



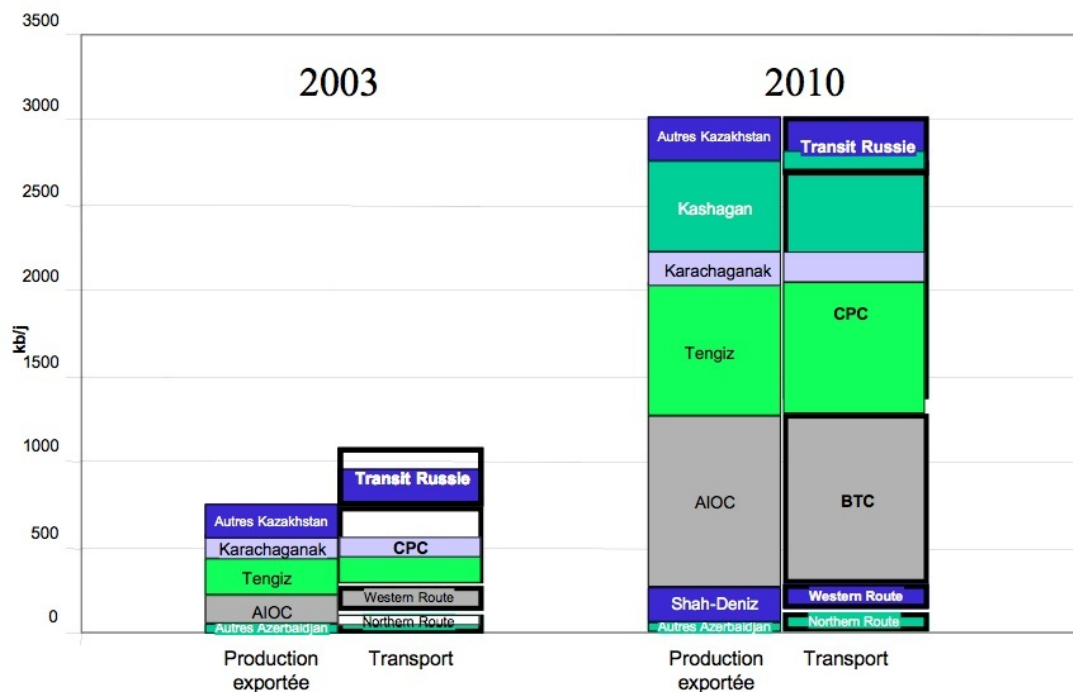
A primer on Caspian Oil

Posted by [Jerome a Paris](#) on November 22, 2006 - 12:39am in [The Oil Drum: Europe](#)

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Tags: [azerbaijan](#), [caspien sea](#), [kazakhstan](#), [pipelines](#), [russia](#) [[list all tags](#)]

Oil & gas in the Caspian has a long history - indeed it is one of the earliest oil production regions in the world, with Baku a major oil center in the second half of the 19th century and beyond. What makes the situation today interesting is the simultaneous appearance of three things: (i) new reserves discovered offshore, (ii) the fact that, with the break up of the Soviet Union, the oil is located in (new) countries that are keen to have foreign investment and are now one of the few oil provinces around the world that still welcome Western oil majors, and (iii) these countries have **no direct access** to the world markets.



Graph by JaP. "kb/j" = thousand barrels per day. "Autres" = other

"Caspian energy" actually covers 3 different things:

- the **oil** production in the region developed under Soviet times, and connected to Russia by oil pipelines. This concerns mostly Kazakhstan, Uzbekistan, and a very small volume of production from Azerbaijan. That oil is usually produced by the national oil company created in each of these countries to pick up the Soviet assets in the sector, and sold to (or through) Russia on the basis of bilateral governmental agreements. This sector is declining and is slowly being replaced by the third one below. Transportation issues that go with it are more and more resolved through the negotiations ongoing in the third bullet below;

- the **gas** production in the region developed under Soviet times, and also connected to Russia by (gas) pipelines. This concerns mostly Turkmenistan and Uzbekistan. That gas is almost exclusively produced by the national company, and also sold to (or through) Russia on the basis of bilateral governmental agreements. In the absence of the third sector like for oil, Russia has absolute power over these countries and their gas production, because they have absolutely no other choice. They would like to have other pipelines to export their production (for instance going South to India or Pakistan via Afghanistan), and some people seem to tell them that this would be possible, but IT IS NOT. I have written about this [elsewhere](#), and will do so again in the comments if requested, but you need just remember one thing: the mooted pipelines through Afghanistan would be *gas pipelines, not oil* and they have no chance to being built for a very long time because nobody will pay for them.
- the third and most interesting sector is the new investments being made by Western Oil Majors to develop recently discovered fields, mostly in the oil sector. This is where most of our attention will focus, because that's what most of the diplomacy of the past 15 years has been concerned about, with two main topics (i) how to make the investments to develop production, and (ii) how to get the hydrocarbons to the market once produced.

It is this new sector that has created the hype around the Caspian and its new reserves, because it is one of the few areas in the world where big fields have been discovered in recent years. The excitement in big oil companies is real, because the province is probably the size of the North Sea AND it is accessible to them. Being the size of the North Sea only (say 30 billion barrels of oil), it will not change the oil balance of the world either - it will account at most for 3-5% of world production at its peak, in 5 to 10 years.

I have some good news: Caspian oil is actually fairly simple to understand because there are only 5 hydrocarbon fields worth noting, and a couple of pipelines. So here they are:

Caspian Region Oil Pipelines (U)



(picture from the US Energy Information Agency's [Caspian area brief](#))

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

(table from EIA, same link as above)

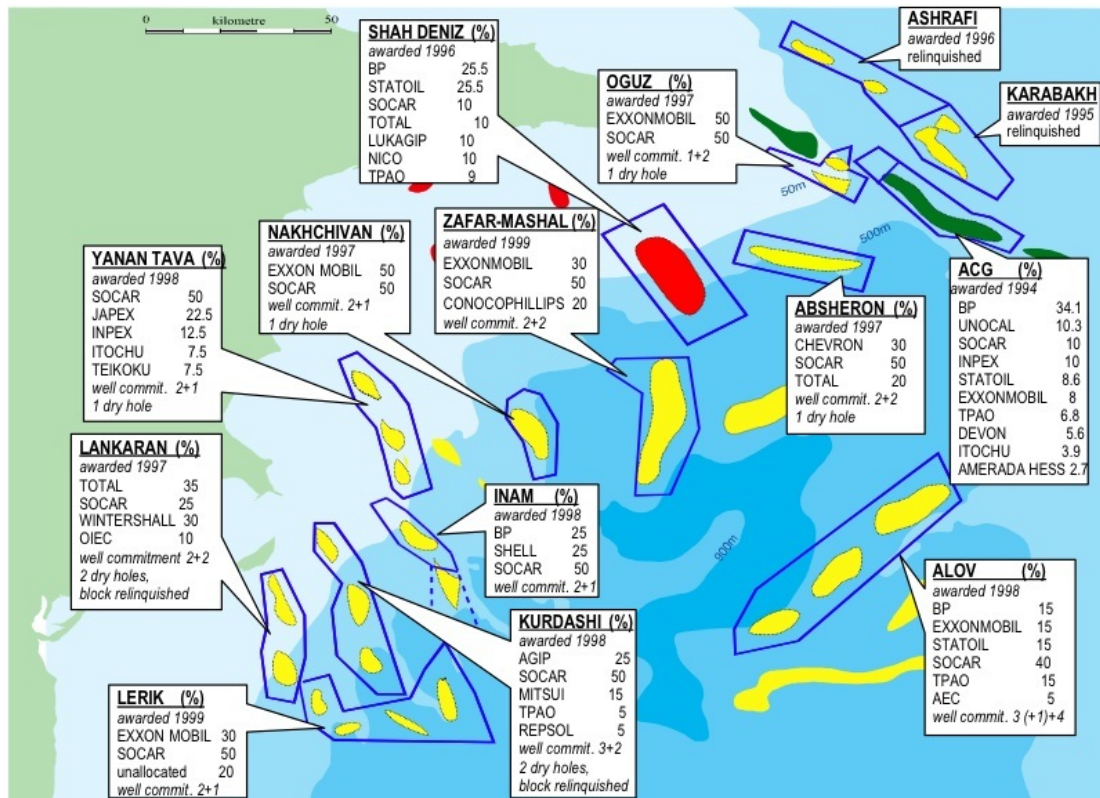
(1) ACG (formerly, AIOC)

That's the big oil field just offshore of Baku in the Azerbaijan sector of the Caspian Sea. It is currently the only field in Azerbaijan with proven oil reserves, despite massive exploration campaigns in the past 10 years. It is currently being developed by a [Western consortium](#) led by BP (which includes Unocal (now Chevron), ExxonMobil as well as a number of other companies), under a contract signed in 1994 (and which is public, you can download it [here](#), along with a ton of other documents on the project). It has an estimated 5 to 7 billion barrels of recoverable oil (slightly less than what is hoped to be found in ANWR, to give you an idea). It has been producing small volumes, about 100 to 150,000 b/d, since 1998, which are exported by a small pipeline going to Georgia, the Baku Supsa (the "WREP" in the map below). They also have the right to use the Baku-Novorossisk pipeline going through Russia (the "NREP" in the map below).



Big investments are underway to bring production to above 1,000,000 b/d in the next couple of years. When I say big investment, I mean big: more than 15 billion dollars will have been spent by 2010. Most of that oil will use a new pipeline, the [BTC](#) (see map above, and more detail below) which was completed last year and has recently entered into operations.

And THAT'S IT for Azeri oil. At least 20 PSAs were signed, each involving one or several exploration wells and **all** except Shah-Deniz, a gas field described below, (ACG had been discovered a number of years earlier) came out dry of with insignificant volumes of hydrocarbons and were abandoned. This map, from 2003, shows the whole sorry end to the Caspian oil boom of the 90s.



(2) Shah-Deniz

It's a big *mostly gas* field offshore Azerbaijan. Gas was not the best of news for the oil companies, as the markets are very, very far away. The consortium is also led by BP (with Total, Statoil of Norway, TPAO of Turkey and OIEC of Iran) and it has managed to go ahead with the development of the project by signing a contract for the gas with Turkey (although there are doubts about Turkey's need for that gas).

Caspian Region Gas Pipelines

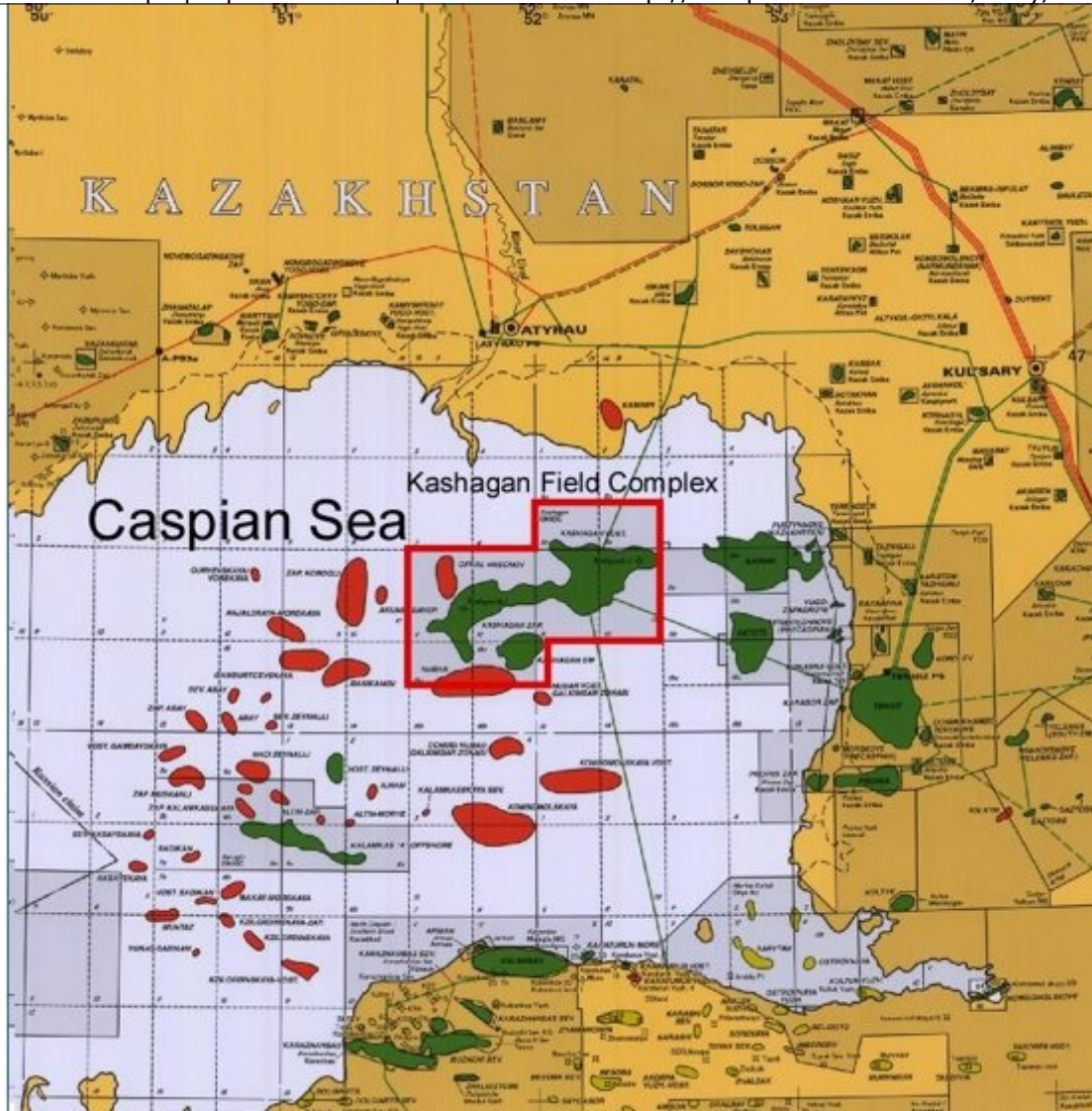


BP has agreed to build a gas pipeline in parallel to the BTC oil pipeline to bring the gas to Turkey, as shown above, and they have a contract to sell that gas in Turkey (I'll write more about the "war to bring gas to Turkey" in another story). They are now hoping to build new pipelines from Turkey to central Europe to be able to give more value to that gas. That project is still in its early phase (you can find more details by clicking on this link which refers to its codename: [Nabucco](#) (pdf, 280 kb), which includes the map below) but is backed by all the national governments involved and by Gaz de France, so it is likely to go ahead in the near future.



(3) Tengiz

A big onshore oil field in Kazakhstan - one of the biggest in the world, developed by a consortium led by Chevron (and including ExxonMobil and Lukoil and ENI of Italy), with about 9 billion barrels of recoverable reserves (another ANWR). Although Chevron came in in 1993, they have had a really hard time with that field, as they had no way to export the oil anywhere. They have used amazing ingenuity to sell their oil (including owning most of the railcars of the former Soviet Union during the 90s - about 9,000, to sell their crude by rail, or sending barges all the way to Finland by the canals of Russia) but this has seriously limited the production of the field. Now that the CPC pipeline has been built (see below), they are ramping up production, which is expected to reach 700,000 b/d in a few years. It is the big field on the Eastern shore of the Caspian Sea (inland) on the map below, from [Rigzone](#)



(4) Kashagan

The biggest oil field to be discovered in the world in the past 30 years, it is in the North of the Caspian Sea, in the Kazakh sector (as shown on the map above), and it is being developed by a consortium including all the big majors - ExxonMobil, Shell, Total, ConocoPhillips, ENI and Inpex, with ENI, the Italian group, as the operator (Exxon did not want Shell, Shell did not want Exxon, and ENI was smarter than Total to be voted in...). BP and BG were initially in but sold their shares in recent years. With 9-15 billion barrels of reserves (exploration is not totally complete), it is yet another ANWR fully in control of BigOil, but it is very, VERY, challenging technically (very high pressures, located in an areas which is at times seawater, ice, mud or any combination in between, and far away from any infrastructure of any kind in an area with a very tough climate) and it will need to find export routes for its production (a combination of CPC and BTC is likely to start with)



(See [here](#) for a larger version with full explanations)

Note that BG have sold out of Kashagan and have updated the linked map since I copied it)

(5) Karachaganak

A big, *mostly gas* field in North Kazakhstan near the border with Russia, it is being developed by ENI, BG, Chevron and Lukoil. As a gas field, it is heavily dependent on Russian gas monopoly Gazprom (the gas is currently being processed at the nearby Orenburg Gazprom plant), but the consortium is strong enough to negotiate decent terms and to build its own infrastructure. As the field contains both gas and condensates (i.e. good quality oil) which have to be produced together, the consortium has initially focused on selling the oil on the world markets while handing over the gas at a low price to Gazprom. The oil goes into the CPC pipeline. They are currently building a gas processing plant in order to at least be able to produce oil without depending on Gazprom.

Pipelines

So this brings us to the pipelines. I'll focus here exclusively on the **oil** pipelines. The gas side here requires a lot more detail and I'll have a go in a later story.

There are a number of existing ones, most of which go through Russia and are thus considered by the oil majors - with reason - as unreliable. They have thus made a lot of efforts to find new routes.

A simple solution would have been to ship oil to Northern Iran (where Iran's refineries are) and swap it for Iranian oil produced in the south of the country. This made good sense for Iran, which would not have needed to ship its own oil for the production in the South to its refineries in the North, but it is not possible under the current US sanctions regime (ILSA). This solution would be partial anyway as the capacity of the Iranian refineries is no more than 800,000 b/d and they would have needed significant investment to be able to use the Caspian crude qualities.

So with Russia and Iran out, this left only the Western (and at a later point Eastern to China) routes. An additional problem is that of the Bosphorus, which already sees a significant volume of oil tanker traffic, which the Turkish authorities were keen to not see increase. Bringing in an additional million barrel per day or two into the Black Sea (on the coast of Georgia for instance) would have created a real danger for Istanbul and this was thus strongly opposed.

Thus came to birth the **BTC**, which goes West from Azerbaijan, through Georgia, and then South through Turkey to the Mediterranean. It was built by a [consortium](#) led, again, by BP (which, interestingly, is different from either the ACG consortium and the Shah-Deniz consortium, something which had sometimes unexpected consequences - another story in waiting again).



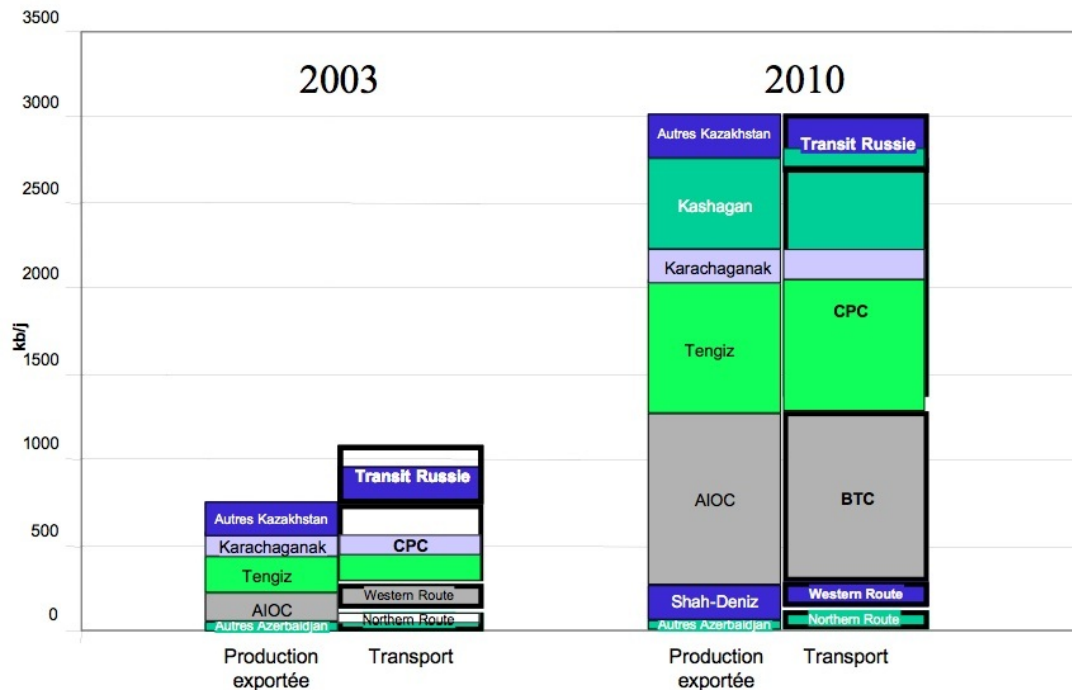
You can find a massive quantity of information on the project starting from [here](#), but the main thing to know is that it has a maximum capacity of 1,000,000 b/d, a good chunk of which will be filled by ACG oil to start with, and by all the liquids Shah-Deniz can produce. It has cost close to 4 billion dollars to build, half of which was financed by international banks with the participation of the World Bank and the EBRD.

You've probably heard nasty things about the project because it has been used as a target by a number of NGOs that absolutely want the World Bank to stop financing the energy sector, and they tried to show that such projects were tremendously damaging to the environment and to the local populations. They've put pressure on the World Bank, on the commercial banks and on the oil companies, thankfully to no avail (*this is not the topic here, but I do intend to write more about this and explain that "thankfully". In the meantime, you can go see the environmental reports on the BTC site linked to above, and otherwise google "Extractive Industries Review" or "Equator Principles"*).

The other big pipeline in the region is the **CPC** (Caspian Pipeline Consortium) which, as you can see on the maps above, does go through Russia and does bring oil into the Black Sea. It nevertheless has the particularity of being the only privately owned pipeline on the territory of Russia (something that they really don't like and are trying to undermine at every turn, especially these days as an extension is being discussed). It was built (and paid for) by a consortium led by ChevronTexaco, and currently has a capacity of 450,000 b/d, due to be increased to 1,300,000 b/d. It is used for oil from Tengiz and from Karachaganak.

So, what can be learnt from that?

- Western Oil Majors fully control the operations of the 5 major oil fields, so the region clearly falls in the sphere of influence of the "West". Chinese companies that tried to buy their way into Kashagan in 2005 were vetoed out by the other shareholders, despite massive - and very public - pressure from the Chinese government on Shell and others not to exercise their preemption rights. Azerbaijan and Kazakhstan have made an explicit decision to welcome foreign investment and will be richly rewarded for it. (Whether that money is wisely used is another issue, of course). The revenues are split using a standard instrument, the PSA (production sharing agreement), which allocates the oil produced first to repay the initial investments ("cost oil") and then as profit ("profit oil"). Host countries get a growing share of the oil as the fields produce and as prices go up. The marginal split usually gives more than 90% to the host country.
- Oil transit is also pretty much solved, with the CPC and now the BTC both in service. These two pipelines bring significant new volumes of (light, good quality) oil into the Mediterranean oil markets and are enough to transport the expected oil volumes from the existing fields. Oil majors have been smart enough to lead in parallel the investments in the upstream (production) and midstream (transport) and have thus been able to ramp up the production of their fields as fast as was possible under the circumstances (it still took time - more than 10 years for both ACG and Tengiz, with the same expected for Kashagan).



Graph by JaP. "kb/j" = thousand barrels per day. "Autres" = other

- Gas is still an almost completely blank field for the Western oil majors. They have not been really happy to find gas when they did, as it is a lot harder to manage (infrastructure is a lot more important and more expensive) and they have to face a much stronger adversary in Gazprom, the Russian monopoly, which controls both the existing infrastructure and the downstream markets in Europe. (The outcome of the Nabucco project will be interesting thing to see, as it would create a new (smallish) competitor for Russian gas in Europe).
- the Caspian oil will go entirely West for the next 10 years, but it is likely that the next route will go East to China. China is making a lot of efforts, especially in Kazakhstan, to procure some oil, but with uneven results. They have tried to buy out BG's stake in Kashagan, but the other shareholders exercised their preemption rights despite strong Chinese pressure (they threatened to kick Shell out of the Chinese refining business). Nevertheless, there is a

Again:

- don't be impressed by big numbers. We're talking close to 50 billion dollars of investments underway. Which needed to be paid upfront before any significant volumes could be sold.
- please, please be wary of what you read on this topic. Too many people have other interests that you may not be familiar with and their public announcements should be taken with a grain of salt; don't believe that everything which is announced will happen; don't even believe that everything *signed* will happen. It's not because Halliburton is involved that it is necessarily a big plan to scam us off (KBR, the Halliburton subsidiary, is one of the biggest contractors for big oil projects, and one of a few to be in the competition. Please remember that they are paid by Exxon or ChevronTexaco and thus will not scam them like they seem to be able to do with the US government)
- finally: don't forget that people are going to these God-forsaken places to get the oil that **YOU** will be burning today, tomorrow and again. Before blaming them for providing a valuable service, remember that they are providing that service ultimately to **YOU**.

There is a lot more to write on the topic; I will write more in the future and would be pleased to provide more info in the comments at your request.



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