

COUNTRY ANALYSIS BRIEFS

Caspian Sea

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Background

The Caspian Sea region, including the Sea and the states surrounding it, is important to world energy markets because of its potential to become a major oil and natural gas exporter over the next decade.

The Caspian Sea region has become a central focus point for untapped oil and natural gas resources from the southern portion of the former Soviet Union. Beginning in May 2005, oil from the southern sections of the Caspian Sea began pumping through a new pipeline (built by a BP-led consortium) to the Turkish seaport of Ceyhan. The 8-year effort of Western capital, technology, and diplomacy had aimed to decrease reliance on Middle Eastern oil. However, in recent years, new oil finds and production performance in the Caspian region have not met levels that had been expected in the 1990s. At any rate, the Caspian Sea's production levels, even at their peak, will be much smaller than OPEC countries' output. Production levels are expected to reach 4 million barrels per day (bbl/d) in 2015, compared to 45 million bbl/d for the OPEC countries in that year.



This report defines the Caspian Sea as an area including the Sea's littoral states of Azerbaijan, Kazakhstan, and Turkmenistan, as well as parts of Russia and Iran. Uzbekistan, although not a littoral state, is the region's largest natural gas producer and is therefore included in the region for the purposes of this analysis.

However, several factors threaten to complicate the region's potential, including a lack of adequate export infrastructure, disagreement over new export routes, and border disputes between the littoral states.

At the moment, the countries of the Caspian Sea region are relatively minor world oil and natural gas producers, struggling with difficult economic and political transitions. Following the break-up of the Soviet Union, the countries' economies languished as regional trade collapsed. In the last couple years, GDP levels in the primary oil and natural gas producing countries have surpassed levels before independence. Moreover, in the region's two biggest oil producers, Azerbaijan and Kazakhstan, 46 percent and 26 percent of the populations, respectively, lived below the poverty line in 2002. Improving these conditions depends, in large part, on the successful development of the region's oil and natural gas potential.

Although there is still no overarching agreement between the five Caspian littoral states on the division of the Sea's resources, three states have come to a trilateral agreement on sub-surface boundaries and collective administration of the Sea's waters. In May 2003, Russia, Azerbaijan, and Kazakhstan divided the northern 64 percent of the Caspian Sea into three unequal parts using a median line principle, giving Kazakhstan 27 percent, Russia 19 percent, and Azerbaijan 18 percent. Following this, development of the northern Caspian Sea's hydrocarbon potential, where most of the region's oil reserves and largest international projects are found, will likely move forward despite the lack of a comprehensive regional consensus. Meanwhile, offshore development in Turkmenistan and Iran, both of which refused to sign the May 2003 agreement, could fall even further behind. A detailed map of the Caspian Sea region with field-level detail is in the [links](#) section below.

The Caspian Sea region contains roughly 17-44 billion barrels of oil. Oil production growth from the region will come largely from Kazakhstan and Azerbaijan in the next decade.

Oil

Estimates of the Caspian Sea region's proved crude oil reserves vary widely by source. For this reason, EIA has estimated proven oil reserves in the Caspian Region as a range between 17 and 44 billion barrels, which is comparable to OPEC member Qatar on the low end, and the United States on the high end. In 2003, regional oil production reached roughly 1.5-1.7 million bbl/d, comparable to annual production from South America's second largest oil producer, Brazil. By 2010, analysts expect the countries of the Caspian Sea Region to produce between 2.4 and 5.9 million bbl/d, which would exceed annual production from South America's largest oil producer, Venezuela. (For more information, see: [Caspian Sea Region: Key Oil and Gas Statistics](#)).

Growing oil production since independence (an increase of roughly 70% since 1992) has come primarily from the north Caspian states of [Kazakhstan](#) and [Azerbaijan](#). The country briefs for [Kazakhstan](#) and [Azerbaijan](#) provide a more detailed description of the oil resources at these fields. Development of the region's oil resources has been led by three major projects: Tengiz and Karachaganak (in Kazakhstan), and Azerbaijan's Azeri, Chirag, and deepwater Gunashli (ACG) field. Combined, these three projects produced about 644,000 bbl/d in 2004, almost half of the regional total. The operating companies expect production levels from these fields at 1.7 million bbl/c by 2010. Development of these key projects, which are each roughly ten years old, has given rise to an influx of new investment and infrastructure development that constitutes the "second Caspian oil rush," the first having occurred in the late 1800s. Following these discoveries, major new finds were announced in Azerbaijan at Shah Deniz in 1999 ("potential recoverable resources" of roughly 14 Tcf of natural gas), and in Kazakhstan at Kashagan in 2000 (recoverable reserves estimated at 7-9 billion barrels of oil equivalent, with further potential totaling 9 to 13 billion barrels using secondary recovery techniques).

By comparison, other countries in the Caspian Sea region have not made substantial progress towards developing their hydrocarbon resources since independence. [Turkmenistan's](#) and [Uzbekistan's](#) leading oil projects, also listed in [Table 1](#), are significantly smaller and markedly less developed than those in Azerbaijan and Kazakhstan. However, according to press reports in the last year, Malaysia's Petronas will begin offshore oil production in the Turkmen sector of the Caspian Sea by the second half of 2005. The country has also discussed plans with Petronas to build a natural gas pipeline and to explore three new oil fields in the Turkmen sector.

Proven oil reserves in Turkmenistan and Uzbekistan are considerably smaller than those in their neighboring states, and the political regimes in Ashgabat and Tashkent have received less favorable consideration by foreign investors. As a result, although multinational oil companies have initiated numerous large-scale projects in Azerbaijan and Kazakhstan, Turkmenistan and Uzbekistan have received only smaller-scale deals.

Oil and natural gas development in the Russian and Iranian sectors of the Sea has been similarly stunted, although exploration efforts are reportedly underway. The Russian oil company, LUKoil, began exploration of the north Caspian in 1995 and is working to produce natural gas by 2008. Five large oil and condensate fields have been found in the north Caspian since LUKoil began exploring including Khvalinskoye, Yuri Korchagin, Rakushechnoye, and Sarmatskoye. One of these, Khvalinskoye, will be tapped by a 50:50 joint venture between Lukoil and Kazakhstan. In July 2003, LUKoil and Gazprom, another Russian energy company established a joint venture with Kazakhstan's state oil company, KazMunaiGaz, to develop the Tsentralnaya hydrocarbon structure located on the border of the Russian and Kazakhstani offshore sectors. According to [LUKoil](#), the Tsentralnaya structure holds recoverable reserves of roughly 20 Tcf of natural gas, with drilling expected to begin in 2007. Russia's natural gas monopoly, Gazprom/Rosneft, is also party to another project in the offshore Caspian Sea called Kurmangazy. The Kurmangazy field, which Kazakhstan estimates to contain around 6-7 billion barrels of oil, also sits astride the border between Russia and Kazakhstan's sectors of the sea. The field is also being developed in conjunction with Kazakhstan's natural gas company, Kazmunaigaz. Exploratory drilling at Kurmangazy began during 2003 with a total capital investment of \$2.1 billion.

Iran has made relatively little progress towards developing its Caspian Sea resources, although in September 2004 it issued an initial tender to begin drilling in deepwater portions of the Caspian Sea sometime in 2005. Reports indicate that Brazilian company Petrobras has been in talks with Tehran and the National Iranian Oil Company (NIOC) to finalize production sharing agreements.

Natural Gas

Azerbaijan and Kazakhstan hope to increase their natural gas exports in the coming years. Much of the successful upstream development has been in the natural gas sector. The region contains roughly 230 trillion

The Caspian Sea region's natural gas potential is, by some measures, more significant than its oil potential. Regional proven natural gas reserves are estimated at 232 trillion cubic feet (Tcf), comparable to those in Saudi Arabia. Natural gas production in 2004 was approximately 5 Tcf, comparable to the combined production of South America, Central America, and Mexico. But companies and governments have thus far shown greater interest in oil than in natural gas—owing, in part, to the greater capital expenditures necessary to start up new natural gas projects, as well as to the region's lack of existing natural gas infrastructure. As a result, regional natural gas production has increased only modestly since independence. With only one major foreign investment focused primarily on natural gas (Azerbaijan's [Shah Deniz](#)—see Table 1), the region will still need considerable investment in upstream projects and export infrastructure before its full potential can be realized.

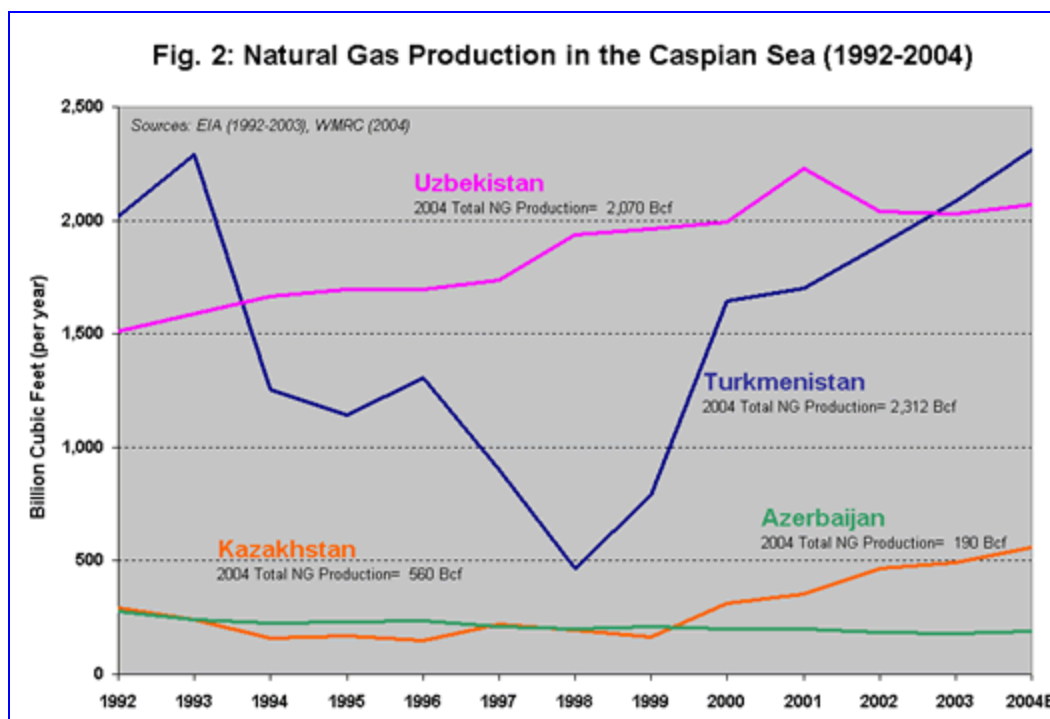
Since independence, regional natural gas production has been characterized by modest annual increases from

cubic feet of natural gas.

[Uzbekistan](#), and by a dramatic collapse (then partial recovery) from [Turkmenistan](#) (see Fig. 2 below). These fluctuations occurred because, after 1991, natural gas from the Caspian Sea region, mostly from Turkmenistan became a competitor with Gazprom, the Russian state natural gas company. Since all of the pipelines connecting the region to world markets were owned by Gazprom and routed through Russia (see [Export Issues](#)), Turkmen natural gas was squeezed out of the market. As a result, Turkmenistan's incentives for increasing its production of natural gas disappeared. The country's output dropped throughout the 1990s, plummeting from 2.02 Tcf in 1992 to just 466 billion cubic feet (Bcf) in 1998 when the country was locked in a pricing dispute with Russia over the export of its natural gas. In 1999, a Turkmen-Russian agreement took hold, and in 2000, production skyrocketed to 1.64 Tcf before reaching 1.8 Tcf in 2003 (see graph). In April 2003 Turkmenistan signed new agreements with Uzbekistan and Russia to increase exports to both countries substantially over the next 25 years. After a pricing dispute which halted Turkmenistan's natural gas exports in late 2004, Turkmenistan renegotiated the quantities and prices of its natural gas exports to Russia and to Ukraine. Turkmenistan's January 2005 agreement with Russia guarantees initial natural gas exports of 212 bcf in 2005, drastically increasing to 2.4 Tcf per year in 2007, and remaining at 2.8 Tcf per year from 2009-2028. Also, Turkmenistan is supplying Ukraine with up to 1.2 Tcf per year until 2006 and plans to extend the agreement through 2016.

In contrast, Uzbekistan has modest annual natural gas production growth by avoiding Russia's pipeline system and by concentrating on the domestic market and on exports to its immediate neighbors. Uzbekistan is the third largest natural gas producer in the Commonwealth of Independent States and one of the top ten natural gas-producing countries in the world. Since becoming independent, Uzbekistan has ramped up its natural gas production by nearly 50 percent, from 1.51 Tcf in 1992 to 2.23 Tcf in 2001 (see graph).

The Caspian region's leading oil producers, Azerbaijan and Kazakhstan, are both net natural gas importers, purchasing natural gas primarily from Uzbekistan and Russia. However, both states plan to increase their own natural gas production significantly by 2010 and plan to become net natural gas exporters. Azerbaijan's major natural gas production increases in the future are expected to come from the development of the aforementioned Shah Deniz field. Kazakhstan's natural gas production increases are expected to come primarily from associated natural gas at Kazakhstan's three largest fields: Tengiz, Karachaganak, and Kashagan (consult the [Kazakhstan Country Analysis Brief](#) for more details).



Oil and Natural Gas Export Issues

Constraints in getting the hydrocarbon resources of the Caspian Sea to markets in Asia, Europe and the Americas has kept energy resource development at a slow pace. However,

As increasing exploration and development in the Caspian Region leads to more production, the littoral states (and Uzbekistan) will have large new quantities of oil and natural gas available for export. Earning hard currency from these resources is essential to regional development plans, as well as to recouping the huge investments made by multi-national oil companies. However, for these purposes, the infrastructure left after the collapse of the Soviet Union is inadequate. Numerous new pipelines and pipeline expansions in each of the cardinal directions have been proposed, and some have been constructed.

with the Baku-T'bilisi-Ceyhan pipeline ready to come online by the end of 2005, the Caspian Sea's oil and natural gas resources will reach world markets without the risks posed by the Bosphorus choke point.



Exports to the West

Changing the region's energy flow to an East-West axis towards Europe, from the existing North-South axis towards Russia is integral to the development goals of these newly independent states. The region's three biggest pipeline projects, the Caspian Pipeline Consortium Project (CPC), the Baku-T'bilisi-Ceyhan oil pipeline (BTC), and the South Caucasus Pipeline (SCP) are establishing the framework for this new axis which will reduce the region's dependence on Russia. However, Russia and its oil companies still remain integral players in the development of these projects, and those companies stand to receive sizeable portions of the profits when they come to fruition.

The [CPC](#) project connects Kazakhstan's Caspian Sea area oil deposits with Russia's Black Sea port of Novorossiysk. Oil loaded at Novorossiysk is then taken by tanker to world markets. Although the CPC pipeline transverses Russia and was developed in conjunction with the Russian government, the pipeline has, for the first time, given the Caspian Sea region and Kazakhstan a viable alternative to the Russian dominated northern export routes (namely Atyrau-Samara). For more information on the production of oil flowing through the CPC and its export levels, please see the country brief on [Kazakhstan](#) and [British Gas \(BG's\) CPC page](#).

One downside to additional Caspian oil exports through the CPC pipeline is higher export levels will increase congestion in Turkey's Bosphorus Straits, which connect the Black Sea to the Mediterranean. Oil flows through the Bosphorus range from 2.5 - 3.0 million bbl/d. The CPC expansion could add an incremental 750,000 bbl/d of oil through the Strait.

Turkey has raised concerns about the ability of the Bosphorus Straits, already a major [chokepoint](#) for oil tankers, to handle the additional tanker traffic, since most of Russia's existing oil export pipelines also terminate at Novorossiysk. Turkey has stated its environmental concerns about a possible collision (and ensuing oil spill) in the Straits as a result of increased tanker traffic from the launch of the CPC's pipeline. As a result, there are a number of options under consideration for oil transiting the Black Sea to bypass the Bosphorus Straits.

Baku-T'bilisi-Ceyhan (BTC)

The Baku-T'bilisi-Ceyhan (BTC) pipeline, will export Azeri (and possibly up to 600,000 bbl/d of Kazakhstani) oil along a 1,040-mile route from Baku, Azerbaijan via Georgia to the Turkish Mediterranean port of Ceyhan. This will allow oil to bypass the Bosphorus Straits (see map above). A BP-led consortium (see table to the right) will operate the pipeline. Construction of the 1-million-bbl/d BTC pipeline was completed in May 2005, with the first tanker deliveries expected by the end of the fourth quarter of 2005. Oil began flowing into Azeri section of the pipeline May 25, 2005, and into the Georgian border on August 10, 2005. According to BP, Oil exports via BTC should reach 200,000-300,000 bbl/d by the end of 2005, with volumes climbing to 500,000 bbl/d by the end of 2006. Reportedly, in August 2005, Azerbaijan began sending oil tankers from Black Sea terminals to Ceyhan to fill oil storage in order to speed up the first deliveries of Azeri oil.

In October 2005, Kazakhstan will sign a long-awaited inter-governmental agreement with Azerbaijan for the supply of up to 600,000 bbl/d of crude oil to the BTC pipeline. The oil would be delivered from Kuryk, roughly 60 miles south of the major oil port of Aktau, and would then be shipped via tanker across the Caspian Sea to the port of Sangachal (the starting point of BTC). The pipeline infrastructure has yet to be built to the southern port, and cost estimates will not be released until the agreement is signed. Kazakhstani officials have said that much of the new oil would come from the [Kashagan](#) field. Kazakhstan also announced it has begun building a new class of Caspian tankers to replace the existing vessels that currently carry much of the region's maritime oil trade. Up to 150,000 bbl/d of the crude oil may reach international markets through the Baku-Supsa pipeline and the Bosphorus straits.

The BTC project has faced numerous challenges in its development. After allaying initial fears that the pipeline was technically infeasible given its considerable distance through rugged terrain, the project's developers now face criticism from local and international non-governmental organizations that consider the project to be environmentally hazardous, a threat to regional archeological treasures, and in violation of international human rights. Critics of the pipeline have taken these grievances to the World Bank and the European Bank for Reconstruction and Development (EBRD), and have asked that they withdraw their support. The project developers have hired independent consultants to review their [Environmental Impact Programme](#), which has sought to "mitigate and offset" any environmental impacts caused by the pipeline projects.

BTC/AIOC Project Shareholders		
Company	AIOC Share	BTC Share
BP	34.1%	30.1%
SOCAR	10.0%	25.0%
ChevronTexaco*	10.3%	8.9%
Statoil	8.6%	8.7%
TPAO	6.8%	6.5%
Total	0.0%	5.0%
Eni/Agip	0.0%	5.0%
Itochu	3.9%	3.4%
ConocoPhillips	0.0%	2.5%
Inpex	10.0%	2.5%
Amerada Hess/Delta	2.8%	2.4%
Exxon Mobil	8.0%	0.0%
Devon Energy	5.6%	0.0%
<i>*formerly Unocal shares</i>		Source: Company websites

[South Caucasus Pipeline \(SCP\)](#)

A third natural gas pipeline, known as the South Caucasus Pipeline, a.k.a Baku-Tbilisi-Erzurum, or BTE, will run parallel to the BTC oil pipeline for most of its route before connecting to the Turkish infrastructure near the town of Erzurum. At a cost of roughly \$1 billion, the 550-mile long South Caucasus pipeline is designed to carry natural gas from Azerbaijan's Shah Deniz field, and have an initial capacity of 1.5 bcf/d. The pipeline will be expanded to 3 bcf/d in 2007 and is scheduled to be completed by October 2006, in time for the Shah Deniz project's first contracted exports to Turkey. The project's operators reported that the pipeline was 70 percent complete in July 2005. Although most of the natural gas will be exported to Turkey, some of the natural gas will be sent to Europe via a transit pipeline through Greece. The SCP consortium comprises BP and Norway's Statoil, each with 25.5 percent, Azeri state oil company Socar, Russian-Italian venture LukAgip, Iran's Nico and French Total, all with 10 percent each, and Turkey's TPAO with 9 percent.

[Caspian Pipeline Consortium](#)

This pipeline exports oil from Kazakhstan to the Russian port of Novorossiysk. Please consult the [Kazakhstan Country Analysis Brief](#) or the [CPC Consortium's website](#).

[Exports to the East](#)

Questions remain regarding whether Europe is the optimal market for Caspian oil and natural gas. Oil demand over the next 10 to 15 years in Europe is expected to grow by little more than 1 million bbl/d. Oil exports eastward, on the other hand, could serve Asian markets, where demand for oil is expected to grow by roughly 10 million bbl/d over the next 15 years. In particular, [Chinese](#) oil consumption is projected to rise almost 6 million bbl/d by 2020. Construction on an \$850 million, 613-mile-long pipeline from Atasu, in northwestern Kazakhstan to Alatau Pass in China's northwestern Xinjiang region will be completed in December 2005 and marks the first

steps to meet this demand. The [Kazakhstan-China pipeline](#), when all three stages are complete, will span almost 1,860 miles from its start in Atyrau to Alashankou in China.

Exports to the South and Southwest

An additional way for Caspian region exporters to supply Asian demand would be to pipe oil and natural gas south through [Iran](#) to the Persian Gulf or southwest to [Afghanistan](#). The Afghanistan option, which Turkmenistan has been promoting, would entail building pipelines across war-ravaged Afghan territory to reach markets in [Pakistan](#) and possibly [India](#). With the ouster of the Taliban in Afghanistan in December 2001, proposals to build a [Trans-Afghan natural gas pipeline](#) have emerged. The Trans-Afghan pipeline, also called the Turkmenistan-Afghanistan-Pakistan (TAP) pipeline, would span over 1,000 miles from a point in Turkmenistan to Fazilka (India) on the Pakistan-India border. A feasibility study, commissioned by the Asian Development Bank was completed in 2005.

Development of a southern pipeline through Iran would be problematic under the [Iran and Libya Sanctions Act](#) which imposes sanctions on non-U.S. companies investing in the Iranian oil and natural gas sectors. U.S. companies already are prohibited from conducting business with Iran under U.S. law. In 1997, however, Turkmenistan and Iran completed the \$190 million [Korpezhe-Kurt Kui pipeline](#) linking the two countries, thereby becoming the first natural gas export pipeline from Central Asia to bypass Russia. According to terms of the 25-year contract between the two countries, Iran will take between 177 Bcf and 212 Bcf of natural gas from Turkmenistan annually, with 35 percent of Turkmen supplies allocated as payment for Iran's contribution to building the pipeline.

Turkmenistan and Kazakhstan have initiated low-volume oil "swap" deals with Iran, delivering oil in tankers to refineries in Iran's northern regions in exchange for similar volumes of crude at Iranian ports in the Persian Gulf. During early 2004, Iran completed efforts to upgrade its domestic distribution network and its port at Neka on the Caspian Sea to allow for swap capacity to increase from roughly 50,000 bbl/d to 170,000 bbl/d. Iranian oil officials claim that Neka's import capacity could be raised to as high as 700,000 barrels in case there is a permanent customer. A June 2005 Iranian proposal would entail a 25-year swap agreement with Russian companies, delivering roughly 300,000 bbl/d of oil at Neka and then receiving an equal amount of Iranian light crude at Kharq Island in the Persian Gulf. The agreement has not been signed. Iran is also developing its Tabriz and Tehran refineries so that they can refine up to 500,000 bbl/d of Caspian crude oil. In late 2004 price differentials between Caspian sweet and Iranian sour crude have rendered these swaps less economic than during the summer of 2004, and Russian and Caspian producers sent their oil westward to Europe instead of sending it to Iran. Since then, swap levels dwindled to 35,000 bbl/d during the winter of 2004-2005 and have now increased slightly to 80,000 bbl/d. This is still about 30,000 bbl/d less than the peak swap volume recorded earlier during the summer of 2004.

Exports to the North and Northwest

For its part, Russia has proposed multiple pipeline routes that utilize its existing and proposed infrastructure. Shortly after independence, two new northwesterly pipelines were constructed, known as the "Northern" and "Western" Early Oil Pipelines. These extend from Baku to Novorossiysk (Russia), and Baku to Supsa (Georgia), respectively, and have a combined capacity of roughly 245,000 bbl/d (see [map](#)). Also, an existing northbound pipeline from Atyrau in Kazakhstan to Samara in Russia has been upgraded, but is expected to become relatively less significant as throughput at CPC increases. However, there are political and security questions as to whether the newly independent states of the former Soviet Union should rely on Russia (or any other country) as their sole export outlet, and Caspian region producers already have expressed their desire to diversify their export options.

Regional Conflicts

In almost any direction, Caspian region export pipelines may be subject to regional conflicts, an additional complicating factor in determining final routes. Numerous ethnic and religious groups reside in the Caspian Sea region, and continuing conflicts pose threats to both existing pipelines and those under construction. Despite the ouster of the Taliban government in December 2001, Afghanistan remains scarred and unstable after years of war. Negotiations to resolve the Azerbaijan-[Armenia](#) war over the Armenian-populated [Nagorno-Karabakh](#) enclave in Azerbaijan have yet to make significant progress. Separatist conflicts in Abkhazia, South Ossetia, and Ajaria in Georgia flared in the mid-1990's. However, the June 2004 election of a leader in Ajaria who is aligned with neighboring Georgia decreases the risk of further oil transport interruptions (please see the [Caucasus Regional Analysis Brief](#) and [Hotspots Factsheet](#) for more information on these conflicts). Finally, Russia's war with Chechnya has devastated the region around Grozny in southern Russia, and the September 2004 terrorist massacre in Beslan underlines the tenuous political situation in the Caspian Sea region.

The most significant problem with the Caspian Sea's oil and natural gas resources is the lack of an agreement among the five littoral states. Although Russia, Azerbaijan, and Kazakhstan have each signed bilateral agreements with the other, Iran's position is that each country be given 20 percent of the Sea's resources. In other words, each country ought to receive 20 percent of all production revenues from the entire Caspian Sea.

Environment

Resolving the dispute over maritime borders in the Caspian Sea and regional conflicts in the Caucasus are the largest barriers to securing safe transport for oil and natural gas and for further investment in the area.

After years of misuse and mismanagement during the Soviet era, the Caspian Sea has become more and more polluted as oil and natural gas extraction activities continue. New pipeline construction will compound the region's already existing environmental difficulties.

Years of neglect and mismanagement have left the Caspian Sea and the surrounding region in an environmentally precarious position. Petrochemical and refining complexes on the Absheron peninsula in Azerbaijan are major sources of land-based pollution, and discharges and spills from oil and natural gas drilling—both onshore and in the sea itself—have had serious impacts on the environment. Untreated waste from the Volga River—into which half the population of Russia and most of its heavy industry drains its sewage—empties directly into the Caspian Sea, while pesticides and chemicals from agricultural run-off are threats to the Sea's flora and fauna. Thousands of seals that live in the Caspian Sea have died since 2000 due to pollution that weakened their immune systems. Overfishing, especially of the prized sturgeon, has caused a dramatic decline in fish stocks. Ecologists have directly related the death of seals, fish, and birds in the sea and the disappearance of unique plants to oil company activities. (For more information, see: [links](#) and [DOE's Black Sea and Caspian Sea Environmental Information Center](#))

In addition to the existing problems, several other issues could compound the Caspian region's environmental difficulties. Oil and natural gas production in the Sea inevitably will result in the construction of pipelines and infrastructure to export these resources to consumers, raising the possibility of loss of habitats for marine life as well as the specter of accidental spills. The mysterious rise of the Caspian Sea could flood oil wells, rigs, and earth-walled reservoirs on the coastline, spilling into water tables and contaminating drinking water supplies. A lack of regional cooperation, highlighted by the still unresolved legal status of the Caspian Sea, as well as weak environmental laws and regulations and the inability to enforce them, already is affecting efforts to protect the Caspian's environment. Continued economic development, improved regional cooperation, and the implementation of modern technology will be required in order to improve the state of the environment in and around the Caspian Sea in coming years.

Maps

Caspian Region Oil Pipelines (click the pictures for a high resolution version)



(Source: CIA)

Caspian Region Natural Gas Pipelines



(Source: CIA)

Bosporus Bypass Options (please click below for a full map)



Other Non-U.S. Government Maps:

- [University of Texas: Perry-Castaneda Map Collection: Link to Detailed Map of Caspian Sea \(North Region\)](#)
- [University of Texas: Perry-Castaneda Map Collection: Link to Detailed Map of Caspian Sea \(South Region\)](#)
- [University of Texas: Perry-Castaneda Map Collection: Link to Detailed Map of Caspian Sea \(Legend\)](#)

Summary Tables

Caspian Sea Regional Statistics
[Caspian Sea Regional Statistics \(PDF\)\(Excel\)](#)

Caspian Sea Region Major Projects

Table 1		Caspian Sea Region Leading Upstream Foreign Investment Projects by Country		
Country	Project (Major Investor)	Proven Reserves	2004 Production	Projection
Azerbaijan	ACG Mega-Structure (BP et al)	5.4 billion barrels	132,000 bbl/d	2005: 224,000 2008-9: 1 million bbl/d
	Shah Deniz (BP et al.)	2.5 billion barrels 14-22.1 Trillion Cubic Feet	not producing	2006: 296 Bcf
Kazakhstan	Tengiz (ChevronTexaco et al.)	6-9 billion barrels	274,000 bbl/d	2005: 290,000 bbl/d 2010: 700,000 bbl/d
	Karachaganak (BG, Agip, et al.)	2.4 billion barrels	210,000 bbl/d	2010: 500,000 bbl/d
	Kashagan (ENI-Agip, BG, et al.)	7-9 billion barrels	not producing	2008: 75,000 bbl/d
Turkmenistan	Cheleken (Dragon Oil)	0.6 billion barrels	8,600 bbl/d	2005: 8,100 bbl/d
	Nebit Dag (Burren Energy)	0.1 billion barrels	31,000 bbl/d	2005: 31,000 bbl/d
Uzbekistan	Central Ustyurt and Southwest Gissar (PSA dissolved, being renegotiated)	Reserves: 90 million Barrels, 18.7 Tcf		2007: 2,600 bbl/d 71 Bcf
	Fergana Basin redevelopment (Australia, China PSAs)	1.2 billion barrels, 5.5 Tcf NG	--	Unknown: 600 million bbl/d

Links

EIA Links

[EIA: Country Information on Azerbaijan](#)

[EIA: Environmental Brief on the Caspian Sea Region \(Feb. 2003\)](#)

[EIA: Country Information on Iran](#)

[EIA: Country Information on Kazakhstan](#)

[EIA: Country Information on Russia](#)

[EIA: Country Information on Central Asia \(Turkmenistan, Uzbekistan\)](#)

U.S. Government

[U.S. Agency for International Development](#)

[U.S. Department of Commerce, Business Information Service for the Newly Independent States \(BISNIS\)](#)
[U.S. Department of Commerce, Country Commercial Guides](#)
[U.S. Department of Commerce, Trade Compliance Center: Market Access Information](#)
[CIA World Factbook](#)
[U.S. Department of Energy, Office of Fossil Energy: International Affairs](#)
[U.S. Department of State: Fact Sheet on Nagorno-Karabakh](#)
[U.S. International Trade Administration, Energy Division](#)
[Library of Congress Country Study on Iran](#)
[Library of Congress Country Study on the former Soviet Union](#)
[Radio Free Europe/Radio Liberty \(RFE/RL\)](#)
[RFE/RL: Energy Politics in the Caspian and Russia](#)
[U.S. Department of State: Background Notes](#)
[U.S. Department of State, International Information Programs](#)
[U.S. Embassy, Baku](#)
[U.S. Embassy, Almaty, Kazakhstan](#)
[U.S. Embassy in Turkmenistan](#)
[U.S. Treasury Department's Office of Foreign Assets Control](#)

General Information

[Amnesty International: Human Rights on the Line—The Baku-Tbilisi-Ceyhan Pipeline Project](#)
[Azerbaijan International](#)
[Azerbaijan Internet Links](#)
[Caspian Development and Export page](#)
[Caspian Crossroads Magazine](#)
[Caspian Energy](#)
[Caspian Environment Programme \(CEP\)](#)
[Caspian News Agency](#)
[Caspian Pipeline Consortium](#)
[Caspian Sea News](#)
[The Center for Middle Eastern Studies \(University of Texas at Austin\): Iran](#)
[Central Asia-Caucasus Institute of The Johns Hopkins University](#)
[Central Eurasia Project: Kazakhstan](#)
[Chevron: Kazakhstan and the Caspian Sea Region](#)
[Embassy of the Russian Federation in the United States](#)
[Energy Russia: website of the Centre for Energy Policy in Moscow, Russia](#)
[ENI](#)
[EurasiaNet.org—News and Analysis from Central Asia and the Caucasus](#)
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Contact Info

Michael Cohen
(202) 586-7057
michael.cohen@eia.doe.gov
