Analysis of Azerbaijan Oil and Gas Sector

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Abstract:

This article is study of Azerbaijan oil and gas industry. It illustrates the business climate, the impact of this sector on Azerbaijan's economy including role of SOFAZ and highlights recent developments in the energy production and the main concepts of Azeri PSAs. Meanwhile, the article establishes the government policy by indentifying several factors that influenced to attract foreign investment to oil and gas sector and examines significant challenges that still remain for further development of the country's oil industry.

JEL Classification:

Keywords: Oil and gas industry, PSA, Regulation

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Introduction

The Republic of Azerbaijan is located in the south east of the Caucasus, and borders on Russia, Georgia, Turkey, Iran and Armenia. Throughout history, oil has been used as a leading mechanism in its political and economic life. Since Azerbaijan's independence, oil has become the main political and economic factor for solving several national problems such as strengthening the country's independence, defending its territorial integrity and especially providing economic development by attracting huge amounts of foreign investment.

Azerbaijan is one of the world's oldest oil producers and the city of Baku and the Absheron Peninsula have long been known as historic sites for oil. The first oil well in the world was drilled in Absheron, Bibiheybat in 1847 using a primitive percussion drilling mechanism. It was not until eleven years later that the first oil well in America was drilled in Pennsylvania. The first oil refinery was also built in Baku in 1878. This refinery was connected to the Balakhani oil fields via a newly constructed pipeline 12 km long. By the end of the 19th century Baku had become a centre for world-scale industrial investment. In the time of the Russian Empire, Baku was the main oil provider, providing 97.7 % of Russia's oil in 1890 and half the world's output in 1901. In World War II, during the Soviet era, Azerbaijan supplied 23.5 million (hereafter, mln) tons in 1941, and accounted for approximately 75% of the total oil output of the former Soviet Union. However, oil production subsequently declined sharply to 39.15% in 1950, 5.7% in 1970 and 2.4% in 1980 (Nasibli, 1998).

Following its independence from the Soviet Union in 1991, Azerbaijan experienced an economic recession, resulting in a decline in oil production from 20 mln tons in 1970 to 10 mln tons in 1995 due to conflict with Armenia over Nagorno-Karabakh, outdated technology, poor planning and lack of investment in new drilling and rehabilitation of existing wells (Energy Information Administration, 1995). However, a successful oil and gas strategy implemented by the Azerbaijan government with the signing of the "Contract of the Century" in 1994 followed by a deal on the Shah Deniz gas field in 1996 led to an extraordinary amount of international investment flowing into the oil and gas sector. Azerbaijan has received $ 60 billion in foreign investment in its oil and gas sector over the past 16 years (Azernews, 2010). The country's oil and gas revenues are expected to reach $200 billion by 2024.

Another important event took place in 2006 with the construction of the giant Baku –Tbilisi – Ceyhan (BTC) pipeline for transporting oil from Baku to western markets via the cities of Tbilisi and Ceyhan. This project practically put an end to the Russian monopoly on transportation of energy resources from the Caspian Sea.

This paper sets out to review recent development trends in Azerbaijan's oil and gas sector. Section 2 presents business climate and Section 3 describes an impact of oil and gas sector on

the country's economy and role of State Oil Fund (SOFAZ), Section 4 summarises the country's prospects for energy production and Section 5 analyses the type of oil contract known as a Production Sharing Agreement (hereafter, PSA), adapted to suit the Azerbaijan model. Section 6 outlines the government policy on oil and gas investment, and challenges related sector; the legal status of the Caspian Sea. Section 7 sets out some conclusions.

2. Business Climate

Azerbaijan declared its independence from the former Soviet Union in 1991. The country is confronting both significant prospects and challenges in its transition to a free market economy. In recent years, Azerbaijan has implemented a successful strategy of developing its oil and gas sector as the main driver of the economy. Despite development of the oil sector, the non oil sector of the economy remains undeveloped and very fragile with significant obstacles to both domestic and foreign investment.

According to IFC/World Bank 2011, Azerbaijan has made notable improvements in business and labor freedom, and its economy continues to improve and undergo transformation and restructuring. Azerbaijan is listed as the top global reformer in the Doing Business report (2009-11) with major improvements in seven out of ten indicators of business environment reform, mainly in doing business, starting a business, employing workers, registering property and protecting investors. Azerbaijan has moved a long way up the global rankings, from 97th place to 33rd in 2009 and 54th in 2011 in overall ease of doing business, but corruption, access to finance and tax rates remain as major constraints to doing business there (Enterprise Survey, 2009).

The main obstacle to investment is the high level corruption in the country. This legacy of corruption dates back to Soviet times and currently the huge injections of money injections from the oil and gas sector are considered as the greatest sources of corruption there. In recent years the government has established a state commission on anti-corruption measures, e.g. legislation has been introduced requiring public officials to disclose their assets on an annual basis. However, bureaucratic control often hinders the application of the law and regulations. Laws and decrees are usually adopted by the government but their implementation is often delayed. Compared to the 1990s, the level of corruption in the country has improved slightly but Azerbaijan still ranked 134th out of 180 countries in 2010 in the Transparency Initiatives Corruption Index (2011). Recently the Azerbaijan Government has started a massive anti-corruption campaign, but it is still open to debate whether this campaign is a long term policy or a short-term

measure. However these efforts may raise hopes for an improvement in the country's business and development climate (Rosenblum,2011).

Access to finance and tax rates other major challenges that entrepreneurs face in Azerbaijan: three out of four entrepreneurs experience difficulties while seeking financing. The limited availability of credit funding, restrictive conditions, high interest rates and expensive processing of payments make loans unattractive for entrepreneurs. Lack of financing to invest in new technologies and equipment makes local entrepreneurs less competitive in quality terms than international suppliers. According to the 2009 Doing Business report, Azerbaijan ranks 102nd of 178 economies in the ease of paying taxes. This survey reveals that tax administration is still a burden and is ranked fifth out of the six most difficult regulatory issues in Azerbaijan. Firms operating in the formal economy face high tax rates and cumbersome tax administration procedures in the standard tax regime as their businesses grow. Compliance with the tax system – preparing and filing numerous tax reports and making tax payments – is time consuming and expensive.

3. Impact of Oil and Gas sector on Economy

The switch from a state-run to a capitalist economy and the Nagorno-Karabakh conflict led to a collapse in trade and a decline in economic output of more than 60% between 1989 and 1995. Trade among the former Soviet countries failed and led to a decline in GDP and to high inflation. The country's GDP fell by almost 60%; agriculture by about 43% and industrial output by about 60% from 1989 to 1994 (International Monetary Fund, 1994). However, since political stability was regained, thanks to oil contracts signed between the Azerbaijan government and Azerbaijan International Operating Company[3] (hereafter, AIOC), Azerbaijan's economy has shown significant economic growth over the past decade.

From 2001 to 2009 as Azerbaijan started to seriously develop its oil and gas sector, GDP growth averaged 16% a year due to strong investment in this sector. Strong oil and gas production gains, high international oil prices and sharply higher public spending propelled growth to an average of 27% a year between 2003 and 2009. Oil revenues even increased more than predicted due to the spike in oil prices on world markets between 2005 and 2008, leading the country's currency reserves to reach 18 billion USD by the end of 2008—twice its foreign debt. The oil sector accounted for 42 % of value added (of GDP), 90.7 %

[3] A group currently numbering 10 oil companies (BP, SOCAR, Chevron, TPAO, Statoil , Devon Energy, Amerada Hess, ExxonMobil, Inpex, Itochu) that have signed extraction contracts with Azerbaijan

of total gross exports and 83.9 % of total foreign investment in 2009 (See Table 1). Foreign direct investment, particularly in hydrocarbons, and public investment remain important contributors to growth, and the share of GDP captured by higher public investment was around 21% of GDP in 2009. However, foreign investment is expected to decline over time as the major oil and gas projects move toward less intensive stages. Indeed, they fell to just 6% of GDP in 2009 .

Table 1: The oil and gas sector in Azerbaijan, 2003-2009

	2003	2004	2005	2006	2007	2008	2009
GDP growth rate (%)	**11.2**	**10.2**	**26.4**	**34.5**	**25**	**10.8**	**9.3**
Share of oil & gas sector:							
Value added in GDP (%)	**27.5**	**29.0**	**42.2**	**50.8**	**53.7**	**52.7**	**42.0**
In industry[4] (%)	**62.1**	**61.6**	**75.0**	**82.8**	**85.7**	**89.0**	**84.0**
in gross export (%)	**85.7**	**82.7**	**86.5**	**92.2**	**94.2**	**93.1**	**90.7**
in FDI (%)	**98.5**	**97.5**	**94.2**	**90.3**	**90.1**	**83.9**	**74.0**

- Source: IMF[5], SSCA[6], CBA[7]

Despite development of the oil sector, the non oil sector of the economy remains undeveloped and very fragile. In 1995 agriculture accounted for 35% of value added (of GDP) and industry 26 %, but since the country began to export huge amounts of gas and oil industry, especially the oil industry, has grown rapidly, and by 2009 it accounted for 70%of value added (of GDP). In 2010 non oil industries accounted for only 8%, while agriculture performed poorly at 2.2% in 2010 (World Bank Indicators, 1995-2010). Current estimates indicate that the oil and gas industries are only responsible for a little over 1% of employment in Azerbaijan, while agriculture employs nearly 50% of the country.

Large oil revenues allowed the government to achieve success in reducing poverty through continuously increasing in the minimum salaries and pensions under social transfer programs from SOFAZ, indicated by a drop in the poverty rate from 27% to

[4] Extraction of crude oil and gas + refined petroleum products
[5] International Monetary Fund
[6] The State Statistics Committee of the Republic of Azerbaijan
[7] Central Bank of Azerbaijan

just 2 % today. Although social transfer measures have reduced the number of people below the poverty line, they do not automatically lead to sustainable poverty reduction, as oil revenues capture 70% of state budget expenditures and such measures are effective for a short-term period. Therefore, it is important to maintain the sustainability of this process while oil-gas revenues are expected to decrease in the long term. The government is aware that the current observed growth rate is temporary as oil output will start to decrease in 15-20 years' time and the country's economic performance will have to be supported by growth of the non-oil sector in the future, so the economy must be diversified. Economic diversification will reduce not only Azerbaijan's dependence on the oil sector but also its resulting vulnerability to adverse international oil price fluctuations.

As transfers from SOFAZ are an important source of public revenues, and encouraging economic diversification by financing infrastructure projects is one of the important objectives of SOFAZ. This has a very important role to play here.

State Oil Fund (SOFAZ):

In fact the non-oil economy is mainly driven by state expenditures through transfers from SOFAZ, and its share of GDP is falling as those transfers increase. According to the Center for Economic and Social Development (CESD), although the assets of SOFAZ total 30.2bn US dollars (as of July, 2011), oil dependency has increased greatly in Azerbaijan in 2011. The share of the oil sector in the state budget has reached 78 % and it accounts for 65 % of GDP, with more than 92 % of exports taking the form of oil and oil products. With the approval of the amendments in the state budget in May, 2011, $ 12.1 billion will be transferred from the Oil Fund to the state budget in 2011 alone, which is a 41.7 percent increase on the previous forecast and represents 59 percent of total budget revenues.

SOFAZ was created in 1999 to guarantee the saving and effective use of oil revenues. The Fund is a legal entity with an independent administrative structure and reports directly to the President of Azerbaijan. Its main goal is to ensure collection and proper management of revenue flows from oil and gas PSAs.

The Fund has operational features similar to other funds across the world to guarantee its savings and stabilization responsibilities; however it was structured with more weight on savings than stabilization. According to Kuralbayeva et al(2010), a paper based on a comparative analysis of the oil sectors in Azerbaijan and Kazakhstan,

Azerbaijan started to consume its revenues too much too soon between 2001 and 2007, although more recently it took steps that led to a large increase in savings in 2008 and 2009. The outflows have been allocated to the financing of public investment by the government, however private sector investment remains low and increasing it is a priority.

According to revenue rules, all revenue flows from PSAs go directly to SOFAZ with the exception of taxes paid by foreign oil companies and SOCAR, which go directly to the state budget. SOFAZ's expenditure policy does not assume any limit on expenditures from the oil fund. However, the articles of association of the fund state that withdrawals from the fund in one year cannot exceed inflows obtained in that year. The operations of the fund are under control of the president and parliament has also the power to approve or disapprove transfers from the fund to the state budget. Transfers from SOFAZ are determined through a discretionary process within the budget framework. The funds are actually spent mostly on covering the budget deficit, though there can also be special expenditures determined by presidential decree. The following table shows SOFAZ's asset trends, transfers and revenue sources between 2005 and 2009.

Table 2: SOFAZ's asset trends, transfers and revenue sources.

(Millions of dollars)	2005	2006	2007	2008	2009
Revenues:					
Sale of oil and gas	662.00	1,116.0	2,159.92	13,960.18	9,444.96
Management of fund assets	32.40	67.14	86.75	325.41	367.33
Dividends (BTC project)	-	-	-	116.74	188.61
Acreage fee	11.09	9.46	6.79	4.27	1.30
Bonus fee	1.58	2.36	70.15	3.42	0.98
Transit fee	22.18	15.37	72.38	0.14	10.90
** *Transfers*	180.0	700.0	700.0	4,560.0	5,898.0
* *Assets*	**1,673.2**	**1,745.5**	**2,971.1**	**13,550.6**	**17,880.5**

Source: SOFAZ and own work

As part of the diversification objective, SOFAZ currently finances significant infrastructural and social projects under social- economic development programmes: the Project for the Improvement of Social and Economic Conditions and Settlement of Refugees from the war over Nagorno-Karabakh; further development of the ACG oil

fields, a railway project, an irrigation system project, water supply system development projects and the State Programme for Education of Azerbaijani Youth Abroad.

Since its independence, economic growth and social development in the country have been closely connected with development of the oil sector. Government has been launched a big public sector investment programs through financing on utilities roads and highways. The poverty level has been dropped remarkably via increases wages and social transfers. However non –oil private investment declines in recent years and a lesser attention has been given to the expenditure management. Despite the creation of the SOFAZ, lack of institutional procedures and explicit fiscal rule does not provide sound spending from fund (Kuralbayeva et al. 2011).

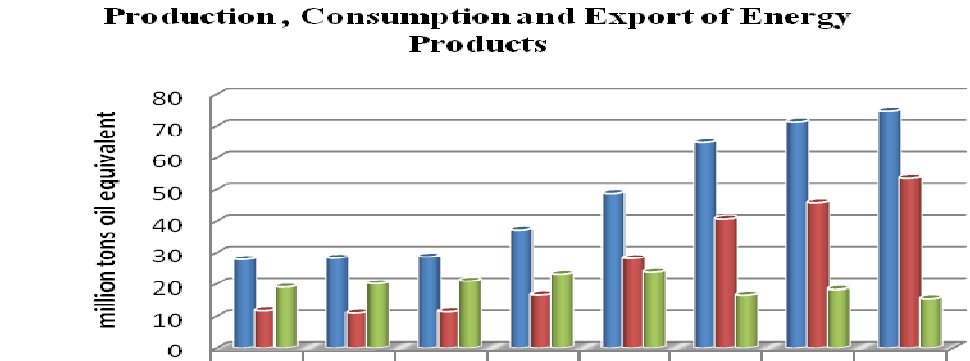
4. Energy production

As a state on the shore of the Caspian Sea, Azerbaijan is endowed with rich oil and gas resources and is currently experiencing an oil boom. Azerbaijan's total energy production has increased almost three-fold from 27.9 million to 74.9 million oil equivalent mainly due to oil and gas production. The country's total energy consumption in 2009 was about 15.7 million tons, which means that a significant part of its production is exported (See Figure 1). Crude oil and oil products make up over 70% of Azerbaijan's total energy exports and gas makes up over 20%. Figure 2 shows that 72 % of total energy production went to export in 2009 compared with 42 % in 2002.

Azerbaijan has about 5,000 MW of power generation capacity (80% thermal, of which 60% runs on *mazut*[8] and the rest on natural gas, and 20% hydro). In 2009, domestic electricity consumption was 12390.5 million kWh. The electricity sector in Azerbaijan works under very poor conditions due to its old Soviet power infrastructure, difficult economic conditions, high taxes, and non-payment by customers. Privatisation and greater investment in the sector are critically needed. *Figure 1* describes total energy production, consumption and exports in 2002-2009.

Figure1.

[8] Mazut is low quality fuel oil commonly called ¨waste oil¨



	2002	2003	2004	2005	2006	2007	2008	2009
Production	27,9	28,3	28,7	37,3	48,8	64,8	71,3	74,9
Export	11,8	11,1	11,5	16,9	28,2	40,7	46	53,5
Consumption	19,1	20,2	21	23,2	23,9	16,8	18,4	15,7

Source: SSCA and own work

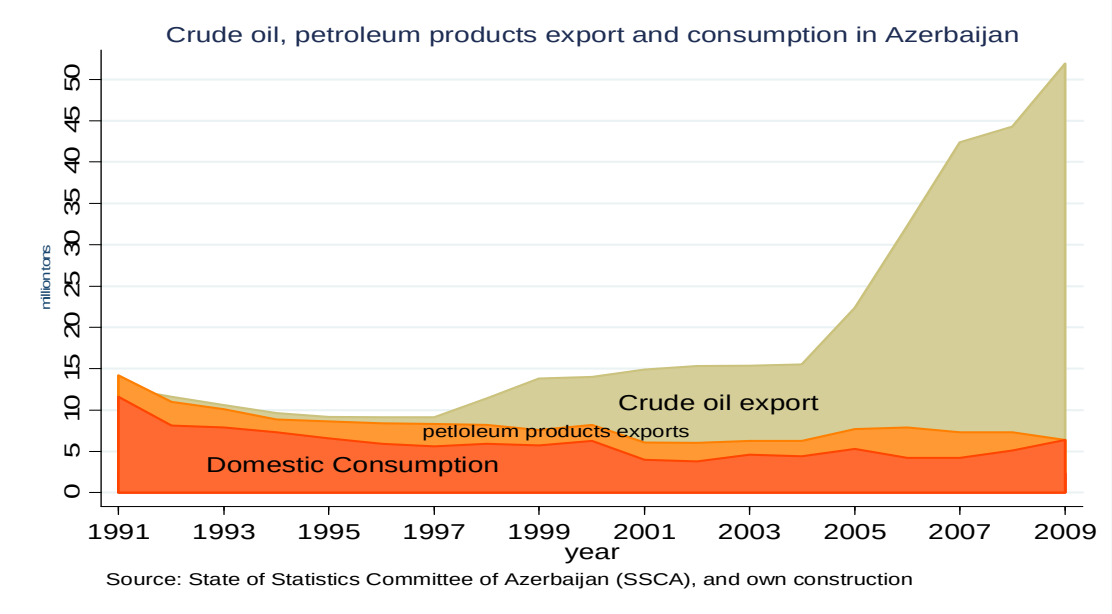
4.1. Oil Production & Consumption Trends

The *Oil and Gas Journal* estimates Azerbaijan's crude oil reserves in 2009 at 7 billion barrels. Most of the country's potential oil is located offshore in the Caspian Sea, particularly in the Azeri Chirag Guneshli (ACG) fields, which accounted for over 80 percent of total oil output in Azerbaijan in 2009.

After independence, oil production in Azerbaijan fell sharply between 1992 and 1997, bottoming out at 9.1 mln tons in 1997. By 2000, production had recovered to 14 mln tons, then to 22.4 mln tons in 2005 and 44.3 mln tons in 2008. Oil production exceeded 50 mln tons in 2009 for the first time in the country's history, with an increase of 14 percent on 2008. (See, Figure2). 83.3% of Azerbaijan's total oil output over this period was provided by higher production levels with an average of 847,500b/d from the Azeri-Chirag-Guneshli (ACG) field (SSCA, 2009). Oil production in 2009 averaged 1.02mn barrels per day (b/d) for the first time.

After the collapse of the Soviet Union, domestic crude oil consumption decreased from 12 mln tons in 1991 to 4.2 mln tons in 2007. However the figure then rose to 7.8 mln in 2008 and 6.4 mln in 2009 (See, Figure 2). This shows just how much oil is available for export. *Figure 2* shows crude oil, petroleum product exports and oil consumption trends in Azerbaijan between 1991 and 2009.

Figure 2



Source: State of Statistics Committee of Azerbaijan (SSCA), and own construction

Azeri Chirag Guneshli (ACG): ACG is Azerbaijan's largest oil field, located 120 km off the coast. It has oil reserves estimated at 5.7 billion barrels (BP in Azerbaijan Sustainability Report, 2009). The production sharing agreement known as the ¨Contract of the Century¨ was signed in 1994 for the development of this field between 11 major oil companies (Azerbaijan International Operating Company – AIOC) and the Azerbaijan government. The agreement is valid for 30 years. The field was originally operated by BP on behalf of AIOC and total investment amounts to about $ 20 billion (See Table 5). Later some companies sold their shares, and the last - Devon Energy - announced the sale to BP of its 5.6262 percent shareholding in ACG in 2010 (Trend, 2010). ACG was ranked as the third largest field in the world in terms of production volume with 817,700 barrels per day (b/d) (Cambridge Energy Research Associates, 2009). The field was developed in three main stages. The first stage started with production from the Chirag platform in 1997. The second stage consisted of two main phases: Phase I – development of Central Azeri - started in 2005; Phase II - development of East Azeri – started in 2005 and the West Azeri platforms were developed in 2006. The third stage was launched with the Deepwater Gunashli platform in 2008. Chirag provided overall production of 105,300 b/d from its 19 wells in operation in 2009, Central Azeri produced 185,800 b/d to BP from 18 wells in operation, West Azeri produced 275,200 b/d from 18 wells in operation, East Azeri produced 139,400 b/d from 13 wells in operation and Deepwater Gunashli produced

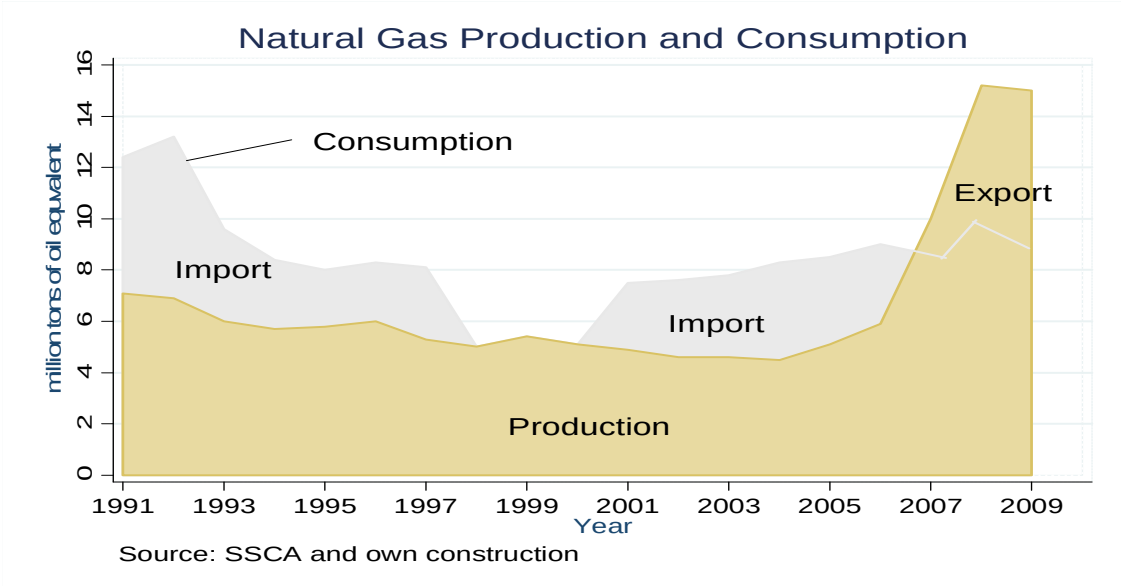
116,400 b/d from 17 wells in operation (BP Sustainability Report, 2009). Most of the crude oil from ACG is exported through the Baku–Tbilisi–Ceyhan pipeline and the rest through the Baku-Supsa Pipeline and Baku-Novorossiysk Pipelines.

4.2. Gas Production & Consumption Trends

Major investments in the exploitation and development of new gas fields in Azerbaijan might tremendously increase the country's estimated gas reserves and enable Azerbaijan to meet rising international demand for gas. Gas imports in European countries are expected to double by 2030, and Azerbaijan's gas reserves are seen as the one of the primary sources for meeting demand particularly from Eastern and Central European states.

Azerbaijan's proven gas reserves are estimated at about 30 trillion cubic feet (hereafter, TCF), and the potential for changes is expected to be between 100 and 200 TCF (Oil and Gas Journal, 2009). Virtually all natural gas is produced from offshore fields. After independence, production declined steadily to 4.5 billion cubic meters (hereby, BCM) in 2005, compared to 8 BCM in 1991. Due to gas storage, Azerbaijan imported gas from Russia up to 2007 to meet domestic consumption. After increases in its own gas production, Azerbaijan stopped buying gas from Russia and instead became a gas exporter in the region. In 2009, gas production increased to 23.3 BCM and was expected to reach 28.5 BCM in 2010. About 66 % of total production is used to meet domestic demand and 34 % exported mainly to Russia, Georgia and Turkey.

Figure 3



The huge investment made by foreign companies to develop other Azerbaijani gas fields such as Shah Deniz, Shafaq, Asiman, Umid, Nakhchivan, Absheron, Dan Ulduzu and Ashrafi will

increase gas production to 5 trillion cubic meters in the near future. On 6 July, 2010 SOCAR and BP signed a gas PSA for the development of the Shafag and Asiman fields, each of which has estimated reserves of 300 BCM. In 2009, a PSA for the development of the Absheron field was signed by SOCAR, Total and Gaz de France in which they hold 40 %, 40% and 20% stakes respectively.

In November 2010 SOCAR announced the discovery of huge gas potential at the Umid field, 40 km offshore and 75 km from Baku, describing it as the largest discovery since the giant Shah Deniz field (Trend, 2010). It is considered as a remarkable event in the history of Azerbaijan's oil and gas industry and the development of the Umid field would further increase Azerbaijan`s gas potential. The huge gas resources discovered prove that Azerbaijan is not only an oil-based, but also a gas-based country.

Shah Deniz: Shah Deniz is the largest gas field in Azerbaijan and the 9th largest in the world with reserves of around 1.2 trillion cubic meters (BP, 2009). It is located in the South Caspian Sea, off the coast of Azerbaijan. The field was discovered in 1999 and it has been in operation by BP since the end of 2006. Total estimated investment is $10 billion (See Table 5). A PSA for the development and exploitation of the field was signed by a consortium of companies consisting of lead operator BP (25.5%), Statoil (25.5 %), SOCAR, Lukoil, Total, NICO (10 % each) and TPAO (9 %). Production from the field was 6.5 BCM in 2009 (13 % down on 2008) and was expected to reach 7.6 BCM in 2010 (BP, 2009). Total production in Azerbaijan in 2009 was almost 16 BCM, and is expected to increase to 26-30 BCM by 2012, of which 9 to 10 BCM of gas is to be produced under Phase I of the Shah Deniz field. According to SOCAR officials, production from Shah Deniz Phase II is expected to reach 16 BCM by 2017.

4.3. Refined Energy Production and Consumption

Azerbaijan has two oil refineries with a total capacity of 442,000 barrels per day (b/d): The Azerineftya Refinery, with a capacity of 230,000 b/d, and the Baku Oil Refinery with a capacity of 212,000 b/d. These two plants were built during the Soviet era and both are located in Baku. The output of these refineries meets most domestic demand and the rest is exported. The most widely produced and exported petroleum products are gasoline, diesel and fuel oil (See Tables 4). In 2009 the output of the two refinery plants was 272,440 tons of fuel oil, with a large fall of 839,560 tons compared to 2008. This is explained by the decrease in demand for fuel oil at electric power stations. The plants also produce jet fuel, kerosene, stove fuel, asphalt and other products. Approximately 25 mln tons of oil products can be produced in both refineries, but they have been running below capacity. After independence, production of refined oil products in the country decreased significantly: gross output from the refineries was 14.2 mln ton in 1991 but fell by almost half to 7.3 mln tons in 2008 (See Figure 2).

Operations at these plants were adversely affected by the tough political and economic transition in the early 1990s. Part of this decline is due to the drop in Azerbaijan's consumption of oil over that period, the failure to replace worn and outdated technology, a falling domestic market, a breakdown in consumer relations and, in particular, a lack of capital investment. According to government estimations modernisation of the two refineries will cost between $600 million and $700 million. Due to lack of facilities the refined oil products produced, especially fuel oil, do not meet EU standards and because of this the refineries have directed their exports at countries with less stringent standards such as Georgia. Other less valuable products are consumed on the domestic market. With a view to producing competitive, highly efficient refined oil products, the government is planning to construct an integrated oil and gas processing plant and petrochemicals complex at Sangachal, with a 300,000 barrel per day (b/d) capacity (SOCAR, 2010). This new complex would reduce the country's dependence on imported chemicals and could allow SOCAR to export refined products to European markets.

Table 4 summarises the refining and exporting of petroleum products for the same period.

Table 3. Gasoline, diesel and fuel oil production, export and consumption, (thousands of tons)

Gasoline	2001	2002	2003	2004	2005	2006	2007	2008	2009
Production	**598**	**610**	**720**	**852**	**906**	**1042**	**1129**	**1319**	**1235**
Export	**185**	**208**	**259**	**389**	**323**	**337**	**332**	**371**	**227**
Consumption	**395**	**398**	**451**	**469**	**577**	**720**	**793**	**952**	**996**
Diesel									
Production	**1562**	**1593**	**1641**	**1789**	**2101**	**2095**	**2101**	**2525**	**2366**
Export	**1089**	**1056**	**1101**	**1140**	**1407**	**1415**	**1406**	**1622**	**1577**
Consumption	**532**	**547**	**513**	**729**	**783**	**731**	**661**	**898**	**774**
Fuel oil									
Production	**2648**	**2569**	**2470**	**2521**	**3061**	**2899**	**2813**	**1624**	**286**
Export	**493**	**995**	**146**	**338**	**392**	**925**	**927**	**582**	**34**
Consumption	**1961**	**1761**	**2317**	**2357**	**2625**	**2135**	**1829**	**553**	**222**

Source: SSCA

4.4. Transport infrastructure

Current and potential energy pipelines are major economic, political and strategic components of Azerbaijan's foreign and transport policies. Most Azeri oil exports pass through the Baku-Tbilisi-Ceyhan (BTC) pipeline, with an estimated cost of $ 3.9 billion, which was designed to deliver up to one million barrels per day of crude oil, crossing 1055 miles from Sangachal terminal near Baku in Azerbaijan, via Georgia, to Ceyhan Terminal in Turkey. From there oil is shipped by tankers to European markets. The pipeline started exporting in July 2006 and oil

transportation through BTC peaked at 1.2 million barrels per day in 2009. This giant project has further prospects: BTC can also expand export and transit opportunities for other countries such as Kazakhstan, Turkmenistan and Russia. If Kazakh oil is also run through BTC its current capacity will be increased to 1.5 mln barrels per day. It may even be doubled to 2 mln barrels per day to carry additional volumes of oil from Central Asia. According to SOCAR officials, in 2009 1.9 million tons of Kazakh oil was shipped via the BTC pipeline. The rest of Azeri oil is carried through the Baku–Supsa and Baku–Novorossiysk pipelines (See Table 4). Table 4 shows oil and gas pipelines in Azerbaijan.

The exploitation and development of the Shah Deniz gas field and other new gas fields, considered to be the largest natural gas discoveries in the last 20 years, have led Azerbaijan to export its natural gas reserves to Turkey and onward to Europe via the South Caucasus Pipeline (SCP). The SCP is the first pipeline to transmit Caspian oil to Europe bypassing Russia. It is 680 km in length and has an annual capacity[9] of 6.6 BCM crossing Azerbaijan and Georgia to end in Turkey.

Results for 2009 show that Azerbaijan exported 5.2 billion cubic meters of natural gas via the South Caucasus Pipeline, around 4 million cubic meters more than in 2008 (SOCAR, 2008).

Table 4

Pipeline	Operator	Length (km)	Capacity	Investment ($ billions)	Tariff
Baku–Novorossiysk (oil)	SOCAR Transneft	1330	0.10mb/d	In use since 1983	$ 2.14 barrel
Baku- Supsa (oil)	BP	833	0.15 mb/d	0.56	$ 3.29 barrel
Baku –Tbilisi- Ceyhan (oil)	BP	1768	1.0-1.2 mb/d	3.6	$6.34 barrel
South Caucasus Pipeline (gas)	BP	970	20 BCM	1.3	-

Source: BP and own work

Construction of the world's biggest transportation projects, the Baku-Tbilisi-Ceyhan (BTC) pipeline and South Caucasus Pipelines were other promising areas which helped to eliminate transportation constraints and given that Azerbaijan is running out of oil, they can play especial role for the future potential importance of Azerbaijan as thoroughfare for the exports of Caspian oil, mainly from Kazakhstan and Turkmenistan. However, currently

the uncertainty over the legal status of Caspian Sea is the main obstacle to developing Caspian undersea pipelines.

5. Production by Type of Contract: PSAs

In practice, there are four basic types of contractual arrangements commonly used for oil and gas exploration and development: concessions, production sharing agreements, service contracts and joint ventures. The differences between them usually lie in the level of control given to foreign contractors over operations and production, the share-out of revenue between foreign contractors and the government and the level of government involvement (Al-Emadi, 2010).

For the development of the oil sector in Azerbaijan, investors are welcomed through Production Sharing Contracts (PSCs) and traditional joint ventures (JVs).

The history of JVs dates back to the United States and a model proposed by the American Association of Petroleum Landmen (Black and Dundas, 1993). JVs in general consist of an operator which is responsible for the exploration and development of operations supervised by an Operating Committee. The Operating Committee is composed of all co-venturers, who have votes in proportion to the size of their stakes (Wilkinson, 1997). The exploration and exploitation operations are under sole control of the operator. Under JVs, host government and FOCs own both the equipment and facilities of the project as well as the oil and gas productions. With regard to the latter, each participant takes its share according to the contract. Therefore, host government and FOCs have direct ownership of the project and production (Blinn,et al., 1986). Concerning risk, the host government and the FOCs are jointly and severally liable for the obligations of the venture. Other possible risks to the parties are related to the acts of the operator.

During the 1990s, Azerbaijan was very weak and its economy was in crisis. Due to SOCAR's lack of modern infrastructures and considerable need for foreign funding to exploit its hydrocarbon resources, the government replaced JVs with PSCs. According to Sabit Bagirov, former president of SOCAR, Azerbaijan preferred PSAs because as a young state, especially one with a lack of financial capital, it was unable to apply other types of contract that would be beneficial to it as a host country. Moreover at that time Azerbaijan's low credit rating meant that it was unable to get long term loans from foreign credit institutions to fund its oil and gas projects. Recently SOCAR has entered into only two JVs – for the Azgerneft and Anshad Oil fields - both of which are for onshore fields. PSCs have now become common as contractual arrangements for oil and gas exploration and development in Azerbaijan.

The first PSAs were introduced in Indonesia in 1966 but recently they have become common in Asian countries and in the Caspian region (Bindemann, 1999). A PSA is ¨a contractual agreement between a contractor and the host government whereby the contractor bears all exploration costs and risk and development and production costs in return for a stipulated share of the production¨ (Daniel, 1994). Under PSA contracts, the contractor may be one or more International Operating Companies (IOCs) authorized by the Host Government (HG) (usually represented by its oil and gas ministry or the state oil company) to conduct petroleum operations within the area specially shown in the agreement in accordance with terms of the contract (Taverne, 1999).

There are two main features that distinguish PSAs from other types of contract. The first is that the foreign contractor provides all technical and financial services for exploration and development operations. It bears all the risk entailed by the operation, e.g. if no oil is discovered the company receives no compensation. The second is that the host government owns both the mineral resources and all installations provided by the foreign contractor and bears no risk. It shares potential profits without having to make a direct investment.

In spite of the apparent attractiveness of the PSA to both parties, it contains certain drawbacks which may be attributed to its complexity and cost recovery provisions. In theory the state has full control over hydrocarbon resources while a foreign contractor extracts them under contract. In practice however, the actions of the state are severely constrained by stipulations in the contract. Moreover, regarding the cost recovery part of PSAs, it causes the occurrence of disputes from time to time between government and contractors. Contract provisions need to be established to determine when cost recovery can be renegotiated, especially when oil prices are high (Akinwumi, 2009).

In general, the basic PSA contract has four main properties: (1) the foreign contractor pays a royalty on gross production; (2) after the royalty payment, the contractor takes part of its share for cost recovery; (3) the rest of production - referred to as “profit” - is shared out between the government and foreign contractor in a pre–arranged way; and (4) the contractor has to pay income tax on its share (World Bank, 2007).

However, PSAs take different forms in different host countries. Under PSA contracts in Azerbaijan, the state is represented by the State Oil Company (SOCAR) and there is a group of foreign oil companies (Azerbaijan International Operating Company – AIOC). Implementation of PSAs started with the signing of the "Contract of the Century” with major Western oil companies in 1994. Between then and 2010, 32 PSAs were signed between SOCAR and AIOC. The 32nd and latest PSA was signed between SOCAR and BP in October, 2010 for joint exploration and development of the Shafag-Asiman gas field in the Azerbaijan sector of the

Caspian Sea. However extraction is implemented only under 11 contracts and as of the year 2010, Azerbaijan made a profit only under 4 PSA contracts. The government receives the largest profit (over 95%) from the Azeri-Chirag- Guneshly (ACG) project[10]. Table 5 lists main oil fields in Azerbaijan describing name of operator, estimated investment, reserves, government share and tax on contractor s profit.

Table 5

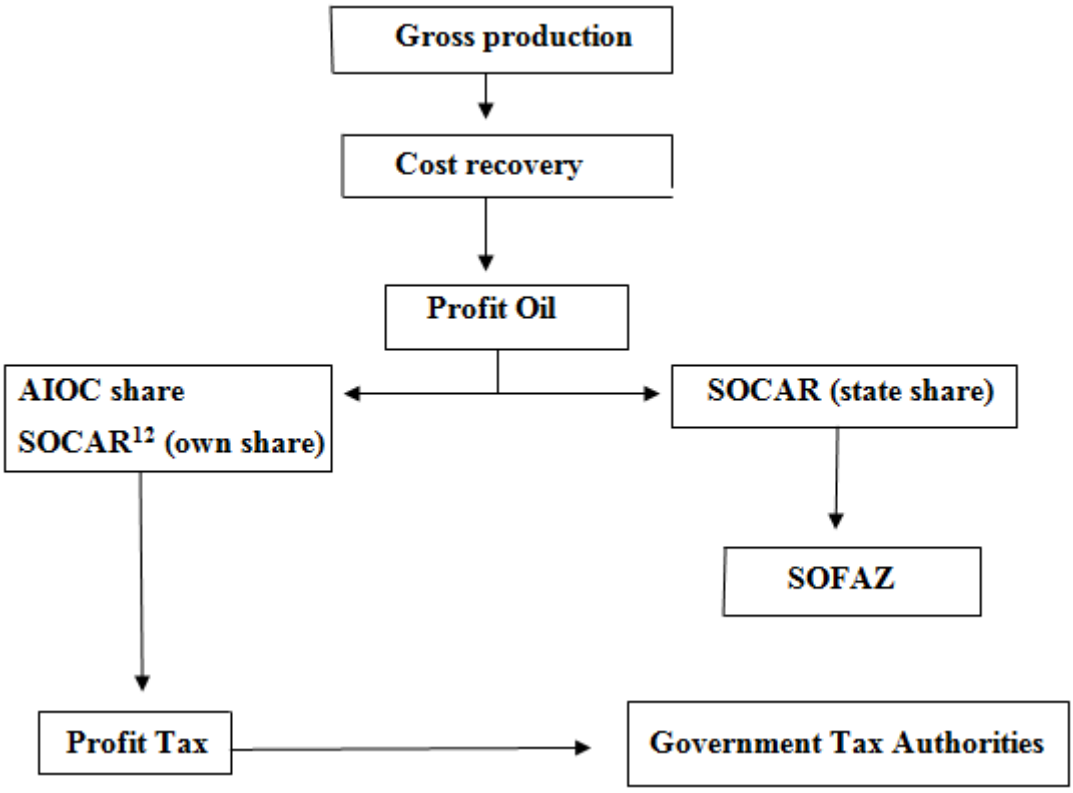
Name of field	Operator	Estimated investment	Estimated reserve	Government share		Tax on contractor's profit (%)
				Min (%)	Max (%)	
ACG - signed 20.09.1994	BP	20 billion $	5.7 billion tons oïl	30	80	25
Araz, Alov and Sharg –signed 21.07.1998	BP	4 billion $	300 million tons oil and 400 billion cubic meters -gas	50	90	32
Shah Deniz - signed 04.06.1994	BP	10 billion$	1200 billion cubic meters gas	45	90	25
Ashrafi- Dan Ulduz – signed 14.12.1996	SOCAR	2.5 billion $	6 million tons oil and 25 billion cubic meters gas	50	90	25
Nakhchivan – signed 01.08.1997	RWE DEO	2 billion $	300 billion cubic meters gas	50	90	32
Inam- signed 21.07.1998	BP	3.5-4 billion$	100 million tons oil and 100 billion cubic meters gas	50	90	32
Karabakh - signed 10.11.1995	SOCAR	1.7 billion $	620 million tons oil and 5 billion cubic meters gas	50	90	25
Umid – new discovered	SOCAR	5 billion $	200 billion cubic meters gas			
Shafaq and Asiman- signed 13.07.2009	BP	-	500 billion cubic meters	50	90	32

Source: SOCAR, Sabit Bagirov (2007) and own work

In typical PSAs, the foreign contractor bears all the exploitation risks and therefore receives no compensation if no oil is found, and the Azerbaijan government owns the resource and all the installations. Unlike PSAs in other countries, in Azerbaijan the foreign contractor does not pay

[10] http://www.contact.az/topics_en.asp?id=3386&pb=5&vr=en&yr=2011&mdn=1

royalties, but it does pay tax on profits. The main characteristics of a PSA in Azerbaijan are the following: (1) the operator recovers its cost at a pre-specified percentage of gross production; (2) after cost recovery, profits are distributed between the contract partners as per the PSA; (3) most PSAs also involve substantial bonus payments; (4) with regard to new capital, a PSA is a flexible agreement whereby if the Azerbaijani and international partners mutually agree, a new participant can enter the PSA; and (5) the PSA provides investors with protection against changes in legislation (CEE[11]). Basically cash movements take place as shown in Figure 4.



In reality PSAs include many elements such as cost oil, profit oil, royalty tax, income tax, bonuses, duties, working programme, pricing, marketing, associated gas, compensation and arbitration. However, we discuss here only those which have a potential impact on the contract partners.

Cost Recovery: this is one of the most important parts of a PSA. Cost recovery in Azeri PSAs distinguishes between operational and capital expenses. Operational expenses include current expenses for purchase of materials, fixed and other operational expenses that must be recovered first from gross production. The "cost oil" available to cover operating costs is 100 percent. In order to cover operating expenses, it is necessary to know the price of oil to calculate what

[11] " Oil Monetization in Azerbaijan" by Center for Energy Economics, The University of Texas at Austin

percentage of oil will go to cover those expenses. Capital expenses include drilling expenses, expenses for equipment and platforms purchased and pipeline. Capital cost must be recovered from no more than 50 percent of the remaining total production after deductions for operational costs.

Production Sharing: After the relevant volume of oil is deducted from gross production to cover first operational expenses and then capital expenses, the rest, known as "profit oil", is divided between SOCAR (the state share) and the foreign contractor. Profit oil is calculated according to the RROR[12] (Real Rate of Return) and the R – factor. The Azerbaijan government's share in PSAs varies between 30 and 90 percent of total oil profit. The first PSA contracts in the country were calculated by using a three step RROR scale. Moreover, the scale was dependent on transportation cost and early oil production figures (See Table 6-a). However, the original three step scale (RROR) was later replaced by a nine step scale with R – factor (See Table 6-b). The R-factor is defined as the ratio of revenue to expenses. This means that the cumulative revenues earned by the contractor from cost recovery and profit oil are divided by the cumulative expenses incurred during a specified period (Binderman, 1999).

Table 6-a.

Real Rate of Return RROR	**Profit Share**	
	SOCAR	**AIOC**
RROR< 16.75%	30%	70%
16.75% < RROR< 22.75%	55%	45%
RROR> 22.75%	80%	20%

Table 6-b.

R-Factor	**Profit Share**	
	SOCAR	**AIOC**
R< 1.00	50%	50%
1.00 < R< 1.25	52.5%	47.5%
1.25 < R< 1.50	55%	45%
1.50 < R< 1.75	57.5%	42.5%
1.75 < R< 2.00	60%	40%
2.00 < R< 2.25	65%	35%
2.25 < R< 2.75	70%	30%
2.75 < R< 3.00	80%	20%

[12] The calculation method is described in each PSA

R> 3.00	90%	10%

Taxation: Under the PSA model used in Azerbaijan, contractors do not pay royalty taxes but they do have to pay tax on profits at between 25 and 32 percent. Tax payments by the relevant companies are made via SOCAR, which means that oil companies have no direct relations with government tax authorities. Tax revenues are then transferred to the Tax Ministry of Azerbaijan by SOCAR. Each contractor pays tax on profits as per the legislation of the Republic of Azerbaijan on the taxing of profits which came into force on 1 January, 1997. The tax rate depends on the share of foreign contractors in the contract: e.g. it is 32 percent for shares of more than 30 percent. If profits are reinvested they are exempt from tax. All contracts include import and export duty exemptions; no customs duty is applied and there is a zero VAT system. On the other hand, the contractor must make acreage payments per square kilometer of contractual territory.

Bonuses: Bonuses are another source of revenues for the government. PSAs usually contain signature bonuses (paid when moment of the contract is signed), production bonuses (paid upon attaining a certain level of production) and bonuses for discovery (paid on initial discovery). For example, the biggest Azeri PSA, Azeri-Chirag-Guneshly (the largest field in Azerbaijan with 5.7 billion barrels of oil reserves, see table 5) features a $ 300 million bonus payment on signing, and the Ashrafi/ Dan-Ulduzu PSA (a small field that contains 6 million tons of oil, see table 5) requires bonus payments of up to $75 million depending on production.

6. Government Policy and Challenges

Azerbaijan is probably the best example of a Caspian country affected by the oil boom. Foreign investors in the oil industry prefer countries which can offer political stability and an attractive business environment with a predictable legislative and regulatory framework. They usually fear high political risks, administrative intervention and unpredictable laws and regulations. PSA contracts require a regulatory, financial, legal relationship between foreign contractors and the host government. In the mid-1990s, Azerbaijan managed to generate a very cautious mechanism: a stable legal framework for contracting oil fields. Each contract became a law of the state, including contractor‘s rights and interests and they pass through different processes before coming into force. First, AIOC negotiates the terms of the PSA with SOCAR and the resulting contract is passed on to various government departments, which may add amendments

or make changes. The contract then has to be ratified by parliament before finally being confirmed by the president. After the collapse of the former Soviet Union, the government adopted strategies to guarantee legal protection and profitability of foreign investment (Semikolenova, 2006).

Moreover the fiscal regime implemented by Azerbaijan for PSAs offered more attractive terms than similar contracts in other Caspian basin countries (See Table 7). As Table 7 shows, under Azerbaijan PSAs foreign contractors are exempt from paying royalty payments, value added tax, excise duties, excess profit taxes, export duty, property and land tax. Beside this, elimination of banking restrictions including no restriction on foreign bank accounts, payroll currency and dollar withdrawals, implementation of the international accounting system, elimination of various governmental audits and application of international practices on labour laws make PSAs more attractive in Azerbaijan (Ciarreta and Nasirov, 2010).

Table 7.

	Azerbaijan	Russia	Turkmenistan	Kazakhstan	Uzbekistan
Profit Taxes	25%-32%	20%	20%	20%	9%
Bonuses	variable	variable	variable	variable	variable
Social security tax paid by employees	22%	26%	20%	4%	25%
Excise duties	Not applicable	variable	Not applicable	variable	variable
Royalties	Not applicable	16.5 %	3-15%	0.5%-20%	2.6%-30%
Excess profit tax	Not applicable	Not applicable	Not applicable	0%-60%	50%
VAT	Not applicable	18%	15%	12%	20%
Property tax	Not applicable	2.2%	1%	1.5%	3.5%
Land Tax	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Export duty	Not applicable	35%-65%	Not applicable	Not applicable	Not applicable

Source: Ernst Young (2010), Daniel et al. (2010) and own work

In explaining the success of Azerbaijan in establishing a stable and attractive environment, many writers mention the country's geostrategic objectives, arguing that Azerbaijan generated the best possible conditions for foreign investors in order to strengthen its sovereignty and independence from Russia, to solve the conflict over Nagorno- Karabakh and to relieve its economic recession. Others, such as Bayulgen

(2005), emphasise that foreign investment and politics are closely linked in Azerbaijan. Since 1993 the state has been governed by the same political party, the New Azerbaijan Party (NAP), and the absence of strong, independent institutional veto players and the lack of strong political parties have created no obstacles for foreign investors. Meanwhile, SOCAR's unique participation in all contracts and its direct dependence on the president make all negotiations simple. As a result, foreign investors do not feel any pressure during negotiation and implementation of contracts and they are satisfied with the straightforward government structure and absence of veto players.

The favorable development of world commodity prices since 2000 has provided an impetus for the government to exert more control over the exploitation of its hydrocarbon recourses in several countries (e.g. Russia and Kazakhstan).They have started to look for ways by claiming to renegotiate existing hydrocarbon contracts and imposing new terms to increase the state's share in hydrocarbon profits. In contrast with Kazakhstan and Russia, Azerbaijan has not renegotiated, since renegotiations would jeopardise future access to foreign capital, which is vital to the maintenance of the Azeri economy. Partlett (2008) provides evidence that renegotiations in Russia, Kazakhstan and Azerbaijan are based more on economic cost-benefit analysis (particular, access to foreign capital) than on ideological purposes. He states that in Russia and Kazakhstan, the benefits of renegotiation were more important than the reputational costs of renegotiating; thus, key long-term contracts were renegotiated. However, these two countries tried to minimize these reputational costs by renegotiating only the largest foreign investment contracts (Sakhalin II- Russia, Tengiz and Kashagan- Kazakhstan). In Azerbaijan, the reputational costs of renegotiating were too big and, therefore, none of its long-term contracts have been renegotiated.

There are several main factors that have made Azerbaijan avoid renegotiating existing contracts: the country could lose much of its future multilateral bank support (funds from the World Bank, the IMF, etc) and the energy partnership with the West in securing a favorable outcome for Azerbaijan in the ongoing Nagorno Karabakh conflict which is a major part of Azerbaijan energy policy; and most importantly Azerbaijan does not expect to recoup long term hydrocarbon-based cash flow as the Russians and the Kazakhs do. Its proven oil and gas reserves are less than those of Kazakhstan and Russia.

Although past Azeri government strategy was successful in attracting foreign investment into the oil and gas sector, significant challenges still remain for further development of the country's oil industry. The excessive dependence of the economy on this sector and the development of non oil sector are mentioned above in Section 3 as major challenges for the country.

Challenges in the Oil and Gas Sector: The legal framework for the regulation of oil and gas contracts is based on the Subsoil Act of 13 February, 1998 and the Energy Act of 24 November, 1998. Although both these acts provide a general framework for exploiting energy resources, in many instances their provisions clash with each other. It is also unclear whether the Energy Act has priority over the Subsoil Act. Another concern is that most existing PSAs do not meet the provisions of these acts (CEE).

In order to improve the preparation and implementation of state policy on oil and gas production, the president of Azerbaijan signed a decree on 15 May 2006 for the founding of the Ministry of Industry and Energy (MIE). SOCAR is thus charged with conducting commercial functions while the MIE is responsible for non commercial functions such as preparing, negotiating and implementing PSAs and other types of contract on behalf of the government. However, in reality, the MIE has been accorded only nominal responsibility for concluding PSAs. SOCAR has its own share in all contracts and is thus one of the contractors. At the same time, SOCAR represents the government in these contracts. As a contractor, SOCAR is interested in increasing its share in the contract. But this might reduce the revenues of the government. This situation has come about because of the lack of a law on oil and because SOCAR continues to have considerable power and influence over the oil and gas sector (Bagirov, 2007).

There is currently no legislation in Azerbaijan specifically governing the oil and gas sector. However, a draft law on oil and gas has been submitted to the parliament for approval. It is clear from the draft that the law will not be applicable to PSAs signed to date and will only apply to agreements signed in the future. Azerbaijan also lacks a modern, independent regulatory agency to set basic modern rules and procedures on oil and gas operation, pipeline regulation and establishment of tariffs. This absence of oil legislation, pipeline legislation and tariff regulations puts Azerbaijan behind its Caspian oil neighbours.

Unresolved questions about the legal status of the Caspian Sea are another big challenge to Azerbaijan's further development of offshore oil and gas reserves, especially to the future development of undersea pipeline projects from Kazakhstan and Turkmenistan to Azerbaijan and to investment decisions.

Because of legal uncertainty, the states bordering on the Caspian have claimed sovereignty over sub-soil a resource, which has led to disputes over exploration in areas claimed by more than one state. In particular Azerbaijan is involved in two disputes: with Turkmenistan over the Serdar / Kapaz field and with Iran over the Alov / Alborz field. Turkmenistan has even claimed parts of the ACG field developed by AIOC, however as these claims are totally unsubstantiated these fields should not be considered as disputed. In any event, Azeri and Chirag are exploited within the framework of "the contract of century" and all other states recognize them as Azerbaijani oil fields.

The status of the disputed Kapaz and Alov fields is not clear and there is currently no production activity in these fields. However, Azerbaijan has granted SOCAR, LukOIL and Rosneft permission to exploitation of Kapaz via a PSA and Turkmenistan has done likewise with Mobil. For the exploitation of the Alov field, Azerbaijan has established a PSA with an international consortium led by BP and Iran has entered into a PSA with Shell and Lasmo. The reserves in the Kapaz oil field are estimated at between 50 and 100 million tons. This can be considered as medium-sized oil field. Alov is a medium size gas and oil field with gas reserves (together with the nearby (Araz and Sharg fields) estimated at 400 billion cubic meters and oil reserves of about 300 million tons (See Table 5).

Legal uncertainty is also the basic obstacle to the construction of a trans-Caspian underwater pipeline from Turkmenistan or Kazakhstan to Azerbaijan. All three countries support this project, but Iran and Russia object to it on the grounds of the fragility of the marine ecosystem. It appears that the construction of such a pipeline will not be possible until the conclusion of a convention on the legal status of the Caspian Sea between all the five states along its shores. In fact, no oil company will invest in this project because of the continued legal uncertainty.

9. - Conclusion

As a moderate, western-oriented, secular Muslim state, Azerbaijan is an important country for the energy security of the European Union and plays the role of a transport corridor between Europe and Central Asia.

The creation of a stable legal framework in the energy sector and the provision of a predictable legislative and regulatory framework in oil contracts have been the biggest achievements of the Azerbaijani government in its strategy for attracting foreign investment to develop the oil and gas sector. Thanks to these achievements, total energy production has increased yearly almost three-fold from 27.9 million to 74.9 million oil equivalent mainly due to oil and gas production between 2002-2009 and Azerbaijan is currently enjoying huge oil revenues (expected to reach $ 200 billion in 2024). The assets of SOFAZ reached to $ 18.9 billion at the end of 2009. Strong oil and gas production gains, high international oil prices, and sharply increased public spending propelled economic growth in the country. Under social transfer programs from SOFAZ and budget allowed the government to achieve success in reducing poverty through continuously increasing in the minimal salaries and pensions.

Despite the successes in the oil and gas sector, Azerbaijan faces several main challenges concerning further development of this sector and its role in the country. Non oil sector of the economy remains undeveloped and very fragile with significant obstacles (corruption, fiscal system and access to finance) impeding both domestic as well as foreign investment. The business environment is poor. Although social transfer measures have reduced the poverty level, they do not automatically lead to sustainable poverty reduction. As far as oil revenues capture main part of state budget expenditures and such measures are effective for a short-term period.

Azerbaijan still lacks independent regulatory institutions, rehabilitation of petroleum refinery plants, resolution of the legal status of the Caspian Sea, laws and regulations such as oil legislation, pipeline legislation, and environmental legislation for the administering of oil and gas operations. These issues remain the main challenges facing Azerbaijan in developing its oil and gas industry in the future.

The oil and gas sector is the powerhouse of Azerbaijan’s economy and its already excessive dependence on this sector is increasing. The government needs to diversify the economy by strengthening services and the non-oil sector, to raise agricultural productivity, to invest in the electricity sector, to increase the effectiveness of public expenditure planning and, in a word, to implement a master plan to translate oil revenues into better lives for its citizens.

Consequently, this paper attempted to illustrate the recent development in the petroleum sector in Azerbaijan by discussing achievements and challenges. However, given that Azerbaijan is running out of its energy resources and the country is at the historic crossroads between Europe and Asia, its involvement in regional energy projects can bring beneficial revenues for the country during long period. A further systematic research project analyzing further right energy policy settings by government is needed to illustrate this perspective.

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