few months is the so-called AGRI or Azerbaijan Georgia Romanian Interconnector,

which includes an LNG option. What is the timetable for its potential implementation?

A: This project consists of three elements. The construction of an LNG liquefaction plant along the Georgian coast, most probably near Kulevi, the construction of a 110km pipeline that would connect Kulevi with the SCP South Caucasus Pipeline and the regasification plant in Constanta. This is the project we have been working on after we established a joint venture company that will be based in Bucharest. Its main task is to prepare the feasibility study.

Q: Is there any specific timetable yet?

A: No not yet, we are at the feasibility stage, but I do want to emphasize that for us this is a very important project, because if it is successful it will be the first LNG terminal in the Black Sea region and this is really important.

Q: You have also been discussing another gas export option that would cross the Black Sea with Bulgaria?

A: Yes indeed. The MOU memorandum of understanding we signed with Bulgaria last year predated the AGRI project and relates to studying the possibility of CNG compressed natural gas exports to Bulgaria through Georgia. Yet in my mind it would be either AGRI or this CNG project. It would be hard for us to do both.

Q: I understand that, apart from the expansion in the capacity of the Baku-Tbilisi-Ceyhan (BTC) pipeline, the main focus of Azeri oil export strategy once you get the oil to Kulevi is to support the Odessa-Brody-Plock-Gdansk or Sarmatia project. Is this still your main Black Sea oil transit target or would you consider supporting other projects such as Constanta-Trieste?

A: When we speak about Sarmatia the countries involved, namely Ukraine and Poland, are very interested in diversifying their oil import options by securing not just Azeri but Caspian oil. That is why Azerbaijan supports Sarmatia, which is 24.75% controlled by Socar. There is still a lot of work that needs to be done sorting out who will pay for this project. Once these details are solved Socar could deliver more Azeri oil to Odessa and subsequently to Plock. We are already exporting crude oil in Odessa, refining it there and sell it to our own distribution network in Ukraine. The same stands regarding the Constanta-Trieste project.

Q: What are your plans to expand the capacity of the BTC system in relations with Azerbaijan's participation in the KCTS (Kazakhstan Caspian Transportation System)?

A: Right now the throughput capacity of the BTC line is around 1.2mn b/d, which we expect to cover on our own. We understand that Phase 1 of Kashagan, which will be ready by late 2012/early 2013 would be serviced via CPC [Caspian Pipeline Consortium] and the Kazakhstan-Chinese pipeline, so we would not expect any significant volumes before approximately 2015, when Kashagan's output would reach 23mn tons/year []. Once this is secured we could expand BTC's capacity even more to over 1.6mn b/d and also expand the capacity of the trans-Caspian oil tanker flotilla that is owned by Caspar from a freight volume of 12,000 tons to around 60,000 tons. What is certain is that the KCTS system will constitute the main export pipeline option for Kashagan. Once Kashagan's production reaches Phase 2 (23mn t/y) and moreover Phase 3 (37mn t/y), then it might be a better idea to construct a cross-Caspian pipeline.

### **SOCAR and RWE plan to sign PSA for Nakhichevan gas fields**

June 20, 2011

Kazakhstan Oil & Gas Weekly

SOCAR and Germany's RWE plan to sign a product sharing agreement (PSA) for the Nakhichevan gas fields in the Caspian Sea by the end of this year.

"A memorandum on the main commercial principles for developing the property has already been signed and a PSA contract is being drafted. The contract will be signed by the end of the year, perhaps even much sooner," Vagif Aliyev, head of SOCAR's investment directorate, told reporters.

Aliyev did not say how equity in the project might be split, and he said other companies might join it.

SOCAR and RWE signed a memorandum on mutual understanding on the main commercial principles and terms for exploration, development, and distributing extraction at the Nakhichevan structure in March last year. Under this memorandum RWE received exclusive rights to negotiate with SOCAR on the points it covers. Abdullayev said the memorandum is effective for one year, before the expiration of which the parties have to coordinate production-sharing terms and ink a PSA.

A contract pertaining to Nakhichevan was signed in 1997 with ExxonMobil as project operator that provided for parity involvement with SOCAR. But ExxonMobil backed out of further exploratory work at the structure when the first exploratory well drilled in 2002 did not reveal commercial hydrocarbon reserves, compensating SOCAR with \$30 million.

The Nakhichevan structure was discovered during seismic exploration in 1960. It is located 90km to the south of the Apsheron Peninsula, at 55km off shore where the water is 120-750 meters deep. SOCAR data indicate predicted reserves of 300 billion cubic meters (bcm) of gas and 40 million tons of condensate.

### **Pipeline construction plans continue slide despite growth in natural gas**

February 7, 2011

Oil & Gas Journal

[Excerpt]

Europe

Construction of the 1,200-km Nord Stream natural gas pipeline, which will extend through the Baltic Sea from Vyborg, Russia, to Greifswald, Germany, began Apr. 9, 2010. Russia's Gazprom projects completion of the first 27.5 billion cu m/year Nord Stream line in 2011, with a parallel line of the same capacity to follow in 2012. The line will pass through Russian, Finnish, Swedish, Danish, and German waters.

Nord Stream AG says pipe laying for the line's first construction phase will be carried out through April 2011 by Saipem SPA's Castoro 6 and Castoro 10 as well as Allseas Group SA's Solitaire.

Work started in early December 2005 on the Russian on shore section of the Nord Stream pipeline in Babayev. This 56-in. segment will stretch 917 km to the Baltic Sea coast near Vyborg, linking existing gas pipelines from Siberia to the project. Seven compressor stations will provide the necessary pressure.

A joint venture consisting of Gazprom (51%), Wintershall AG (15.5%), E.ON Ruhrgas AG (15.5%), NV Nederlandse Gasunie (9%), and GDF Suez (9%) is building the pipeline. For the two-leg option, the total cost for the offshore project will amount to more than (EURO)7 billion, with Gazprom investing an additional (EURO)1.3 billion in the onshore section.

The Ostsee-Pipeline-Anbindungs-Leitung (OPAL), a Wintershall-Gazprom (Wingas) joint venture, will eventually extend 470 km to link Nord Stream to Eastern Europe. About 400 km of the pipeline's overall length have already been laid. Wingas expects to start the line in 2011 with Nord Stream. Wingas also is planning construction of the 440-km North European gas pipeline (NEL), which will transport Nord Stream gas from Greifswald to Rehden in Lower Saxony. NEL is scheduled to come on stream in 2011 and has a planned capacity of 20 billion cu m/year.

Russia began production at the 825.2 billion cu m Yuzh-no Russkoye gas field in December 2007. Gas from this field will be shipped through Nord Stream once it is completed. In February 2010, Gazprom announced a 3-year production delay to 2016 from its Shtokman gas field (OGJ Online, Feb. 8, 2010). Shtokman is to be another supply source for Nord Stream.

Gazprom and Eni SPA agreed in December 2007 to build the South Stream gas pipeline under the Black Sea and through Bulgaria (Fig. 4). The subsea section will be 900-km long, reaching a maximum depth of 2,250 m. Under consideration are two options for the balance of the overland route: a northwestern route to Slovenia and Austria and a southwestern route to Greece and Italy.

Bulgaria and Russia reached agreement in January 2008. Intergovernmental agreements have also been reached with Serbia, Hungary, Greece, Slovenia, and Austria. Gazprom anticipates making a final investment decision on the project by mid-April 2011. On completion, the (EURO)15.5-billion line could distribute gas to northern and southern Europe, with an estimated capacity of 30 billion cu m/year. Participants plan to deliver first gas through South Stream by December 2015.

Electricite de France (EDF) signed a memorandum of understanding with OAO Gazprom in December 2009 for "at least 10%" of the consortium in charge of building South Stream. Gazprom also completed a feasibility study in November 2010 with Romania's Transgaz SA for a potential future leg of the pipeline. Austria's OMV AG and Gazprom signed a cooperation agreement in April 2010 for construction of the Austrian section of South Stream from the Austrian-Hungarian border to the Baumgarten distribution hub.

OMV also, however, continues to advance the 56-in. Nabucco pipeline, which will bring some combination of Central Asian, Caspian, and Middle Eastern gas to the Baumgarten hub in Austria near the Slovakian border at a rate of 31 billion cu m/year, before moving it on to Western Europe (Fig. 4).

Feasibility studies have led to a two-stage construction plan. The first phase, starting in 2011, calls for 2,000 km of pipe between Ankara, Turkey, and Baumgarten, allowing 8 billion cu m/year of gas from the existing Turkish pipeline network to be transported through the line by 2014. Second-stage construction would begin in 2012 and build eastward from Ankara to the Iranian and Georgian borders, bringing total pipeline length to 3,300 km.

Turkey wants Iranian gas for Nabucco. The US supports construction of Nabucco, citing the need to move gas into Europe through economically viable and secure routes, but would likely oppose Iranian exports through it. Turkmenistan is building a 620-mile domestic East-West gas pipeline to transport gas from its Southern Yolotan-Osman field near the border with Afghanistan to its Caspian Sea coastal region but has remained noncommittal as to whether the gas would then be moved across or around the Caspian to potentially supply Nabucco or follow a different path, maintaining for the time being that it has enough gas to supply multiple export routes.

Nabucco is expected to cost around \$11 billion. Nabucco has six shareholders: Turkey's Botas, Bulgaria's Bulgargaz, Romania's Transgaz, Hungary's MOL, Austria's OMV, and Germany's RWE.

To deliver gas from Bovanenkovo field Russia is building a multi-line gas transmission system connecting the Yamal Peninsula and central Russia. Construction calls for 1,420-mm OD pipes designed to work at higher pressures than existing Russian lines.

Total pipeline length will exceed 2,400 km, consisting of the Bovanenkovo-Ukhta pipeline (1,100 km, 140 billion cu m/year) and the Ukhta-Torzhek gas pipeline (1,300 km, 81.5 billion cu m/year). Connection to the Ukhta hub will allow shipment through the Yamal-Europe pipeline.

Gazprom began building the 72 km subsea section of the Bovanenkovo-Ukhta line, crossing Baidarate Bay, in August 2008. Construction of the main trunkline began in December 2008. Concrete-covered pipes for the subsea section were still being shipped as of November 2010, however, with estimates placing completion of the line at as late as 2013 despite Gazprom's earlier statements that Bovanenkovo gas would begin shipment during 2011.

Galsi SPA and Snam Rete Gas SPA signed a memorandum of understanding in November 2007 to construct the Italian section of the planned 8 billion cu m/year Galsi natural gas pipeline, which will deliver Algerian gas to Italy via Sardinia.

Galsi shareholders are Sonatrach, Edison SPA, Enel SPA, Hera Trading, Regione Sardegna, and Wintershall AG.

The project envisions four pipeline segments: 640 km onshore between Hassi R'mel gas field in Algeria and El Kala on the Algerian coast; 310 km between El Kala and Cagliari on Sardinia in water as deep as 2,850 m; 300 km between Cagliari and Olbia on the northern Sardinian coast; and 220 km between Olbia and Pescaia, southeast of Florence, in water as deep as 900 m.

Sonatrach will deliver 3 billion cu m/year into the system, Enel 2 billion cu m/year, and Hera Trading 1 billion cu m/year.

Work on the line was under way in January 2009, with service expected by 2012-13. The European Commission gave the project a (EURO)120 million grant in March 2010 as part of its economic recovery package for the continent.

#### Middle East

Iran and Pakistan continued laying the groundwork during 2010 toward building the long-contemplated gas export line from Iran. The \$7 billion project would transport as much as 2.2 bcf/d of natural gas from South Pars field in the Persian Gulf through 1,850 km of 56-in. OD line (Iran, 1,100 km; Pakistan, 750 km).

The Iran-Pakistan pipeline would be an extension of Iranian Gas Trunkline (IGAT) VII, which began flowing gas in September 2010. Running 907 km from Assaluyeh to Iran-shahr in Iran's Sistan-Baluchestan province, the 56-in. OD line can carry 1.8 bcf/d of South Pars gas, with National Iranian Gas Co. planning expansion to 2.9 bcf/d.

FACTS Global Energy Group, Honolulu, said the export pipeline will enter Pakistan in southern Balochistan, running to Sindh province where the country's main pipeline hub lies. From Sindh, gas would travel through SSGC's existing distribution network. Iranian gas entering Pakistan will be used by independent power producers, according to FACTS.

Pakistan and Iran signed an agreement in June 2010 for initial deliveries of 750 MMcf/d beginning in 2014.

IGAT IX, slated for 2014 completion and also termed the Europe Gas Export Line, would move South Pars 9-10 gas 1,863 km from Asalouyeh to the Turkish border. Construction on the stretch from Asalouyeh to Bidbolyand was completed as of June 2008.

Iran has expressed interest in finding an international partner on a build-own-operate basis for the balance of IGAT IX, which could link with either the proposed Trans-Adriatic pipeline or the proposed Nabucco pipeline for exports farther west.

In July 2010 Turkey denied press reports indicating it had reached agreement with Iran for shipment of gas to Turkey, with private Turkish firm Som Petrol ending up being the counterparty.

#### **Nabucco investment seen at 12-15 bln euros-sources**

Thu, May 5 2011

<http://www.reuters.com/assets/print?aid=USIST00770920110505>

ANKARA, May 5 (Reuters) - Projected investment in the Nabucco gas pipeline has been revised up to 12-15 billion euros (\$18-22 billion) from 7.9 billion euros, sources close to the matter in Turkey told Reuters.

Nabucco plan intends to bring up to 31 billion cubic metres of gas annually from the Caspian region to an Austrian hub via Turkey and the Balkans. It aims to open in 2015.

Some partners investing in Nabucco are opposed to meeting the revised sum and seek a cost reassessment, the sources said.

The investment decision could be delayed until 2012, given the increased costs and supply problems, the sources added. (\$1=.6726 Euro)

(Reporting by Orhan Coskun)

#### **AGRI Project Takes Shape**

International Oil Daily

September 15, 2010 Wednesday

Azerbaijan, Georgia and Romania inked an accord Tuesday to create a new natural gas export route from the Caspian region to Europe that could help ease European dependence on Russian gas.

The Azerbaijan-Georgia-Romania Interconnector (AGRI) project also envisages the construction of LNG terminals in the Georgian town of Kulevi, as well as in an as yet unspecified location in Romania. Gas will be piped from Azerbaijan to neighboring Georgia and shipped on LNG tankers to Romania. The gas would then be transported via existing gas pipelines to Europe, Azeri state Socar said in a statement Tuesday.

Initial gas deliveries will total up to 8 Bcm/yr although this could be increased, Azeri energy minister Natik Aliyev said. Gas will reportedly come from the second stage of Azerbaijan's Shah Deniz field ( IOD May24,p2 ).

Socar, Georgian Oil and Gas Corp. and Romania's Romgaz will each hold a 33% stake in the venture, which will cost an estimated €2 billion-€4 billion (\$2.6 billion-\$5.1 billion), Aliyev said.

The accord was signed by the three countries' energy ministers during a visit to the Azeri capital Baku by Georgian President Mikheil Saakashvili and his Romanian counterpart, Traian Basescu.

The ceremony was reportedly also attended by Hungarian Prime Minister Viktor Orban, whose country is considering joining the project. Hungary, which relies on Russia for 80% of its gas, is a member of the European Union's Nabucco pipeline project, planned to transport 31 Bcm/yr of Caspian and Mideast gas to Europe via Turkey.

#### **Russia's Arctic Investment Push EI Finance May 18, 2011**

Russia is looking to accelerate the development of new resources in the Arctic, and has unveiled plans to bring at least seven on- and offshore fields harboring some 1.56 billion barrels of oil and nearly 13 trillion cubic meters of gas on stream by 2020. But after trying to develop one field, Prirazlomnoye, on its own, Moscow now has a clear understanding that to get these multibillion-dollar projects off the ground, it will need both foreign help and tax breaks to make the economics more attractive.

Russia's Arctic acreage is appealing to international investors, but for now they are waiting to see how things develop for Total and Statoil at the Shtokman development in the Barents Sea, as well as at the competing Yamal LNG project.

Russia's northern ambitions are dictated by the simple fact that some 20% of its territory lies in the Arctic region, which holds 95% of the country's gas and 60% of its oil reserves and whose onshore gas fields have been key to state Gazprom's production since the late 1970s. The region also accounts for 12% of Russian GDP and 22% of exports.

Consequently, the Arctic push has already started. Gazprom aims to launch production from its 530 million bbl Prirazlomnoye oil field in the Pechora Sea – the first project Russia is implementing in the icy waters of the Arctic without foreign help – at the end of this year. It took Russia no less than 17 years to build the platform for the development, and foreign help was nevertheless needed. The steel structure was built in Russia, but most of the topside facilities have had to be imported, despite efforts to ensure a higher local content.

The project's operator, Gazprom subsidiary Gazprom Neft Shelf (GNS), has estimated costs near \$4 billion, which experts say is optimistic. Indeed, the onshore Arctic Trebs and Titov fields will produce only 120,000 barrels per day to Prirazlomnoye's 133,000 b/d, but have been

budgeted at \$6 billion. GNS General Director Alexander Mandel admits that the project's returns are now close to zero, even though the field has been exempted from the country's mineral extraction tax. Experts claim the economics will be further depressed by the Prirazlomnoye crude being sold at a discount to Russian Urals given its API gravity of only 23°. Mandel says the company is going to apply for a zero export duty for the project for 10-15 years, which could improve the economics, hiking the internal rate of return to 15%.

Tax breaks are also crucial for Russia's two flagship Arctic LNG projects: the offshore 3.9 Tcm Shtokman development and Yamal LNG, which will be fed from the onshore 1.26 Tcm South Tambei field. Yamal LNG, led by Russian independent Novatek, has already received solid backing of the government that promised exemptions from production taxes and export duties for its condensate sales. Gazprom's Shtokman is looking for similar breaks. Since there is no export duty on Russian LNG exports, project operator Shokman Development AG (SDAG), in which Total holds 25% and Statoil 24%, wants pipeline exports exempted from the tax too. The project's first 25-year phase will produce 23.7 Bcm of gas per year, split 50-50 between pipeline gas and LNG. Shtokman would also like to get other sweeteners, including breaks on the country's value added tax and profit tax.

Both Shtokman and Yamal continue to invite skepticism though, with analysts pointing to the huge costs involved – possibly exceeding \$20 billion for each project – and the uncertainties over a likely market for Shtokman's gas and the transportation issues facing Yamal. Indeed, Shtokman had been conceived with a view toward LNG sales into the US, but the North American shale gas boom and low US natural gas prices mean Shtokman LNG is unlikely to be competitive. Europe and Asia remain more plausible markets, but these have already been targeted by Yamal, which aims to ultimately produce 15 million tons of LNG a year.

But Total, which has also been chosen to be a major foreign partner in Yamal LNG with 20%, is confident there will be no problems with finding LNG buyers from both projects given the anticipated growth in demand following the devastating earthquake in Japan as well as the expected slowdown of nuclear energy projects in certain parts of the world. At the same time, growth in India, China, Africa and Brazil add to optimism about future demand.

Total's Russian plans clearly indicate its belief that both Shtokman and Yamal LNG will get off the ground by 2020, with the former being the priority. The final investment decision on Shtokman is to be taken at the end of this year with intention to start pipeline gas production in 2016 and LNG export a year later. Yamal LNG is to be launched sometime between 2017 and 2020, according to the French major, which differs from Novatek plans that aim to commission the first 5 million ton/yr phase between 2016 and 2018. Total believes that while the project includes development of the onshore South Tambei field, which will feed the LNG plant on the Arctic coast, it could be technologically more difficult than offshore Shtokman, with the main problem being transportation in the Arctic's icy waters.

International majors are also closely watching the way Total and Statoil are able to book the reserves from Shtokman, the license to which remains in the hands of Gazprom. Total refuses to reveal the details of the reserve-booking scheme Gazprom offered to it, saying only that participation in commercial, technological and financial risks would allow the international major to do so. In Yamal LNG, Total is understood to be getting a stake in an operating company that will also be the license holder.

"The Shtokman model is not applicable for an exploration project," a representative from a foreign major told <em>Energy Intelligence Finance</em>. However, this is the scheme that state-controlled Rosneft is now offering to foreign partners in offshore projects, including to BP for the South Kara Sea exploration, where drilling could begin in 2015 ( EIF Jan.19,p2 ).

Onshore, Gazprom will bring on stream its 4.9 Tcm Bovanenkovskoye field in the Arctic Yamal Peninsula next year. Bashneft and Lukoil unveiled plans to commission the Trebs and Titov fields in the northern Nenets region in late 2013 or early 2014. On- and offshore Yamal, Gazprom plans to start up Kharasaveyskoye in 2019 and the neighboring Kruzenshternskoye field a year later.

Meanwhile, the eastern part Russia's Arctic shelf remains unexplored, with investment being a major problem. If spending remains at its current pace, it would take 120 years to complete seismic work in unexplored areas of the Russian Arctic, according to academic Leopold Lobkovsky. Some \$830 million has been spent on Arctic exploration since 2005, of which only one-fifth came from the state budget.

Russian Arctic Fields to Be Commissioned by 2020				
Field	Reserves	Location	Owner	Start-Up Date
Prirazlomnoye	530 million bbl	Pechora Sea	Gazprom	2011
Bovanenkovskoye	4.9 Tcm	Yamal Peninsular	Gazprom	2012
Trebs and Titov	1.03 billion bbl	Nenets District	Bashneft (74.9%), Lukoil (25.1%)	2014
Shtokman	3.9 Tcm	Barents Sea	Gazprom (51%), Total (25%), Statoil (24%)	2016
South Tambei	1.26 Tcm	Yamal Peninsular	Novatek (51%), Total (20%), others to be chosen	2016-2018
Kharasaveyskoye	1.9 Tcm	Yamal Peninsular, inc.offshore	Gazprom	2019
Kruzenshternskoye	965 Bcm	Yamal Peninsular, inc.offshore	Gazprom	2020