Euroasia, Energy Cooperation or Conflict? PART 2.: Caspian Region, Oil and Geopolitics

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REVIEW

During the 1990s Caspian region and its oil and gas potentials opened the way to new optimism. Expectations were huge.
However, at the beginning of the new century some doubts appeared about real energy potentials of the region. Oil and gas reserves are below expectations, and a real challenge is how to bring them to European markets. Long distance pipelines are costly and involve political issues as they cross different countries. Several conflicts blocked the evacuation of the Caspian oil to the West. Russia as the largest supplier tends to dominate transit routes. In recent history they used dominant supplier position as a weapon for imposing Russian state policy. On the other side are fast growing Asian countries that enter into competition for getting Caspian oil and gas supplies.

Key words: energy potential, geopolitics, oil and gas reserves, oil and gas production

1. INTRODUCTION

International interests for shipping and trading in the Caspian Sea intensified in the 19th century when ships of the Russian and Persian empires claimed shipping rights for transport of food and other goods. At that time there was no need for regulation of mineral resources exploitation. In 1921 the Soviet Union and Persia signed the Friendship Treaty according to which both countries were given full and equal shipping rights in the Caspian Sea. In 1940 the Treaty of Commerce and Navigation was signed. These treaties denied the shipping right to third parties. So, historically, Russia and Persia had shared joint control of the Caspian Sea, with the exception of 10 -mile coastal zone where ships had right to fish. However, at that time the borders at sea have not been defined. Neither were defined the rights concerning mineral resources extraction.

Today five countries, Azerbaijan, Iran, Kazakhstan, Russia and Turkmenistan share the Caspian basin. Shortly after the collapse of the Soviet Union, the Caspian states became open to foreign investment and they emerged as potentially significant players in energy supply. However, in order to fully and profitably exploit their mineral resources, the five Caspian states should settle the issue who controls what.

In spite of undefined borders and some conflicts among the countries, exploration and production of oil and gas in the region intensified in the 1990s and continue without major international disputes.

In addition to the existing pipeline to Novorossiysk at the Black Sea, new pipelines were constructed to Ceyhan in Turkey on the Mediterranean coast and in 1999 to the port of Supsa, in the Black Sea.

With successful exploration efforts and growing hydrocarbons production, the need for new transport (evacuation) routes becomes acute. New transport routes are considered toward India, Pakistan and China.

And while European Union expected that the rich Caspian resources would be directed to meet Euro-American energy needs, it was faced with difficulties in constructing pipelines across state borders and risks of political instability in the region. Primarily, Europe was confronted with Russian tendency to control the Caspian resources indirectly by offering transit trough Russia's infrastructure. At the same time, the fast growing Asian markets, particularly countries like China, India but also Pakistan, entered into competition for the supply of oil and gas from the Caspian region. In the meantime, the Russian giant Gazprom tended to acquire all available free production capacity from the countries in the region. Some European companies are also offering competitive projects for transport of Caspian gas in an effort to ensure supply for their national markets. In 2008 there were several gas pipeline projects on the table, some of them going through SEE countries.

Croatia has also been in the situation to choose among several transport routes and sources of supply. Some of them did not meet the principle of diversification of sources, and consequently, security of supply was also questionable. The diversification of sources and security of supply are the two key principles promoted by the EU. For a number of reasons, Croatia should follow them.

The above two principles complement each other and their implementation mean that sources of supply must be balanced in a way that neither of them gains monopoly position. It is even more important in the situation when domestic production will decline over the years and new sources need to be found. A significant new source of supply will be LNG from the terminal to be constructed on the Croatian coast. According to initial plans, the first stage of the LNG project should be completed by 2013

and 2.5 billion m³/y of gas would be earmarked to the Croatian market. After 2015, when the completion of the 2nd stage is expected, additional 1.5 billion m³/y could be distributed to Croatia.

The other offered gas transport projects such as South Stream, Ionian Adriatic pipeline and Nabucco, have scheduled completion somewhere between 2013 - 2015. If, according to plans, Croatia starts receiving LNG, then it would not be wise to enter into any other commitment for additional supply.

Having in mind high estimations of oil and gas potentials in the Caspian region (Azerbaijan, Kazakhstan and Turkmenistan), the reserves of oil range from 2.7 to 5.1 billion m³ (16.9 – 32.2 billion bbl) and gas 4 728.9 billion m³ (167 Tft³), the European Union established in 1995 the INOGATE program. The purpose of this program is to enable secure energy supply for the EU by promoting integrations of regional oil and gas pipelines. In 2001 the Umbrella Agreement was signed which sets out an institutional system designed to rationalize and facilitate the development of interstate transportation system and to attract investments for such projects.

2. THE CASPIAN REGION, RESERVES AND PRODUCTION

EU considers the Caspian basin and its oil and gas supply potential as a region of particular interest. Even a political slogan was forged: "European Neighbourhood Policy - ENP" to express this special relation to the countries in the region.

On one hand Russia considers the region to be its forecourt, and on the other hand the West pursues its own policy. This is even reflected in the names that were invented for the region: Central Asia, South Caucasus or recently the Caspian region.

For various motives the region was in the midst of geopolitical interests of the world powers already in the 19th century. Geographical names changed with political influences. Today, in the context of modern geopolitics and importance of the region for its oil and gas reserves, the Caspian region seems to be the most appropriate name.

When the authors of the book «A Century of Oil: The Nexus of Oil, Money and Power that has Changed the World»[4] investigated the importance and influence of the Caspian region on the world oil supply, they were struck by differences in available data, so they decided to entitle the chapter dealing the most uncertain production potentials: «Enigma of oil production: Caspian region, Africa and deep sea».

According to sources, mainly American[1], proved reserves of the region with all five countries included: Azerbaijan, Kazakhstan, Turkmenistan, Russia and Iran, [Note 1] are estimated at 2.5 to 5 billion tonnes, probable at 31 billion tonnes. As for gas reserve, proved reserves are estimated at 5 – 5.2 trillion m³ and probable 83 trillion m³.

The size of investments in oil and gas exploration and production in the region, indirectly confirms that the above estimates are well grounded. In the 1990s the investments were estimated at US$70 – 100 billion. Furthermore, the investments in construction of transportation pipelines also confirm that there are huge reserves that justify construction of costly pipelines.

When the Caspian basin was opened for foreign investors after the collapse of the Soviet Union by the end

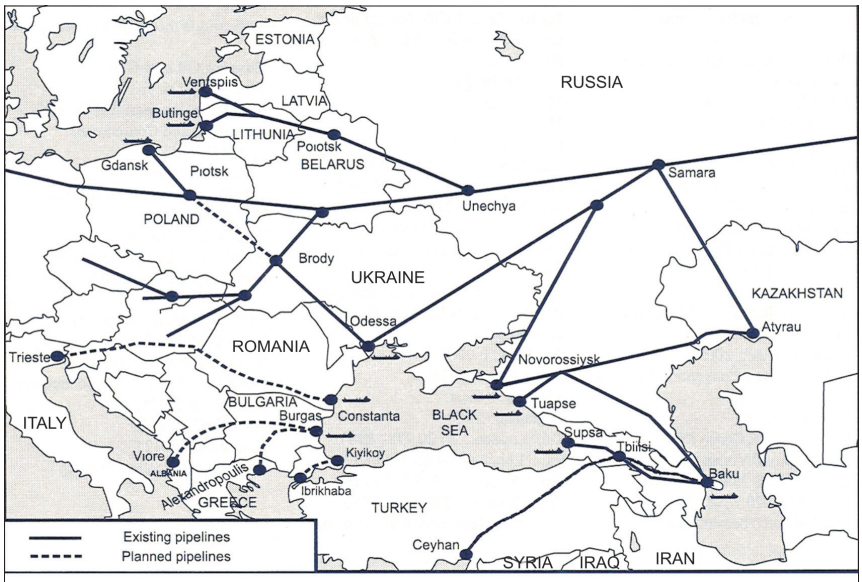
Fig. 1. BTC i CSP pipelines[8]
Sl. 1. BTC i CSP naftovodi[8]

[1] In this analysis of Caspian region Russia was not very much included as it was a subject of a separate survey. Iran was not included with respective data because of pragmatic reasons. Namely, the established regime which is in power for a quarter of a century now, remains unpredictable about its possible reconciliation with the world community. Although this country holds 11.4% of world oil reserves and 15.5% of gas reserves, Iran is still under a sort of embargo.

of the 1980s, the third wave of exploration for oil and gas started in the long history of oil production in the region.

In the 19th century explorers were most probably attracted by scripts and records about oil shows on the surface, similarly as it was the case in Croatia. Early findings of oil shows were most frequent in the Baku area, which can be taken as a cradle of the Russian oil industry.

Robert Nobel, the elder brother of famous Alfred Nobel, travelled to Baku for other business but then entered into oil business so that in 1873 he owned significant oil production sources. In the two world wars the Caspian area became a target for which German forecast fought to get in possession of precious oil. This wave of interest for oil exploration in the region subsided after the Second World War. Toward the end of the 20th century overall oil production in the region declined. It lasted until the 1990s when the new wave of exploration activities started, which were soon crowned with significant discoveries. US company Amoco, later acquired by BP, discovered the large Chirag field in Azerbaijan. National company SOCAR emerged following this discovery [Note 2].



Source/Izvor: Bilten Caspian Investor, February 2005

Fig. 2. Existing and planned pipelines for oil evacuation
Sl. 2. Postojeći i planirani cjevovodi za evakuaciju nafte

Geopoliticians consider that oil discoveries instigated nationalistic movements in the region. They were frequently ignited by foreign interests, including the conflict between Chechenia and Russia. The wars broke out between Azerbaijan and Georgia and then between Chechenia and Russia.

As more fields were discovered and more oil and gas produced, the question of transportation routes toward Western markets of Europe and America became more acute. One of the first transit routes was the oil pipeline Baku – Ceyhan in Turkey – BTC (Figure 1). This pipeline route follows the so called "Silk Road". A new pipeline, the South Caucasus Pipeline – SCP, is planned to be constructed along this same route - marked green in the Figure 1.

In planning the route to the Mediterranean it was important to avoid Bosporus Strait as a bottleneck in transportation from the Black Sea, but also to circumvent existing transportation system in Russia, so new solutions are found: Figure 2.

Advocators of „conspiracy theory" would say that the removal of Eduard Shevardnadze from the position of the president of Georgia and installing his successor

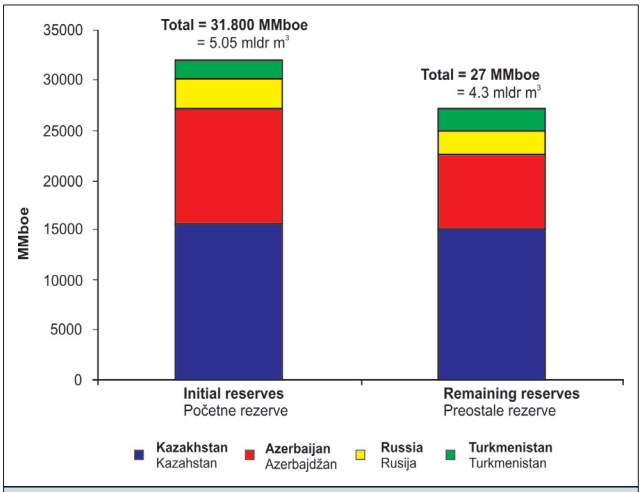


Fig. 3. Caspian offshore reserves
Sl. 3. Rezerve ugljikovodika u podmorju Kaspija

Mikheil Saakashvili was done in order to ensure safe passage of Caspian oil and gas to the West. Just in case he might change his mind, conflicts were ignited in Abhazia with the Azeris. These conflicts were calmed by the Russians, and in 2007 a contingent of US marines and military advisers came to help [Note 3]. The Americans took over control in Afganistan, Kazakhstan, Turkmenistan and Uzbekistan.

[2] SOCAR is abbreviation for the national oil company State Oil Co of Azerbaijan. The largest shareholder in the company has been Mr. Hajdar Alijev, formerly member of Politbiro and a general in KGB, and later the leader of independent, sovereign Azerbaijan.

[3] An excellent review of past and current events, as well as relationships between politics and oil (on the occasion of publication of the book by Lutz Kleveman: Der Kamf und das Heilige Feuer) was given by well informed Antun Abramović: «Dictators control flow of Caspian oil» - article published in weekly edition Obzor/ within daily papers Večernji list of 6 November 2004, pages 58-59

Table 1. Reserves and crude oil production in the Caspian region (January 2002)[7]

Reserves	Proved			Possible		
	10^9 bbl	10^9 m^3	10^9 t	10^9 bbl	10^9 m^3	10^9 t
DOE US Department of Energy	10	1.4	1.26	233	33.28	29.95
CERA Cambridge Energy Research Associates	21	3.0	2.7	89	12.7	11.43
USGS U.S. Geological Survey	18	2.57	2.31	57	8.14	7.33
Production bbl/d, t/d	1.3 mil. bbl/d 167 000 t/d (2002)			5.3 mil. bbl/d 681 000 t/d (2010 – 2015)		

In an article published in the *Nafta* journal in 2001, the author Z. Hill mentioned that initial estimates of oil reserves in the Caspian region accounted for 17% of total world reserves, including huge gas reserves. By later revisions these estimates were lowered. The share of the regional oil production in 2003 was below 10% of the world production. According to the author, daily production was between 410 000 and 547 000 t/day (3 to 4 million bbl/d). According to this estimate, annual production would be 150 to 200 million tonnes.

Hilary McCutcheon, Wood Mackenzie Consultants[3], wrote about oil and gas reserves in the Caspian region and gave an overview of initial and remaining reserves (Figure 3) and production potentials of the offshore Caspian oil and gas (Figure 4).

According to the data, initial reserves expressed in barrels of oil equivalent were 31.8 billion bbl, while remaining reserves are estimated at 27 billion boe. This remaining potential is mainly crude oil, its share is 60%. Most probably the data were based on the available information up to 2002, when the difference between extracted volumes of initial reserves was 31.8 billion bbl and the remaining reserves were 27 billion bbl. This potential, with the policy of 20 -year exploitation, ensures annual production of 206 million toe (4.114 billion t/20 years = 206 million toe.

It is unlikely that concession rights would be extended beyond 20 years of exploitation. Rather, it could be expected that they could be shortened to 15 years. In such a case, production volumes might rise to 250 million t/year.

In a paper presented at the Croatian Academy of Science and Art on 6 June 2003, and at the Summer School of Petroleum Engineering held in Dubrovnik on 9 June 2003, Mr. G. Moscato, ex CEO of ENI, quoted the data regarding Caspian reserves and production figures, also referring to the mentioned data published by Wood Mackenzie Consultants, as presented in the Table 1. The data refer only to Kazakhstan, Turkmenistan, Russia and Azerbaijan, without Iran and Uzbekistan.

According to the same source, in 2002 annual production was 61 mil. tonnes, while in the period from 2010 to 2015 expected production should grow to around 250 mil. tonnes.

Table 2. Natural gas reserves (2002)[7]

Region	10^9 m^3
Kazakhstan	2 400
Turkmenistan	2 600
Azerbaijan	600
Russia – Caspian region	900
TOTAL	6 500

Table 3. Estimated proved oil reserves in the Caspian region[10]

Country	Proved reserves, 10^6 m^3	
	Minimum	Maximum
Azerbaijan	1 113.0	1 987.5
Kazakhstan	1 431.0	2 798.4
Turkmenistan	86.8	270.3
Iran	15.9	15.9
Russia	47.7	47.0
Total	2 694.4	5 119.8

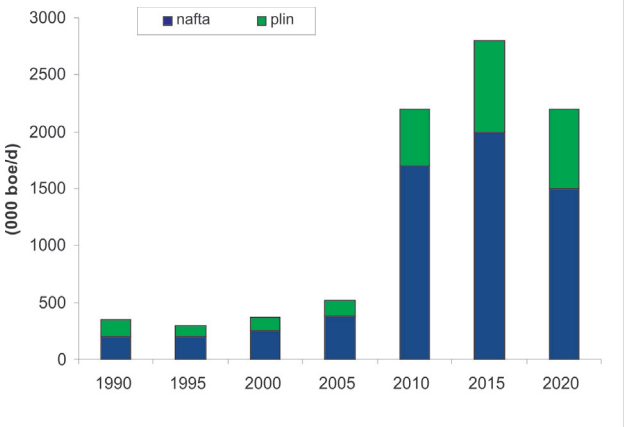


Fig. 4. Caspian offshore production potential
Sl. 4. Proizvodni potencijal za naftu i plin u podmorju Kaspija

Table 4. The largest oil fields in the Caspian region[10]

Country	Project	Recoverable reserves (10^6 m^3)	Initial reserves and production volumes (m^3/d)	Foreseen year of maximum production 10^3 m^3/d
Kazakhstan	Tengiz	954.0 – 1 431.0	End of 2004 (43 000)	2012 (119 – 159)
	Kashagan	1 113.0 – 1 431.0	2008 (11 950)	2016 (190)
	Kurmangazy	1 165.5	2009	na
Azerbaijan	Azeri-Chirag-Guneshli	858.6	March 2004 (25 917)	2008-2010 (117)
	Azar-Alov-Sharg	1 050.0	Na	na
Turkmenistan	Cheleken	102.6	End of 2004 (3 265)	na
	Nebit Dag	Na	mid 2004 (2 894)	na
Russia	Khvalinskoye	42.0 oil; 19.9 condensate	na	na
	Tsentralnoye	82.9 MOE	2009 – 2010	na

Table 5. Oil production dynamics in the Caspian region, billion m^3/d[10]

Country	Year									
	2000	2001	2002	2003	2004	2005	2006	2007	2010	2015
Kazakhstan	0.144	0.130	0.149	0.164	0.189	0.207	0.231	0.254	0.366	0.493
Azerbaijan	0.046	0.049	0.051	0.049	0.050	0.066	0.084	0.103	0.207	0.175
Turkmenistan	0.025	0.027	0.031	0.032	0.032	0.033	0.033	0.034	0.037	0.043
Total	**0.185**	**0.206**	**0.231**	**0.245**	**0.271**	**0.306**	**0.348**	**0.391**	**0.610**	**0.711**

G. Moscato also presented the data on natural gas reserves in the countries in the region as presented in the Table 2.

In case of natural gas, Wood Mackenzie's estimates are about 6 900 billion m^3 of natural gas reserves in the region (Kazakhstan, Turkmenistan, Azerbaijan and Russia's reserves in Caspian offshore, but without Iran and Uzbekistan).

In an issue of June 2006, the Croatian magazine Plin[8] (Gas) quoted the data published by International Energy Agency on Caspian region reserves which quote estimates about: 2.7 – 5.1 billion m^3 of crude oil (16.9 – 32.2 billion bbl) and 4 700 billion m^3 of natural gas (167 Tft^3).

According to more recent data presented by Prof. J. Sečen in the article «Impact of Caspian oil on international market»[10] published in the *Nafta* journal in 2005, minimum proved oil reserves (for five countries) are 2 694 billion, and maximum proved reserves are estimated at 5 119 billion m^3, as presented in Table 3. These estimates are within the frame of those quoted by the authors I. Dekanić, S. Kolundžić, D. Karasalihović[4] in the book «A Century of Oil».

The same author presented a short overview of the large development projects, or large oil fields which are expected to be put on stream in the period from 2004 – 2010.

The data from the above Table 4 [Note 4] indicate that minimum reserves amount to 5 381 mil. tonnes, exceeding the estimates presented in Table 1, but it has also been confirmed by the projects that have entered into production phase.

Another confirmation of the above reserves can be found in the data presented in Table 5, which indicate production volumes by 2003 and forecasts to 2015. These data are in line with estimated size of reserves, nevertheless lifting policy adopted by production companies is unknown, and it is usually contracted for the period of 10 - 20 years.

The above data are in harmony with more recent data.[1]

In 2003 oil production was 1.6 mil bbl/d, and in 2015 forecast production is 4 mil bbl/d or 0.571 mil m^3/d. The data are slightly different from those presented in Table 5, particularly those referring to the year 2015. The author quotes EIA forecast (US Energy Information Administration).

Consequently, according to IEA[7] sources, estimated oil reserves range from 17 to 44 billion bbl, or 2.4 to 6.3 billion tonnes, which is slightly less than minimum estimated reserves quoted by Prof. J. Sečen in Table 3 and slightly higher than estimated maximum reserves.

Mohamed Barkindo, general secretary of OPEC, had a presentation at the Strategic Forum that took place at

[4] In Table 4, I interpreted the quantity of 82.9 MOE as million of tonnes of oil equivalent, since other data are given in tonnes. It might be an error if the source quoted reserves in bbl, which would mean that the Tsentralnoye field has reserves of about 10 million tonnes.

Table 6. Forecast oil and gas production and investments in Kazakhstan

Oil & gas production	2005 – 2010	2010 – 2015
Oil production (mil t)	60.0 – 100.0	100.0 – 150.0
Natural gas production (10^9 m^3)	21.0 – 29.0	29.0 – 50.0
Foreign investments (billion $)	20	25

According to Caspian Investor Bulletin, February 2005

Table 7. Oil consumption in SEE countries and Azerbaijan, Kazakhstan & Russia (000 m^3/d)[2]

Country	Actual (000 m^3/d)				Expected (000 m^3/d)			
	2003	2004	2005	2006	2007	2008	2009	2010
Azerbaijan	12.3	13.1	14.7	15.7	16.8	18	19.3	20.6
Bulgaria	14	14.6	15.6	16	16.6	16.8	17.1	17.6
Croatia	13.1	13.4	13.7	14	14.3	14.6	14.8	15.1
Czech Republic	26.7	29	30.7	30.7	31.4	32	32.6	33.3
Hungary	18.8	19.4	21.6	21.8	22.3	22.6	22.8	23.3
Kazakhstan	25.3	26.8	31.1	31.1	33.4	35.7	38.3	40.8
Poland	62.1	65.7	68.3	70	72.1	74.3	76.4	78.7
Romania	28.4	32.8	34.3	35	36.4	37.8	10.7	40.8
Russia	377.8	387.7	393.3	405.1	417.3	429.7	442.7	455.8
Slovakia	10.1	9.7	10.4	11	11.4	12.1	12.7	13.3
Slovenia	8.3	8.6	8.8	9.3	9.7	10.1	10.7	11.3
Ukraine	41	1.8	42	43.3	44.6	45.8	47.3	48.7

Historical data (by 2005) –BP Statistic Review of World Energy, June 2006, Forecast (2006-2010) BMI Research

Bled, Slovenia on 28 August 2006. In the presentation he laid out the following data about the Caspian region:

- Kazakhstan (has a status of observer in OPEC), Azerbaijan and Turkmenistan will have a significant increase of oil production by 2011, from the current 2.2 mil bbl/d it will grow to more than 3.5 mil bbl/day.
- In May 2006 the BTC pipeline started to transport 1 mil bbl/day of crude toward the port of Ceyhan, but this is insufficient capacity for evacuation of oil produced in the region.
- Although expected production in 2015 is considerable, it will be on the level of only 10% of total OPEC production. So, OPEC considers Caspian production only as an addition to international supply, and not as a replacement to OPEC's output, which is expected to be at the level of 45 mil bbl/day at the same period.

In February 2005 issue, the Caspian Investor published the data about future production and investments in the region – Table 6.

Accordingly, in the period 2005 - 2010 average annual oil production in Kazakhstan would grow from 12 – 20 million to 20 - 30 million t/y, while natural gas production would have a declining trend toward 4 - 6 billion m^3/y.

The same source in the issue June/July 2005, published a comment about natural gas production in Azerbaijan and said that in 2004 gas production exceeded 5 billion m^3. Considering the fact that in the same year Azerbaijan imported from Russia 4.93 billion m^3, it is obvious that indigenously produced volumes were sold in the domestic market.

And what one pessimist said about the Caspian reserves?

Matt Savinar, the author of the book „The Oil Age is Over"[9], claims that instead of expected 200 billion bbl production, the Caspian region delivered „only" 20 – 40 billion bbl. The book was published in 2004, hence at the time when less data were available about most recent exploration results. According to M. Savinar, Kazakhstan holds the largest reserves, between $^1/_2$ and $^2/_3$ of total reserves in the region. Most of the sources agree with this statement; however estimated reserves differ (from 1 to 3 billion m^3).

In Kazakhstan there is one of the largest oil fields in the region – Kashagan, whose recoverable reserves are estimated at 7 to 9 billion bbl (from 1 to 1.3 billion m^3), with additional potential for increase of recoverable reserves from 9 to 13 billion bbl if recovery is enhanced by application of gas injection.

Table 8. Oil reserves – end of 2006 and 2007[2]

Country	Reserves (billion t)		Share in world reserves (%)		Life of reserves (years)	
	2006	2007	2006	2007	2006	2007
Azerbaijan	1.0	1.0	0.6	0.6	29.3	22.1
Kazakhstan	5.5	5.3	3.3	3.1	76.5	73.2
Turkmenistan	0.1	0.1	-	0.1	9.2	8.3
Uzbekistan	0.1	0.1	-	0.1	13.0	14.3
Total	**6.7**	**6.5**				

Table 9. Oil production in 2006 and 2007[2]

Country	Production (billion t)		Change in comparison with previous year (±%)		Share in world production (%)	
	2006	2007	2006	2007	2006	2007
Azerbaijan	32.5	42.8	44.9	31.7	0.8	1.1
Kazakhstan	66.1	68.7	5.6	3.9	1.7	1.8
Turkmenistan	8.1	9.8	- 15.2	6.5	0.2	0.3
Uzbekistan	5.4	4.9	- 0.7	-8.9	0.1	0.1
Total	**112.1**	**126.2**				

Table 10. Proved natural gas reserves by the end of 2006 and 2007[2]

Country	Reserves (000 billion m^3)		Share in world reserves (%)		Life of reserves (years)	
	2006	2007	2006	2007	2006	2007
Azerbaijan	1.35	1.28	0.7	0.7	*	na
Kazakhstan	3.00	1.9	1.7	1.1	*	69.8
Turkmenistan	2.86	2.67	1.6	1.5	46.0	39.6
Uzbekistan	1.87	1.74	1.0	1.0	33.7	29.8
Total	**8.28**	**7.59**				

* > 100 years!

At the beginning of the project the consortium of the following companies developed the field: Agip Caspian Sea BV (18.52%) also Operator, Kaz Munay Gas - KMG (8.33%), ExxonMobil Kazakhstan Inc. (18.52%), Shell Kazakhstan Development BV (18.52%), Total E&P Kazakhstan (18.52 %), Conoco Phillips (9.26%) and INPEX North Caspian Sea Ltd (8.33%). Total investments were estimated to US$ 29 billion.

The largest discoveries in Azerbaijan are on the fields Azeri–Chirag-Gunashi (ACG) and Shah Deniz. BP is the operator on both fields.

According to article published in Energy in East Europe, Issue 116/ 8 June 2007, BP is the main operator on the Shah Deniz field, where the maximum depth is 7 300 m, and expected production around 50 billion m^3/y by 2021. Forecast growth in production is as follows:

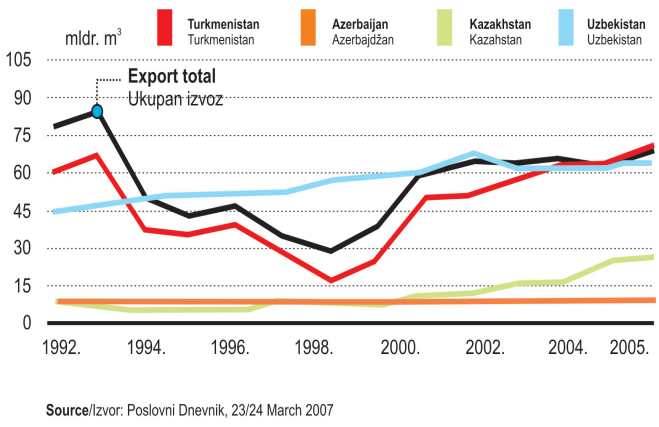


Fig. 5. Natural gas production and export in 2006
Sl. 5. Proizvodnja i izvoz prirodnog plina u 2006. godini

Table 11. Natural gas production in 2006 and 2007[2]

Country	Production (billion m³)		Change in comparison with previous year (±%)		Share in world production (%)	
	2006	2007	2006	2007	2006	2007
Azerbaijan	6.3	10.3	18	63.2	0.2	0.3
Kazakhstan	23.9	27.3	2.7	10.8	0.8	0.9
Turkmenistan	62.2	67.4	5.9	8.4	2.2	2.3
Uzbekistan	55.4	58.5	0.8	5.6	1.9	2.0
Total	**147.8**	**163.5**				

Table 12. Forecasts for the region: Oil and gas reserves and production

Year of data publication	Source	Oil reserves 10^9 t,		Gas reserves 10^9 m³	Production (2006)		Countries observed
		Proved	Probable		Gas (10^9 m³)	Oil (10^9 t)	
2002	«A Century of Oil»	3.6					Azerbaijan, Kazakhstan, Turkmenistan, Uzbekistan
2003	Wood Mackenzie (*Offshore*[3])						Azerbaijan, Iran, Kazakhstan, Russia, Turkmenistan
2003	G.Moscato[7]: - DOE - CERA - USGS	 1.26 2.70 2.57	 29.95 11.43 7.33	6 900			Kazakhstan, Turkmenistan, Russia, Azerbaijan, (excluding Iran and Uzbekistan)
2005	Prof. J. Sečen[10]	2.7 – 5.1					Azerbaijan, Kazakhstan, Turkmenistan, Iran, Russia
2007	BP Statistic Review of World Energy (2006)	Azerb. 1.0 Kazahst. 5.5 Turkm. 0.1 Uzbek. 0.1		1 350 3 000 2 860 1 870	32.5 66.1 8.1 5.4	6.3 23.9 62.2 55.4	Azerbaijan, Kazakhstan, Turkmenistan, Uzbekistan
	Total	**6.7**		**9 080**	**112.1**	**147.8**	

- in 2007 production of 10 billion m³, to grow to 20 billion m³ in 2010, then to 30 billion m³ in 2016, 45 billion m³ in 2018 and over 50 billion m³ in 2021.

Chevron explores the nearby Absheron field which is not connected with the Shah Deniz field.

The same source quoted information that on 1 June 2007 Russia concluded an agreement with Kazakhstan with the aim to increase production from the Karachaganaka field. According to the joint venture agreement the partners have 50:50% share in the project.

The reserves of the Azeri–Chirag-Gunashi field are estimated at 5.4 billion bbl of oil and investments of about US$ 13 billion.

Shah Deniz field holds reserves of 2.5 billion bbl of oil (397.1 billion m³) and 14 Tft³ of gas (39.6 billion m³) while planned investments are US$ 3 billion.

Transportation of produced oil is carried out through the mentioned BTC (Baku-Tbilisi-Ceyhan) pipeline which was put into operation in 2006, with capacity 1 million bbl/d (~ 159 000 m³/day). It would also transport up to 100 000 m³/day of oil from other fields.

BTC pipeline was constructed by the consortium in which BP has 30% share, and other members are: SOCAR, Amerada Hess, Conoso Phillips, Eni, INPEX, ITOCHU, Statoil, Total, TPAO and Unocal.

The above data throw some doubts regarding the Caspian region potential to meet optimistic expectations, but let's see an analysis of reserves and their share in world reserves by BP Statistical Review of World Energy, June 2007, June 2008[2], (Tables 8 and 9).

The status of reserves at the end of 2006 and 2007 is stable. This is particularly important for Kazakhstan whose reserves are considerable both from the aspect of their size and duration.

Hence, the four countries of the region (without Russia and Iran) by the end of 2006 had reserves of 6.7 billion tonnes, in comparison with total world reserves of 168.6 billion tonnes, consequently their share in world reserves was 3.97%, and Kazakhstan alone had a share of 3.1%.

The above comparison of oil production in 2006 and 2007 shows that in 2007 the three countries: Azerbaijan, Kazakhstan and Turkmenistan recorded growth, while Uzbekistan had fall of production. In total, in these four countries' prodution grew to 126.2 million tonnes, and thus their share in total world production was 3.3%.

In general, production is in correlation with the reserves which confirms quality estimation of reserves. However, a share of 3 - 4%, either in respect of reserves, or production, is far below expectations.

However, this is not all. Now we shall compare the same indicators of reserves and production for natural gas in the observed countries – Table 10.

Consequently, with 8.28 trillion m^3 of natural gas reserves in 2006 the four Caspian states accounted for 5.0% of world natural gas reserves of 177.36 trillion m^3.

In 2007 the natural gas reserves in the four countries were lower than previous year by more than 8% and amounted to 7.59 trillion m^3 and their share in world reserves was 4.3%. Highest decrease of reserves was in Kazakhstan.

After 1998 natural gas production had a growing trend (Figure 5), with the exception of Azerbaijan which had a stagnant production.

In 2006 the share of natural gas production of the four countries in total world production was 5.16%. In 2007 this share grew to 10.6%. This information points to faster exploitation on expense of life of reserves.

As a number of international sources quote international reserves (sometimes even expected production) in oil equivalent barrels or tonnes, and if we do this calculation for the four countries, oil and gas reserves are as follows: 8 000 billion m^3 of natural gas and 6.7 billion tonnes of oil in 2006 make 15 billion tonnes of oe, while in 2007 this sum is 14 billion tonnes oe. In oil equivalent terms the share of the four countries in world reserves is 6%.

Different sources analyzed countries in the Caspian basin from different perspective. Uzbkekistan with 100 million t of oil reserves and 1 740 billion m^3 of natural gas has lower impact on the overall picture of the region than Iran. As for the Russian share of oil and gas reserves in the Caspian basin, there are few reliable data, with the exception of information presented by Prof. J. Sečen which are included in Table 3. If we take into account this information, it comes out that regional reserves of Iran and Russia do not have a large percentage in total Caspian reserves. However, Prof. Sečen did not quote the data for Uzbekistan, but according to BP Statistic Review of World Energy (June 2008) this country holds reserves of 1 740 billion m^3 of natural gas and 100 million t of oil as indicated above.

The comparison of the above data leads to the conclusion that the reserves have increased during the last decade, both oil and gas reserves, nevertheless, even such increased reserves do not meet early optimistic expectations about 10 - 15% share in total world reserves, i.e. production. However, in the light of declining European production, these Caspian reserves should be taken as an important addition or at least replacement source of supply. To achieve this goal, new oil and gas pipelines need to be constructed for transportation of Caspian oil and gas to the West.

European and US investors plan new, southern corridors, trying to avoid transit routes across Russia. There is a fear that control of energy flows by Russia would put in jeopardy one of the basic principles of energy supply – security of supply. Recent conflicts between Russia and Ukraine, past events by the end of 2005 and early 2006 when gas supply for Europe was interrupted, as well as former conflict between Belarus and Russia when oil transport was interrupted, confirm fears that Russia as a controller of transport routes is ready to use its position to exerte political pressure. However, these southern corridors pass through unstable regions. New conflicts have been additionally generated for the purpose of preventing implementation of large oil transport/transit projects.

By the end of 2007 the huge gas field Karachaganak in Kazakhstan entered the second development phase. It will produce 9 billion m^3/y in 2015 (Kazakhstan weighs its options, International Gas Report, 2007).[6] Hence, in 2015 this field would prodouce about 20 billion m^3/year.

The same source quotes that natural gas production doubled from 10.1 billion m^3 in 2001 to 20.2 billion m^3 in 2006. Nevertheless, expected further growth to 52.5 billion m^3 in 2010 and 79.4 billion m^3 in 2015 (!) has now been revised to 40 billion m^3 in 2010 and 70 billion m^3 in 2015.

Negotiations with China began during 2005 and 2006 for a long-term supply of 30 billion m^3/year of natural gas. The long-term contract has not been concluded by the end of 2007, however, the optional supply of 10 billion m^3/year is not excluded as Kazakhstan expects better price to be negotiated with China than 150 US$/1 000 m^3 contracted with Gazprom.

The fast growing, highly populated markets such as China, India and Pakistan entered into competition for oil and gas supply from the Caspian region. With considerable problems related to evacuation of oil and gas to Europe, it seems that the new constelation is characterized by two features:

- oil and gas reserves of the Caspian region are significant, but not so large to have a global scale impact,
- Europe and North America could lose part of additional supply from the region as a result of transit problems.

3. CONCLUSIONS

According to BP Statistical Review of World Energy from 2007, the four Caspian countries: Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan hold reserves of 6.7 billion tonnes of oil and 9 080 billion m^3 of natural gas. In 2006 the production of the four countries was 112.1 million tonnes/y of oil and 147.8 billion m^3/y of natural gas. When we compare annual production and reserves, it can be concluded that life of reserves is 60 years. In 2007 there were no significant changes in producation levels.

Hence, the above data on production and reserves of oil and gas in the Caspian region confirm that they had a growing trend in this decade.

However, if we look at this oil and gas potential supply from Europe's perspective, whose expectations regarding energy supply from the region were twofold: i) as a source of additional oil and gas supply; and ii) as a new supplier that could bring more balance among suppliers, then we can conclude that there is a great deal of uncertainty about realization of both goals.

The main challenge are transportation routes toward Europe. In case of oil transportation the situation is slightly better as a result of BTC pipeline construction, and new projects in store such as AMBO and PEOP. So, there are good chances that part of Caspian oil will be evacuated to Europe.

However, no infrastructure exists for evacuation of natural gas. In recent years, several natural gas pipeline projects were designed, mainly competing with each other, and at the same time they are used to gain strategic leverage and pursue of geopolitical interests. Among the first proposed was the Nabucco project, supported by the EU, which has been designed for transport of Caspian gas through Turkey, Bulgaria, Romania, Hungary to Baumgarten in Austria. With the Kremlin's support, Gazprom offered South Stream project, more or less following the Nabucco route. After that other pipeline projects were proposed, but it will be elaborated in more detail in another part of this article.

All these newly proposed projects make part of geopolitical games. On one hand, Russia wants to increase its market share in Europe by offering sources of supply under its control. But it has not stopped by acquiring part of gas production in some Caspian states, but tends to pursue the same model in Lybia. On the other side, Russia is doing everything to gain control over transit pipelines.

China, India and Pakistan want to ensure oil and gas supply from the Caspian region as well, and thus put in jeopardy expected supply from the same region for Europe and North America. Transit routes play very important role in these evacuation plans.

It seems that potential routes, some of which would go through or by Croatia, deserve a separate analysis. This is true also from the aspect of public opinion. It seems that frequently there are excessive expactations regarding advantages of individual project, but what is frequently neglected, are far more important aspects: security of supply and diversification of sources of supply, the two principles of highest importance for the EU, but which Croatia should also follow in order to safeguard its own longterm interests.

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