

Elif



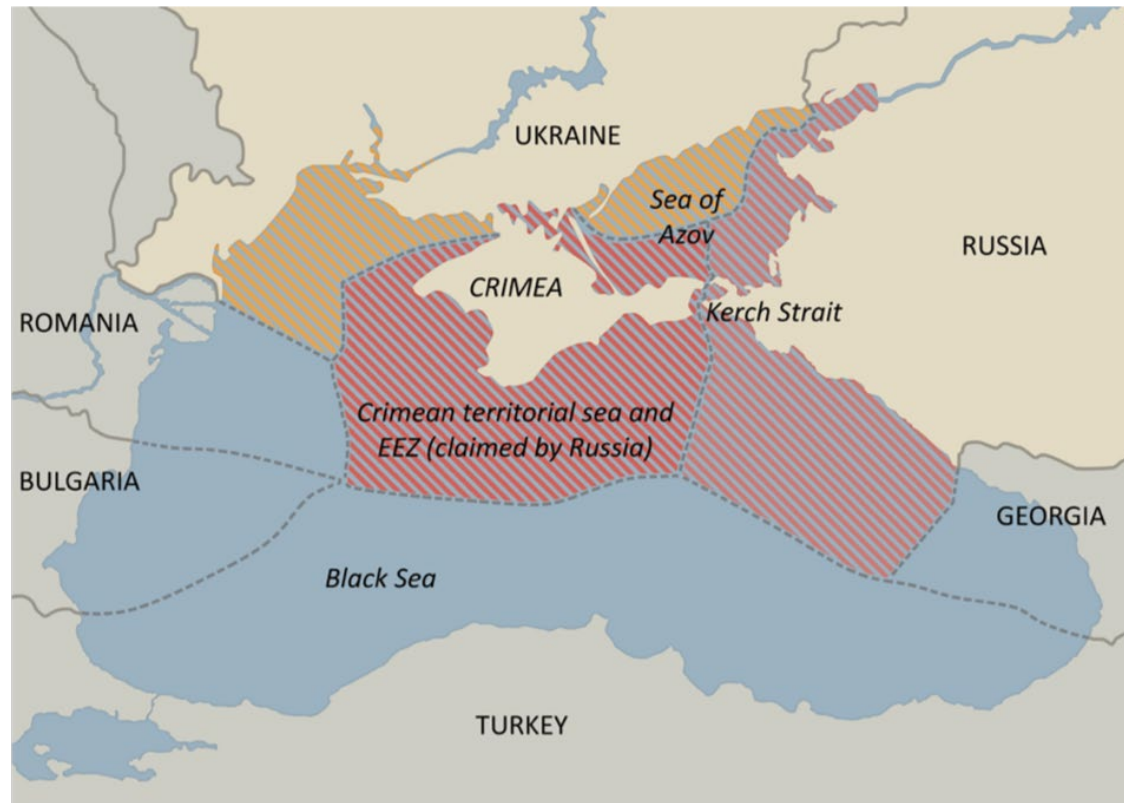
Black Sea: Another Caspian ?

**Türkiye Black Sea
Oil and Gas
International Congress and Exhibition**

**14-15 December 2022
İstanbul**

**By
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EEZ Black Sea



- EEZ of Black sea was signed between the USSR and Türkiye and ratified by the independent countries surrounding Black Sea after the break up of USSR in 1990 together with Russia.
- There has not been any dispute on the EEZ in Black Sea until the invasion of Ukraine by Russia.

Black Sea in Numbers



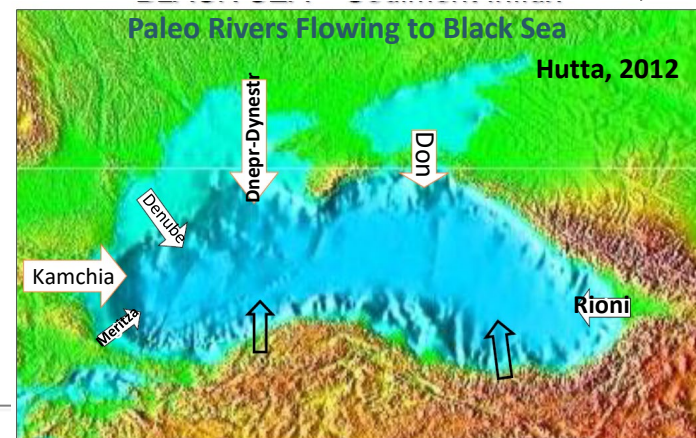
- Black Sea remains the only wildcat area that has huge potential except the deeper parts of ocean and frozen areas
- The first exploration well was drilled in 1975 nearly the same time with North Sea
- The Black Sea has a coastline of approximately 5,800 kilometers, including the Sea of Azov. Russia has the longest coastline on the sea (2,300 km), followed by Turkey (1,329 km) and Ukraine (1,282 km)
- The rivers flowing to Black Sea discharges around the 2 million km² drainage areas with in 24 countries.
- Some of the wells drilled in ultra deep waters of Black Sea
 - USSR started offshore drilling during 1980s and until then 21 wells were drilled exceeding 500m
 - Turkey- 18 (Hopa-1, HPX-1, Yassihöyük-1, Sürmene-1, Şile-1, Kastamonu-1, Iştiranca-1
 - Romania-10
 - Bulgaria - 2
 - Russia -1

Coastlines and areas

Coastline and exclusive economic zones

Coastline length and area of exclusive economic zones

Country	Coastline length (km) ^[1]	Exclusive economic zones area (km ²) ^[26]
Turkey	1,329	172,484
Ukraine	2,782	132,414
Russia	800	67,351
Bulgaria	354	35,132
Georgia	310	22,947
Romania	225	29,756
Total	5,800	460,084



Feature

Surface Area	436,402 km ²
Maximum Depth	2,212 m
Average Depth	1,253 m
MaximumLength	1,067 km
Water Volume	547,000 km ³

W-E Regional Cross Section Black Sea

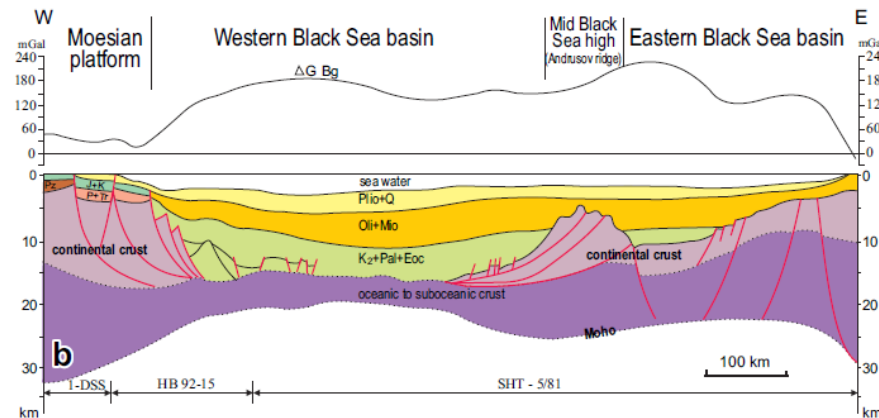
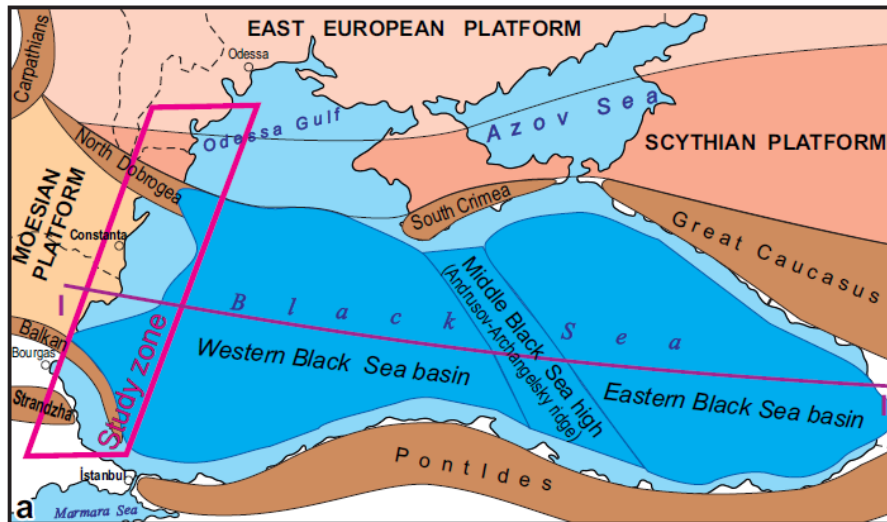


Figure 1. (a) Tectonic units in the Black Sea domain with location of study zone (after Rempel & Georgiev 2005); (b) Geological-seismic cross-section along line I-I (after Dachev & Georgiev 1995).

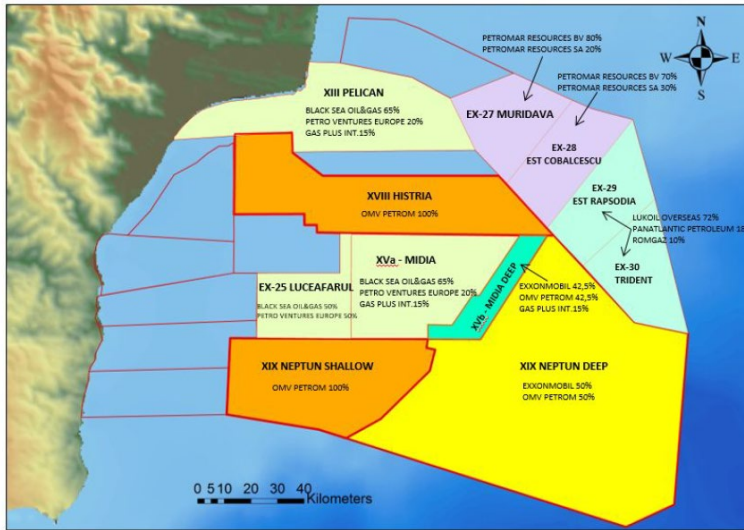
Georgiev, 2012

- Discovered hydrocarbons are located on the shelf areas of Black Sea; Ukrainian Kalamit high and Romanian Moesian platform.
- Although there is no shelf at Southern part of Black Sea there is gas production at Akçakoca Türkiye at the shallow waters .
- There is still no discovery in the deeper parts of Eastern and Western Black Sea but these areas are still frontiers.
- There have been less than 20 wells drilled with in the EEZ of Türkiye at ultra deep waters.
- Remind that North Sea is a shallow water drilling, and the first discovery was made after the 75th well drilled.
- The exploration activities started in 1969 in North Sea and 1920s n Caspian Sea so there is long distance between the two and the Black Sea.

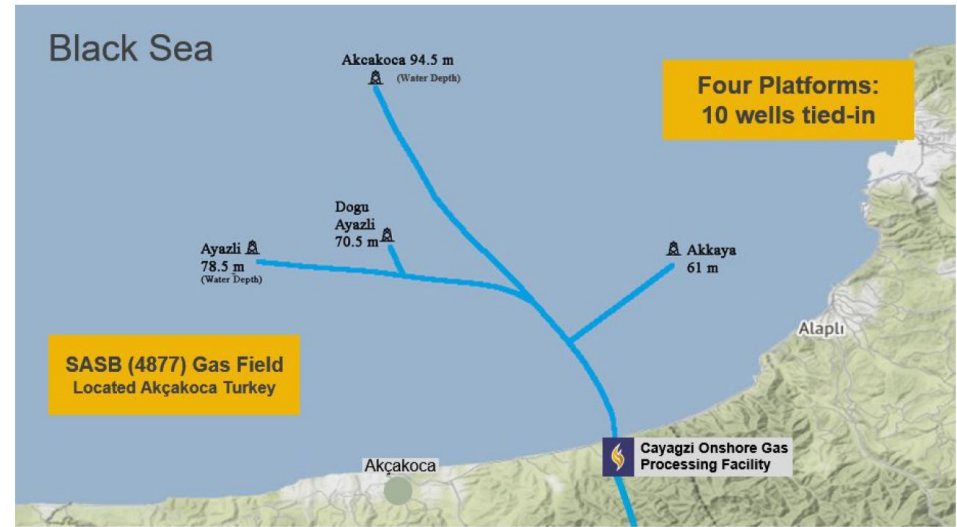
Offshore Romania, Bulgaria, Turkey



NEPTUN DEEP GAS FIELD PROJECT



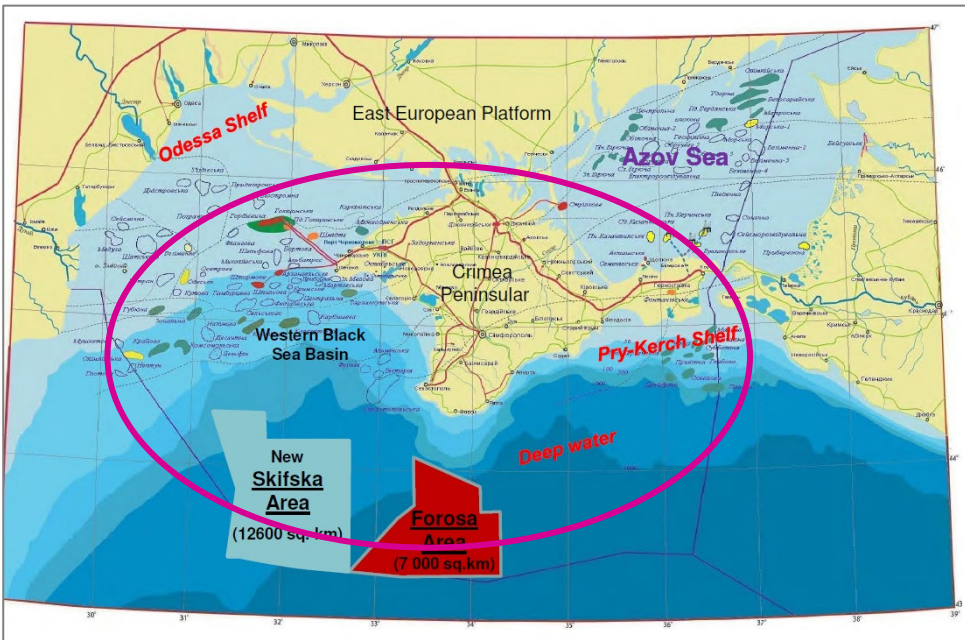
SOUTH AKCAKOCA SUB-BASIN GAS FIELD



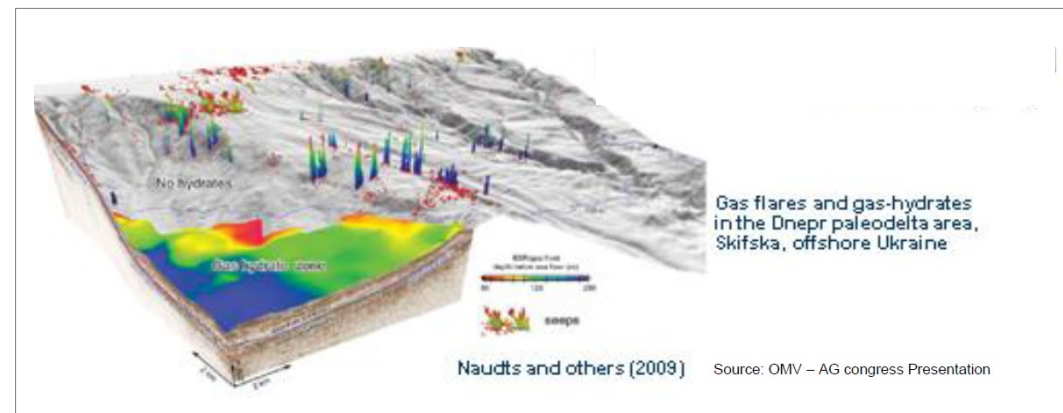
- Midia Gas Development 400m \$ investment with total of 320 Bcf
- Neptunian Deep reserves are 42 – 84 Bcm and 700m \$ investment
- Trident Block Ex-30 with estimated 30 Bcm gas
- XVIII Histria is estimated 30 m€ investment.
- Khan Asparuh block the Bulgaria received 45.2m\$ from bonus payment

- Akçakoca field 608m \$ investment with a surface facility can process up to 75 Mcf of gas per day.
- Sakarya gas field estimated 540 Bcm (?)

Offshore Ukraine



- Ukraine reserves are 1.09 Tcm natural gas which is the second in Europe after Norway
- There are still more to find as these gas flares and gas hydrates in the Dnepr paleodelta.
- 9 Bcm natural gas 1P in offshore



Offshore Upstream Profile of Black Sea Countries

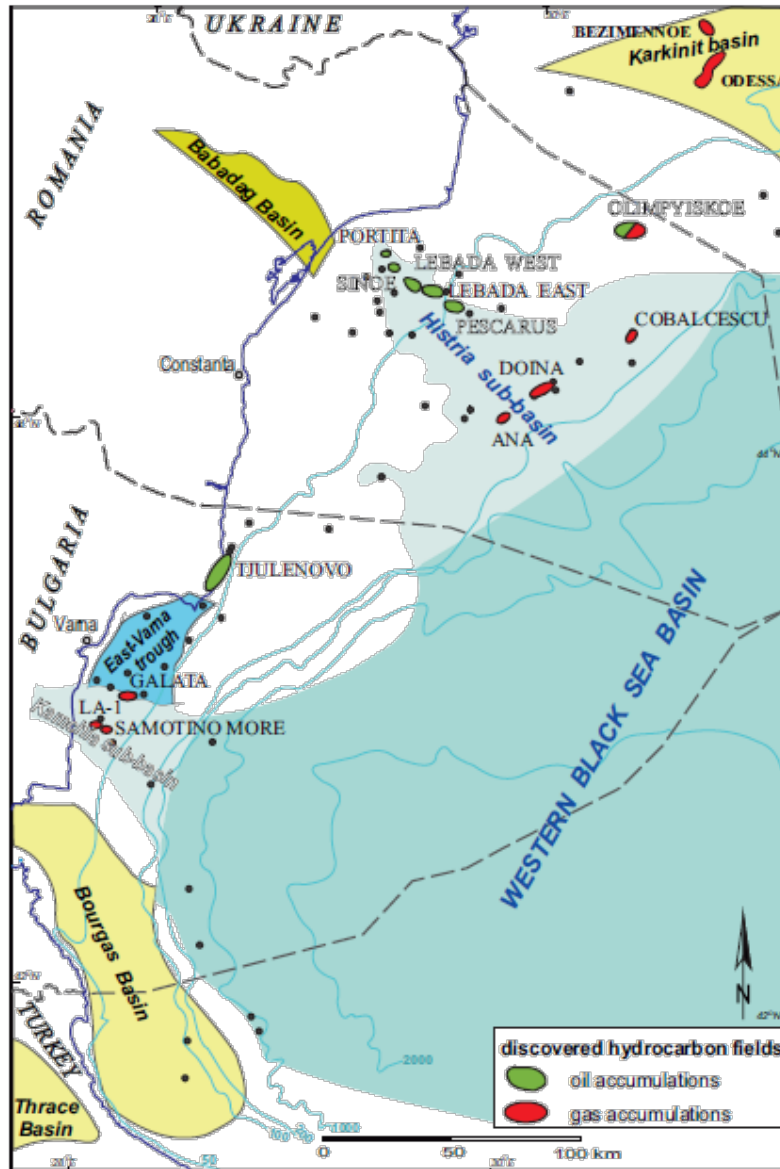


Figure 7. Map of sedimentary basins in WBSZ and discovered hydrocarbon fields.

- Ukraine holds; between 1997-2001 discoveries and Paleocene Eocene sandstones
 - 917 Bcf gas
 - 70 M bbls
- Romania holds; between 1979-2007, Cretaceous, Eocene-Paleocene, Mio-Paleocene sandstones
 - 672 Bcf gas
 - 179 M bbls
- Bulgaria holds; 1951-1994, Cretaceous and Eocene sandstone and carbonates
 - 85 Bcf
 - 30 M bbls

Two Seas one Geological Realm

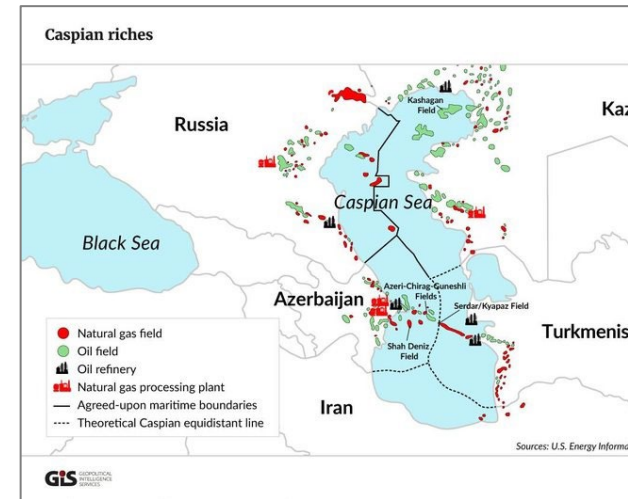
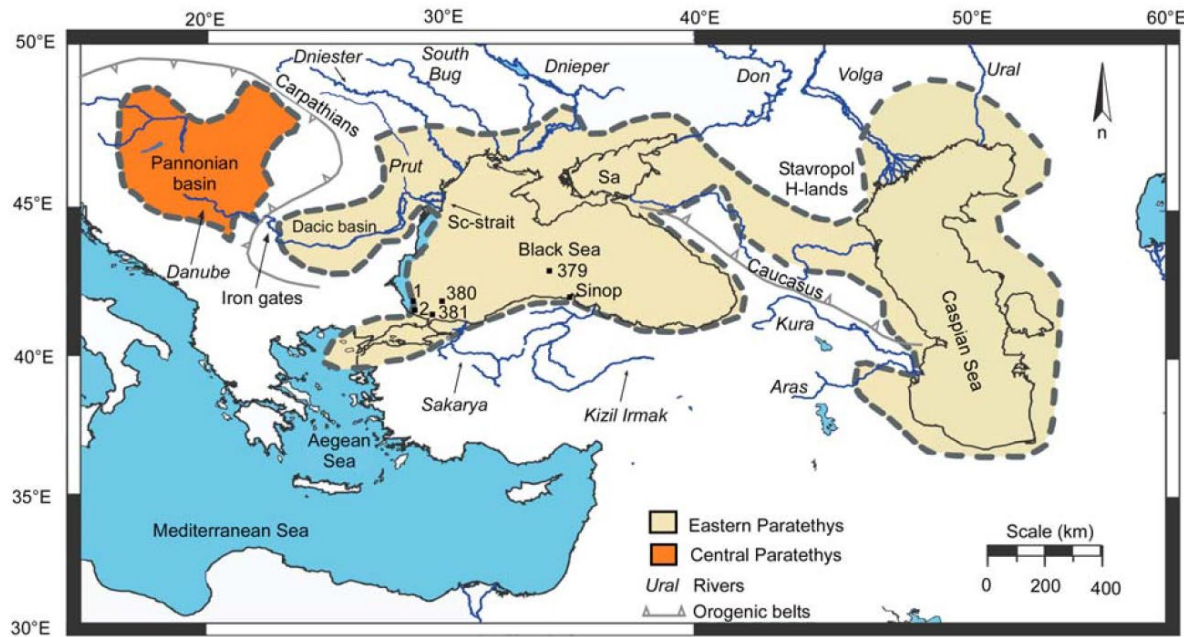


Figure 1. Regional location map during the Late Miocene. Dashed lines outline the central Paratethys and eastern Paratethys (modified after *Popov et al.* [2006]). Numbered boreholes 379, 380, and 381 indicate the location of DSDP boreholes, and 1 and 2 define the location of İğneada-1 and Karadeniz-1 boreholes. Sc-strait, Scythian strait; Stavropol H-lands, Stavropol highlands; Sa, Sea of Azov.

Bartol and Govers, 2009

- Black Sea was apart of the Paratethys during Messinian- Pontian
- Until the beginning of the late Miocene (about 13.8 million years ago), the sea basin of the Caspian was connected to the Black Sea through the structural depression known as the Manych Trench (or [Kuma-Manych Depression](#)).
- After a late Miocene uplift, the Caspian became an enclosed body, with oceanic submarine characteristics preserved today only in the southern Caspian. The ocean connection was temporarily reestablished in the early Pleistocene (about 2.6 million years ago),

Caspian Sea by Numbers



Caspian OffShore

Country	Crude oil and lease condensate (billion bbl)	Natural gas (Tcf)
Azerbaijan total	8.5	51
Offshore Caspian	6.8	46
Iran total	0.5	2
Offshore Caspian	0.5	1
Kazakhstan total	31.2	104
Offshore Caspian	15.7	36
Russia total	6.1	109
Offshore Caspian	1.6	14
Turkmenistan total	1.9	19
Offshore Caspian	1.1	9
Uzbekistan total	negligable	7
Offshore Caspian	0	0
TOTAL CASPIAN	48.2	292
Offshore Caspian	19.6	106

Notes:

Sources: U.S. Energy Information Administration, IHS EDIN, Eastern Bloc Research Energy Databook 2012

Caspian Production

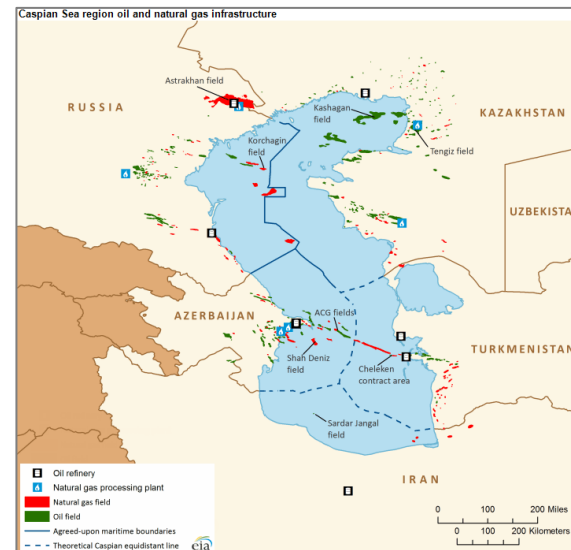
Country	Oil offshore Thousand bbls / day	Natural Gas Offshore Bcf/y
Azerbaijan	890	562
Iran	0	0
Kazakhstan	3	Negligable
Russia	6	17
Turkmenistan	46	1
Uzbekistan	0	0
Total	945	580

Sources: U.S. Energy Information Administration, IHS EDIN, Eastern Bloc Energy, Rigzone, Rystad Energy

Coastlines

1. Kazakhstan - 1,422 km (884 mi)
2. Turkmenistan - 1,035 km (643 mi)
3. Azerbaijan - 813 km (505 mi)
4. Russia - 747 km (464 mi)
5. Iran - 728 km (452 mi)

Features	Fact
Surface Area	386,400 km ²
Maximum Depth	1025m
Avarage Depth	211m
Maximum Length	1200 km
Water Volume	78,200 km ³



Caspian Sea - Black Sea - North Sea



Caspian Sea	Black Sea	North Sea
<ul style="list-style-type: none"> • More than >5000 wells 	<ul style="list-style-type: none"> • Less than 100 wells • 20 wells are drilled at ultra deep part 	<ul style="list-style-type: none"> • More than 7000 wells
<ul style="list-style-type: none"> • Partially unexplored 	<ul style="list-style-type: none"> • Widely unexplored, deep water exploration started at around 2000s 	<ul style="list-style-type: none"> • Discovery in the 75th well
<ul style="list-style-type: none"> • Disputes due to water territories 	<ul style="list-style-type: none"> • Political issues and disputes due to invasion of Ukraine 	<ul style="list-style-type: none"> • Open political system
<ul style="list-style-type: none"> • Production in Azerbaijan, Russia, Kazakhstan, Turkmenistan 	<ul style="list-style-type: none"> • Production in Romania, Turkey, Ukraine, Bulgaria 	<ul style="list-style-type: none"> • Mature basin and declining
<ul style="list-style-type: none"> • 20 billion bbls (EIA,2013) 		<ul style="list-style-type: none"> • 14 billion bbls
<ul style="list-style-type: none"> • 106 Tcf (EIA,2013) 	<ul style="list-style-type: none"> • 7 Billion bbls (USGS,2000) 	<ul style="list-style-type: none"> • 162 Tcf
<ul style="list-style-type: none"> • 371.000km² 	<ul style="list-style-type: none"> • 436.402 km² 	<ul style="list-style-type: none"> • 570.000km²
<ul style="list-style-type: none"> • 1920 	<ul style="list-style-type: none"> • 1975 	<ul style="list-style-type: none"> • 1969

the U.S. Geological Survey (USGS) estimates another 20 billion barrels of oil and 243 Tcf of natural gas in as yet undiscovered,

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