



# Association for the Study of Peak Oil&Gas

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### 464. Country Assessment -Kazakhstan

Kazakhstan was a member of the Soviet Union until 1991. It covers an area of some 2.7 million km<sup>2</sup>, having common frontiers with Russia and China to the north and east. Much of the country comprises low-lying plains, including some extensive deserts, bordering the inland Caspian and Aral Seas, but to the south and east develop high mountain ranges, associated with the Himalayan chain. The highest peak rises to as much as 7000 m. The country suffers from an extreme climate of hot summers and cold winters, with generally low rainfall. The Aral Sea suffered an environmental crisis in 1986 when rivers flowing into it were diverted for irrigation, causing it to be so severely polluted and saline that crops could barely grow in the vicinity. Kazakhstan also played a prominent part in the Soviet nuclear and space programmes.

The population amounts to about 17 million, comprising the remnants of the original Kazakh nomads and the descendents of massive waves of immigration during the early years of the 20<sup>th</sup> Century which saw the arrival of Russians, Slavs, Jews, Germans and others. The indigenous people were driven from their lands, being, in many cases, made destitute. But the situation was partially reversed following independence, when many Russians left, such that about half the population is now of Kazakh origins. The Kazakhs belong to the Muslim faith, although that was partially suppressed during the Communist era. The non-Kazakh sectors of the population are concentrated in the cities, including Almaty, the capital.

The President, Nursultan Nazarbayev was born in 1940 in humble circumstances before rising to prominence in the Communist regime, being appointed President in 1990 and steering the country to independence a year later. He was re-elected President in 1999. An old time Communist strongman by background, he is generally regarded as a sensible leader, although possibly not above a touch of the vote-rigging, as practiced with greater or lesser subtlety by many of the world's leaders. He was successful in recent elections, granting himself certain powers for life.

In geological terms, the country is dominated by two petroleum systems. The most important is the Pre-Caspian Basin in the northwest, where Silurian source rocks have charged Carboniferous carbonate reservoirs beneath, often thick, deposits of salt, forming an excellent seal. To the south, lies a less prolific Jurassic trend, probably relying mainly in Upper Jurassic source rocks.

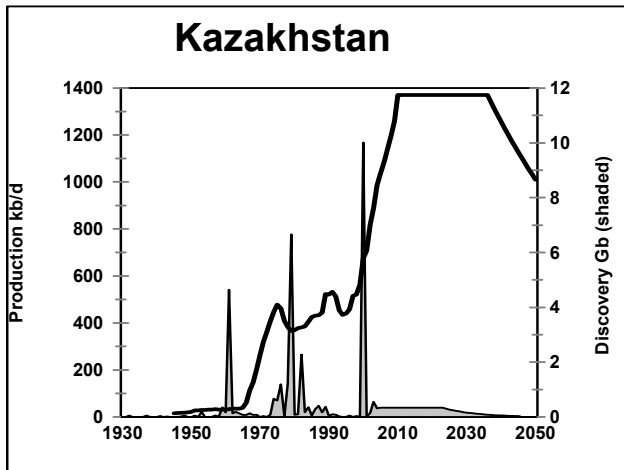
The early record of exploration is lost in the pages of history, although it is known that some discoveries had already been made before the Second World War. The discovery of the Tengiz Field in 1979 evidently stimulated new interest, with exploration drilling reaching a peak in 1986 when some 33 wildcats were drilled. Tengiz itself holds some 6 Gb (billion barrels) of oil, but it contains as much as 16% sulphur, which proved too much for Soviet steel. Chevron, took over the project on the fall of the Soviets, and has successfully overcome the technical difficulties.

Ownership of the Caspian proved legally contentious. If it were deemed a lake, its mineral rights under international law should be shared by the continuous countries, whereas if it were a sea, they would be physically divided between the countries. It seems however that a pragmatic agreement has left much of the northern Caspian under Kazakh jurisdiction.

KAZAKHSTAN		<i>Regular Oil</i>
<b>Population M</b>		16
<b>Rates Mb/d</b>		
Consumption	2004	0.19
per person b/a		4.4
Production	2004	0.98
Forecast 2010		1.4
Forecast 2020		1.4
Discovery 5-yr average Gb		2.1
<b>Amounts Gb</b>		
Past Production		6.6
Reported <i>Proved Reserves*</i>		9.0
Future Production - total		38
From Known Fields		37
From New Fields		8
Past and Future Production		45
Current Depletion Rate		0.9%
Depletion Midpoint Date		2036
Peak Discovery Date		2000
Peak Production Date		2030

\*Oil & Gas Journal

This is highly prospective territory that attracted great interest after the fall of the Soviets, with some reports suggesting it might rival Saudi Arabia. A huge prospect, named Kashagan, was identified, attracting the attention of the veteran New York promoter, Jack Grynberg, who persuaded Mr Nazarbayev to grant rights to a consortium of major oil companies, led by BP, in return for an over-riding royalty, which he may possibly have shared. Operating conditions are appalling, with shallow water impeding the entry of drilling equipment and a frightful wind that coats everything in ice during the winter. If that was not enough, the area lies in the breeding grounds of the sturgeon, an important source of caviar for the Russian market. But eventually wildcats were drilled at either end of the prospect at enormous cost, finding some 9-15 Gb. Although by most standards this would be a fine discovery, BP, Statoil and later British Gas pulled out, turning the operation over to Agip, which left poor Mr Grynberg to sue for his over-riding royalty. Probably, the structure is a huge platform containing discrete reefal reservoirs, separated by rocks lacking sufficient porosity and permeability to be effective. Other structures in the vicinity were later tested successfully, suggesting that overall Kazakhstan has considerable potential.



Insufficient is known about the country to make a very reliable assessment but the indications are that about 37 Gb have been discovered, of which only 6.6 have been produced. Future discovery is here assessed at about 8 Gb, giving a rounded total of 45 Gb. With such substantial reserves, the country has little incentive to explore for more.

If this is approximately correct, it might be reasonable to model production rising to about 1.4 Mb/d by 2010 followed by a plateau to the onset of decline around 2030. Since consumption is no more than about 200 kb/d, the growth of production implies a massive expansion of export capacity, with the construction of new pipelines. The options are to route them through Russia; southwards through

Turkmenistan and Iran to the Persian Gulf; eastwards to China; or westwards to the Black Sea, and onward by tanker or pipeline across eastern Europe through Kosovo, where a large American military base, known as Bondsteel, has been constructed for possibly not unrelated reasons, as even the name suggests. All carry grave geopolitical constraints (see Item 468 below), suggesting that production will not in fact rise as modelled on the resource base, depicted in the table above. It is easy to understand why BP, Statoil and British Gas have pulled out.

Approximately 150 Tcf of gas have been found, of which only 26 Tcf have been produced, meaning that the country has substantial export potential, with Russia or China being the obvious main customers.

Kazakhstan is in an anomalous position thanks to its remote landlocked location and its history as a former member of the Soviet Union. It evidently has great potential as an exporter of oil and gas, but is likely to face intractable political and geopolitical pressures, which can only grow as alternative world supplies decline in the years ahead.

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