



AKTAU PORT DEVELOPMENT

Masterplanning and Feasibility Study
for the Port of Aktau, Kazakhstan

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TRAFFIC FORECAST

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1 EXISTING PORT TRAFFIC

1.1 Cargo Volumes

The Port of Aktau handled 11.5 million tonnes of cargo in 2006 (see Table 1.1).

The range of cargoes handled, however, is limited, with oil accounting for 87% of the total and metals, mainly steel exports, for another 9%. Most of the remaining cargo is carried in the ferries connecting with Azerbaijan and Iran.

Table 1.1: Aktau Port Traffic 2006

	('000 tonnes)	%
Oil	9,960	87%
Metals	1,029	9%
Grains	118	1%
Others	398	3%
Total	11,505	100%

The limited range of cargo handled at Aktau is not a post-Soviet Union phenomenon. Even in the 1980s, Aktau handled only about 7 million tonnes of oil and a few hundred thousand tonnes of low value materials, such as salt and coal. The city of Aktau was constructed only in the 1960s, after oil was discovered in the region, and its main activity in later years centred around the nuclear power station.

Aktau's traffic has grown appreciably by 12.6% p.a. in the last five years (see Table 1.2). This growth, however, was all in oil and 'other' cargoes, with steel exports remaining flat over the five year period. The grain traffic, for which silos have been built in the port, has been volatile and not yet taken off.

Table 1.2: Growth of Aktau Port Traffic 1996 - 2006 ('000 tonnes)

	1996	1997	1998	1999	2000
Oil	101	868	1815	2067	3386
Steel etc	222	226	140	235	702
Grain	16	11	28	8	15
Others	36	46	27	38	43
Total	376	1150	2011	2348	4144

	2001	2002	2003	2004	2005	2006	Growth (% p.a.) 2001-2006
Oil	5035	5553	6971	8289	8913	9960	14.6%
Steel etc	1060	574	836	1011	1024	1029	-0.6%
Grain	84	209	5	13	33	118	7.0%
Others	181	615	268	378	399	398	17.1%
Total	6360	6951	8080	9691	10369	11505	12.6%

Source: AISCP



1.2 Import and Exports

Almost all of Aktau's cargo consists of exports. Although Kazakhstan's imports were over \$25 billion in 2006, they entered the country mainly by rail, or, if they were of higher value, by road. This is necessarily so, as their origins are mainly in countries with land borders with Kazakhstan – e.g. Russia, Iran and China. In the third quarter of 2006, 42% of imports came from Russia or the Ukraine, and 20% from China or Korea, and almost all of this is assumed to enter Kazakhstan by rail. The traffic from Western Europe, Iran and Turkey moves predominantly by road.

1.3 Origins and Destinations

Almost all of Aktau's dry cargo goes to **Iran** at present, along with about 40% of the oil. The other main destinations for the oil are Baku in Azerbaijan (25%) and Makhachkala (35%) in Russia.

The only other destinations of Aktau's dry cargoes are Baku, for the ferry traffic, and Greece and Turkey for small volumes of steel scrap.

1.4 Roro and Containers

Roro

Aktau is served by a rail ferry from Baku run by the Caspian Shipping Company (Caspar). It calls on a regular schedule. Its cargoes consist mainly of oil shipments in rail wagons from Aktau to Baku and mixed general cargoes on the return voyage back to Aktau. The oil shipments on the ferry have fluctuated from year to year and fell sharply in 2006. The general cargo from Baku to Aktau, however, has been increasing rapidly (see Table 1.3).

The ferries were designed in Soviet times to carry passengers, but passenger traffic is now minimal.

Table 1.3: CASPAR Rail Ferry Traffic 2001-2006 ('000 tonnes)

	2002	2003	2004	2005	2006	Growth p.a 2002-06
Aktau-Baku	509	198	230	525	160	-25.1%
Baku-Aktau	83	46	112	103	148	15.6%
Total	592	244	342	628	308	-15.1%

A second ferry service to Makhachkala was opened in 2007, but was discontinued almost immediately

Containers

Aktau handled only 1000 containers, which is an extraordinarily low number by international standards, in 2006. They almost all come from Iran, on the non-scheduled general cargo vessels run by Khazar Shipping, a subsidiary of the Iranian national shipping line (IRISL). Their main southbound cargo is steel. Northbound the vessels bring building products, oil industry equipment and consumer goods, partly in containers. The origins of these goods are in Dubai or the Iranian port of Bandar Abbas, from where they are trucked across Iran to



the Caspian ports of Amirabad, Anzali and Nourshar, and ferried up to Aktau. Almost all the southbound containers are empty.

The gap between inbound and outbound traffic shown in Table 1.4 implies that the majority on the containers are not being returned – i.e. the trade is based on the use of one-way boxes. The container traffic, however, has doubled in the last two years.

Table 1.4: Aktau Container Traffic 2004-2006 (Number of Containers)

	In	Out	Total
2004	326	147	473
2005	407	268	675
2006	716	290	1006
Growth p.a. 2004-2006	48.2%	40.5%	45.8%

Source: AISCP

In brief, although container and Roro traffic are very low by international standards they are increasing rapidly, by 48% p.a. and 16% p.a. respectively. Their future growth will be followed up in Chapter 3.

1.5 'Corridor' Traffic

Four international transport corridors pass over the territory of Kazakhstan. They are

1. The Traceca Corridor, from Europe to Central Asia and China via the Black Sea, Caucasus and the Caspian;
2. The North-South Corridor from Northern Europe to the Persian Gulf/India, via Russia and Iran;
3. The Southern Corridor, from South East Europe to China and South East Asia, via Turkey, Iran and the Central Asian republics;
4. The Northern Corridor from Western Europe to China, Korea and Japan, via Russia and Kazakhstan.

Of these only the *Traceca* corridor would be likely to use the port of Aktau (see Chapter 3.11). But so far Aktau has handled very little Traceca Cargo apart from oil. Almost all the potential Traceca route cargoes - grains, fertilisers, sulphur coal, etc – are using direct rail routes to Black Sea ports, bypassing the Caspian Sea. It will require several reforms – including much more flexible pricing by the Kazakh, Azeri and Georgian railways, streamlining of border crossing procedures and removal of the obligation to add VAT to Aktau's tariffs - to be successfully introduced if these cargoes are to be attracted to Aktau (see Chapter 3.11 for discussion).

The North South Corridor from India (i.e. Mumbai) to north-west Russia and Europe would be unlikely to use the port of Aktau. They would be much more likely to use ports at the northern end of the Caspian, such as Makhachkala or Astrakhan/Olya.



1.6 Special Economic Zone Traffic

The Aktau Special Economic Zone opened in 2003 has not yet generated any significant traffic for the port. It is, however, starting to attract investment and its future contribution to Aktau's traffic will be discussed in Chapter 3.

1.7 Shipping Traffic

Ship sizes at Aktau are small, as is the case in all Caspian Sea ports. Even when volumes were high in Soviet times, the need to keep the option of using the Volga Don Canal open restricted vessel sizes to about 4000 dwt.

More recently, however, larger ships have been built, mainly for oil, to trade *within* the Caspian, and the oil traffic at Aktau is now handled by tankers in the 5000 - 12000 dwt range. The port records show 1,467 tankers calling in 2006 with average load being 6,787 tonnes.

The general cargo at Aktau in 2006 was handled in 305 small vessels with an average load of 3,996 tonnes.

The services to Iran are intra-Caspian services and therefore not limited to Volga-Don dimensions.

Typical ships calling at Aktau are shown in the Table 1.5.

Table 1.5: Typical Ships Calling at Aktau

Vessel name	Vessel type	Length (m)	Beam (m)	Cargo draft (m)	Cargo capacity, (tonnes)	Deadweight
Alexander	Tanker	128	16.6	5.5	5700	6400
General Aslanov	Tanker	136	17.5	8.0	11500	12450
Apsheron	Tanker	137	17.4	5.3	7000	7410
Captain Pshiniscin	Tanker	134	16.5	4.5	5300	5825
Geidar Aliev	Tanker	143	17.3	7.14	12500	13470
Iran Daleer	Dry cargo	140	16.0	4.7	5700	5992
Iran Gadeer	Dry cargo	136	13.5	4.7	3809	4000
Omskyi 113	Dry cargo	108	13.0	4.7	3230	3600
Dobrogast	Dry cargo	106	16.5	3.7	3665	3983
Neferudovoz	Dry cargo	114	13.0	3.7	3070	3280
Monoxylion	Dry cargo	106	16.7	3.7	3709	4100
Compositor Rahmaninov	Ro-Ro Cargo ferry	117	16.2	4.7	3463	4673
Azerbaijan	Ferry	154	17.0	4.2	3435	11500

Source: Kazhydro



1.8 Competing Ports

There are only two ports that may be considered as potential competitors to Aktau in the Caspian basin: they are **Turkmenbashi** and **Astrakhan**.

The Caspian also has several other ports which are sometimes identified incorrectly as competitors to Aktau. In fact they are the trading partners of Aktau, and their facilities and traffic are discussed in the next section

Turkmenbashi

The port of Turkmenbashi has 6 oil berths, 4 dry cargo berths, and a rail ferry berth which handles a service to Baku. The port is Aktau's only competitor for Traceca cargoes. It currently handles raw materials for an aluminium plant in Tajikistan and some oil products from Central Asian countries. It also handles declining volumes of cotton.

The dry cargo, ferry and oil loading terminals have been rehabilitated with loans from the European Bank for Reconstruction and Development.

Astrakhan

Astrakhan is the largest port in the Caspian. The complex includes terminals at Olya, Astrakhan and Buzan. It has a total of 21 berths.

In 2004 the port handled 5.7 million tonnes, mainly dry cargo, including metals and metal goods (their share in 2004 was 33 %), sulphur (24 %), timber and sawn wood (6 %), paper (2 %) and containerized cargo (2 %).

The port also handles transit traffic, mainly steel pipes and metal products, from the Black Sea (including Turkey and the Ukraine) to Azerbaijan and Iran.

The port benefits from competition between a large number of cargo handling companies; but suffers from being closed by ice during the winter.

The Russian government plans to set up ferry services at Astrakhan.

1.9 Aktau's Trading Partner Ports: Destination and Origin Ports

The main destination / origin ports for the ships calling at Aktau are:

Baku

The port of Baku, located in Azerbaijan, is the main Caspian transit port for crude oil for export to the west. The port has 8 berths and a maximum water depth of 7 metres.

The port's cargo traffic fell sharply from 30 million tonnes p.a. before 1990 to 3 million tons in 1998/1999; but it is now reviving again. Oil and oil products account for the majority of the traffic. In 2006 a quarter of Aktau's oil went to Baku.

A large part of the oil goes to either:

- the port's oil terminal at Dubendy, which has two berths for tankers up to 8,000 DWT. Its capacity is about 3 million tonnes p.a. The oil landed there is moved either to the local oil refinery or to the port of Batumi in Georgia by rail; or
- a private Azpetrol terminal with a capacity of about 4 million tonnes p.a..



Baku's role will expand following the recent opening of the 60 million tonnes pa. Baku-Tbilisi-Ceyhan pipeline.

There are also ferry services from Baku to Aktau and Turkmenbashi, operated by the Caspian Shipping Company. Traceca cargoes would probably have to use these ferry services, and this raises problems, as the services are generally regarded as expensive and inefficient.

Neka (Iran)

The port of Neka has one berth with a draft of 4.9 metres for tankers up to 5,000 tonnes.

The port took 40% of Aktau's oil shipments in 2006 – mainly under swap arrangements.

It is reported that the Iranian government is considering constructing an SBM to accept 60,000 DWT tankers from Kuryk.

Makhachkala

The port of Makhachkala in Russia is free from ice all the year round. It has five berths, with a capacity of 5 million tonnes, for ships up to 12,000 DWT. Its water depth is 9 metres.

It received 35% of Aktau's oil shipments in 2006.

Makhachkala has a petroleum storage depot which is connected to the pipeline from Baku to Novorossiysk and has a storage capacity of 500 thousand cubic metres, which is more than twice that at Baku.

There are plans to dredge the port and reconstruct 5 piers, increasing capacity up to 11 million tonnes.

Most of the traffic is oil, but general cargo has been increasing.

A rail ferry service between Makhachkala and Aktau was introduced recently, but lasted only a short time.

Anzali (Iran)

The port of Anzali in Iran is the origin of most of Aktau's container traffic. About 1000 TEU were carried on the Khazar Shipping services from Iranian ports to Aktau in 2006.

The port has eight general cargo berths, an oil berth and a passenger berth. Its capacity is around 5 million tons of cargo a year.

Its water depth, however, is only 5.5 metres, limiting vessel sizes to 6,000 DWT.

Currently, the port has no railway and the access road is in need of reconstruction.

Noushahr (Iran)

Noushahr in Iran has three berths with a maximum draft of 5.5 m.

The annual throughput of the port is 1.5 million tons.

Amirabad (Iran)

The port of Amirabad (Khazar) has a capacity of 5 million tonnes but only a shallow draft.

There is a plan to expand the capacity of the port to 8 million tonnes a year. The plans include a container terminal with two shore gantry cranes.

A special economic zone specializing in storage and processing has been set up and an oil-refinery and a grain silo (part owned by Kazakh investors) is planned.



2 THE ECONOMY

2.1 GDP, Import and Export Growth

Kazakhstan's economy went into a steep decline in the early 1990s following the collapse of the Soviet Union, but revived with the discovery and production of large volumes of oil. In the last five years Kazakhstan's GDP growth has averaged just under 10%, which is faster than China's and India's. The high growth, however, reflects not only increasing oil production, which averaged only 8% p.a. in the last five years, but also the increase in world oil prices.

Imports have also increased rapidly, by 32% p.a. in the period 2002-2006. Aktau has not benefited from this growth, as the port handles few imports.

Table 2.1: Kazakhstan's GDP, Imports and Exports 2002-2006 (% Growth p.a.)

	GDP	Exports	Imports
2002	9.8		
2003	9.3	32	19
2004	9.4	56	45
2005	9.7	37	30
2006	10.6	37	34
Average	9.76	40.5	32

Source: EIU

Kazakhstan's exports are dominated by oil, and to a lesser extent metals. As shown in Table 2.2 they accounted for 88% of national exports in 2006 and for imports machinery represented 45% as shown in Table 2.3.

Table 2.2: Kazakhstan's Exports, by Main Product 2006

	% of Value
Petroleum and Mineral products	72
Metals	16
Chemicals	4
Food	3
Others	5
Total	100

Source: EIU

Table 2.3: Kazakhstan's Imports, by Main Product 2006

	% of Value
Machinery and Equipment	45
Mineral products	14
Metals	13
Chemicals	11
Food	7
Others	10

Source: EIU



The main destinations of exports and origins of imports are shown in Tables 2.4 and 2.5.

Table 2.4 Origins of Kazakhstan's Imports (% of Value)

	% of Value
Russia and Ukraine	42
China and Korea	20
EU	26
Iran	4
Turkey	3
Others	5
Total	100

Source: IMF, third quarter of 2006

Table 2.5: Destinations of Kazakhstan's Exports (% of Value)

	% of Value
Italy	13
Germany	12
Russia	11
China	10
Romania	5
Iran	4
Turkey	3
Others	41
Total	100

Source: IMF, third quarter of 2006

2.2 Location of Kazakhstan's Exports

Oil

The existing oilfields are located mainly in the west of Kazakhstan, relatively close to Aktau, and the main **future** sources of oil – Kashagan, Tengiz, Karachaganak and Kurmagazy – are, fortunately for Aktau, also all in the west, mainly at the northern end of the Caspian Sea.

Minerals

Kazakhstan is very well-endowed with minerals, but they are *located mainly in the east of the country*, far from Aktau.. Kazakhstan has:

- 18% of the world's zinc reserves and 6% of the world's copper reserves. The production plants, however, are located at Zhezkazgan, in the centre of Kazakhstan, and Balkash, in the east of Kazakhstan;
- 15% of the world's lead reserves, but the mines are located close to Ust Kamenogorsk in the north east;
- half of the FSU's tungsten reserves that are located in northern Kazakhstan;
- one fifth of the FSU's coal reserves with most of the production being in the east. There are long term prospects for coal mining in the Mangystau Peninsula, but the 250 million tonne reserves located there have not yet been exploited.



Kazakhstan has the eighth largest iron ore reserves in world, but they are also in the east of the country, as are the steel plants that use these raw materials. Despite this, the steel industry exports about a quarter of its products through Aktau.

Other minerals that possibly are better located for Aktau are:

- chrome: Kazakhstan's has 90% of the FSU's chrome reserves and they are mined in the northwest near Aktobe; and
- asbestos: which is mined in the north east, but presently being exported via Novorossiysk.



3 TRAFFIC FORECASTS

3.1 Petroleum

Aktaus' traffic is dominated by oil, and much of Aktau's potential traffic growth is likely to be in oil. Kazakhstan produced 67 million tonnes of oil in 2006, of which 57 million was exported; and the Government's current plans envisage rapid growth of exports to about 80 million tonnes¹ in 2010 and 123 million tonnes by 2015².

The majority of Kazakhstan's oil is well-located for Aktau Port. A large part of existing oil production is in the west of Kazakhstan and by 2015 the vast majority will be produced around the northern shores of the Caspian Sea. The main oilfields in 2015 will be:

- The Kashagan field, which is being developed by ENI/AGIP-KCO, who hold 18.52% of the shares. It has six other shareholders - ExxonMobil (18.52%), Shell (18.52%), Total (18.52%), ConocoPhillips (9.26%), Kazmunaigaz (8.33%) and Inpex 8.33%. It is the largest oilfield that has been discovered worldwide in the last 30 years, and was expected to cost almost \$30 billion to develop. It was originally scheduled to open around 2008, but there has been a series of delays, and it is now unlikely to come on stream before 2012 at the earliest. Even this date may prove to be optimistic, as a dispute between the government and AGIP over environmental problems, continuing delays and soaring costs had halted operations at the time of writing (September 2007);
- Tengiz, on the north east shore of the Caspian, which is the largest field currently in operation. It is owned by ChevronTexaco (50%), ExxonMobil (25%), Kazmunaigaz (20%) and LukArco (5%);
- Karachaganak is an onshore field north of the Caspian Sea on the Russian border near Russia's Orenburg oilfield and refinery. It is owned by AGIP of Italy (32%), BG UK (32%), Chevron (20%) and Lukoil (15%);
- Kurmagazy, on the maritime border between Kazakhstan and Russia, to the west of Kashagan, is the least developed of Kazakhstan' new oilfields. It is being developed by Kazmunaigaz (50%) and the Russian oil company, Rosneft (50%); and
- Others, including the Kumkol, Uzen, Aktobe and Emba oilfields.

Several forecasts of production by oilfield have been made, but the most recent information provided by Kazmunaigaz is shown in Table 3.1:

**Table 3.1 Forecast Breakdown of Kazakhstan's Oil Production (a) by Field up to 2020
(million tonnes)**

	2010	2015	2020
Kashagan	0	30	56
Tengizchevroil	25	41	50
Others (b)	69	72	75
Total	94	143	181

(a) The production figures include oil used in local refineries as well as exports.

(b) Including Karachaganak, Kurmangazy, Kumkol, Uzen, Aktobe, Emba, etc

¹ The forecast of total production including crude oil used in domestic refineries is 94 million tonnes in 2010, 143 million in 2015 and 181 million tonnes in 2020.

² The government's target has been reduced from 150-175 million tonnes, partly because of delays in the development of Kashagan.



Source: Kazmunaigaz and others, with some adjustments and assumptions related to the continuing delays in production, especially at Kashagan

At present the oil is exported via five main routes. They are as follows:

- The CPC pipeline, which opened in 1999, and now handles about half of Kazakhstan's exports. It is nearly 1,600 km long and runs from the Tengiz oilfield to the port of Novorossiysk. It is owned by ChevronTexaco (15%), LukArco (Russia/US, 12.5%), Rosneft-Shell (Russia-U.K./Netherlands, 7.5%), ExxonMobil (US, 7.5%), Oman (7%), Agip (Italy, 2%); BG (U.K., 2%), Kazakh Pipelines (1.75%), Oryx (U.S, 1.75%), and various Russian (24%) and Kazakh interests (19%). Its Phase I capacity is supposed to be 565,000 bbl/d (or 28 million tonnes p.a) but it is handling slightly more in practice. The original plan of the western shareholders was to expand capacity to 1.34 million barrels a day (67 million tonnes p.a.) by 2015, at a cost of \$1.6 billion. The expansion would involve the construction of 15 new pumping stations, 12 additional tanks and a third loading buoy at CPC's Marine terminal at Novorossiysk. The Phase II expansion, however, requires Russia's approval, and Russia is currently reluctant to grant its consent (the pipeline's ownership is only about one third Russian). Russia has raised seven issues with the CPC Consortium, and the CPC shareholders have already agreed to lower the interest rate on the producing companies' loans from 12% to 10.5%, to accept the "deliver or pay" principle, to establish the Board of Directors and grant equal status to all lenders, to increase pipeline transportation tariff from \$28.33 per ton to \$30.83. There is now only one point of difference, which is the refusal of the shareholders to accept Russia's proposal to introduce a tariff revision mechanism. The concern is that this would introduce too much uncertainty into producing companies' business plans. As a result the negotiating process has stalled.
- The Atyrau-Samara pipeline carries the second largest volumes into Russia. Prior to the CPC opening this was the main outlet for Kazakh oil exports;
- Modest volumes of oil are exported into Russia from the Karachaganak oilfield in the north east of Kazakhstan, close to the Russian border;
- China is now taking increasing volumes of oil. A pipeline is being constructed in stages and the capacity is scheduled to reach 20 million tonnes by 2011. The oil volumes likely to be diverted include the Kumkol production of Petrokazakhstan, which has been taken over by a Chinese oil company and Kazmunaigaz; and
- Most of the rest of the oil is currently exported via the port of Aktau. The destinations of the Aktau exports in 2006 were Iran (40%), Makhachkala, Russia (35%) and Baku, Azerbaijan (25%). Until recently, the oil unloaded at Baku had been transported onwards to the world's shipping lanes on the Black Sea and the Mediterranean via three routes – the Baku-Supsa pipeline (5 million tonnes p.a), the Baku-Novorossiysk pipeline (5 million tonnes p.a.) and by rail to the port of Batumi in Georgia. However, **a large part of this oil will be diverted to the 50 million tonnes p.a. Baku-Tbilisi-Ceyhan pipeline** (length, just over 1000 miles) which opened in 2005. This pipeline is the largest in the region. Its capacity is greater than is needed for Azeri oil exports and the Kazakh Government has recently signed an agreement for up to 30 million tonnes p.a. of Kazakh oil to be exported via this pipeline.

The capacities, costs and lengths of the pipelines are summarised in Table 3.2. Their locations are shown in Maps 1 and 2.



Map 1 Map of Oil Pipelines and Fields adjacent to Caspian Sea





Map 2 Map of Oil Pipelines and Fields adjacent to Caspian Sea



Name	Route	Capacity (tonne p.a.)	Length	Cost
EXISTING PIPELINES				
Caspian Pipeline Consortium (CPC)	Tengiz oil field (Kazakhstan) to Novorossiisk	30 Planned: 50	990 miles	\$2.5 billion for Phase 1 \$4.2 billion total when completed
Baku-Ceyhan ("Main Export Pipeline")	Baku to Ceyhan (Turkey)	50	Approx 1,038 miles	\$2.9 billion
Atyrau-Samara Pipeline	Atyrau (Kazakhstan) to Samara (Russia), linking to Russian pipeline system	15	432 miles	
Baku-Supsa Pipeline (AIOC "Early Oil" Western Route)	Baku to Supsa (Georgia)	Upgraded to 7	515 miles	\$600 million
Baku-Novorossiisk Pipeline (Northern Route)	Baku via Chechnya (Russia) to Novorossiisk (Russia)	5 possible upgrade to 15	868 miles; 90 miles are in Chechnya	\$600 million to upgrade to 300,000 bbl/d
Baku-Novorossiisk (Chechnya bypass, with link to Makhachkala)	Baku via Dagestan to Tikhoretsk (Russia) and Novorossiisk	6	204 miles	\$140 million



PLANNED PIPELINES				
Central Asia Oil Pipeline	Kazakhstan via Turkmenistan and Afghanistan to Gwadar (Pakistan)	50	1,040 miles	\$2.5 billion
Iran-Azerbaijan Pipeline	Baku to Tabriz (Iran)	10	N/A	\$500 million
Iran Oil Swap Pipeline	Neka (Iran) to Tehran (Iran)	9	208 miles	\$400 million to \$500 million
Kazakhstan-China Pipeline	Aktyubinsk (Kazakhstan) to Xinjiang (China)	20	1,800 miles	\$3 billion to \$3.5 billion
Kazakhstan-Turkmenistan-Iran Pipeline	Kazakhstan via Turkmenistan to Kharg Island (Iran)	50	930 miles	\$1.2 billion
Khashuri-Batumi Pipeline	Dubendi (Azerbaijan) via Khashuri (Georgia) to Batumi	3.5	Rail system from Dubendi to Khashuri, then 105 mile pipeline from Khashuri to Batumi	\$70 million for pipeline renovation
Trans-Caspian (Kazakhstan Twin Pipelines)	Aktau (western Kazakhstan, on Caspian coast) to Baku; could extend to Ceyhan	N/A	370 miles to Baku	\$2 billion to \$4 billion (if to Ceyhan)

Source:USEIA

In 2006 the volumes of Kazakhstan crude oil exports using each route were estimated as follows, according to KOGIG:

Table 3.3 Estimated volumes of crude oil by pipelines

	Million tonnes
CPC pipeline, Tengiz-Novorossiysk	24.5
Atyrau-Samara pipeline	16.5
Atyrau-Orenburg refinery (Russia)	2.5
Atasu-Alashankou (China)	2.2
Aktau port to Baku, Neka and Makhachkala	9.7
Others	2
TOTAL	57

(a) Almost 10 million tonnes are shipped from Aktau, but only 2.4 million tonnes went to Baku in 2006, with 7.4 million tonnes going to Iran and Makhachkala.

AISCP Forecasts of Oil Traffic at Aktau

The AISCP's current forecast of oil traffic at Aktau, which was based mainly on information received from the oil companies, is shown in Table 3.4.



Table 3.4: AISCP Forecast of Oil Traffic via Aktau ('000 tonnes)

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Name of Companies									
Agip					5,000	7,000	7,000	7,000	7,000
Tengis Chevron	1,000	2,000	2,000	2,000	4,900	4,900	5,100	5,300	5,900
Buzachi Operating LTD	1,500	2,400	2,600	3,100	3,100	3,000	3,000	3,000	3,000
Karagambasmunai	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300
Mangistau Munaigas	1,200	1,200	1,300	1,300	1,300	1,300	1,200	1,200	1,200
JV Kazgermuny	2,000	2,000	2,000	1,700	1,500	1,500	1,300	1,100	900
Maersk Oil Kazakhstan	400	500	600	700	900	900	1,000	1,000	600
CNPC Aktobe Munygas	1,500	600	600	600					
Petro Kazakhstan	500								
TOTAL	9,400	1,0000	10,400	10,700	18000	19,900	19,900	19,900	19900

Source: AISCP

Much of this traffic is from local oilfields, including Mangistau Munaigas, Karagambasmunai and Buzachi, that have been using the port for several years. In 2006 40% of Aktau's exports came from the Kumkol field to the east near the Aral Sea, and 25% from the local Buzachi field. The traffic from these fields is considered to be relatively captive, except that some will go to China in the future.

The new traffic from 2010 onwards, however, will be mainly from AGIP/Kashagan and Tengizchevroil in the north Caspian, and the routing of this oil must be regarded as uncertain for reasons discussed in the following paragraphs.

Future Routeing of Exports

The future routings of Kazakhstan's oil exports are difficult to predict. There is a large amount of commentary on the future capacities of the main routes out of west Kazakhstan, but there are two main unknowns:

- First, the future capacity of the CPC pipeline. As described previously, the non-Russian shareholders want to expand its capacity from 30 million tonnes p.a. to 67 million tonnes, but this proposal has been blocked by the Russian Government (the pipeline passes mainly through Russian territory). The Russian authorities have been creating tension by threatening to withdraw CPC's operating licence, by demanding high back taxes from the CPC and by insisting that the fees should be increased. Nevertheless, it was reported in the press in May 2007 that Presidents Putin and Nazarbayev had agreed to an expansion. The reports, however, were inconsistent. Some suggested that the agreement was for an expansion to 40 million tonnes, others suggested that it was to over 60 million tonnes and others stated that there was no agreement. Despite their opposition, the expansion of the pipeline would clearly have some advantages for Russia: it would send more oil via Russian territory in a pipeline with a significant Russian share; it would increase Russian revenues from the pipeline; and it would give Russia more potential ability to "turn off" the oil. It would also divert Kazakh oil from the independent BTC and Batumi rail route. It might be considered surprising that these advantages appear to be outweighed by the facts that (i) the Russians consider that the CPC tariffs are too low, (ii) interest rates on the loans for construction are too high, (iii)



the pipeline assists one of their competitors' (i.e. Kazakhstan's) oil exports and (iv) that the pipeline is making a large loss. It might be speculated that Russia's eventual aim is to have the pipeline closed down on the grounds that it is accumulating losses, and then renegotiate the ownership to give Russian interests a much larger share. The assumptions made for forecasting purposes, however, are that the CPC will have a capacity of 40 million tonnes by 2010 and 67 million tonnes p.a by 2015; and

- Secondly, plans have been announced for a new port with single buoy moorings (SBMs) for oil exports at Kuryk, 70 km south of Aktau (loading at the Kashagan oilfield is reportedly not possible in winter due to ice). It will require a 700 km pipeline from Eskene, close to the Kashagan oilfield, to Kuryk, and SBMs at the receiving ports. The initial reports suggested that they will use 60,000 dwt tankers but more recent reports suggest that the KCTS group, which is developing the plans for the ports (the group includes Agip, Chevron, ExxonMobil, Lukarco, KMG and Total), are now reconsidering the ship size, and could even use 12,000 dwt tankers, the same size as those using Aktau. The decision will be made on the basis of calculations trading off economies of size with larger tankers against the cost of constructing the SBMs in deeper water. The operators will be Kazmunaigaz, Kazmortransflot and AGIP.

The initial capacity of the pipeline from Eskene to Kuryk will be about 23 million tonnes p.a. in the early years, and it will eventually be expanded to about 56 million tonnes, according to the most authoritative source contacted, i.e. Kazmunaigaz. (It is noted that the 56 million tonnes capacity is the same as Kazmunaigaz's forecast of their own level of production in the period 2015-2020)

The costs are likely to be very high. The pipeline is expected to cost about \$1.5 billion, and the cost of the whole system is estimated at \$4.3 billion (see Table 3.5), which is well above the costs of the CPC pipeline (\$2.6 billion) and BTC pipeline (between \$3 billion and \$3.6 billion, according to different reports).

Table 3.5
Costs of the Proposed Kuryk-Based Transport Chain (\$ billion)

	Phase I	Phase I + III	Total
Capacity Million t.p.a	23	35-56	
Pipeline, Eskene to Kuryk	1.5		1.5
Terminal at Kuryk	0.6	0.4	1
Terminals at destination ports	0.7	0.5	1.2
Tankers	0.3	0.3	0.6
Total	3.1	1.2	4.3

Source: Kazmunaigaz

The outcomes of these plans³ for CPC and Kuryk will determine how much oil is potentially available for Aktau.

³ There are also plans for three additional pipelines. They are:

- A 50 million tonnes p.a. pipeline from Kazakhstan to Iran via Turkmenistan. This would displace Aktau's shipments to Iran, which accounted for 40% of the total in 2006; but it may be ruled out by US laws against investment in Iran
- A pipeline from the Kumkol field to the port of Turkmenbashi. Most of this line exists and would only require rehabilitation. The purchase of the PetroKazakhstan, the main operator at Kumkol, by CNPC (Chinese) makes it less likely that a westbound line will be built.
- A Trans-Caspian pipeline under the sea.
The probabilities of these pipelines being built does not appear to be high, but they nevertheless pose some risk for Aktau's traffic volumes.



To clarify the competitiveness of the various routes the next two sections will examine the cost of transport via:

- Aktau versus Kuryk; and
- Sea routes across the Caspian versus other routes.

Aktau versus Kuryk

This section compares the cost of transport from Tengiz to Baku via (i) Aktau and (ii) Kuryk.

The main costs of using **Aktau** are:

- The rail tariff from Tengiz to Aktau. No traffic is moving on this route at present, but when it did so five years ago the rail tariff was reportedly \$6 per tonne. This is similar to the tariffs currently charged for oil on the Azerbaijan and Georgian railways.
- Aktau port charges, including cargo handling and ships dues. The port's accounts show this to be around \$3/tonne, the largest charge being \$1.65/tonne for handling.
- Sea freight rates to Baku. Calculations based on operating costs for ships of 12,000 DWT, shown in Annex I, suggest that the cost of the Aktau-Baku sea voyage should be \$3.7/tonne, but delays and queuing adds to these costs. In practice, Caspian Shipping Company has been charging much more than this cost-based rate.

On this basis, the total cost of transport from Tengiz to Baku via Aktau is estimated at \$16 per tonne (see Table 3.6).

Table 3.6: Transport Costs from Tengiz to Baku via Aktau

	\$ per tonne
Rail, Tengiz-Aktau	6
Aktau port charges	3
Sea freight rate to Baku	5(a)
Baku port charges	2
TOTAL	16

(a) Based on ship operating costs with a 15% return (see ANNEX I), rather than Caspian Shipping Company's charges, which include port charges and have a large profit element.

The main costs via **Kuryk** in the initial years are estimated as follows:

- The pipeline from Tengiz to Kuryk is likely to cost about \$1.5 billion, according to Kazmunaigaz. Its tariffs are not yet known. But the charges for the main pipelines built in recent years (CPC and BTC) suggest that the tariff for Tengiz-Kuryk is likely to be around 1.65 US cents per tonne km, which would entail a tariff of \$12 per tonne (see Annex II for details).
- Kuryk port charges, including cargo handling and ships dues, would be higher than at Aktau. The minimum charge that would be necessary to cover the port costs at Kuryk in the early years - when capacity is expected to be around 23 million tonnes p.a - is estimated at about \$5 per tonne. The basis for this approximation is a 15% rate of return on the investment of \$600 million, giving an annual capital cost of about \$90 million, divided by annual traffic of 23 million tonnes, to give a capital cost of \$4 per tonne. In addition, operating costs are assumed to be around \$1 per tonne, bring the total up to \$5 per tonne.



- Sea freight rates to Baku will be lower than via Aktau, as a result of economies of size with larger vessels. Calculations based on ship operating costs for 60,000 DWT tankers, as shown in ANNEX I, suggest that the cost of the Aktau-Baku sea voyage should be \$1.5/tonne, and, with port charges, \$4.5/tonne. It should be noted, however, as stated above, that Caspian Shipping Company has been charging more than cost based rates.
- Baku port charges, including the link to the BTC pipeline, will also be much higher than at the existing Baku oil terminal. The minimum charge that would cover the new Baku SBM terminal in the early years - when capacity is expected to be around 23 million tonnes p.a - is estimated at about \$5.5 per tonne. The basis for this approximation is a 15% rate of return on the investment of \$700 million, giving an annual capital cost of about \$105 million, divided by annual traffic of 23 million tonnes, to give a capital cost of \$4.5 per tonne. In addition, operating costs are assumed to be around \$1 per tonne, bring the total up to \$5.5 per tonne.

On this basis, the total cost of transport from Tengiz to Baku via Kuryk is estimated at \$24.5 per tonne (see Table 3.7)

Table 3.7: Transport Costs from Tengiz to Baku via Kuryk

	\$ per tonne
	Early years (Capacity 23 million) tonnes
Pipeline, Tengiz-Kuryk	12
Kuryk port charges	5
Sea freight rate to Baku	2
Baku port charges	5.5
TOTAL	24.5

It is concluded that Aktau should give significantly lower transport costs (\$16/tonne) than Kuryk (\$24.5/tonne).

Sea routes across the Caspian versus other routes.

The dominant route likely to be served by Aktau and Kuryk is the Aktau/Kuryk-Baku-BTC-Ceyhan route. The costs of this route, however, will be high, at \$40-48.5 per tonne (see Tables 3.8 and 3.9 for details of the calculations).

This is well above the cost of most other routes. The CPC pipeline currently costs only \$30 per tonne; the Atyrau-Samara pipeline is understood to cost less than that; the rail route to Batumi costs about \$29-33 per tonne (see Table 3.12); the Supsa pipeline costs only \$21 per tonne (see Table 3.11); and the Northern Route pipeline costs \$31 per tonne (see Table 3.10).

The last two pipelines, however, are used mainly by Azeri oil.

**Table 3.8: Transport Costs from Tengiz to Ceyhan via Aktau**

	\$ per tonne
Via Aktau	
Rail, Tengiz-Aktau	6
Aktau port charges (a)	3
Sea freight rate to Baku	5 (a)
Baku port charges	2
BTC. Baku-Ceyhan	24
TOTAL	40

(a) Based on costs, not actual tariffs.

Table 3.9: Transport Costs from Tengiz to Ceyhan via Kuryk

	\$ per tonne
Pipeline, Tengiz-Kuryk	12
Kuryk port charges	5
Sea freight rate to Baku	2
Baku port charges	5.5
BTC. Baku-Ceyhan	24
TOTAL	48.5

Table 3.10: Northern Pipeline (Tengiz-Aktau/Kuryk-Baku-Novorossiysk)

	\$ per tonne
Via Aktau	
Tengiz-Baku (a)	16
Northern Route Pipeline to Novorossiysk	15
TOTAL	31

NB the Northern Pipeline is mainly used for Azeri oil

Table 3.11: Supsa Pipeline (Tengiz-Aktau/Kuryk-Baku-Supsa)

	\$ per tonne
Via Aktau	
Tengiz-Baku (a)	16
Pipeline to Supsa	5
TOTAL	21

NB the Supsa Pipeline is mainly used for BP's Azeri Oil.

Table 3.12: Rail Route to Batumi

	\$ per tonne
Via Aktau	
Tengiz-Baku (a)	17(a)
Rail to Batumi	12
TOTAL	29(a)

(a) The cost shown is based on ship operating costs. If Caspian Shipping company charges are used the total would be about \$4 per tonne higher.



To summarise, the costs via the various routes are:

Table 3.13: Cost Summary by Routes from Tengiz

Via	\$ per tonne
CPC	30
Atyrau-Samara	..
Aktau-Northern Route pipeline to Novorossiysk (but mainly for Azeri oil)	31
Aktau-Supsa pipeline (but mainly fro Azeri oil)	21
Aktau to Batumi 20	29-33
BTC via Aktau	40
BTC via Kuryk	48.5

(These cost are based on existing information and may need updating)

It is concluded that the Kazakh oil exports are likely to use alternatives to the BTC routes to the extent possible, leaving the **remainder** for the relatively expensive BTC route served by Aktau and Kuryk.

On this basis the most likely breakdown of future oil traffic by route is calculated in Table 3.14, with the main assumptions shown in the footnotes.

Table 3.14 Forecast of Most Likely Breakdown of Oil Traffic by Route

	2006	2010	2015	2020
CPC (a)	24.5	34	42	42
Atyrau-Samara	16.5	16.5	16.5	16.5
Atyrau-Olden	2.5	2.5	2.5	2.5
China (b)	2.2	7	20	20
Kuryk (c)	0	0	23	56
Aktau	9.7	20	19	19
Others	1.6	2	2	2
Total	55.4	80	123	156

Assumptions:

- CPC. The CPC pipeline capacity will be expanded to 40 million tonnes p.a. in 2010 and to 60 million tonnes by 2015. The percentage of the pipeline capacity used by Kazakh oil (mainly Tengizchevroil's) was about 85% in 2006, with 15% is dedicated to Russian oil, currently that of Rosneft and TNK-BP. The percentage used by Kazakh oil will be assumed to remain at 85% in 2010 but then fall to 70% by 2015 as a result of Russian demands to expand their share of the ownership of the pipeline.*
- Pipelines to China are scheduled to increase their capacity to 20 million tonnes by 2015, but there are no further expansion plans.*
- The capacity of the Kuryk pipeline planned by Kazmunaigaz is 23 million tonnes in the early years increasing to 56 million tonnes in the period 2015-2020) is the same as Kazmunaigaz's forecast of oil production at Kashagan. The obvious implication is that the Kuryk pipeline is for Kashagan only. This assumption was confirmed to be correct by Kazmunaigaz, but other sources have given differing opinions. The planning of the Eskene pipeline is not yet sufficiently advanced for it to be clear whether oilfields other than Kashagan will have links into the pipeline.*



Risks

The forecast shown in Table 3.14 is subject to the following risks.

- The CPC could be expanded more than assumed. If so it would probably take at least part of the Tengizchevroil oil which would otherwise make up a significant share of Aktau's expected traffic
- New pipelines may be built. Possibilities include a 50 million tonnes p.a. pipeline from Kazakhstan to Iran via Turkmenistan; a pipeline from the Kumkol field to the port of Turkmenbashi; and a Trans-Caspian pipeline under the sea (see footnotes at the beginning of this section for details). The probabilities of these pipelines being built does not appear to be high, but they nevertheless pose some risk for Aktau's traffic volumes.
- The capacity of the Eskene-Kuryk pipeline could eventually be higher than planned at present

Strengths and Advantages of Aktau

On the other hand, there are several factors favourable for Aktau:

- Aktau's berths are already full, and Kuryk is unlikely to be built before 2013. Consequently, there is a very urgent need for additional capacity during the period 2009-2013 - 2009 being the earliest date at which Aktau's new oil berths could be completed and 2013 being the earliest date at which the port Kuryk is likely to open, as it will not be opened before Kashagan starts production.
- Tengizchevroil (TCO), despite apparently supporting the new port at Kuryk, has sent a written request to the AISCP to route 5 million tonnes p.a. via the port, at least until 2013, and a contract is reported to be under negotiation. TCO is requesting some exclusivity for berths N4 and 5 and some other concessions if it is to ship oil again via Aktau from 2008.
- The Kuryk route will be very expensive during its early years. Aktau will be able to offer lower costs, and if the two ports end up competing in the market Aktau will have the advantage.
- There was a strong consensus amongst organisations contacted, including Kazmunaigaz that Aktau's new oil terminals were necessary and should be built.

3.2 Steel

Exports to Iran

Steel exports to Iran account for almost all of Aktau's dry cargo.

Kazakhstan produced 4.1 million tonnes of steel in 2006, mostly for export. The main exporter is a plant run by Mittal, the world's leading steel company. Kazakhstan's steel production had fallen sharply after independence, but revived strongly after LMN Mittal took over the country's largest steel plant in 1995 and invested \$1billion, doubling production.

The Mittal plant is located at Termirtau in the east of Kazakhstan, and the second largest plant, the Castings LLP steel mill, is also located in the east, north of Almaty, at Pavlodar. It



opened in 2001 to exploit casting facilities in an old tractor production plant and currently produces 0.3 million tonnes, but is expected to expand to 0.7 million tonnes per annum.

The main destinations of Kazakhstan's steel exports are China and Russia, but about a quarter is transported from the steel plants to Aktau by rail, and then exported to Iran. Aktau handled 0.95 million tonnes of steel in 2006.

The steel exports from Aktau have been relatively static in recent years, as shown in Table 1.2.

Table 3.15: Steel Exports at Aktau, 2004-2006 ('000 tonnes)

	Ispat	Casting	Other	Russian	Total
2004	719	209	7	20	955
2005	683	149	21	105	958
2006	608	287	47	5	947

Future growth will depend on Iranian demand for steel imports, which has been increasing. Iran produced about 11 million tonnes of steel, and exported about 2 million tonnes in 2006 (see Table 3.16). But despite being the largest producer in the region Iran it is also the largest importer of steel, accounting for one third of steel imports to the Middle East. A combination of exports and imports by major steel producing countries is not unusual, as reflected in a recent statements by a spokesman for the Iranian steel industry that "steel products are quite diverse and no country is able to supply its entire demand: there is no economic justification in investing in all steel-related areas".

The Iranian imports are likely to continue to increase, as the Iranian government is becoming fewer protectionists. It cut steel import tariffs to 10 percent in 2005, dismissing arguments by the domestic steel producers that a decline in import tariffs would badly affect the national industry. Steel industry officials suggested that if the government did not increase steel import tariffs, almost all steel producing factories would be closed down. But others argued that if the country is to become competitive it should remove import barriers.

Since then imports rose from 7 million tonnes in 2005 to 8 million tonnes in 2006; and the growth continued into 2007. Iranian steel imports almost doubled to 3 million tonnes in the first quarter of 2007 compared to the same period in 2006.

**Table 3.16
Iranian Steel Production, Exports and Imports 2004-2006
(Million tonnes)**

	2004	2005	2006
Production	9.4	10.6	11.1
Exports	..	2.5	2.0
Imports	7	7	8

Mittal and Castings have forecast that future exports will rise to about 1.5 million tonnes via Aktau by 2010. This may seem slightly high; as Mittal has no plans to increase production at present (its investment programme is focussing on quality improvements). But Castings is planning an increase in production of 0.4 million tonnes – equivalent to a 10% increase in national production - and the Iranian and Kazakhstan governments recently agreed to an Iranian company constructing a modern steel plant in Kazakhstan.



Given the strong growth of imports into Iran, the fact that the fast-growing Kazakh economy has a well-established steel in Kazakhstan dominated by Mittal, it seems likely that the steel exports via Aktau will increase. But in view of the negligible growth in recent years it will be assumed that future growth will be modest, at around 5% p.a. On this basis Aktau's steel exports are projected to increase as shown in Table 3.17.

Table 3.17
Forecast of Steel Exports via Aktau

Year	(000 tonnes)
2006	947
2010	1,151
2015	1,469
2020	1,875

Exports to Europe

Mittal Steel also exports steel products to Europe, but they are shipped directly to the port of Novorossiysk by rail. The transport cost via Novorossiysk is estimated to be \$15-20 per tonne less than via Aktau and Georgian ports, so there appears to be little prospect of attracting this cargo to Aktau.

3.3 Grain

Kazakhstan is the fifth largest wheat producing country in the world. It produced 16 million tonnes of grains in 2006, and production is forecast to increase to 20 million tonnes in 2010/11, according to the President's Program.

About 35-40% of the production (just over 6 million tonnes) was exported in 2006.

About 70% of the wheat is grown in the north of Kazakhstan on the border with Russia, and in the 1990s about 90% of the grain produced in Kazakhstan was exported to Former Soviet Union countries.

Today the destinations are more diversified. Russia takes about 2 million tonnes; about 800,000 tonnes are exported to the west via Ukrainian ports; Iran takes about a million tonnes; and over half a million tonnes go to Azerbaijan. Almost all of the traffic leaves Kazakhstan by rail. But minor volumes are shipped to Iran by sea.

In 2001 a bilateral contract was arranged for Kazakhstan to export 2 million tonnes of grain to Iran through Aktau. There were also negotiations about the use of the port of Aktau to ship Kazakh grain to Azerbaijan where a new grain facility has recently been opened. At the time, grain producers believed that export volumes to Iran would be boosted by the construction of a railway link between Altynsarino and Khromtau that would shorten the export route by half.

To handle these exports, Aktau the government-owned grain export company "JSC Ak Bidai – Terminal", which has sold grains to 46 countries, built a specialised grain berth, with a silo capacity of 25,000 tonnes, at Aktau.

In the event, the grain traffic has never materialized. About 200,000 tonnes were handled via Aktau in 2002, but after that it declined.

Over the last five years, however, Aktau's grain exports have slowly started to increase (see Table 3.18).

**Table 3.18 – Grain Exports via Aktau, 2001-2006 ('000 tonnes)**

2003	2004	2005	2006	2007
5	13	33	118	180(a)

(a) JSC Ak Bidal estimate for 2007

Source: AISCP for 2002-2006

Building on this recent growth, JSC Ak Bidal has drawn up a strategy which, if successful, would result in much higher volumes being shipped via Aktau. The following paragraphs outline this strategy.

The closest markets available to Kazakhstan's grain exporters are in Azerbaijan and Iran, where the total requirement for imports is around **3-4 million tonnes p.a.** Of this total:

- Azerbaijan imports about 1 million tonnes p.a., from both Russia and Kazakhstan. Overall they share the market about half and half, but the shares vary year by year.
- Iran imports about 3 million tonnes (including all grains, not only wheat). But while Azerbaijan is fully dependent on Kazakh and Russian grain, Iran is not: it also imports from Canada and Australia - via Panamax ships at Arabian Gulf ports.

Other countries bring Kazakhstan's total grain export market up to **6-8 million tonnes p.a**

Of this total, the main movements of exports in 2006 were as follows. Almost all were transported by rail, including:

- About 700,000 tonnes were exported to Azerbaijan – but all went by rail, down the west coast of the Caspian Sea, via the Aksaray and Samur border stations.
- About 1 million tonnes were exported to Iran. Almost 90% of it however was also transported by rail, crossing Uzbekistan and Turkmenistan, to reach Iran. There are, however, problems on the border between Kazakhstan and Iran, at Serax, where the gauge is different and the wagons have to be changed. Delays at the border can add 1-2 weeks to transit times.
- A further 800,000 tonnes were exported to western destinations, after being transported by rail to ports on the Black Sea, mainly in Ukraine.
- Additional volumes were routed via Baltic ports.
- Over a million tonnes were exported to Russia, much of it to Moscow which relies on Kazakhstan's high quality grain for half of its supplies.

The terminal operators consider that there are three main reasons for so little grain having used Aktau. First, until recently it was necessary to cross the border into Russia for part of the journey from Northern Kazakhstan to Aktau; but the new Kromtau rail link now avoids the need for this diversion.

Secondly, the inefficient KTZ rail operations at Aktau add to costs. And, thirdly, the rail tariffs from Northern Kazakhstan to Aktau are high. As shown in Table 3.19 total transport costs to the Ukrainian Black Sea ports are \$20 per tonne lower than via Aktau-Baku-Poti.



Table 3.19
Comparison of Grain Export Transport costs via Aktau versus Ukrainian Ports
(\$/ tonne, in 60 tonne wagons)

Northern Kazakhstan (Kovyl'naya) to Ukrainian ports			
KzRW	Kovyl'naya – Tobol		4.3
RRW	Tobol – Solovey		28.9
UzRW	Topoli - Ukrainian ports		15.05
Total			48.25
Northern Kazakhstan (Kovyl'naya) to Poti via Aktau			
KzRW	Kovyl'naya – Aktau		18
	Expenses in Aktau (port charges, station services, Customs and etc.)		14
	Baku-Aktau ferry		14
	Expenses in Baku (port charges, station services, etc.)		6
AzRW	Baku- Beyuk-Kiasik		8
GRW	Garbadani – Poti		8
			68

Sources: JSC Ak Bidal, Scott Wilson

JS Ak Bidal's current targets are:

- to win 50% of the Azeri and Georgian markets;
- to export 1 million tonnes p.a. to Iran; and
- to route a much larger part of this traffic via Aktau

For this purpose JSC Ak Bidal is setting up three new silos at Poti (cost, \$18 million), Baku (\$12-13 million) and Amirabad (\$18 million). Their aim is to provide stockpiles within the consuming countries from which to sell and distribute the wheat. The need to do so is a consequence of the difficulties of trading with the Caspian countries.

They include the banking problem that the letter of credit must come from a first class bank and this is difficult, especially for Iranians, to arrange. Consequently prepayment is required in practice. The foreign silos will avoid these problems by providing a store from which to sell in the markets - making the grain available in the destination country, rather than a distant and complicated location outside the country.

The future trade with Iran should also be assisted by the fact that grains trade in Iran, which had previously been in government hands, has now been liberalised and largely privatised. On the Kazakh side, grain trades have been free for many years, with economics deciding sales and routings. Although there are still bilateral government agreements, business is the main driver. Government only role in practice is to help with permits etc.

The location of the three silos will strengthen the switch from rail to sea transport, as they are all on the coast.

On this basis grain traffic is forecast as follows:



Table 3.20
Forecast of Grain Exports at the Port of Aktau

Year	(000 tonnes)
2003	33
2007	180 (a)
2010	400
2015	1,000

(a) Estimated by JSC Ak Bidai

The existing silos at Aktau (capacity, 600,000 tonnes p. a.) would be able to handle these traffic volumes up to about 2012, but if the 2015 export target of 1 million tonnes p.a is achieved a new silo would be required.

3.4 Minerals

Kazakhstan exports several different minerals to Europe, and it might be expected that part of this traffic could be attracted to TRACECA routes via Aktau, for shipment to Baku and then on to Georgian ports.

In practice, however, it appears that **most of the exports with destinations in the west go overland to Novorossiysk and other ports by rail.** In particular:

- About 2 million tonnes of coal are exported to Europe and Turkey, but not via Traceca routes. The route used is by rail to Novorossiysk. Coal transport through the TRACECA corridor at current rates ⁴ is \$20-25 higher per tonne than via Novorossiysk.
- Ferro-alloys production is concentrated around Aktau, the main producer being Kazkhrome. The annual export volumes exceed 900,000 tonnes but they are routed mainly though Klaipeda to the Netherlands. Thus, although the tariffs applied by Georgian ports, Caspar and the railways of Georgia, Azerbaijan and Kazakhstan seem to be reasonably competitive, the fact that the main consumers are concentrated in Northern Europe limits the transport volumes through TRACECA corridor to about 20,000 tonnes per year.
- Copper is produced mainly by the Kazakhmis Corporation based in Zhezkagan. About 400,000 tonnes per year are exported, mainly to China; and about 150,000 tonnes is transported to Italy and Germany, but they are routed via the ports of Novorossiysk and St Petersburg. Comparisons of existing transport tariffs suggest that the part of this cargo that goes to Italy (more than 20,000 tonnes) could be attracted to the TRACECA corridor if the lower tariffs were applied.
- The main producer of asbestos is Kostanay Asbestos, which has an export potential of up to 200,000 tons per year. About 50,000 tonnes per year is sent to Europe, but is being transported through Novorossiysk port where costs are \$20-25 per tonne lower than via the TRACECA corridor.

It is concluded that the unless major reforms necessary to make the Aktau-Baku-Poti route more attractive (see Section 3.11) are implemented Kazakhstan's mineral exports will continue to bypass Aktau.

⁴ 2006 rates



3.5 Fertilisers

A large fertiliser plant is being reconstructed in Aktau, and the management plans to export large volumes via the port.

The plant was built by the Soviet government in the 1960s, adjacent to the nuclear power plant on the outskirts of Aktau. Initially it manufactured products from uranium and phosphatic materials, but it later reoriented its production to concentrate on fertilizers. The plant was eventually closed in 1994, but started up again in 2006 after being bought by Aspect (from its previous owner, Kazazot). It is now producing about 250,000 tonnes p.a. of fertilisers and ammonium nitrate.

Aspect will reconstruct the plant with loans of \$1.5 billion. The reconstruction will be completed in 2011.

Future production in the period 2011-15 be around 2500 tonnes/day of urea and 1000 tonnes/day of ammonium nitrate; and after 2015 it will produce another 2500 tonnes/day of urea. The total output will therefore be about 1.2 million tonnes p.a. in the first phase and 2 million tonnes in the second

The raw material is natural gas, from a field near Uzen. The idea of producing sulphuric acid, which was being considered, has now been dropped

It will be the only fertilizer plant in Kazakhstan.

The production will be almost entirely for export (98-99%), as the fertilizers for Kazakh agriculture, which is located mainly in the north, comes from 3-4 Russian fertilizer plants just over the border in Russia.

Urea

The main destinations for the urea will be to the west, in Northern Europe, South America, etc, and it is planned to route it *mainly via the port of Aktau* to Baku and then to Poti or Batumi by rail in hopper wagons. The urea will be transported in powder form (85-90%), with a small amount in big bags.

Another export route which is being considered by Aspect is the Volga Don Canal, but the limited ship size is a problem. There could also be some shipments to the Indian sub continent, via Iran. Although there is little demand in Iran itself there is more in Pakistan (it imports about 2 million tonnes) and India, and Aktau-Iran would be the best route to the Indian sub continent.

The plant intends to switch to sea transport for the urea because the new markets will not be well-located for rail transport. They also expect the route via Aktau to be much more economic than rail routes to Novorossiysk or Ukrainian ports, given the plant's location in Aktau. Aspect is currently paying about \$45-50/tonne for rail to the Baltic and \$60/tonne for rail to the Romanian border crossing, but expect to pay only \$8/t for the Aktau-Baku ferry (in rail wagons) and \$10 on the Azeri/Georgian railway, giving a total of \$18/tonne fro Aktau to Poti. (This seems optimistic, but even the costs were significantly higher, they would still be well below the costs via other routes.)

On the basis of Aspect's plans and the assumptions that:

- 1) output will be 75% of the planned urea capacity (fertiliser plants rarely averaged 100% utilization of capacity over a period of years);
- 2) a modest amount of the fertilisers will be used for domestic purposes; and
- 3) a minor part of the exports will take all rail routes

exports via Aktau would be around 500,000 tonnes p.a. in the period 2011-2015 and 1 million tonnes after 2015.



Table 3.21
Forecast of Urea Exports via Aktau

Year	(000 tonnes)
2010	0
2015	500
2020	1,000

Aspect plan to export the urea in rail wagons, carried by ferry. The volumes required will exceed the capacity of the existing Caspar ferries, and will therefore require additional vessels. There will not, however be a need for additional rail ferry terminal facilities at the port, as the existing terminal is empty most of the week.

Ammonium Nitrate

The ammonium nitrate is currently exported by rail, and will continue to do so. The main markets are in the Baltic region and Eastern Europe (Romania, Bulgaria, etc) . The company has 100 special wagons for this purpose.

3.6 Special Economic Zone

Aktau has a major opportunity to expand its role - by becoming a distribution hub for the Caspian. The obvious model is the Free Trade Zone⁵ at the United Arab Emirates port of Jebel Ali, which has consolidated a position as the leading commercial centre of the Middle East over the last 30 years. It achieved this by making itself an easy place in which to do business in a region where business is made difficult by bureaucracy, red tape and a lack of commercial traditions. The breakthrough in Dubai was achieved by the rapid liberalization of customs, business practices and entry/visas, together with elimination of taxes on imports and corporations. The similarities between the Middle East in 1975 and the Caspian today – both oil regions - are therefore obvious. But so far no port in the Caspian has emerged to take over a role comparable with that of Jebel Ali, and certainly not Baku or Turkmenbashi, where customs, permits and other paperwork are major impediments to economic activity. The Central Asian Republics, the Caspian and the Caucasus remain very difficult places in which to do business.

In addition, the emergence of an efficient free zone at Aktau could have the further benefit of attracting other industries to the area and assisting in the development of a market economy, as has happened in Jebel Ali. As well as becoming the distribution centre for the Middle East, the Jebel Ali Free Zone has served as a vehicle for diversification away from dependence on oil by attracting industrial plants for aluminum, chemicals, food processing, textiles, footwear, electronics, etc. (The Aktau SEZ staff confirmed that one of its aims is to diversify economic activity to make Kazakhstan less dependent on oil.)

The setting up of a Free Zone or SEZ, however, does not guarantee success. Most countries have Free Zones, but there have been many more failures than successes. For example, Africa has a large number of Free Zones, but none are successful. The success of the Aktau SEZ will therefore require a high level political intervention and commitment by the tax authorities, customs and the immigration department to create a genuinely deregulated working environment.

⁵ The difference between Free Trade Zones and Special Economic Zones (which were pioneered in China) is that Free Trade Zones tend to limit their concessionary terms and conditions to exports, while Special Economic Zones also cater for goods produced for the local market. In most ways, however, they are very similar.



There are also negative features. Costs can be high (Jebel Ali cost \$2.5 billion to build in the 1970s); and business can take a long time to build up. Also, from a ports viewpoint, the cargo volumes, despite being of high value, are often low in weight terms; and they may be transported by air rather than via ports.

Aktau's Special Economic Zone was set up in 2002/3 and now has three areas (total, 720 hectares) within the city. In addition, the port has SEZ status.

Its terms and conditions are similar to those offered in other countries, including Jebel Ali. In particular, there are:

- No import duties, although this concession applies only to a selected list of goods
- No corporation tax
- No property tax
- No VAT or customs duties on goods imported for personal needs.

Plots of land are leased out to occupants for the duration of the SEZ, which was originally up to 2015, although it has been reported that a 25 years extension being considered by the government. The occupants have a right to purchase the land after the SEZ regime is terminated.

The Aktau SEZ has made modest progress so far. The projects planned at the SEZ are shown in Table 3.22. As shown, the main projects are dominated by metal products and machinery, with a bias towards the oil industry.

Only two or three of the projects, however, are expected to generate exports (see Table 3.22). They are pharmaceuticals and battery projects. Another, Mittal steel, is shown as a potential exporter by the SEZ, but not by its website (see footnotes to Table 3.22).

It is concluded that the SEZ is now starting to attract investment after a slow start, but that no significant port traffic will be generated in the near future by the nine projects committed so far. The only two potential exporters, the pharmaceuticals and batteries factories, produce goods that are of high value but low volume.

Table 3.22
Projects Planned at the Special Economic Zone

Company/ Agency	Product	Area (hecs)	Expected Start of Operations	Investment (\$ million)	Employment (staff numbers)	Production	% for export
Mittal	Pipes	52	2007	32	176	60,000 t	25% (b)
Silicasolar Aktau	Solar batteries	...	2007	142	100	100 megawatts	100%
Chakur	Pharmaceuticals	...	2007	12	180	...	30%
Keppel	Steel construction	44	2005	40	708	7,000 t	...
AEST	Glass fibre pipes	12	2003	5.5	200	400,000 m	...
Multimodal transport Logistics Centre	Transport/distribution centre	200	2008	280	200	3.3 mn t in 2010 5 mn t in 2017 (a)	...
Thyssen Krupp-Imstalcon	Metal products	...	2007	16	20	25,000	...
Petrochem Kazakhstan	Lubricants	5	2007	5	50	5000 t later	...
Danake	Machinery, electric cable, etc	9	2007	90	1010	77,000	...



- (a) A study is being undertaken for JICA but drafts were not made available to the consultants. The traffic figures shown above are clearly optimistic
- (b) Information from Mittal's website, however, suggests that the pipes will be for the domestic market, not export.

Source: *Special Economic Zone "Morport Aktau"*

3.7 New City

A potential source of large volumes of future cargo is the construction of the Aktau New City which is being planned by investors from Dubai. The launching of the project in September 2007 was attended by the President of Kazakhstan, the UAE's foreign minister and the chairman of the Abu Dhabi Cultural and Heritage Authority.

The city will provide attractive living conditions especially for staff working in the fast-growing oil industry, especially at Tengiz and Kashagan, the largest oilfield to have been discovered worldwide in 30 years. It is located 600 kilometres to the north of Aktau, at Atyrau. Atyrau is an unattractive town, muddy in the summer and iced up in the winter, but with a large number of high income employees. In contrast, the New City at Aktau is envisaged as a modern city, "complete with infrastructure and an entertainment industry,» The master developer is Kazemir Aktau Development Ltd .

The long term aim is to develop 35-40 square kilometres of land along 10 km of coastline on the northern borders of Aktau, at a cost of \$40 billion. The developers have suggested that there could be a city of one million people by 2020, compared with the existing population of about 150,000.

The first phase, however, will reportedly concentrate on 35% of the final area. Up to \$7 billion are to be invested within the first five years of construction.

The project will require large amounts of construction materials and when the city is built it will require consumers goods.

The basic construction materials, including cement steel and timber may not use the port. They may well be sourced either internally or overland, as is the case at present (none of these cargoes, which have been required for recent construction projects at Aktau, have entered via the port). The cement is likely to be sourced from Kazakh plants or, if not, from Russia. But imports may not be necessary as there are plans to increase Kazakhstan's production. Similarly, steel is likely to be sourced domestically and, where not, from Russian imports.

Fittings and higher value products, however, would be much more likely to come from sources outside the Former Soviet Union. Given that (i) the investors are from Dubai and (ii) the most successful international construction companies in the region are Turkish it is likely that a large part of the more valuable products and machinery would come from Dubai and Turkey.

The transport route used from Dubai would almost certainly be the route via Bandar Abbas, then by road to the Iranian ports on the Caspian, from which they would be transported to Aktau by sea (i.e. the route currently served by Khazar Shipping). Traffic on this route has been growing at 50% p.a. and is reported to be relatively problem-free.

The dominant transport route from Turkey would be via Baku to Aktau – either by truck or rail wagon. In both cases they would be likely to use the Caspar ferries.

The majority of this cargo would probably be carried in containers. Although some of the lower value goods from Turkey may come by rail wagons – with the completion of the link from Kars in north west Turkey improving the competitiveness of the rail services.



There are no construction plans on which to estimate (i) the cargo volumes required, or (ii) whether they would come via Aktau rather than overland, as almost all imports do at present.

However, a very rough guide might be derived from the estimated expenditure of \$7 billion over the first five years (see above). If it were assumed that the basic low value construction material such as cement, steel and timber account for only a minor percentage of this expenditure, it could be assumed that about \$1 billion p.a. of higher value imports would be required. As a very broad rule of thumb \$1 million of imports requires about 33 TEU (i.e. the average container holds about \$30,000 of goods). And on this assumption an investment of \$1 billion p.a would require about 33,000 TEU – or 66,000 TEU if empty outbound movements are included.

On this basis, the traffic required for the new city might be approximated as follows:

Table 3.23
Possible Order of Magnitude of New Aktau City Traffic, including empty Returns
(000 TEU)

	2006	2010	2015
New Aktau City Traffic	0	66	66

The geographical origins and handling methods can only be a matter of guesswork, but for port planning purposes it might be speculated that half of the traffic might come from Dubai and half from Turkey - and it might be split 50/50 between containers and Roll on Roll off ferries.

Although highly ambitious, this project appears to be taken very seriously, and there would be a major bottleneck if berths were not available to handle the necessary imports.

3.8 Containers

Aktau's container traffic is still very low, with only 1000 containers handled in 2006.. But the growth rate is high, at 50% p.a. on the period 2004-2006. (see Table 3.24).

The main cargoes are building products, oil industry equipment and consumer goods The containers come mainly from Dubai via Bandar Abbas, then by truck to the Caspian ports of Iran, and on by sea to Aktau. This route has only recently been established but is reported to be relatively problem free by the standards of the Caspian region..

The existing import traffic will be assumed to continue increase at the current growth rate of 50% p.a. up to 2010 and then at 25% p.a. over the next five years. In addition it is assumed that half the requirement for high value building materials will come to Aktau by container via Dubai/Bandar Abbas (see previous section for an order of magnitude estimates of cargo volumes).. On this basis container traffic would be as shown in Table 3.24.

Table 3.24
Forecast Growth of Existing and New City Container Traffic at Aktau (000 TEU) (a)

	2006	2010	2015
Existing Traffic	1.0	5.1	15.4
New Aktau City Traffic	0	33.0	33.0
Total	1.0	38.1	48.4

(a) The average load per TEU is about 10 tonnes



3.9 Roro Ferries

The Caspian Shipping Company rail ferry to Baku calls twice a week at Aktau. The main cargoes have been oil on the voyages out of Aktau (into Baku) and mixed general cargo on the voyages into Aktau.

Table 3.25
Caspian Shipping Company Rail Ferry Cargo 2001-2006 (thousand tonnes)

	2002	2003	2004	2005	2006	Growth p.a 2002-06
Aktau-Baku	509	198	230	525	160	-25.1%
Baku-Aktau	83	46	112	103	148	15.6%
Total	592	244	342	628	308	-15.1%

The inbound mixed general cargo will be assumed to continue to grow at the same rate as over the last five years (15% p.a.) until 2010 and at 10% p.a. from 2010 to 2015. The oil traffic to Baku, on the other hand, will be assumed to divert almost entirely to tankers; but it will be replaced by fertilisers from the reconstructed Aspect plant (see section 3.5).

In addition a significant part of the construction materials are likely to come from Turkey, which is the leading construction country in the region (see section 3.7). On this basis rail ferry traffic is forecast as in Table 3.25.

Table 3.26
Forecast of Rail Ferry Cargo 2006-2020 (thousand tonnes)

	2006	2010	2015	2020
Baku-Aktau, existing traffic	148	259	417	613
Baku-Aktau, New City Construction materials	0	330	330	330
Aktau-Baku Fertilisers	160	500	1,000(a)	1,200 (a)
Total	308	1,089	1,747	2,143

3.10 Sulphur

The oil from the region has high sulphur content, and has to be separated from the oil. At present Kazakhstan's oil companies are producing approximately 1.4 million tonnes of sulphur per annum, and there is now a stockpile of about 8-9 million tonnes. The oil companies are under pressure to dispose of it. Consequently, they have started to export it, and have sold about 1.5 million tonnes so far. It has been sold to 50 customers in 22 countries.

The majority of the sulphur is being sent to Ukrainian ports via rail.

This is a cargo for which Aktau could compete. The costs via Aktau are, as shown in Table 3.27, only slightly above the current cost via Ukrainian ports. But unless the major reforms necessary to make the Aktau-Baku-Poti route more attractive (see Section 3.11) are implemented the sulphur will continue to bypass Aktau.



Table 3.27
Comparison of Costs of Routing Sulphur Exports via Ukrainian Ports and Poti
(\$/tonne in 60 tonne wagons)

Carrier	Kulsary – Ukrainian ports		
KzRW	Kulsary- Aksaraiskaya		5,58
RRW	Aksaraiskaya – Gukovo		20,95
UzRW	Krasnaya Mogila – Ukrainian Ports		19,3
Total			45,83
	Kulsary - Poty (via Aktau)		
KzRW	Kulsary – Aktau		7,79
	Expenses in Aktau (port charges + station services, Customs and etc.)		2
	Baku-Aktau ferry		17,5
	Expenses in Baku (port charges, station services, etc.)		1
AzRW	Baku- Beyuk-Kiasik		12,08
GRW	Garbadani – Poti		8,86
Total			49,23

Transported in 2006: Kulsary - Ukrainian ports – 815 000 tonnes
Aktau- Baku - 0 tonnes

3.11 Corridor Cargoes

Traceca

Since the mid 1990s the EU has been promoting the attraction of cargo to the Transport Corridor Europe-Caucasus-Asia (TRACECA). Its original aims were (i) to revive the transport route via the 'Silk Road' to give landlocked Former Soviet Union countries access to world markets and (ii) to avoid the need to use routes via Russia. It was expected that Aktau would become a key port on the Traceca route

In practice, however, Aktau is currently handling relatively little TRACECA transit traffic other than oil produced in the port's immediate catchment area.

The only *transit* traffic that has been handled at Aktau was steel moving between Russia and Iran about five years ago but this is not a TRACECA route, and in any case it was lost after Russia reduced its domestic rail tariffs to attract the cargo back to Russian ports (this was part of national policy: Russian railways introduced similar tariff cuts in the Baltic to attract steel back to Russian ports). Consequently, steel transit traffic has almost disappeared in the last four years, with the exception of 2004, when 105,000 tonnes were handled.

There are three fundamental problems for the TRACECA routes at present:

- The container shipping services between the Far East and Europe, with which TRACECA would have to compete for transit traffic, are highly efficient and tariffs are lower than 10 years ago. The container freight rate between Hong Kong and North West Europe is only \$1500-1800 per 20' container, and the transit time can be as low as 20 days. Even the Trans Siberian route, which is the most problem-free of the land routes between the Far East and Europe, has failed to attract much traffic away from shipping services, despite having been managed by highly efficient operators. It has been



reported that when Russian tariff authorities almost doubled the charges in 2006, it resulted in the collapse of the already minimal cargo volumes from around 100,000 TEU in 2005 to 8,000 TEU in 2006 – which is well below 1% of the Far East-Europe container traffic.

- Traffic volumes from/to Caspian ports are limited by a classic regional trade problem. All the main Caspian countries - Kazakhstan, Azerbaijan, Iran and Russia - have only one major export, which is oil. The other countries do not therefore need Kazakhstan's exports. Conversely, none of the manufactured goods and machinery which Kazakhstan needs are produced in Caspian countries. Instead, they come from Europe, Turkey, Russia and China. In other words, Caspian countries are neither a destination for Kazakhstan's exports nor an origin for Kazakhstan's imports; and trade between the Caspian countries is therefore limited.
- There are alternative *overland* routes to ports located on the Black Sea, running across the northern shore of the Caspian. Brief reference to a map will show that, prima facie, these direct routes appear more attractive than routes involving a switch from rail to a ferry terminating in a landlocked country (Azerbaijan). And in practice Kazakhstan's exporters do prefer to use these *overland routes to Novorossiysk and Ukrainian ports*. In fact there are now *overland movements to Azerbaijan and Georgia*, via Russia. They were assisted by an 80 km railway line which was constructed in Dagestan in 2001-2 in order to bypass Chechnya, and there are now reportedly 8-10 trains per day at the Azeri-Russian border crossing at Samur. The main traffic moving westwards by rail from Kazakhstan in 2006 was as follows:

Table 3.28
Kazakh Exports Transported to the West by Rail, Bypassing Traceca Routes

	Tonnes p.a
Cargo (all by rail, to the port shown)	
Grains to Ukrainian ports	800,000
Grains to Azerbaijan (via border crossings at Aksaray and Samur)	700,000
Sulphur to Ukrainian ports	800,000
Fertilisers to Eastern and Northern Europe,	250,000
Coal to Europe and Turkey mainly via Novorossiysk	2,000,000
Copper to Europe, transported to Italy via Novorossiysk and to Germany via St Petersburg.	150,000
Ferro-alloys tonnes, mainly via Klaipeda to the Netherlands.	900,000
Asbestos to Europe via Novorossiysk	50,000

In contrast, Aktau sends only very minor volumes of dry cargo westwards by sea. They include about 20,000 tonnes of grain. They are carried on the Caspar ferries, which also send about 150,000 tonnes p.a on the return leg into Aktau.

If any significant volumes of the cargoes shown in Table 1 are to be attracted to Traceca routes via Aktau, there will have to be major reforms and lower tariffs on these routes.

There are three main obstacles to attracting Traceca traffic to Aktau.

- So far the Traceca countries have not discounted their rail tariffs significantly to attract transit traffic. In contrast the Russian railways, which are Traceca's main competitors, have been discounting tariffs for several years. They have been reducing prices by up to 70% to recover Russian traffic which was being handled at foreign ports - e.g. in Kazakhstan, Estonia, Latvia and Lithuania. The Russian railways reportedly have a staff of several hundred working on the discounts necessary to attract traffic. The fact that



Russia appears to have “stolen Traceca’s clothes” by implementing commercial pricing policies first should be regarded as a cause for concern. It is also of concern that although the port of Aktau port *is* allowed to discount tariffs to attract traffic, it has to wait 2 months for approvals by government.

- Cross border formalities on Traceca routes are still resulting in delays of up to five days at the borders. These delays are entirely unnecessary, especially for transit containers where seals can be used. The majority of trucks crossing borders within Europe do so without stopping.
- The port of Aktau has to add VAT to their tariffs, while rail operators providing services crossing Kazakhstan’s land borders do not. This burden adds 14% to Aktau’s charges. The Ministry of Finance should remove this anomaly to allow a level playing field for competition between rail and sea transport.

It will be necessary to deal with these problems, particularly the first two, if significant progress is to be made on attracting transit traffic to Traceca routes. If traffic is to be diverted away from existing direct all-rail routes terminating at Black Sea ports (such as Novorossiysk, the Ukrainian ports or the Baltic ports), in order to use Traceca routes involving a sea leg to a landlocked country (Azerbaijan), the transport service will have to be both seamless and economic. It should be emphasised, however, that Aktau’s ability to influence routeings is limited, because the railway tariffs account for a much higher percentage of total costs than port tariffs.

The scope for reducing tariffs if the necessary reforms are implemented has been estimated in Annexes 3 and 4, and summarised in Table 3.29 below.

Table 3.29
Comparison of (i) Current and Recommended Costs via Traceca Routes with (ii)
Costs via Routes Currently Used
(US\$)

Cargo		Current Cost	Current Cost via Traceca (Poti)	Cost via Traceca after Reforms
Grain	Per tonne	48	68	47
		via Ukrainian Ports		
Ferrous Meta;	Per Tonne	76	97	68
		via Ukrainian Ports		
Sulphur in Bulk	Per Tonne	46	49	39
		via Uktainian Ports		
Non Ferrous Metal	Per TEU	1,703	2,500	1425??
		via Novorossiysk		

Source: See Appendices I and II

The reforms necessary to have the Traceca tariffs reduced, border formalities streamlined and VAT removed will take some time to achieve. Traceca has been in place for 13 years and progress has been slow.

It is therefore recommended that no port investment for traffic dependent on these reforms should be carried out in advance of the reforms.. That is to say, the reforms should precede the investment rather than vice versa.



A Note on Transit Traffic from North West China

Another possible source of transit traffic which was investigated was transit cargo from China. China is now the second largest exporter in the world, after Germany. The vast majority of the Chinese exports come from the east coast, especially Guangzhou and Shanghai. But there is now increasing manufacturing in North West China, around Urumuchi; and Kazakhstan's imports from China have increased sharply to just over 20% in the third quarter of 2006 (source IMF statistics). China is now second to Russia which accounts for just under 40% of Kazakhstan's imports.

The fast-increasing trade with China raises the question of whether Aktau could attract transit traffic from Western China to destinations across the Caspian. But brief reference to a map shows that this is unlikely. The shortest rail route from north west China to Azerbaijan is via Turkmenbashi, not Aktau. And despite the need to cross three borders (China-Kazakhstan (at Dostik)-Uzbekistan-Turkmenistan), the route via Turkmenbashi is the route favoured in practice by westbound exports from both western China and Uzbekistan. Turkmenbashi does in fact handle modest volumes of this trade (e.g. imports destined for the growing population of Chinese in Georgia), while Aktau, which entails a long diversion to the north, handles none.

It will be recalled when the Uzbek cotton exports used the Traceca route for a short period several years ago, it was routed via Turkmenbashi, not via Aktau. JICA are currently working on the subject of transit traffic from China, and confirmed that they consider Turkmenbashi better located for this traffic than Aktau.

3.12 Conclusions

The traffic forecast is summarised in Table 3.30.

Table 3.30
Summary of Traffic Forecasts (000 tonnes)

	2006	2010	2015	2020
Oil	9,900	20,000	19,000	19,000
Dry Cargoes				
Steel	947	1,151	1,469	1,875
Scrap	51	100	200	300
Grain	118	400	1,000	1,250
Other	30	30	40	50
Rail ferry inbound, existing traffic	148	259	417	613
Rail ferry inbound, New City cargoes	0	330	330	330
Rail ferry outbound (fertilisers)	0	0	1,000	1,200
Containers, existing traffic	10	51	154	310
Containers, New City cargoes	0	330	330	330
Total Dry Cargo	1,304	2,651	4,940	6,258
Total Liquid and dry	11,204	22,651	23,940	25,258



Comparison of Forecasts with AISCP and EBRD Forecasts

The **oil** forecasts shown in Table 3.30 are slightly below the AISCP's forecast, but above those of the EBRD, for both 2010 and 2015 (see Table 3.31 on the following page).

For **dry cargo**, however, the 2015 forecast shown in Table 3.30 is well above AISCP forecast. The main reasons for the higher forecast are (i) the exports planned by the new fertiliser plant, (ii) the additional grain exports likely to result from the new export strategy of JSC Ak Bidal and their investment in new coastal silos in Iran, Azerbaijan and Georgia, and (iii) imports of construction materials and later consumer goods from Dubai and Turkey for the New City .

In the longer term the Special Economic Zone should generate additional traffic, but it will take time. None of the projects currently in the pipeline will generate significant port traffic, and no distribution companies, which are the key players at Jebel Ali, have yet been set up in the SEZ.

Also, additional traffic may be attracted away from their overland current routes to Novorossiysk and Ukrainian ports on to Traceca routes via Aktau - if key reforms are carried out, especially in rail pricing and cross border procedures. But these reforms will take time. They have been under discussion for several years and there is little sign of progress as yet.

Table 3.31: Existing AISCP and EBRD Traffic Forecasts
('000 tonnes)

	2006	2010	2015
AISCP Forecast			
Oil	9,900	24,300	28,200
General cargo	1,028	3,000	3,800
Grain	118	500	500
Total	11,046	28,250	33,595
EBRD Forecasts			
Oil	9,900	15,800	11,400
General cargo	1,028	2,000(b)	2,500 (b)
Grain	118	500	500
Total (a)	11,046	18,300	14,400

Notes:

(a) Excludes ferry traffic

(b) Excludes grains and ferry traffic



ANNEX I

SHIP OPERATING COSTS

Table AI.1 Ship Operating Costs, 12000 v 60000 DWT
(US\$)

Ship capacity (DWT)	12000	60000
Constructing Cost (\$ million)	8.5	27
Speed		
Annual Costs (\$000)		
Capital	1,358	4,314
Crew	600	600
Maintenance and Repair	170	540
Insurance	128	405
Supplies	500	500
Others	500	500
Total p.a.	3,255	6,859
Operating days p.a.	330	330
Daily cost in port	9,865	20,784
Fuel per day	4,167	12,500
Daily cost at Sea	14,032	33,284

Notes:

<i>Interest rate</i>	: 15%
<i>Vessel Life</i>	: 20
<i>Annualised capital cost factor</i>	: 0.1598
<i>Crew</i>	: 20
<i>Number of crews</i>	: 2.5
<i>Cost per crew member (\$ p.a.)</i>	: 12,000
<i>Maintenance and repair (% of construction costs)</i>	: 2%
<i>Insurance (% of construction costs)</i>	: 1.5%
<i>Fuel consumption (tonnes/day)</i>	
12000	: 16.7
60000	: 50
<i>Fuel cost per tonne (\$)</i>	: 250

**AI.2 Comparison of Shipping Costs from Aktau and Kuryk to Baku.
(US\$)**

	AKTAU	KURYK
Ship capacity	12,000	60,000
Distance, Aktau-Baku (n miles)	250	230
Ship speed	12	13
Days at sea	1.74	1.47
Days in port	2	2
Costs per ship day (\$)		
at sea	14,032	33,284
in port	9,865	20,784
Costs per round voyage (\$)		
Ship time at sea	24,361	49,072
Ship time in port	19,730	41,567
	44,091	90,639
	3.67	1.51
plus port dues		
Aktau/Kuryk	3	2
Baku	2	2
TOTAL SEA FREIGHT (\$/tonne)	8.67	5.51



ANNEX II

COSTS OF PIPELINES

The two main pipelines which have been constructed in the recent past are the Caspian Pipeline Consortium (CPC) pipeline which opened in 2000 and the Baku-Tbilisi-Ceyhan pipeline which opened in 2005. Their construction costs, tariffs and order of magnitude revenues are summarised in Table All.1

Table All.1
Costs and Tariffs for CPC and BTC Pipelines

	CPC	BTC
Construction cost	\$2.6 billion	\$3 billion
Route	Tengiz-Novorossiysk	Baku-Tbilisi-Ceyhan (Turkish Mediterranean)
Distance (km)	1600	1675
Start of Operation	2000	2005
Construction cost per km (\$)	\$1.8 million	\$1.6 million
Tariff	\$30.3/tonne	\$24/tonne
Tariff per km (US cents)	1.9 cents	1.4 cents
Traffic, average over first 10 years (tonnes)	30 million	40 million (a)
Revenues (a)	\$900 million	\$960 million
Approximate revenues as % of construction costs (b)	35%	32%

(a) The traffic (and revenues) assumed are based on the assumption of traffic levels of 40 million tonnes p.a. The capacity of the pipeline is 50 million tonnes, but it is unlikely to carry that volume in its early years.

(b) The return on the pipeline investment would be lower than the percentage shown as the revenues have to cover capital repayments as well as interest, and also operating costs, which are estimated at about \$3 per tonne. The operating cost of about \$150 million for the 1600 km (source: The BTC Pipeline and BP by Claros Consulting, 2003) would suggest operating costs of around \$60 million p.a. for the Tengiz-Kuryk pipeline

It will be seen that:

- The construction costs of the pipelines are similar at \$1.6-1.8 million per kilometre
- The tariffs for the pipelines are similar, at 1.4-1.9 cents per km, giving an average of 1.65 cents per kilometre
- The required revenue would appear, from the charges applied for the CPC & BTC pipelines, to be over 30% of construction costs. This appears high, but the investors have had to make their investments several years before the revenues start, they may have to face traffic below maximum capacity in early years, as well as operating costs.

It may be concluded that:

- The implied cost for the Tengiz-Kuryk pipeline, for 600 km at approximately \$1.7 million per km, would be \$1 billion. This is in line with prices quoted in the press.
- If the Tengiz-Kuryk pipeline had to set tariffs to recover the same 30% as at CPC and BTC, this would be about **\$15 per tonne** (i.e. 30% of \$1 billion, divided by 20 million tonnes p.a).



- But if the tariffs for the 600 km pipeline Tengiz-Kuryk are set at similar levels per kilometre to the CPC and BTC pipelines (1.65 cents per km) this would imply a tariff of about \$10 per tonne. However, the diseconomies of size with the smaller capacity of the pipeline of the Tengiz-Kuryk pipeline might suggest a tariff of, say, **\$11 per tonne**.



ANNEX III

COMPARISON OF COSTS OF SELECTED EXPORTS VIA TRACECA AND COMPETING ROUTES

**1 Grain
(in 60 tonne rail wagons)**

Kovylnaya to Ukrainian ports			
KzRW	Kovylnaya – Tobol		4,3
RRW	Tobol – Solovey		28,9
UzRW	Topoli - Ukrainian ports		15,05
Total			48,25
Kovylnaya to Poti (via Aktau)			
KzRW	Kovylnaya – Aktau		26,77
	Expenses in Aktau (port charges + station services, Customs and etc.)		2
	Baku-Aktau ferry		17,5
	Expenses in Baku (port charges + station services and etc.)		1
AzRW	Baku- Beyuk-Kiasik		12,08
GRW	Garbadani – Poti		8,86
Total			68,21

**2. Ferrous metal
(in 60 tonne rail wagons)**

Zhanaul to Ukrainian ports			
KzRW	Zhanaul – Tobol		16,79
RRW	Tobol- Solovey		43,3
UzRW	Topoli - Ukrainian ports		15,63
Total			75,72
Zhanaul – Poty (via Aktau)			
KzRW	Zhanaul – Aktau		54,45
	Expenses in Aktau (port charges, station services, customs, etc.)		2
	Baku-Aktau ferry		17,5
	Expenses in Baku (port charges, station services and etc.)		1
AzRW	Baku- Beyuk-Kiasik		12,08
GRW	Garbadani – Poti		8,86
Total			95,89

Cont...



3. Sulphur in Bulk
(in 60 tonne wagons)

Carrier	Kulsary to Ukrainian ports		
KzRW	Kulsary- Aksaraiskaya 2		5,58
RRW	Aksaraiskaya – Gukovo		20,95
UzRW	Krasnaya Mogila – Ukrainian Ports		10,00
Total			45,83
Kulsary - Poty (via Aktau)			
KzRW	Kulsary – Aktau		7,79
	Expenses in Aktau (port charges + station services, Customs and etc.)		2
	Baku-Aktau ferry		17,5
	Expenses in Baku (port charges, station services etc.)		1
AzRW	Baku- Beyuk-Kiasik		12,08
GRW	Garbadani – Poti		8,86
Total			49,23

4. Nonferrous metals
(in 20' containers)

Zhezkazgan – Novorossiysk			
KzRW	Zhezkazgan - Aksaraiskaya 2		985
RRW	Aksaraiskaya - Novorossiysk		718
Total			1703
Zhezkazgan – Poty (via Aktau)			
KzRW	Zhezkazgan – Aktau		1083
	Expenses in Aktau (port charges + station services, Customs and etc.)		100
	Baku-Aktau ferry		630
	Expenses in Baku (port charges + station services and etc.)		32
AzRW	Baku- Beyuk-Kiasik		530
GRW	Garbadani - Poti		125
Total			2500



ANNEX IV

RECOMMENDED TARIFF RATES TO ATTRACT EXPORTS TO AKTAU AND TRACECA ROUTES

Cargo	Grain	Ferrous metal	Sulfur
Route	Kovylnaya –Poti	Zhanaul- Poti	Kulsary - Poti
Wagon	60t/wagon	60t/wagon	
	US \$ / ton	US \$ / ton	US \$ / ton
KzTJ	15	36	6,84
Charges in Aktau	1	1	1
Aktau-Baku ferry	15	15	15
Charges in Baku	0,7	0,7	0,7
AzRW	8,05	8,05	8,05
GeoRW	7,0	7,6	7,6
UzTY			
Total	46,75	68,35	39,19

Cargo	Nonferrous metals	20 foot Container	
Route	Zhezkazgan – Poti	Poti - Tashkent	Poti – Almaty
Wagon	(20 f container)	(own 20 f container)	(own 20 f container)
	US \$ / container	US \$ / container	US \$ / container
KzTJ	690	245	405
Charges in Aktau	50	50	50
Aktau-Baku ferry	360	360	360
Charges in Baku	25	25	25
AzRW	176	105	105
GeoRW	124	105	105
UzTY		45	
Total	1425	935	1050

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