

**CASPIAN OIL AT EURASIAN CROSSROADS.
PRELIMINARY STUDY OF ECONOMIC PROSPECTS**

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(with contribution by
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Dedicated to the memory
of Prof. Eugene O.Shteingaus

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To the Readers:

In spite of a large number of publications on Caspian related topics available in the world media, the book "Caspian Oil at Eurasian Crossroads: Preliminary Study of Economic Prospects" by A. Konoplianiuk with participation of A. Lobzhanidze is a pilot book of its kind. The authors were among the first ones to move away from doing a traditional microeconomic analysis of separate projects or describing the events connected with the development of Caspian oil, which most publications have been covering recently. The authors focused on a research of a wide range of macroeconomic Caspian development issues. The authors intently and reasonably (the reasons are stated in the book) left aside legal and political aspects of the problem, focusing on economic aspects of the issue only.

There has been a long-time need for this research. Without having a clear idea of comparative economic advantages and disadvantages of each scenario of Caspian development, one can give priority to a scenario that is not based on long-term economic interests of the countries of the Caspian region. Most importantly, such a scenario would not have a goal of providing a stable balance of these interests, which could be the only guarantee of a long and effective Caspian development (based on favorable economic conditions). Such a scenario would only pursue short-term interests of today's political and business elite in various countries, including some countries geographically distant from the Caspian region.

Russia's protection of its national interests in the region often meets resistance from other countries. This is especially true of the discussion on the transportation route of the main stream of Caspian oil, which has been ongoing for several years. The reason is that the discussion is based on political aspects only. This research provides the opportunity to the participants of this discussion (mainly on the Russian side), to have a more solid base of comparative economic advantages and/or disadvantages of a certain transportation route. The research provides a wide range of macroeconomic restrictions. They include volume and changes in supply and demand of liquid fuel on the main potential markets of Caspian oil; demand for investment required for development of Caspian oil in stated volumes; and the opportunity to satisfy this demand, based on the current and forecasted conditions of the capital markets. The authors calculated the structure of the "cutting price" of Caspian oil in various markets, which can already be considered an objective answer to many questions raised during Caspian oil discussions.

К читателям

Несмотря на обилие материалов по каспийской тематике, публикуемых в мировой прессе, предлагаемая вниманию читателей книга А.Конопляника (при участии А.Лобжанидзе) *«Каспийская нефть на Евразийском перекрестке: предварительный анализ экономических перспектив»* является по своему «пионерной» в этом ряду публикаций. Главным образом в силу того, что ее авторы одними из первых сделали попытку отойти от традиционного анализа микроэкономики отдельных проектов (либо от освещения тех или иных событий, связанных с разработкой каспийских месторождений - чему обычно бывает посвящена большая часть из опубликованных за последнее время работ) и сосредоточились на комплексном исследовании широкого спектра макроэкономических проблем освоения Каспия. При этом авторы сознательно и вполне обоснованно (причины изложены в книге) оставили в стороне правовые и политические аспекты анализируемой проблемы, сосредоточившись на сугубо экономической стороне вопроса.

Необходимость в проведении именно такого исследования назрела давно, поскольку без четкого представления сравнительных экономических преимуществ и/или недостатков того или иного варианта освоения Каспия на первый план в выборе предпочтительных сценариев такого рода могут выступить не долгосрочные экономические интересы народов государств каспийского региона, и – главное – не стремление обеспечить устойчивый баланс этих интересов, что единственно может явиться залогом долгого и эффективного освоения Каспия (при благоприятной экономической конъюнктуре), а текущие, краткосрочные интересы сегодняшних политических и деловых элит в отдельных странах, в том числе и весьма далеких (в географическом плане) от Каспийского региона.

Отстаивание Россией своих национальных интересов в этом регионе часто наталкивается на противодействие других стран. Особенно много копий было сломано в ведущейся уже несколько лет дискуссии по вопросу о выборе маршрута транспортировки основного потока каспийской нефти. И в значительной степени именно потому, что чаще всего эта дискуссия ведется в сугубо политической плоскости. Выполненное авторами исследование позволяет участникам такой дискуссии (прежде всего, разумеется, с российской стороны), опереться на более прочный

фундамент выявленных сравнительных экономических преимуществ и/или недостатков того или иного маршрута в контексте широкого набора ограничений на макроэкономическом уровне, таких как масштабы и динамика спроса и предложения жидкого топлива на основных потенциальных рынках сбыта каспийской нефти, спрос на инвестиции, необходимые для освоения каспийской нефти в заявленных объемах, и возможности удовлетворения этого спроса, исходя из сегодняшнего и прогнозируемого состояния мирового рынка капитала и т.п. Авторы рассчитали структуры «цены отсечения» каспийской нефти на различных рынках, что уже само по себе дает объективные ответы на многие вопросы в ведущейся вокруг нефти Каспия дискуссии.

Именно поэтому настоящее исследование, начатое его авторами как инициативное, было сразу же, на ранних его этапах востребовано Министерством топлива и энергетики РФ и впоследствии выполнялось уже по заказу Минтопэнерго РФ в тесном контакте с заинтересованными российскими компаниями и организациями с тем, чтобы подготовить широкомасштабную систему экономических аргументов российской стороны для переговоров по Каспию. В этом смысле заключения и выводы, полученные авторами, не только отражают, но, скорее, формируют основу экономической позиции Министерства в отношении перспектив освоения каспийской нефти. Результаты исследования являются предварительными, поскольку Минтопэнерго РФ планирует продолжить (расширить и углубить) работу по этой чрезвычайно актуальной для российской нефтяной отрасли теме – ведь от успеха (темпов) освоения Каспия будут в значительной степени зависеть перспективы развития новых нефтяных проектов в самой России, особенно на севере Европейской части и на Дальнем Востоке страны.

Настоящей работой Минтопэнерго РФ приглашает заинтересованные стороны к аргументированному диалогу в отношении перспектив освоения Каспия, диалогу – базирующемуся не на изменчивых, сиюминутных политических предпочтениях, а на серьезных экономических расчетах и обоснованиях.

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ILLUSTRATIONS

TABLES	3
FIGURES	3
1. A Word of Introduction	6
2. Caspian Development and Its Impact on the Geography of Oil and Gas Flows in the Eastern Hemisphere (Formulating the Problem)	7
3. The Available Sources and Approaches to Covering the Economic Problems of the Caspian Development	11
4. Caspian Hydrocarbon Reserves and Resources: Why the Differing Assessments?	16
5. Industrial Potential for the Production of Caspian Oil (First Stage of Development)	19
6. Prospects for Changing Demand in Europe and Asia	21
7. Forecast Balance of Supply and Demand for Caspian Oil: Main Scenarios	22
8. Costs of Production of Caspian Oil	26
9. Costs of Transportation of Caspian Oil by Directions of Supplies	29
10. Consumer Price Structure of the Caspian Oil, Levels of Cut-Off Prices by Directions of Supplies	38
11. Demand for Investments in the Production and Transportation of Caspian Crude and Possibilities of Meeting It: Main Scenarios	40
12. Russia's Economic Interests in the Caspian Region	44
13. Evolution of Russia's Energy Policy in the Caspian	46
14. Conclusions	49
15. Sources	51

ILLUSTRATIONS

TABLES

1. Proven oil reserves in the world and in the Caspian
2. Oil and gas resources of the states of the Caspian Region (estimates of the US EIA)
3. Oil and gas resources for the main alternatives of division of the Caspian sea bottom (estimates of the RF Ministry of Natural Resources)
4. Incremental growth of demand for oil in the Eastern Hemisphere, 1995-2015
5. Four scenarios of demand for and supply of Caspian oil on the markets of the Western Hemisphere, 1995-2015
6. Specific investments in the development of individual Caspian oil and gas projects (estimates of the US EIA)
7. Consolidated evaluation of approximate indicators of Caspian oil production
8. Evolution of investment estimates for certain Caspian petroleum projects
9. Capital investments and transportation costs by different routes of supply of Azerbaijani and Kazakh oil to the Western European markets (Transneft data).
10. Certain technological and economic characteristics of pipeline construction projects for the transportation of Caspian oil (US EIA data).
11. The main pros and cons of the three main routes of transportation of Azerbaijani oil to Europe according to the AIOC/RPI estimates
12. Cost estimates for the transportation of Azerbaijani oil along certain routes of transportation (IPP Rice University data).
13. Consolidated technological and economic characteristics of pipeline construction projects for the transportation of Caspian oil to Europe and Asia.
14. Hierarchy of directions of supply of Caspian oil by the level of "cutoff" prices
15. Estimated levels of aggregate demand for investments in the production and transportation of Caspian oil and the oil from competing Russian projects, main scenarios
16. Evolution of Russia's energy policy in the Caspian

FIGURES

1. Oil and gas markets in the Eastern Hemisphere: main export routes before the start of wide-scale development of the Caspian.
2. Oil and gas markets in the Eastern Hemisphere: main export routes after the start of wide-scale development of the Caspian.
3. Forecast of oil production capacities in the Caspian (phase one of development) and in the competing new Russian oil projects.

4. Forecast of oil production capacities of new Azerbaijani projects.
5. Forecast of oil production capacities of new Kazakh projects.
6. Forecast of oil production capacities of new Russian projects in Timan Pechora and the Sakhalin Island shelf.
7. Forecast evolution of oil demand growth in the Eastern Hemisphere, 1995-2015.
8. Approximate levels of oil production costs in different regions of the globe.
9. Specific investments for developing oil production capacities in OPEC countries (TsGEI estimates) and the Caspian (IEA estimates)).
10. Approximate levels of "cutoff prices" for crudes of individual Caspian states by directions of supplies.
11. C.i.f. price structure for individual Caspian states on the European and the Asian markets by routes of transportation.
12. The structure of possible supplies of Caspian oil to Europe and Asia by levels of "cutoff prices".
13. Evolution of demand for investment in new oil projects in the CIS (exploration and production).
14. Scenario 1. Evolution of demand for investment in the production and transportation of Azerbaijani oil.
15. Scenario 1. Evolution of demand for investment in the production and transportation of Kazakh oil.
16. Scenario 1. Evolution of demand for investment in the production and transportation of Caspian oil.
17. Scenario 1. Evolution of demand for investment in the production and transportation of Caspian oil and the competing Russian projects.
18. Scenario 2. Evolution of demand for investment in the production and transportation of Azerbaijani oil.
19. Scenario 2 Evolution of demand for investment in the production and transportation of Kazakh oil.
20. Scenario 2. Evolution of demand for investment in the production and transportation of Caspian oil.
21. Scenario 2. Evolution of demand for investment in the production and transportation of Caspian oil and the competing Russian projects.
22. Scenario 3. Evolution of demand for investment in the production and transportation of Azerbaijani oil.
23. Scenario 3. Evolution of demand for investment in the production and transportation of Kazakh oil.
24. Scenario 3 Evolution of demand for investment in the production and transportation of Caspian oil.

25. Scenario 3. Evolution of demand for investment in the production and transportation of Caspian oil and the competing Russian projects.

1. A Word of Introduction

The idea of this work was begotten by one of its authors several months ago, when it became evident that the numerous discussions on various subjects immediately and indirectly related to Caspian oil and gas are dominated first and foremost by a set of political (politized, if you will) arguments but typically lack integrated comparative economic evaluations stripped of political parlance.

There are two different approaches to evaluating the problem of developing the Caspian wealth of natural resources, both equally reasonable and well justified. The first approach, which happens to be the dominating one nowadays, especially outside Russia (we will be referring to it as "political" for the purposes of this paper) is based on the supremacy of political preferences of parties (both states and corporations) partaking in the Caspian development, and only after this, i.e. after a purposeful selection of political preferences, takes into account economic assessment of Caspian development scenarios and hydrocarbon transportation routes defined a priori by political choices.

The second approach (let's call it "economic") is used rather less frequently. This approach presupposes first of all an identification of comparative economic advantages and/or disadvantages of a given scenario of Caspian development, only after which the thus obtained hierarchy of economic preferences is adjusted proceeding from the existing and forecast political realities. This approach is of course of necessity used in the economic evaluation of each individual investment project. In evaluating the prospects for the development of Caspian resources as a whole, however, this approach, in our opinion, remains unrequired (or may have not yet found sufficient coverage in mass media).

This work is based on our desire to close the above-mentioned gap. In its preparation the authors enjoyed a very useful assistance of many Russian and foreign experts, primarily officials of the Ministry of Fuel and Energy of the Russian Federation as well as of LUKoil and Transneft corporations. We would like to personally express our gratitude to the following individuals for their invaluable assistance and support:

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2. Caspian Development and Its Impact on the Geography of Oil and Gas Flows In the Eastern Hemisphere (Formulating the Problem)

It is common knowledge that changing one figure in a mathematical matrix results in a change in numerical values of all other elements in it. In a similar manner, the emergence of a new oil and gas producing region on the world map will inevitably raise the issue of its possible impact on the prevailing geography of supplies of hydrocarbons to the world market, of a redistribution of entrenched routes and volumes of such supplies as well as of whipping up or wearing away competition on oil and gas markets.

This issue has been the subject of recent vigorous discussions as regards the Caspian oil and gas basin and its future role in the world energy supplies. We believe that the problem should be viewed in a broader economic and geopolitical aspect. The states of the Caspian region will be emerging on the world oil and gas market at the same time with the implementation of new projects in the Russian oil and gas industry. Both Russia and the Caspian will be simultaneously impacting the existing directions of flows and power balance at the oil and gas market of the Eastern Hemisphere. What will be the thrust generated by of those two vectors? Will the strengthened role of one of the main players on the world market (Russia) and the emergence of another major actor (Caspian) exert a substantial impact on the competitive positions of the states of the Middle East, the biggest exporter of oil and gas?

Up to a very recent time the oil and gas markets of the Eastern Hemisphere were rather well divided between the major suppliers. The main routes of oil and gas supplies to the markets of major consumers of liquid fuels were quite entrenched and stable (see Fig.1) Oil from the Middle East dominates on both Western European and Far Eastern markets where it is shipped by tankers. Russian oil may compete with it in Western Europe only, while the routes of delivery of Russian oil to different segments of the Western European market are quite different:

- Southern Europe gets West Siberian oil via Mediterranean ports in tankers arriving from Novorossiisk, Tuapse and Odessa where it gets through pipelines from West Siberia, including transit across the territory of Ukraine as is the case of Odessa;
- The Central Europe gets the selfsame West Siberian oil via the Druzhba pipeline that transits through the Ukrainian territory;
- The North Western Europe gets oil in tankers via the ports of Baltic States (Ventspils and others) where pipeline terminals are located.

The Russian gas gets to Western Europe through pipelines from West Siberia through the territory of Ukraine. Its major immediate competitors on the West European market are natural gas supplies from Norway and Algeria also supplied there through pipelines, as well as, indirectly, LNG from Nigeria. There are no regular supplies of Russian oil and gas to the Far Eastern markets. Natural gas from the Middle East (Qatar and Oman) is shipped to the rapidly growing markets of South East Asia (SEA) as LNG.

In the long term, the fastest demand growth will continue in the SEA countries. That region is the main market for expanded exports of oil and gas. The Middle East countries will continue increasing their exports of hydrocarbons into the region. They will, however, face a growing competition from the new oil and gas/LNG exporters (Russia and the Caspian).

In the next few years the geography of supplies of Russian oil and gas to the world market will undergo a substantial transformation as a result of diversification of sources and routes of their transport (see Fig.2). There will appear new producing regions within Russia itself while at the same time Russian oil and gas companies will be penetrating the oil and gas production in the Near and Far Abroad (primarily in the Caspian and then on down South to some of the Middle Eastern states, first of all to Iraq).

In addition to West Siberia, the traditional mainstay oil and gas producing region of Russia, the country's map will show newer oil and gas producing areas, including those that are export-orientated from the very start: in the Russian Far East (Sakhalin), in East Siberia (Kovyktinskoye field in the Irkutsk Region) and in the North of the European part of the country (Timan-Pechora).

As a result, Russian oil and gas will emerge at the Far Eastern markets. The Sakhalin shelf development projects envisage supplies of oil and LNG to the markets of Japan, Korea, and Taiwan. These are the two Sakhalin projects at the stage of development as of today:

- Sakhalin 1 – Rosneft-Sakhalinmorneftegaz of Russia, Exxon of the US and Sodeco of Japan are developing Chaivo, Odoptu and Arkutun-Dagi fields;
- Sakhalin 2 – Sakhalin Energy Investment Company set up by a consortium of Marathon of the US, Mitsui and Mitsubishi of Japan and Royal Dutch/Shell of United Kingdom and the Netherlands is developing Piltun-Astokhskoye and Lunskeye fields.

A tender for the development of Sakhalin 3 block has been held with winners being Exxon, Texaco and Mobil of the US, while a total of at least eight blocks have been slated for tenders on the shelf of Sakhalin.

The main targets for export supplies of oil and gas (in the form of LNG) produced as a result of the Sakhalin projects are as follows:

- The rapidly growing markets of South East Asia (for ensuring the payback of those projects being developed on the basis of project financing); and
- The Russian Far East currently experiencing dramatic shortages of hydrocarbon fuels (today the liquid fuels are shipped to the two Far Eastern refineries in Khabarovsk and Komsomolsk-on-the-Amur by railroad from West Siberia with small quantities of natural gas being supplied through a pipeline from Northern Sakhalin).

Yet another source for the supplies of Russian gas to the SEA markets may be gas from Kovyktinskoye and other East Siberian fields. The proposed destinations of gas to be transported by pipeline from there are the North and Northeast China and Korea (a bilateral intergovernmental commission has already started preparing a feasibility study for this project).

Thus the MNE countries will end up facing another competitor, Russia, supplying both oil and LNG to their traditional markets. The Caspian will become a second newcomer.

All of the Caspian states are engaged in active exploration and prospecting efforts at their parts of the shelf involving international oil companies despite the fact that the problem of territorial delimitation of the shelf is yet to be resolved at interstate level. The pending status of the problem and the resulting political differences (one of more recent examples being the Turkmen-Azerbaijan-Russian conflict over Kyapaz or Serdar field also known as Promezhutochnoye) may slow down, but not halt the robust development of oil and gas resources of the Caspian Sea shelf.

Thus, Azerbaijan alone, being the country known for its most active development of oil and gas resources of the Caspian shelf, has already signed around a dozen agreements on exploration and production of oil and gas with consortia of foreign companies (the initial eight projects already signed are Azeri, Chirag, Guneshli; Karabakh; Shah Deniz; Dan-Uludzu-Asrafi; Lenkoran-Talis-Deniz; Apseron; Nakhchivan, and Oguz

In addition to international oil companies, Russian oil majors have been very active in penetrating this area. Only LUKoil and, in part, Rosneft are "entrenched" in the area so far, but the process will continue intensively (with appropriate adjustments for the world oil and financial as well as Russian political crisis). Central Fuel Company, Yukos and others will arrive before too long.

There are several reasons for the active expansion of Russian companies into the area, in addition to the traditional ties of oil complexes of the CIS states and the ethnic roots of the companies' top managers. First, their desire to cut down the costs and facilitating their penetration of world markets. Some time ago LUKoil made public its goal of increasing the share of oil produced by the company outside Russia to 25 percent of its total production. This goal is necessitated by a steady increase in the costs of production at "old" fields in West Siberia, on the background of which the participation in the development of new fields on the Caspian shelf may slow down or even stop the averaged increase in costs for the company as a whole. On the other hand, by investing into oil production abroad, LUKoil and other companies avoid the punishing Russian taxation thus augmenting profitability of the company as a whole.

Shifting oil operations to the periphery of the Russian territory (Sakhalin, Timan-Pechora) or beyond (Caspian) resolves yet another important problem of raising the effectiveness of those operations for Russian oil companies: they thus acquire access to possible alternative transportation routes and thus repudiate the monopolistically expensive services of Transneft in terms of transporting oil produced by those companies within Russia.

In addition to burdening the consumer with financing its investment projects, the exclusive and hence overvalued tariffs of this state-owned natural monopoly incorporate, in our view, some elements of indirect taxation on the users of Transneft's services that are actually unavoidable if you want to pump oil from West Siberia to any destination whatsoever. When it is transported, say, to Novorossiisk, the transportation costs "eat up" 23-24 US dollars per ton, so a decrease in the need to use Transneft's services or dropping them altogether through shifting oil production to the periphery of the Russian territory and/or beyond would decrease the production cost of oil companies quite significantly.

In the development of Caspian fields, the shorter transportation routes of oil to the world markets as compared to West Siberian oil (transportation savings) would imply that while keeping their budget expenditures at the same level, the companies will be able to afford profitable development of costlier Caspian fields, with oil produced there remaining quite competitive with the selfsame West Siberian crude. This will happen, however, only in the case that the routes of transportation of Caspian crude would imply the availability of paths going through more than just Russian territory and/or controlled by one sole company, i.e. Transneft. Thus the Russian oil companies involved in the development of Caspian oil are objectively interested in the availability of alternative transportation routes thus setting up competitive transportation systems and eventually cutting their transportation costs.

Hence, the problem of transportation of the Caspian oil is not as much in finding an alternative for the "Chechen" route (the problem being most in the limelight so far) as in a broader diversification

of transportation routes, including those outside of the Russian territory. This is in the objective best interests of Russian oil companies, and those interests will objectively diverge from the interests of the Russian state.

For this reason, the interests of the Russian oil companies reach even further down South, toward Iraq and other Middle East oil producers wishing to increase their production capacities. The penetration of Russian companies into Iraq is effected in two stages:

Stage One – the supplies of Iraqi oil to the world markets within the UN “crude for food” program which already allowed almost a dozen Russian companies to obtain quotas for the sales of Iraqi oil;

Stage Two – expanded presence of companies already present on the Iraqi markets (expanding their business from oil trade to investments in petroleum production), the best known example of it being the participation of LUKoil and other Russian companies in the West Kurna project.

With increased production of oil in the Caspian region and expanded penetration of Russian oil companies into that region as well as into countries located south of the Caspian, the importance of the Middle East as a transit region will increase as well, as it is the Southern route (through pipelines to the terminals in the Persian Gulf) that is actually the shortest way for the deliveries of oil to the SEA markets, still fastest growing, despite all cataclysms related to the world oil and financial crises.

Thus, in the future the additional flows of competing oil and gas may start reaching the SEA markets along two converging routes: from the Russian Far East and from the Caspian region through the Middle East itself, unless, of course, the Middle East countries try to introduce prohibitive tariffs on oil transit thus diminishing the competitive pressure of Caspian hydrocarbons on the traditional export markets of the Middle East crudes.

Competition will become especially fierce among the suppliers to the Western European markets (see Fig. 2). The development of Timan-Pechora oil and gas province (and subsequently that of Shtokmanovskoye gas/condensate field) will result in more hydrocarbons for the Western European markets brought both by tankers (the Northern Gate project) and through pipelines (the Baltic Pipeline Scheme) via new oil terminals on the Baltic's Russian coast (Batareynaya Bay, et al.). Gas from Yamal peninsula and, probably, some of the Timan-Pechora and West Siberian oil into the bargain, will also arrive at the same destination through Central European countries along the “Byelorussian corridor” as a result of the desire to decrease dependency on transit through Ukraine.

Oil transshipped through the Black Sea ports of Russia, whatever its origin, will spur competition in Southern Europe. Building bypass pipelines across Bulgaria and Greece may relieve the problem of the Bosphorus and the Dardanelles, and Caspian oil delivered to the ports of East Mediterranean through the territory of Turkey would also increase competition in Southern Europe.

Therefore, in the next few years we may expect increased competition for oil and gas from the Middle East in Southern Europe and in South East Asia from Russia and the states of the Caspian Region. The winners in that competition will be those who will succeed in providing stable supplies with the least production and transportation costs.

The intensified competition on oil and gas markets is preceded by the competition between the three above-mentioned producing regions (Russia, the Caspian and the Middle East) at the

international capital markets (the fight for investment in the development of quite capital-intensive petroleum projects) already in full swing.

The sheer scale of investments is quite impressive, as we will show below, so the fight for these investments will be quite fierce. The winners in this competition will be countries able to offer the most favorable, stable and predictable terms to investors for their investment endeavors.

All of the above has actually predetermined the main goals of this paper, i.e. to evaluate the costs of production and transportation of Caspian oil along different routes to the main destinations of its consumption as well as to estimate the demand for investment in the development of the Caspian oil and possibility of meeting that demand. All other goals of this study are of an auxiliary nature.

3. The Available Sources and Approaches to Covering the Economic Problems of the Caspian Development

The problems of development of hydrocarbon resources of the Caspian Sea have enjoyed much attention lately. Caspian-related subjects are favorites with both general business and specific oil & gas-oriented publications, especially those targeted at petroleum investors.

The Western specialized oil and gas publications (Oil & Gas Journal, World Oil, Petroleum Economist, International Petroleum Encyclopedia, etc.) have been paying close attention to this region for reasons quite easy to understand since much earlier times than the Russian press. In Russia, the Caspian developments have been monitored by such general business publications as *Kommersant Daily* or the recently deceased *Russkiy Telegraf*. Last April, the Caspian oil became "the subject of the issue" in a special issue of the *Nezavisimaya gazeta* [1], and in May it was extensively covered by the *Ekspert* magazine. Various aspects of development and transportation of the Caspian oil are covered practically in every issue of specialized petroleum reviews, such as *Neftegazovaya vertikal*, *Neft i kapital*, and *Neft Rossii*. The well known in both Western & Russian petroleum circles in the CIS a Monthly Intelligence Journal *Russian Petroleum Investor* at first started a dedicated column titled *Caspian Investor*, and then went on to publish a separate review under the same title. A special "branch" review called *Neft i gaz Kaspiya* (Caspian Oil and Gas) is being launched by *Neftegazovaya vertikal* as well.

Absolutely most of the above publications, however, have one curious thing in common – they mainly track the events and developments in the quest for Caspian hydrocarbons, and their analysis is normally limited to specific development or transportation projects.

We should also mention the numerous international conferences dealing with various aspects of Caspian oil development. These conferences are usually sponsored – not always publicly – by the following entities:

- Individual states of the Caspian Sea basin (more often than not, by Azerbaijan, Kazakhstan and Turkey) seeking thus to foment the interest of potential investors in the development of their petroleum resources and/or to offer their territories for transit of Caspian oil;
- International (in most cases, consulting or research) firms seeking to attract more potential clients;

- Companies specializing in conference services regarding such conferences as business projects and trying to profit from the interest in the Caspian problems that exists today in the world business community.

Such conferences are normally held according to one typical scenario: first top political officials of the Caspian States give their assessments of economic development prospects of their countries showing the ways in which an intensive development of Caspian oil resources may boost their economic growth, wellbeing and economic prosperity of the populations of those states at the same time providing a high rate of return of foreign investments in Caspian projects. Then they discuss individual exploration and/or production projects (progress reports on their preparation and/or implementation), as well as pros and cons of individual transportation routes. In other words, at such conferences, representatives of individual companies and numerous experts discuss as usual "microeconomic" issues of the Caspian hydrocarbon development problems.

Caspian "macroeconomics" (the place of Caspian hydrocarbons within the world energy supplies and the economic aspects thereof) is normally left outside the framework of the detailed discussion at such conferences, despite the fact that it is usually stated on their agendas.

There are some fortunate exceptions to this rule, however, best known of them being the now regular (semiannual) "Caspian" conferences of the well-known US consulting company CERA (Cambridge Energy Research Associates), the latest of which was held in late May 1998 in Istanbul (Turkey) [3], and the one before – in late 1997 in Washington, D.C. (USA) [4]. These conferences attempt at an integrated analysis of the problems of Caspian petroleum resources development, including their macroeconomic aspects. Individual aspects of the Caspian hydrocarbon resources development are studied in numerous relevant CERA publications dedicated to these issues [5], including those generalizing the materials of the above-mentioned and other similar conferences.

In the meanwhile, several detailed analytical reviews of the problems and prospects of Caspian petroleum development have been published in the West (our list does not claim to be exhaustive in any way, of course):

- A series of reports by Sheila Heslin, a prominent US "Caspianologist", a recent US National Security Council Director for Russia, Ukraine and Eurasia [6, 7 and others];
- A report by the US Energy Information Administration (EIA) posted on the Internet in October 1997 [8];
- An integrated report by an international team of experts of the James A. Baker III Institute for Public Policy, Rice University (USA) published in April 1998 and completing a series of 15 "intermediate" publications [9];
- A number of studies of the Royal Institute of International Affairs in London led by John V. Mitchell, current Chairman of the Energy and Environmental Programme Steering Committee at the RIIA and until recently the Special Adviser to the President of British Petroleum, one of the best "applied" energy economists worldwide [10, 11];
- A number of studies by the German Institute of Economic Studies [12], and others.

All those studies more or less concentrate either on the legal aspects of Caspian development or on an analysis of the development trends of the world energy balance, including the analysis of reorganization of energy economy within the post-Soviet space, or, alternatively, on transportation

routes for Caspian hydrocarbons. Moreover, all those studies, as a rule, have a strong geopolitical angle in their approach to the Caspian problems.

For instance, the report by the US EIA notes the following main problems in the region: (1) legal aspects of property rights and exploration & production rights in the Caspian Sea, (2) regional instability, (3) routes of development of export pipelines, (4) problems related to export supplies through the Bosphorus and the Black Sea, and (5) the problem of Iranian sanctions and the role of Iran [8].

The most fundamental economic study of the energy problems of the Caspian Region is probably the report by the International Energy Agency (IEA) published in June 1998 [13].

We believe, however, that an integrated economic assessment of the prospects of development of Caspian hydrocarbons has been conspicuously missing (at least it has not been published and/or presented at any of the conferences), even in the most fundamental of all studies published so far, the above mentioned IAE study [13]. Such an assessment should embrace, in an integrated manner, the following key issues while providing potential development scenarios for each and every one of them:

- Evaluation of the resource potential of Caspian hydrocarbons;
- Evaluation of production possibilities for the production of oil and gas in the Caspian;
- Demand for investments in the process of development of Caspian hydrocarbons and the possibilities for meeting that demand;
- The prospects of demand for Caspian oil and gas at major markets;
- The evaluation of costs of production and transportation of Caspian hydrocarbons as they are delivered to the major markets;
- Competitive positions of Caspian oil and gas on major markets as compared to other sources of supply.

There were no studies of this nature in Russia either. To the best of the authors' knowledge, neither the Foreign Ministry nor the Ministry of Fuel and Energy (that should be the parties most interested in such an analysis) have engaged in studies of this kind. Some economic evaluations have been done by LUKoil and Transneft companies (in the case of LUKoil, such evaluations are quite possibly of an integrated nature, as concerns the evaluation of the Caspian potential for oil and gas production), but the results of those evaluations have never been made public.

Besides, the authors have some reasons to believe that Russian companies today, facing an uphill survival struggle as a result of the fiscally orientated and restrictive (even punishing for investment) tax policy of the state, an absence of legal stability and the incessant power struggles between different political elites, have to be guided in their development by exclusively tactical tasks, taking care of their short-term and mid-term prospects of market development while seeking out the niches for their projects and striving to run ahead of their competitors. In this situation (although some may regard this as a paradox), the companies find an integrated economic evaluation of the prospects for the development of Caspian hydrocarbons kind of redundant or too academic.

The most fundamental of the existing Russian studies of Caspian problems is probably the analytical report by Yu. Fedorov [14], in which the author provides a sufficient coverage of the economic aspects of Caspian oil development. This report, however, is structured as a compilation

of presentations at the Caspian Oil and International Security Conference [15], held in Moscow in March 1996. The author did an enormous work of consolidating various opinions stated in those presentations, compiled an impressive supplemental material of facts and figures but naturally failed to provide an integrated (i.e. systematic and unified) economic evaluation of the prospects of Caspian development along the above-mentioned lines.

In the meantime, an evaluation like that is of course necessary.

First of all, an integrated economic evaluation of the prospects of the development of Caspian hydrocarbons is needed in order to find out how competitive any future supplies of Russian hydrocarbons will be, both within Russia and beyond, and, hence, to define the place of the Caspian as a zone of either possible competition or cooperation among Russian and foreign gas- and oilmen (primarily those from the Caspian CIS countries).

Second, availing itself of such integrated data, it would be easier for Russia to engage in well-argued polemics on comparative advantages of various scenarios of development of the hydrocarbons of the Caspian region and on choosing appropriate routes of their delivery to major markets, primarily in the discussions at the interstate level, first of all with the US, its main opponent in the region. Moreover, it would allow Russia to pursue a consistent and systematic policy in the region, aimed at defending our national interests, the interests of the Russian companies based on a balance of interests of the states and the business communities of the Caspian region, including the balance of the interests of the Russian state and the Russian business community. (In this regard, the attempt to track down the economic prerequisites of the evolution of Russia's state petroleum policy in the region has a certain particular value in itself.)

The authors had every reason to believe that the US policy in the region is based on such integrated economic evaluations. However, numerous discussions of one of the authors of this study with top US government officials and business executives gave rise to serious doubts in the correctness of our earlier opinion that such systematic economic evaluations are indeed at the root of the foreign policies of the US. The reason is very simple (if we can believe in such an explanation that appears quite plausible to us): neither the US Government nor US companies have done such integrated calculations (so far). At least, to the best of the authors' knowledge, no results of such evaluations have ever been aired either at any intergovernmental negotiations with the participation of the US or at any business meetings attended by US companies and government officials.

If this is true, two conclusions would seem self-evident:

- (1) If such studies have not been done yet, they seem all the more timely and relevant;
- (2) If such studies have been done but have not been made public, then we have every reason to believe that their conclusions are not quite in line with the arguments forming the basis of the political course of the US in the region. In that case, independent studies of the nature described would seem all the more necessary for a well argued defense of the Russian interests in the region.

Integrated US studies of the Caspian's energy problems known to the authors do not contain any macroeconomic evaluations of various scenarios of the development of oil and gas resources of the Caspian Sea. This is true both for the above-mentioned works by Sheila Heslin [6] and for the studies by the James A. Baker III Institute for Public Policy of the Rice University [9]. Moreover, the works by Sheila Heslin are of a clearly pro-American nature (for obvious reasons) culminating in an

apex of their politization, aimed at complete removal of Russia from the region, in her November, 1997, article in the New York Times [16]. The IPP, Rice University, study is a much more balanced work. Moreover, some of the conclusions therein (for example, as concerns the concept of "multiple pipelines routes", US policy towards Iran, etc.) in their essence diverge with the oil policies pursued by the US in the region and directly recommend that some of the key issues of those policies were reconsidered.

For these reasons, it would appear that today US policies and strategic decisions on the directions of development of the Caspian's oil and gas complex are dictated by political rather than economic considerations in determining the options for individual solutions of Caspian oil and gas problems.

It looks like today the US policies in the region are mainly aimed at strictly political goals – to squeeze Russia out of the region at any cost and to get the Caspian oil and gas out of the sphere of Russia's influence [16].

Yet another obvious goal of the US foreign policy in the region is to resolve the "Iranian" problem [15] – while any actions of US or other companies within Iranian projects fall under the anti-Iranian sanctions of the US (US Administration orders signed in 1995 that forbid any business relations between US companies and Iran as well as the 1996 Act on Sanctions against Libya and Iran envisaging sanctions against non-US companies involved in major investments in the petroleum sector of Iran), the US will be interested in any solutions of the Caspian's problems in which the interests of US companies would be infringed upon the least. This implies that in resolving the delimitation problems the US side will be most interested in scenarios where the Russian and the Iranian zones of the Caspian are reduced to the absolute minimum.

For this reason, proceeding from the pragmatic US interests within the current "intra-American" political restrictions, the US must feel really close to Azerbaijan's position on the national sectors reducing to a bare minimum the area of the sectors and the resource base of both Russia and Iran on the Caspian (see Table 3), and must find totally unacceptable the basic Russian-Iranian position on the 10-mile (20-, 30-, or 40-mile) zone of national jurisdiction the rest being the international zone of the Caspian, which would significantly expand the area of the national sectors and the resource base of the two above-mentioned countries on the Caspian thus curtailing the zone of operations for US and pro-US companies.

At the same time, at least at the interstate level, there are numerous referrals to the need for cooperation of the states of the region in developing the Caspian hydrocarbon resources and for Russia-US cooperation on this issue. This subject has been raised more than once in the formal bilateral discussions (e.g. at the sessions of the bilateral Russian-US commission on economic and technological cooperation – the former Gore-Chernomyrdin commission) and multilateral fora (for instance, at the G-8 Energy Ministerial Meeting in Moscow, April 1st, 1998) as well as at informal meetings of Russian and US representatives, like conferences organized jointly by the Council on Foreign and Defense Policy of Russia and the Aspen Institute of the US (the latter is the well known abode for retired but still quite influential US politicians). In order to develop any cooperation, however, one needs to have a clear understanding of the economic reasons as a basis for such a cooperation, i.e. in this case, we need an integrated micro- and macroeconomic evaluation of the prospects of the development of oil and gas resources of the Caspian region.

This work is our attempt to partially close this gap as applied to Caspian oil. Due to a lack of systematic baseline data, the results of any calculations presented here are of but a preliminary nature and will be adjusted by the authors in the future.

4. Caspian Hydrocarbon Reserves and Resources: Why the Differing Assessments?

Strategic importance of any oil and gas region lies in the volume of reserves of its energy resources (which determines the output and duration of the proposed supplies as well as the economics of production – costs at wellhead, etc., i.e. the f.o.b. price) and its location (which determines the economics of transportation, i.e., ultimately, the c.i.f. price).

From this standpoint, the strategic importance of the Caspian region is more in its location – it is situated, on the one hand, between the current and future major markets for crude oil and petroleum products (Europe and Asia) and, on the other hand, between the main current suppliers of liquid fuels (Middle East, North Africa and Russia) to the markets of the Eastern Hemisphere, rather than in the volume of its hydrocarbon reserves.

For the purposes of this study, we were interested not so much in the estimates of the resource potential of the Caspian region (i.e. the amount of oil and gas that may be involved in production in some foreseeable future, especially considering the fact that such estimates have already been made in a number of studies, e.g. in [9]), but rather in the assessed economic potential of the explored fields which provides the basis for a calculation, albeit an approximated one, of the cost values of production and delivery of the Caspian oil using the actual existing investment projects, starting with those already signed. For this reason, we limited our study to the category of “proved recoverable reserves”.

According to the estimates from various Western sources, the proved recoverable reserves in the region (the estimates of resources in accordance with this classification system, commonly used in the West, are not yet widely used in Russia but most experts believe that the “proved recoverable reserves” category may be considered equivalent to reserves within categories A+B or A+B+C1 under the Russian classification of resources) are at a level of 2-4 billion tons (see Tables 1 and 2). On the world scale, this is quite modest, as the states of the Middle East hold 90 -100 billion tons, i.e. 25-50 times as much as the Caspian states. Thus the resource base of the Caspian ready for industrial development today is comparable with the proven reserves of the North Sea.

It is quite evident that the Caspian region holding proved reserves of 1.3-2.6 percent of the world level (not taking into account probable reserves that may amount to 15-30 billion tons) may never in principle become “the second Gulf”. Nevertheless, its role in the energy supply of Western Europe may for a brief time become quite substantial – a decline in North Sea production is expected early in the next century, and as those fields are being depleted, the European demand for oil diversified by sources of supply, including that from the Caspian, that will replace the oil of North Sea, will be growing.

Of course, the geological structure of the Caspian region, especially offshore, is much less studied than that of the “old” oil producing areas (this is true for all other “new” petroleum regions where development is just beginning). In accordance with the *Arps diagram* that is a classic for oil economists, at the initial stages of development of new petroleum producing areas the spread in the estimates of reserves of identified fields is at its maximum, narrowing down as prospecting and exploration goes through various consecutive stages. The size of reserves in a field is continuously adjusted but in fact becomes final and accurate only when production is ceased (the economic potential of the field is depleted). Thus we may expect that as further prospecting and exploration goes on and as oil production in the Caspian starts, the estimates will be further adjusted, both for individual fields and for the region as a whole.

Will that adjustment be an upward or a downward one? In our opinion, the estimates will go down, for the following two reasons:

First, the oil and gas potential of the Caspian region has been rather well studied since the Soviet times despite the fact that production here outside Baku was quite limited in the post-WWII years. As a result of implementation of an integrated program of geological and prospecting work, rich hydrocarbon resources (at least 10-12 billion tons) were found under the Caspian seabed before 1992. New expert geological evaluation of potential oil and gas resources showed that the estimates may increase to about 20 billion tons. Over 250 local structures have been identified offshore, out of which 47 were prepared for drilling, 27 were subject of deep exploratory drilling, 20 oil- and gas fields were discovered. It was the well-studied geology of the Caspian subsoil (and the absence of technologies to develop deep water fields in the country at that time) that allowed in the past to make an evaluation of comparative economics of the development of the region as less preferable to that of West Siberia which ultimately became the main fuel base of the planned development of the economy of the USSR in the 60ies, 70ies and the 80ies. As early as by the beginning of 1990s, however, as the Siberian fields were becoming more and more depleted, the prospects of growing production (primarily offshore production) in the USSR were mainly tied to the Caspian, based on the well-studied nature of the region's subsoil [17].

Therefore, all current forecasts of hydrocarbon reserves in the region are based on studies carried out by Soviet geologists, and the results of those studies are quite reliable, so we can hardly expect that they will be radically adjusted upward, which would otherwise be typical for initial stages of *Arps diagram* (although, naturally, we cannot exclude a natural adjustment of the estimate of the resource base of the region with time).

Second, today's evaluations of proved oil reserves in the Caspian region should be considered exaggerated. On the one hand, this plays into the hands of the Caspian states themselves, as they need to attract attention of potential foreign investors. The easiest way to do this is to announce huge proved reserves whose production is profitable in the current situation. Hence the announcements on "new Kuwait", "new Gulf", etc.

On the other hand, an exaggeration of announced size of the Caspian's reserves is to the advantage of the Western countries: in this way the governments of Caspian states are led to believe that they can exist autonomously, pursuing an independent economic policy. Thus the consolidated US estimates of hydrocarbon reserves of four Caspian states – Azerbaijan, Iran, Kazakhstan and Turkmenistan (the aggregate of proven and probable reserves) amount to 51.2 – 57.1 billion tons of coal equivalent, Table 2) are 3.6-4.2 times as high as the current Russian estimates of oil and gas resources there (15.9 billion tons of coal equivalent in D1 category, Table 3). Moreover, even the consolidated US estimates for Caspian oil resources only (35.2-27.9 billion tons of coal equivalent, Table 2) actually double the appropriate Russian estimates of oil and gas (18.1 billion tons of coal equivalent in the maximum option, Table 3). This, accordingly, contributes to the weakening of the historical Russian influence in this area and prepares the ground for broader penetration of Western states and companies into the region.

Therefore, in the near future, as political considerations start shifting to the background and a serious economic analysis of Caspian projects begins, we should expect a downward adjustment in the evaluation of the region's hydrocarbon reserves, especially at the stage of organization of project financing for the development of Caspian fields. Financial institutes are the most conservative business entities trying to minimize the risks of default on loans granted to the

borrower, so banking expertise evaluation is normally the strictest one that will most likely decrease the amount of proved recoverable reserves lying at the basis of business plans (field development projects) submitted in order to obtain financing.

The data in Table 2 (US estimates) and Table 3 (Russian estimates) show that most of the proved and probable reserves of the region are concentrated within two countries, Azerbaijan and Kazakhstan. As we already mentioned, the consolidated forecast evaluations of hydrocarbons obtained from American sources are significantly higher than the evaluations made by the Russian experts, whereas, in our opinion, the Russian and American estimates of the "forecast" (possible) category should have been much closer to each other for quite objective reasons: the categories of geological resources are as free as possible of the impact of "technological" limitations (those that take into account the technological possibility of extracting these reserves) or "economic" limitations (that take into account the possibility of their cost-effective production and marketing), the methodology of which differ in the Russian and American evaluations.

The differences are even more pronounced for individual countries, and what meets the eye first, is the most significant surplus in US evaluations of the Caspian's resources over the Russian ones for those states that have promoted and are still promoting a sectoral division of the Caspian (by 2.0-2.3 times for Azerbaijan, by 2.7-3.0 times for Kazakhstan, and by 6.3-7.1 times for Turkmenistan, even if we compare the absolute maximum Russian evaluations of the resource potential of individual Caspian States out of all options presented in Table 3).

For the states that have opposed and/or are continuing to oppose the Caspian's division into national sectors (Iran), the US evaluations of their subsoil's hydrocarbon resources are quite close to the maximum Russian evaluations.

At the same time, Russia's own resource potential in the Caspian region is estimated by US experts "at a bare minimum", putting it mildly: there are no estimates for natural gas at all, while Russian oil potential in the Caspian is forecasted at 750 million tons. We should note, however, that even proved recoverable reserves of oil for the fields of the Russian sector that were put up for tender in late 1997, with the winner being LUKoil Company, are in a significant excess of 600 million tons. US evaluations of the proven reserves of oil in the Russian sector are just 30 million tons (Table 2), which is 20 times less than the proved reserves of just the first Russian tender block in the Caspian.

This set of coincidences may turn out to be a mere accident, but we believe that those "coincidences" are much more likely an element in the above-mentioned deliberate policy aimed at fostering a certainty of the governments of three Caspian states championing a sectoral division of the Caspian to the effect that the resource base of each and every one of them is quite sufficient for attracting generous foreign – primarily from US companies – investments. (We shall leave it to the politologists, i.e. outside the scope of this work, any discussions on "divide and rule"-related subjects as applied to the Caspian oil, but really, one cannot help but see these parallels when comparing US and Russian evaluations of hydrocarbon resources of individual Caspian states.

At the same time, this presentation of data in US evaluation quite evidently needs to point to a conclusion that the Russian policy in the Caspian is supposedly based on a dramatic Russian "deprivation" in terms of hydrocarbon resources in this region. The alleged deprivation is so serious (according to US data, Russia accounts for less than 3 percent of possible resources of oil in the Caspian – see Table 2), that it would inevitably, following that logic, make the Russian policy unabashedly aggressive in the struggle to redefine the national boundaries on the Caspian Sea