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Political and business intelligence
for energy investors in the FSU



December 1998/January 1999
Volume VII, Issue 10

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Central Asia
The Baltics**

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A monthly advisory service of

Russian Petroleum Investor, Inc.

The Caspian Region

Future Oil Flow from the Caspian Could Encounter Many Snags on its Way to Market

In Search of a Market

by Andrei Konopliank, adviser to the RF Ministry of Fuel and Energy (with contributions by Anton Lobzhanidze)

As oil companies contemplate investing billions of dollars to develop Caspian oil reserves, a key factor under consideration is the potential market for their output. Additional funds will be needed to lay export pipelines to reach the most attractive markets in Europe or Asia. But competition from oil producers around the world and uncertainty over transport routes, prices, reserves, and costs clouds the picture for investors. In an attempt to clarify some of the confusion, two authors exceptionally well equipped to analyze the FSU oil industry present their views on the long-term prospects for marketing the main outflow of Caspian crude.

Three disappointing wells drilled by the international North Apsheron Operating Co. in the fall and three similarly lackluster efforts by the Caspian International Petroleum Co. (CIPCO), an international consortium led by Pennzoil (US)—all in Azerbaijan's Caspian waters—are prompting foreign investors in the area to take a closer look at the region's potential. CIPCO has already announced that it is closing down. Even if large reserves are discovered, their development still hinges on where, and at what profit level, their production would be marketed.

By 2010, according to the authors' estimates, two Caspian nations—Azerbaijan and Kazakhstan—would

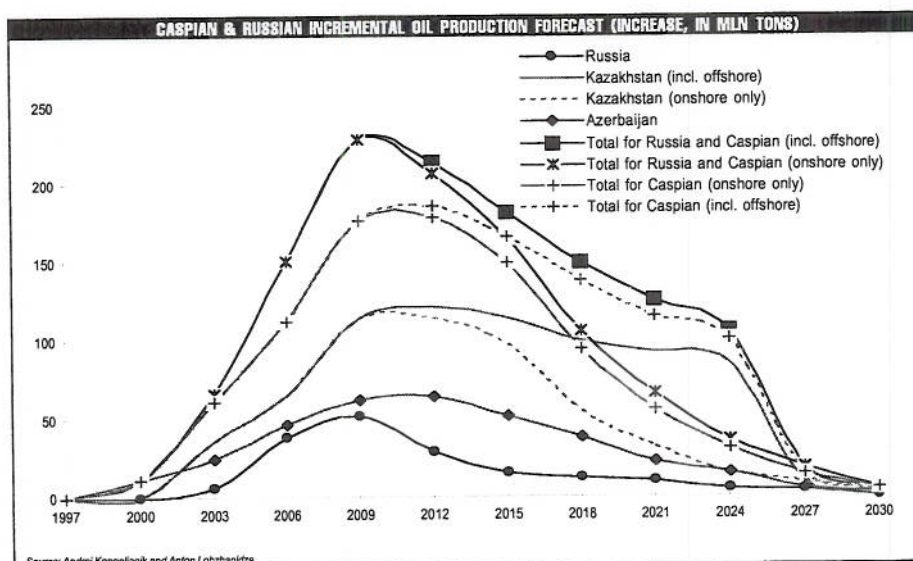
theoretically be able to produce a total of 180 million tons of oil annually. After reaching this benchmark, any increase in Caspian oil production would depend on the development of Kazakhstan's northern Caspian shelf, which still lacks reliable reserves data. This forecast falls within the upper range of predictions made by the International Energy Agency (IEA) and the Energy Charter Secretariat. They estimate Kazakhstan and Azerbaijan's total oil output in 2010 at 138 million to 194 million tons a year.

Oil Surplus

The producers of this oil flow are seeking customers in the eastern hemisphere, that is, in Europe and/or in Asia. At first blush, Asia appears to be the preferred market. While in 1995, Europe and Asia consumed 750 million and 800 million tons of crude, respectively, the IEA

believes that by 2010 annual consumption will increase by another 80 million tons in Europe and 535 million tons in Asia. And, because of the imminent depletion of the North Sea deposits, Europe will have to import an additional 80 million tons of oil in 2010. Declining domestic production will similarly add 40 million tons to Asian net imports in 2010. Compared to 1995 net imports, Europe will probably need an additional 240 million tons of oil and Asia almost 800 million tons by 2015.

Apart from more rapid demand growth compared to Europe, Asia's markets have another positive feature as a market for Caspian oil. Almost all (95%) of incremental imports will be processed at new refineries, which are yet to be built and could be designed to accommodate Caspian types of crude. Europe, in contrast, has an existing surplus of refining



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WESTERN AND EASTERN SCENARIOS FOR DEMAND AND SUPPLY OF OIL

(mln tons)

WESTERN SCENARIO (EUROPEAN DELIVERIES)

Supply to Europe

	Growth of demand (vs. 1995)	Net import growth	Azerbaijan	Kazakhstan	Russia (Timan-Pechora)	Iraq	Total	Demand in the Black Sea region	Total demand (Including in the Black Sea region)	Deficiency (-)/ Surplus (+)
2000	30.00	30.00	11.00	5.00	0.00	40.00	56.00	17.00	39.00	+9.00
2005	54.00	84.00	44.00	28.20	18.00	60.00	150.20	33.00	117.20	+33.20
2010	79.00	159.00	64.00	38.00	43.00	80.00	225.00	33.00	192.00	+33.00
2015	109.00	239.00	52.00	67.00	16.00	80.00	215.00	33.00	182.00	-57.00

Supply to Asia

	Growth of demand (vs. 1995)	Net import growth	Azerbaijan	Kazakhstan	Russia (Sakhalin-1, Sakhalin-2)	Iraq	Total	Deficiency (-)/ Surplus (+)	
2000	153.00	168.00	0.00	0.00	5.00	0.00	5.00	-163.00	
2005	357.00	382.00	0.00	0.00	36.00	60.00	96.00	-286.00	
2010	535.00	575.00	0.00	0.00	16.00	120.00	136.00	-439.00	
2015	748.00	793.00	0.00	0.00	8.00	220.00	228.00	-565.00	

(million tons)

EASTERN SCENARIO (ASIAN DELIVERIES)¹

Supply to Europe

	Growth of demand (vs. 1995)	Net import growth	Azerbaijan	Kazakhstan	Russia (Timan-Pechora)	Iraq	Total	Deficiency (-)/ Surplus (+)	
2000	30.00	30.00	11.00	5.00	0.00	40.00	56.00	+26.00	
2005	54.00	84.00	44.00	5.00	18.00	60.00	127.00	+43.00	
2010	79.00	159.00	64.00	5.00	43.00	80.00	192.00	+33.00	
2015	109.00	239.00	52.00	5.00	16.00	80.00	153.00	-86.00	

Supply to Asia

	Growth of demand (vs. 1995)	Net import growth	Azerbaijan	Kazakhstan	Russia (Sakhalin-1, Sakhalin-2)	Iraq	Total	Deficiency (-)/ Surplus (+)	
2000	153.00	168.00	0.00	0.00	5.00	0.00	5.00	-163.00	
2005	357.00	382.00	0.00	0.00	36.00	60.00	116.00	-266.00	
2010	535.00	575.00	0.00	20.00	16.00	120.00	156.00	-419.00	
2015	748.00	793.00	0.00	20.00	8.00	220.00	248.00	-545.00	

¹ Eastern scenario assumes no CPC.

Source: Andrei Kononov and Anton Lobzhanitso

capacity, amounting to 100 million to 120 million tons each year. Thus, Europe's existing plants would have to be refurbished to process lighter and sweeter Caspian oil instead of traditional sorts, if the former wins in its competition with traditional supplies. Caspian oil is more likely to find its way to existing but idle refineries with technology that suits the quality of the new oil, incurring no additional upgrade costs.

But in both Europe and Asia, competition among suppliers is tough. Today, the bulk of European and Asian oil consumption is covered by deliveries from the Middle East, which, according to the IEA, possesses spare production capacity for another 300 million tons per year and is capable of quickly increasing annual output by nearly that amount. (This estimate includes spare capacity to produce about 80 million tons per year of Iraqi oil that is currently unavailable on the world market due to United Nations sanctions.) If Russia overcomes

its economic crisis soon and starts large-scale development of its Timan-Pechora reserves, by 2010 it will attempt to sell additional crude in Europe, potentially flooding that market.

Moreover, it will be costly to build two sets of export infrastructure to both Europe and Asia from the Caspian region. According to the "multiple pipelines" concept popular among Caspian-operating producers and host governments, they will have to reach a strategic agreement on a single main export route, complemented by various smaller export facilities going in all possible directions. The key point is that the main pipe must operate at its maximum throughput to be economic; so not only must sufficient volumes be available, paying customers must be found at the end of the pipe.

West Is Best?

If Caspian producers target Europe as their principal export market, they will

find it very hard to squeeze their oil past the competition. By 2015, two trunkline pipes—Kazakhstan's Caspian Pipeline Consortium (CPC) project and a main pipe from Baku (whatever route Azeri producers choose)—plus a plethora of smaller routes such as the pipeline from Baku via Chechnia to Novorossiysk, may be operating and capable of shipping a total of 120 million tons a year westward. In theory, Europe will easily consume this volume if it uses no other sources.

However, within two to three years after the United Nations embargo against that country is lifted, Iraq will be able to produce about 120 million tons a year and up to 300 million tons by 2010, according to forecasts by the Paris-based Arab Petroleum Research Center. Existing transport infrastructure can annually send 80 million tons of Iraqi oil westward, but its expansion is easily financeable, given the exceptionally low cost of producing crude in that

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country. (See chart, below.) And in 2010, another 40 million tons could come to northwestern Europe from Russia's Timan-Pechora, if that country's long-suffering production-sharing legislation takes on workable shape at last.

All factors considered, in 2000, Europe's oil demand will grow by about 30 million tons a year compared to 1995, while the available supply increases by almost 60 million tons, composed of an expected 40 million tons from Iraq and 20 million tons from the North Sea and the Organization of Petroleum Exporting Countries (OPEC). Moreover, this will be true only if traditional suppliers in North Africa and the Middle East maintain their deliveries at the present level. Thus, even the first drops of Caspian oil will have to fight for a niche in the European market. (See chart, page 41.)

By 2005, if North Sea production decreases as expected, European demand should grow by a total of 84 million tons compared to 1995. By that time, Kazakhstan will be able to pump to the European continent about 28 million tons a year through the first phase of the CPC pipe (from Tengiz to Novorossiysk), Azerbaijan will export about 40 million tons from its first four offshore projects, and up to 60 million tons of Iraqi supplies may reach Europe (assuming the other half of its additional exports is sent to Asia). Another 18 million could come from Timan-Pechora. Novorossiysk and Supsa, the two existing export terminals for Caspian oil, would be sufficient to accommodate the combined incremental supply to Europe, totaling 150 million tons—almost twice the forecast demand growth for the area.

Looking further ahead, in 2010, annual European demand will increase by 160 million tons compared to 1995, but this will absorb barely 75% of the expected supply growth. Even without additional supplies from OPEC, such a trend

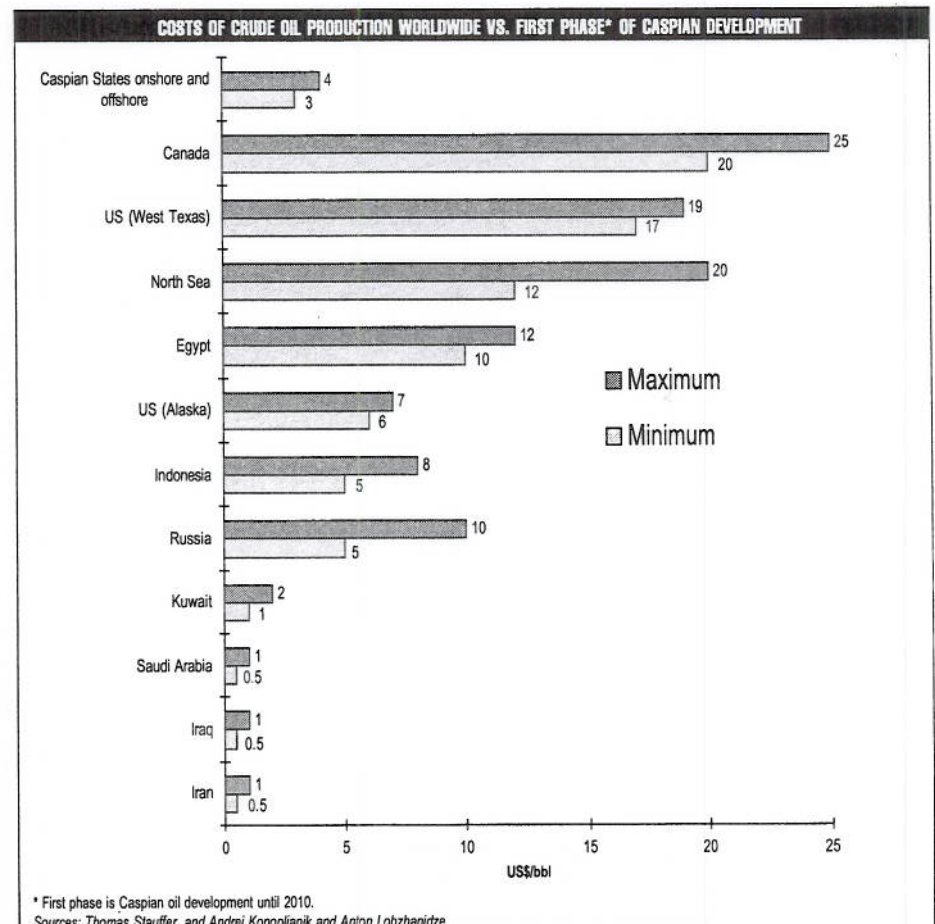
would kill the market for oil producers long before that time.

Tale of Two Continents

There are several possible ways to prevent a glut on the European oil market. First, producers might reach an agreement on production cuts; however, the sad fate of OPEC's recent attempts at controlling world prices in this way leaves little hope that it will work. Caspian nations' economies are almost totally dependent on oil exports for their development and are unlikely to agree to this restriction. Second, oil flows from Russia, Iraq, and the Caspian nations could be redistributed—also by agreement—between European and Asian markets. However, of all those suppliers, only Iraq and Kazakhstan have a degree of freedom in selecting between the two routes. Azerbaijan and Russia's Timan-Pechora are destined by their locations to serve Europe.

Another possibility is selling the bulk of Caspian crude in the Black Sea nations and Central Europe, but this will be realistic only if those countries, such as Ukraine or the new states of the former Yugoslavia, recover quickly enough from their economic depression. Assessing this option would require an analysis of various economic and political factors, which is difficult because of the many uncertainties at work. Still, it remains a viable alternative to flooding the oil markets of industrialized European nations.

Finally, focusing on Asia instead of Europe will be an expensive choice for Caspian oil producers. A pipeline route from the Caspian Sea across China to the Pacific Ocean would be prohibitively costly to build, making pipeline tariffs exorbitant. In addition, transcontinental pipelines are notoriously hard to finance. The most realistic solution for



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PRICE STRUCTURE FOR VARIOUS MEANS OF SUPPLYING CASPIAN OIL TO THE WORLD MARKET IN \$/TON

Supply route	World oil price	Production costs	Pipeline transportation costs	Sea transportation costs	Transshipment costs, port charges	Total transportation costs	Total costs	Profit (15%)	Available for taxes
Baku-Novorossiysk-Genoa	105	19	26	6	0 ¹	32	51	8	46
Baku-Supsa-Genoa	105	19	21	8	4	32	51	8	46
CPC-Genoa	105	27	25	6	0	31	58	9	38
Baku-Supsa-Burgas-Alexandroupolis-Genoa	105	19	29	8	6	43	62	9	34
Baku-Ceyhan-Genoa	105	19	43	5	5	52	71	11	23
Baku-Persian Gulf-Genoa	105	19	43	11	5	59	78	12	15
Tengiz-Aktau-Baku-Supsa-Genoa	105	27	38	14	8	60	87	13	5
Baku-Persian Gulf-Singapore	105	19	43	10	5	58	77	12	16
Central Asian Pipeline (to Singapore)	105	27	44	5	6	55	82	12	11
Kazakhstan-East China	105	27	100	0	0	100	127	19	41

¹ For all pipelines originating in Baku, oil production costs are assumed to be \$19/ton, while for pipes originating in Kazakhstan, production cost is assumed to be \$27/ton.
² Port charges and transshipment costs are included in the pumping tariff.

Source: Andrei Konopliank and Anton Lobzhanidze

Caspian exports would be a shortcut across Iran to the Persian Gulf and Sea of Oman—where crude could be loaded in tankers bound for Asia. At present, this route is not an option for most Western companies because of US sanctions against Iran. There are no indications that the US intends to ease sanctions any time soon, but such a measure would benefit both the Caspian producers (but primarily the US oil companies, since they are the main losers under the sanctions) and their host nations. Still, Iran does not have a strong economic or commercial incentive to permit more Caspian oil to transit its country than can be consumed by its northern refineries. Therefore, Caspian oil would compete with Iran's own exports.

Money Matters

Another question looms for Caspian governments and petroleum companies operating in the region: Will their oil be sold at a competitive price, justifying its production and transportation? Average full-cycle production costs of Caspian crude at the wellhead (calculated for the duration of existing and planned projects at a 10% discount) vary from \$19 per ton at Azerbaijan's first offshore fields to \$27 per ton for Kazakhstan's onshore Tengiz field. These costs are significantly below the worldwide mean for crude oil production costs as measured recently by Thomas Stauffer, a US-based independent consultant. (See chart.)

Compared to CIF (container-insurance-freight) oil prices both in Europe and Asia, the "bottom price" of Caspian crude calculated for various transport routes leaves a very wide range of margins for taxation. (The bottom price is the sum of full-cycle production and transport costs, plus a 15% profitability rate.) For Azerbaijan's oil, the most efficient routes are Baku-Novorossiysk-Genoa and Baku-Supsa-Genoa, both of which leave \$46 for taxes (assuming \$105 per ton at Genoa, the CIF price in early 1998, when the calculations were

made). Even a possible Bosphorus bypass through an overland Burgas-Alexandroupolis pipeline is within reasonable limits of profitability and still leaves \$34 for taxes. By contrast, a Baku-Ceyhan-Genoa route is a costly arrangement at the late-November CIF price of \$85 per ton. While the CPC pipe is still feasible for Kazakhstan (\$38 per ton left for taxes), a trans-Caspian pipeline would leave just \$5 per ton for local governments to consume through taxes—making the latter option an unlikely prospect. A cross-China pipeline is predicted to be a total failure. For that route to be economically feasible, Caspian crude would have to sell for about \$150 per ton plus taxes, hardly a competitive price on the Pacific coast.

Any attempts by the transit governments to stimulate the construction of trunklines across their territory by offering artificially low transportation tariffs would extend payback periods to such

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Hurricane's total revenues were \$47.0 million, net income was \$9.5 million, and cash flow from operations was \$17.2 million. Net income for 1998, which was previously estimated at \$9.2 million, has been reforecast as a loss of \$20.6 million.

Regional Briefs

Azerbaijan

Azerbaijan's Ministry of Economy reported that, as of late November, the nation's energy sector had attracted nearly \$40 billion in Western investment commitments. Western investment represented 71% of all capital investment in the Azeri economy in the first nine months of 1998. The nation's gross national product grew at a rate of 7% in 1998 and the ministry expects continuing growth, possibly reaching a 9% growth rate in 1999.

Azerbaijan's president, Geidar Aliyev, signed a decree on November 23 allowing the sale of a 46% stake in the International Bank of Azerbaijan, the country's largest bank. The shares will be offered from the government's 51% holding. The State Property Committee, which is in charge of privatization in Azerbaijan, was to organize the sale before yearend. The decree states that 20% of the shares will be sold to "an international financial organization with a high rating" and another 26% through cash auction. The strategic buyer will be required to partially finance the bank's debts to the state, estimated to total from \$30 million to \$40 million, by January 5.

Western oil companies warned the Azeri government that it stands to lose \$500 million per year if a main

export pipeline is built from Baku to Ceyhan in Turkey. The pipe could cost as much as \$4 billion to build and invested funds would be recovered through transport tariffs charged to oil exporters. However, one major future exporter—the Azerbaijan International Operating Co., a consortium of eleven companies—would be entitled to claim its transport expenditures as recoverable costs under its production-sharing agreement, delaying the Azeri government's receipt of its share of profit oil. If the trans-Turkey route costs \$3.7 billion to construct vs. the estimated \$1.8 billion to build a Baku-Supsa pipe, the former would cost exporters \$4 per barrel vs. \$2 per barrel for the Georgian route.

Kazakhstan

The Kazakh Supreme Court on November 24 left standing a lower court's ruling against former prime minister Akezhan Kazhegeldin, effectively preventing his candidacy in the presidential election scheduled for January. An October ruling by the Medeo District Court determined that Kazhegeldin had illegally participated in a meeting of an unsanctioned organization. Under Kazakh law, no one found guilty of an offense may run for elected office. Four candidates successfully registered to compete in the election, including Kazakh president Nursultan Nazarbayev and Communist Party chairman Serikbolsyn Abdildin.

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lengths that the projects would leave the realm of commercial financing. A limited number of governments and international lenders might have some interest in providing the necessary funds to support commercially weak pipeline projects, but such decisions would be politically motivated. Economically speaking, considering current low oil prices, the only potentially profitable route to bring Caspian crude to Asian markets is to cross Iran, either through a new pipeline or using swap arrangements.

With European markets unavailable because of the projected supply/demand conditions, and Asian markets, because of prohibitive transportation costs and US sanctions against Iran, investors in Caspian oil projects have few options. One is to cultivate local consumers around the Black Sea in anticipation of their economic recovery. Another possibility is to try to reach Asian markets by rallying political support for a breakthrough in US-Iranian relations and establishing an economically feasible link via Iran. The primary remaining option is simply to delay full-scale development of Caspian crude.

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A more detailed version of this analysis is to be published in December 1998 by Cambridge Energy Research Associates (CERA, a consulting organization based in Massachusetts) under the title Caspian Oil at the Eurasian Crossroads: Preliminary Analysis of Economic Perspectives and is available both in English and Russian. The Russian-language version was published in October 1998 in Moscow.

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