



TRACECA Traffic and  
Feasibility Studies

TNREG 9803

Module B

New Caspian Shipping  
Services

Final Report

August 2001

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**REPORT COVER PAGE**

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## Abbreviations & Acronyms

ACSP	Aktau Commercial Sea Port
BISP	Baku International Sea Port
Bn	Billion
Cascor	Caspian Corporation
Caspar	Caspian Shipping Company
cm	Centimetre
CU	Co-ordination Unit
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ESCAP	Economic and Social Commission for Asia and the Pacific (institution of the United Nations)
EU	European Union
FIRR	Financial internal rate of return
g	Gram
GDP	Gross Domestic Product
GNP	Gross National Product
IMDG	International Maritime Dangerous Goods Code
IMO	International Maritime Organisation
km	Kilometre
l	Litre
m	Metre
m <sup>2</sup>	Square Metre
m <sup>3</sup>	Cubic Metre
MARPOL	International Convention for Prevention of Marine Pollution
Mn t	Million Tonnes
MoT	Ministry of Transport of Turkmenistan
MoTC	Ministry of Transport and Communications of the Kazakh Republic
NM	Nautical Mile
PSC	Port State Control
SOLAS	International Convention for the Safety of Life at Sea, 1974
T (or t)	Tonne of 1,000 kg
Takis	The European Union's Tacis Programme
TAR	Trans-Asian Railway Corridor
tdw	Tonnes Deadweight
TEN	Trans-European Network
TML	Turkmen Maritime Lines
ToR	Terms of Reference
t.p.a.	Tonnes Per Annum
TRACECA	Transport Corridor Europe-Caucasus-Asia
USD	United States Dollar
VHF	Very High Frequency (radio system for short range communications)

## 1 Project Synopsis for Module B

Project Title	: Traffic and Feasibility Studies
Module B Title	: New Caspian Sea Shipping Services
Project Number	: TNREG 9803
Module B Countries	: Azerbaijan, Kazakhstan, Turkmenistan, Georgia, Ukraine

**Project Objectives (Module B)** According to the terms of Reference the ultimate objective of Module B is to define conditions under which new shipping services or lines could be inaugurated on the Caspian Sea. If the analysis reveals that under present conditions or under conditions, which can realistically be created within the Caspian region, a new shipping service or line is feasible, then a business plan will be prepared.

Specific objectives are:

1. to assess the cargo potential for transports across the Caspian Sea;
2. to analyse the availability of current shipping capacity on the Caspian Sea;
3. to investigate the operating costs of vessels in the Caspian Sea;
4. to investigate technical constraints relative to navigating and operating vessels on the Caspian Sea;
5. to examine the availability of qualified human resources for the operation and management of a merchant fleet;
6. to develop a strategy for providing training needs for local mariners and shipping experts;
7. to investigate the political and regulatory environment affecting shipping on and into the Caspian Sea;
8. to recommend a management structure for a new shipping service or line, provided the foregoing steps have indicated sufficient evidence for the feasibility and demand for such a service or line;
9. to establish a business or feasibility plan for possible new or extended shipping services on the Caspian Sea, provided that the foregoing steps have indicated sufficient evidence for the feasibility and demand for such a service or line;
10. to discuss the results of the business plan with interested parties.

Planned Outputs

1. Reliable and robust information on the present and future development of transport across the Caspian Sea.
2. Analysis of the possible match or mismatch between available shipping capacity on the Caspian and forecasted transport demand.
3. Cost estimates for the operation of vessels on the Caspian Sea.
4. Report on the technical conditions of navigating on the Caspian Sea.
5. Investigation into existing facilities in the Caspian region capable of training mariners and shipping management staff.
6. Proposal for a strategy to develop human shipping resources in line with international standards. To familiarise the beneficiaries with the implications of this proposal a regional seminar will be held.
7. Report on political and regulatory constraints affecting shipping on the Caspian Sea.
8. Proposal for the management structure of a new shipping service or line (if considered feasible).
9. Business or feasibility plan for a new shipping service or line operating on the Caspian Sea (if considered feasible), that should stand up to potential financing parties' scrutiny.

Project Activities

1. A traffic forecast provided by Module A will be analysed with respect to traffic across the Caspian Sea and cross-checked for plausibility with respect to recent transport data; a general overview of macro economic factors affecting the project and trade and transport conditions prevailing in the Caspian sea region (especially in Turkmenistan, Kazakhstan and Azerbaijan). Interviews with local/regional transport experts both from public sector (administrations, institutions) and private sector traffic users (operators, freight forwarders, consultants) will be conducted.
2. Review of recent studies on the situation of shipping in the Caspian Sea will produce a preliminary list of tonnage available for shipping in the Caspian Sea. This list will be checked in the course of an "on-site" visit in the Caspian region and during talks with representatives of the major ports of the beneficiary countries. The then confirmed tonnage available in the Caspian would be compared with the forecasted demand for transport. In case of the demand exceeding the available shipping capacity, the consultants will propose what type or types of vessel should additionally be made available.

3. Review Admiralty charts and/or 'Pilot' handbooks of the Caspian Sea, port registers (e.g., 'Ports of the World') and existing studies on nautical aspects of Caspian Sea navigation (e.g. EC: Caspian Sea Water Level Study). Superficial inspection of access channels, waterfront port infrastructure, navigational infrastructure and maintenance facilities in Aktau, Turkmenbashi and Baku. Analyse the consequences of the identified limitations for types and sizes of suitable vessels, risk of damage and time loss and in general propose possible measures to remove these limitations.
4. Investigate and evaluate the local and regional situation concerning a human resources base for the maritime profession.
5. Advise on the most appropriate steps to be taken by, in particular, Kazakhstan and Turkmenistan, in establishing a human resources base for a national shipping industry. In order to assist local training institutions and other maritime organisations to develop their services to international standards, a regional seminar will be held to familiarise them with international maritime practice.
6. Analyse (market) position, intention, objectives of the companies, and management structures of operators in the Caspian Sea, both present and potential. Propose how a new line or shipping service can effectively be incorporated within the existing management structure(s) of present and potential operators on the Caspian Sea and develop rough management structures for new ventures.
7. Identify the possible fields of interaction between the regulatory and political environment of the Caspian and Volga-Don Canal on the one hand and shipping on the Caspian Sea on the other. Collect and review existing studies and literature with respect to the identified fields of interaction. Additional information will be gathered and gaps filled by means of interviews with legal and political experts, and research especially of local experts into administrative, regulatory and legal procedures in the beneficiary states. Analyse the extent to which the existing legal, fiscal and regulatory frame hinders or facilitates the development of shipping on the Caspian Sea, especially with regards to the establishment of a new shipping venture. Recommend improvements and changes required.

8. Based on the information provided by Module A and the data base secured in the preceding tasks the consultants will assess the current costs of operating ships in the Caspian Sea, and the revenues, and calculate the profitability, or otherwise, of the existing services. Develop a limited set of scenarios, based on reasonable assumptions depicting possible cargo flows from the forecast of Module A, and draw consequences therefrom with regard to vessel capacity. Demonstrate the areas of maritime activities, which in the consultants' estimation are the most promising. Test the various calculations, scenarios, proposals and suggestions listed above. Provide and hand over to beneficiary or other interested party(ies) a model calculation with sufficient flexibility enabling such party(ies) to fine-tune and adapt the same to specific requirements. Demonstrate the commercial viability of one or several models. Make proposals with respect to ship chartering or owning. Propose a method or methods for setting up a new operation including suggestions concerning ship acquisition or chartering, staffing ashore and afloat, selection of suitable ports of registry, management structures, a preliminary timetable, and ancillary matters. Discuss the entrepreneurial and other risks and opportunities associated with shipping services in the Caspian Sea.

Project Starting Date	Contract signature	30 August 1999
	Actual start of project activities Module B	1 May 2000
Project Duration	14 months for module B, counted from	1 May 2000
	24 months for whole project, including modules A, B, C, D and E	

## 2 Summary

As an integral part of the TRACECA Traffic and Feasibility Studies, a project financed by the European Commission, the present study analyses the risks and chances of establishing new shipping services on the Caspian Sea.

Shipping in the Caspian Sea is short-sea by definition and by nature, but international since true cabotage (i.e., sea transportation within the boundaries of one State) is virtually non-existent, except for some minor oil shipments e.g. between Baku and Dubendi, Alaja and Turkmenbashi, Neftchala and Baku etc.

Whereas trans-Caspian shipping operations in Soviet times were predominantly national with Iran being the only non-USSR littoral participant, the present scene is characterised by the emergence of three more littoral States, Azerbaijan, Kazakhstan and Turkmenistan, which together with the 'historical' Caspian maritime nations, Russia and Iran, now lay claim to national participation in trans-Caspian shipping. Former Soviet participation was mainly confined to river-sea types of ships, Iran deployed multi-purpose single-deckers and Azerbaijan, formerly a part of the Soviet Union provided by far the lion's share of ships comprising many types ranging from multi-purpose dry-cargo to tankers to tugs to ferries. This amounted to a quasi-monopoly situation which has survived to the present even though Caspian Shipping Company, the national Azeri carrier, has had to reduce its Caspian fleet and deploys a certain percentage of its active fleet in the Black and Mediterranean Seas, and has consigned other ships to lay-up, that being a consequence of the drastic decline of former transport volumes due to the disintegration of the former Soviet Republic and the national economy.

In the Soviet past, most if not all service companies were considered as, and in fact operated very much like, Government institutions, similar in many respects to the Post Office. Not surprisingly, therefore, the notion that customer satisfaction is vital for the survival of any service provider was largely unknown in such organisations, if only for the reason that there was no real competition. However, the commercial environment in the region has changed and keeps changing.

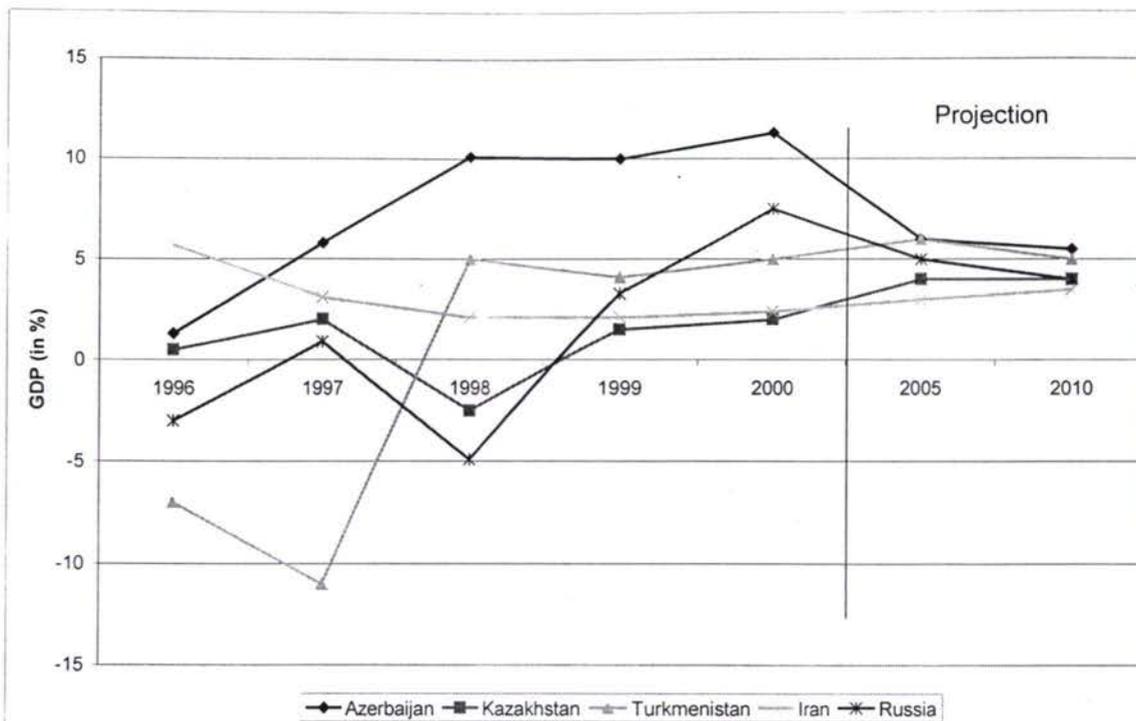
### 2.1 Potential Regional Markets

From a central European angle, the TRACECA route extends from the Ukraine via the eastern Black Sea ports of Poti and Batumi (Georgia) and via Tbilisi to the western Caspian Sea port of Baku (Azerbaijan). Here, the route basically splits into a northern lane across the Caspian Sea to the port of Aktau (Kazakhstan) and onwards via Aktybinsk to Chimkent, and a southern lane to the port of Turkmenbashi (Turkmenistan) and from that port via Ashgabat and Tashkent (Uzbekistan) to Chimkent. In Chimkent both corridors re-unite and the TRACECA route finally ends at the Kazakh-Chinese border at Druzhba (Kazakhstan). For the purpose of the present study it is indispensable to take a closer look at the key economies and regions around the Caspian Sea.

Within the region investigated, Russia shows the highest level of Gross National Product (GNP) per capita among the Caspian littoral states (USD 2,270), followed by Iran (USD 1,760). Of the TRACECA countries Kazakhstan (1,230 USD) seems to be relatively well off, while Azerbaijan (550 USD) and Turkmenistan (660 USD) lag behind. Over the past five years though, Azerbaijan has made considerable progress in increasing the GNP per capita while Russia, Turkmenistan and Kazakhstan have barely been able to avoid reductions. Iran can also be considered to have found a moderate but nevertheless positive growth path.

The GDP of the Caspian states mainly depends on the evolution of the energy industry, on world oil consumption and on solving the existing transportation problems. Economic development in recent years shows a very fluctuating pattern. Extreme economic troughs are followed by high growth rates. Subject always to the prevailing, and substantial, uncertainties, the short-term forecasts for economic developments in the region look promising. Azerbaijan and Kazakhstan stand out as being likely to achieve comparatively high real GDP and trade growth rates. Thus, given the expected positive development of the a.m. parameters and the potential of the Caspian states for catching up, also for the medium-term future a stabilisation of regional growth on a comparatively high level appears most likely.

**Figure 2-1: GDP Development of Caspian Riparian States 1996-2010**



Source: The World Bank (2001), World Development Indicators 2000; Bundesanstalt fuer Auslandsinformationen, bfai-Info Osteuropa, 15/2000; own projections

The economic development of other Caspian and Caucasian countries is a determining factor for sea-borne trade. At the time of compiling this report, trade between the three beneficiary states remains at a low level. However, the countries located at the eastern side of the Caspian Sea, Kazakhstan, Turkmenistan and Uzbekistan show the highest trade values in the region. The overall value of import and export flows of these countries in 1999 amounted to almost USD 19 billion. Furthermore, Russian trade with these four countries accounts for 25% of Russian CIS trade. Goods exchange with the Iran has developed quite dynamically during the last three to four years, though starting from a relatively low level.

Making a long-term forecast of foreign trade developments in the Caspian region is complicated by substantial uncertainties related to:

- the progress of the transformation process in the TRACECA countries and in Russia towards a market economy;
- the geopolitical situation, particularly with regard to the Chechnya conflict and the undecided situation over Nagorno-Karabakh;
- world economic developments, in particular the development of oil and gas prices.

Future developments in international trade of the individual CIS countries depend on:

- the pace of economic transformation;
- the availability of natural resources;
- the competitiveness of industrial goods;
- the availability of an efficient trade and transport infrastructure.

All in all, it is expected that foreign trade growth will remain subject to considerable fluctuations, however the overall growth trend in the Caspian region will turn out to be positive. Significant changes to the commodity structure of regional exports and imports are not expected. The Caspian region will export natural resources and semi-finished products (oil and oil products, gas, cotton, metals), and import consumer goods (food and non-food) and machinery and equipment.

The complex economic situation in the Caspian Sea region has direct consequences on the sea-borne trade. The past and present cargo throughput is mainly characterised by the following aspects:

- The ports are primarily serving national industrial and social centres exporting or importing raw materials, semi-manufactured or manufactured goods;
- Liquid bulk (crude oil and oil products) represents the major share of total throughput;
- Within the general cargo group, metal is the main commodity handled by the ports;
- Containerised general cargo represents only an insignificant share of total throughput.

Dry cargoes shipped from Aktau to Baku on the east-west route would as a rule originate in Kazakhstan, Uzbekistan and Kyrgyzstan and comprise i.a. certain ferrous and non-ferrous metals, cement, timber, grain, cotton (the latter commodity is also carried in containers) and some chemical products. The quantities however are rather small particularly when compared with oil shipments.

Dry cargo shipments from Turkmenbashi to Baku are almost exclusively carried by the ferry service (rail wagons and road trucks) which normally adheres to its schedule. Crude oil in rail tank wagons dominates the westbound trade. Apart from the repositioning of empty tank wagons, which claims a major percentage of eastbound rail ferry capacities (i.e., between Baku and Turkmenbashi), the principal commodities moving eastbound across the Caspian Sea are manufactured products mainly from Turkey and the EU, some oilfield equipment, and building materials. The dry cargo trade is divided between two modes, i.e. conventional cargo ships; and ferries, with the commodities split between both modes in accordance with their physical nature.

Dry cargoes shipped through Aktau, i.e. grain and a large proportion of the metal products handled at that port, are currently almost exclusively destined to Iran. The Iranian demand for metals from Russia (Magnetogorsk, Chelyabinsk) and Kazakhstan (Karagandar) at present amounts to some 700,000 t p.a. (with increasing tendency) and accounts for some 80 percent of ACSP's dry cargo throughput.

All recent attempts at establishing regular dry cargo services (ferry, Ro/Ro) between east Caspian ports (Aktau, Turkmenbashi) and Russian ports (Makhachkala, Astrakhan) have failed to generate sufficient cargo to guarantee the viability of such services.

Before the disintegration of the Soviet Union, Baku served as the USSR gateway to Iran. The dry cargo trade between the USSR and Iran amounted to one million tonnes p.a. Today, the Iran traffic consists of rather minor quantities of bagged cement and of construction material. The current regular ferry service between Baku and Nourshahr carries only very minor quantities of trucks.

A major feature of the TRACECA route is the incidence of multiple handling and of several border crossings. A perfectly normal transport, by container, from the EU to, say, Ashgabad will move by sea from Europe to Poti. The container will be discharged and placed on a railcar to be railed to Baku. This entails customs formalities, including deposits payable but very difficult to recover, in Poti and at the Georgian/Azeri border. The truck will then go by ferry to Turkmenbashi and onward to Ashgabad. By that time the container has crossed four borders and has been handled at least three times. It should be noted that current practices of customs clearance are far from efficient state-of-the-art procedures. Consequently, the cargo sometimes has to bear considerable waiting times and is charged with extra 'fees' not necessarily found in printed tariffs, which altogether may contribute to a reduced attractiveness of the TRACECA route.

Consequently, cargo owners and transport operators also use other competitive routes than the TRACECA itinerary:

- The land bridge between Turkmenistan and Turkey via Iran passes by the southern part of the Caspian Sea and has in the past been used for the west-east transport of construction material.
- The land bridge between Kazakhstan and Azerbaijan via Russia passing by the northern part of the Caspian Sea. Certain cargoes from Kazakhstan also travel direct to Russian Black Sea ports avoiding the route via Azerbaijan.
- Instead of going from Aktau to Baku, some vessels sail to Russian Caspian ports, where on-carriage is organised by rail and road.
- Important competitors of the TRACECA route are the Trans-Asian Railway Corridor, which is also promoted by UN ESCAP, and the refurbished Trans-Siberian Railway.

Russia in particular is searching for alternatives to the existing transport corridors. In line with a new Russian policy doctrine towards Central Asia, which aims at a) opening new markets and business opportunities for Russian companies, b) integrating Russia into the international markets and thereby, Russia into the Central Asian economies (or v.v.), and c) firmly establishing Russia as a transit and distribution hub for hydrocarbons of Central Asian origin, Russia actively participates in developing transport corridors in the Central Asia region, of which some may be regarded as competing with the TRACECA route.

At the time of drafting the present Report Russia favours the development of the North-South "Nostrac" Corridor, a multi-modal route extending from the Baltic Sea to the Iranian Gulf, and beyond to the Indian sub-continent. Politicians both from Russia as well as Iran quite openly declare the new North-South Route as a project directed against the EU TRACECA corridor and what they consider Western "encroachment" on the Caspian region. Given the long time horizon for a full implementation of the project, it remains to be seen whether the new corridor will be accepted by the major transport users and by the operators which compete for cargo in the Asia-Europe trade, and whether the high expectations of Russian and Iranian transport experts will be justified at the end of the day.

## 2.2 Existing Facilities and Market Players

The consultants have investigated the relevant existing infra- and superstructures necessary to organise shipping on the Caspian Sea: port facilities, maritime safety systems, ship repair facilities and vessels. With respect to port facilities the consultants have focused on the main ports of Baku, Aktau and Turkmenbashi as well as on the emerging ports of Amirabad (Iran) and Olya (Russia), which have recently been inaugurated or are under construction, respectively, whilst not totally ignoring other minor ports.

Baku port is a universal port with facilities and equipment to handle all major commodity groups. Port and port facilities are owned by the public sector and mainly managed by the Baku International Seaport (BISP), which enjoys a near-total cargo handling monopoly. BISP works 365 days per year, 24 hours per day. Some of the handling equipment requires total replacement or is in need of repair. The new container handling equipment financed by Taxis appears to be in good condition. Baku has adequate ship repair facilities and also shipyards engaged in shipbuilding. BISP is also responsible for the administration and infrastructure of Dubendi (42km by road, 92nm by sea north of Baku), where some major oil handling facilities are located (superstructure owned by the state-owned oil company SOCAR and the Azeri-Turkish joint venture company Caspian Transco).

Aktau Port is the only international seaport of the Republic of Kazakhstan with links to Russia, Turkmenistan, Iran, and Azerbaijan. The port is managed by the state-owned Aktau Commercial Sea Port (ACSP) authority. Cargo handling operations are mainly in the hands of private companies. The port operates throughout the year, 24 hours per day. After the recent rehabilitation of the dry cargo berths, ACSP has a capacity to handle 1.5 million tonnes p.a. of dry cargo. A new grain terminal was inaugurated in May 2001. The rehabilitation of the rail ferry terminal is expected to be finalised by the end of July 2001, which will give a boost to the insignificant cargo volumes carried by (road) ferry between Aktau and Baku. The existing oil facilities and pipelines permit the port theoretically to handle up to 8.5 million tonnes of liquid cargo annually. There are no ship repair facilities in Aktau.

Turkmenbashi port is owned and operated by the state-owned TML Turkmen Maritime Lines under the direct responsibility of the Cabinet of Ministers. The port accommodates rail ferries, and conventional and multipurpose ships trading within the Caspian Sea and from/to the Black Sea via the Volga-Don canal. In addition to a ferry terminal with two berths and a new terminal building, plus some general cargo facilities, Turkmenbashi Port also has a fully equipped container yard (funded by TRACECA), which is currently under-utilised. The existing shipyard has workshops and an old floating dock for vessels up to 150m. The workshops are in an operational condition and can produce simple spare parts. The floating dock is out of class.

Aids to navigation in both Baku and Turkmenbashi are in a deplorable and altogether unsatisfactory condition, while in Aktau only the Port Control Centre needs upgrading. At the time of writing TRACECA is inviting tenders for a rehabilitation programme, implementation of which will considerably improve navigational safety in the three ports concerned.

Olya seaport is situated about 100km south of Astrakhan. Recently the first stage of construction has been finalised allowing the port to handle general cargo vessels and ferries. In the final stage of

development Olya seaport is expected to have a handling capacity of 8 mn. tpa of dry bulk, conventional cargo and containers. However, this is subject the improvement of the hinterland connections (e.g. the construction of a 46km railway link to reach the main railway line).

The new port of Amirabad, which has recently been opened, will be one of the biggest and best equipped ports in the Caspian Sea Area. The port is located about 180 kilometres east of Noushahr and near Neka. Rail tracks connect this port to the national railway system. One jetty and one Ro/Ro jetty are expected to be opened soon, a rail ramp is under discussion. At the final stage, there will be ten berths for dry cargo, oil, and oil products. Local sources opine that further work is required (e.g. dredging and the setting-up of the port administration) before the port is operational.

The consultants have also investigated the existing shipping companies and the types of vessels trading on the Caspian Sea.

Caspian Shipping Company (Caspar, based in Baku), by far the most important player in the Caspian shipping market, owns 8 rail ferries of Dagestan Type, 33 tankers (5,000 to 12,300 tdw), 22 dry cargo vessels (3,000 to 5000 tdw), and 2 Ro-Ro vessels (Kompositor Kara Karaev Type). Some of these vessels are currently operating in the Black and/or Mediterranean Seas, others are laid up due to lack of employment, or outstanding repairs. The dead-weight capacity of the Caspian fleet amounts to 350,000 tons. At present 20 dry cargo vessels, 1 ferry and 1 tanker are trading outside the Caspian Sea. CSC vessels serve all Caspian Sea ports. The company is active in the transportation of passengers, dry and liquid cargo. It runs all ferry services in the Caspian Sea (Baku – Aktau/Turkmenbashi), and at the time of writing has a quasi-monopoly of carrying oil from the east coast of the Caspian Sea to Baku/Dubendi. Caspar has placed an order for the construction of one 4000 tdw-general cargo vessel with an Azeri shipyard, contract value: 5.0 mn USD, for delivery in 2001.

#### Russian Operators

Russia has a very large fleet of river-sea type ships of which the majority trades within the vast Russian system of rivers and other interior waterways. Also, many of the shipping companies operating those vessels serve traditional trading routes. However, that does not mean to say that their ships will never enter the Caspian Sea. The short overview hereunder of Russian shipping companies serving Caspian ports is restricted to those at present actively engaged in that trade whose number could at least in theory increase provided the Caspian business picks up. A total of 200 Russian ships have Caspian ports of register but that number includes many small vessels exclusively deployed in the domestic coastal and river trades.

North-Caspian Shipping Company of Astrakhan was reported recently as wishing to acquire a 2,500-3,000 tdw dry cargo ship for river/sea trading, allegedly together with unnamed German partners, in addition to the medium-sized fleet of similar dry cargo ships it already owns, plus one small sea-going vessel for 100 to 200 passengers. The company is engaged in the trade with Iran.

Volgotanker, a Russian company based in Samara which owns i.a. 176 tankers and 49 ore-oil carriers. As the company name suggests, Volgotanker is in the business of carrying liquid bulk commodities, mainly oil and derivatives. A rather limited number of suitably-sized river-sea tankers is operating in the Caspian Sea. Volgotanker is also very active on the rivers Kama, Don, Dnieper, Danube and their tributaries. At the time of the consultants' field research Volgotanker ships served all Caspian oil ports except Baku. Volgotanker have recently concentrated on taking oil and products from the Caspian east coast to Russian ports and to Iran. Volgotanker has foreign shareholders.

Volga-Flot Shipping Company of Nizhny Novgorod is a mixed operation. It ranks among the biggest Russian shipping enterprises, owning a fleet of some 290 tankers and dry cargo ships, predominantly of the sea-river type. A small number of the ships is engaged in the Russia/Iran and v.v. trade.

#### Turkmenistan

Turkmen operator Turkmen Maritime Line (TML, based in Turkmenbashi) owns four dry cargo vessels of about 3000 tdw each of which two are operating in the Black Sea due to cargo shortage in the Caspian Sea. The company has ordered a new tanker of 5,000 tdw to be built in Turkey for delivery in 2001 and reportedly holds options for four additional tankers.

#### Iran

The Iranian shipping line, Khazar Shipping, the subsidiary of state-owned IRISL (Islamic Republic of Iran Shipping Lines) owns 3 to 4 or perhaps five dry cargo vessels and operates between Aktau/Turkmenbashi/Astrakhan and Iran. The company is mainly involved in carrying metal products.

### 2.3 Regulatory and Political Aspects

Shipping is an international business depending for its smooth operation on a set of universally accepted rules, regulations, codes, norms and conventions. The same also applies, if to a somewhat lesser degree, to maritime legislation of which in many countries, parts are closely related to the respective national legislation.

The United Nations, via its maritime arm, the IMO International Maritime Organisation, have achieved a great deal by way of convincing maritime nations of the need to accede to existing conventions, and to co-operate in the drafting of new conventions, all of which revolve around the multi-faceted subject of operational ship, crew and passenger safety. Of course it is one thing for a country to accede to a convention, and quite another thing for the ship owners of the relevant flag state to adhere thereto, and for the flag state and states actually to enforce and implement its stipulations.

In Soviet times the Caspian Sea was treated by all except Iran as a national waterway which strictly speaking it was not. However, with the emergence of the new littoral States of Azerbaijan, Kazakhstan, Turkmenistan, and of course of Russia, the Caspian Sea has been truly internationalised, calling for the faithful observance of the international agreements, conventions etc. referred to above. It is pertinent to record that Azerbaijan, Kazakhstan and Turkmenistan are in the process of developing their own maritime codes and have advised the consultants that their respective codes will be modelled on the Russian example (and in Azerbaijan also taking account of the TRACECA Draft Maritime Law). Some of the elements of maritime legislation are deeply rooted in the history of mankind. To quote but one example, the basic rules applying to the principles of general average can be traced back to the times of the Phoenicians but have of course since been codified thereby becoming the York Antwerp Rules which are universally accepted. Iran and Russia, incidentally, have a long maritime tradition and a maritime code.

It is outside the scope of this Report to discuss the many inter-relations between maritime legislation, ship safety (which in itself is a vast subject), ship owner and/or operator liability, insurance, claims and the settlement thereof, regulations concerning navigation, safety and quality management, prevention of pollution, cargo care, ship registration, plus a host of other items. Suffice it to say that maritime nations and ship owners who elect to ignore, or even to treat in a frivolous manner the subjects briefly touched upon immediately above do so at their own peril.

The consultants place on record that to the best of their knowledge and as a result of their field research they are persuaded that the powers that be in the countries under review are aware of the importance of the subject matter, and either have achieved international standards, or are striving towards that goal. Having said that, it is also true to state that lack of exposure to international shipping legislation and related subjects in at least two of the countries concerned will mean that in the foreseeable future those countries and the respective national ship owners will of necessity have to rely on outside assistance. The paramount importance of the subject matter cannot be over-emphasised.

The consultants have been told in the course of numerous interviews conducted with national shipping companies in Azerbaijan, Kazakhstan and Turkmenistan that cross-border international co-operation in whatever manner as between shipping companies will not be considered for operations on the Caspian Sea. Instead, foreign national carriers of littoral Caspian Sea States commonly treat one another as (hostile) competitors. The consultants strongly suggest that both the national shipping companies and also the relevant Ministries of Transport –where they exist- would benefit from comparing notes on shipping matters. International experience proves that where transport service providers which of course includes shipping, are on informal rather than official speaking terms they can resolve many a technical problem which might otherwise cause serious difficulties. The consultants hasten to add that such informal exchanges of views must not be misinterpreted as an advice to abolish healthy competition. Competitors should always be competitors and adversaries by definition, but remain on good speaking terms, since after all they are colleagues inside the same industry.

To sum up, the analysis of information gathered during the field visits indicates that the current legal, administrative and political environment prevailing in the countries visited is not conducive to the implementation and establishment of competitive market structures. The maritime sector is strongly

dominated by state-owned companies and institutions and subject to discretionary politico-strategic interests rather than governed by sound economic and commercial principles. Flag discrimination in the manner described is considered to be normal practice and an adequate means to promote the national shipping line.

## 2.4 Traffic Forecast

The traffic forecast has been restricted to dry cargo but includes movements of crude oil and derivatives to the extent same is being carried in railway tank wagons. The movement of bulk liquids (and gas) has been excluded throughout. The consultants have in the main had to rely on their own investigations and/or estimates since the information expected from Module A concerning cargo flows did not materialise. Having analysed the current situation of transports across the Caspian Sea and having evaluated the information gleaned in the course numerous interviews with regional transport operators and experts the consultants have decided to proceed as follows:

- Counter-directional liner-type services (e.g. east-west and west-east) are most promising since they contribute towards the balancing of trades, an important feature in e.g. container transports, while regular calls are expected to attract and generate traffic.
- The commodity mix reveals that the bulk of the commodities at present actually moving consists of low-value, transport-cost sensitive primary goods. Such goods can only bear low or moderate transport costs and do not warrant investments into port infrastructure, shipping capacities and handling equipment for the foreseeable future. In the short to medium term, dry cargo shipping across the Caspian Sea is therefore expected to continue to rely on existing vessel types, i.e. geared and gearless multi-purpose ships, and ferries.
- Containerised transport is expected to increase in Central Asia, and once the volumes are sufficiently high to support specialised ships on a permanent basis, the region will see cellular containerships regularly serving Caspian ports. Simultaneously, shore-based and inland waterways transport techniques will similarly have to adapt. This applies to means of road, rail and river transport, and to container handling and storage facilities. Subject always to normal developments the consultants expect the region to have been 'conquered' by containerisation not later than the year 2020.
- The consultants have calculated the expected cargo volumes on ferries and multi-purpose vessels carrying dry bulk, packaged and neobulk traffics on various routes across the Caspian Sea.
- In their calculations the consultants have been guided by the level of freight rates ruling at the time of field research. They have endeavoured to achieve optimum results. Accordingly, the commodity mix for multi-purpose ships has given preference, in that order, to containerised, packaged, neo-bulk, dry bulk and 'dirty' cargo, even though the actual operators of such services will most probably not have that amount of freedom of choice. The consultants have assumed a constant utilisation factor of 70% throughout the year and for all prognosis years even though the seasonality of certain trades will produce peaks and troughs in any one period. Liner trades the world over have to live with occasional slumps and less than fully booked ships.

With the above in mind the consultants suggest, for the purpose of testing the commercial viability of carefully selected routes, a number of ferry and multi-purpose vessel serving the said routes. The most promising thereof appear to be the five services more fully discussed hereunder:

- The first route is a triangular ferry service between Aktau, Amirabad and Baku, with one ferry steaming clockwise and the other ferry counter-clockwise, on a weekly schedule. Amirabad is synonymous for any suitable Iranian port. This service remains a theoretical assumption until such time as Amirabad has a shore-based ferry ramp and also gauge changing equipment for railway wagons.
- Two multi-purpose ships, maintaining a fortnightly schedule, take the place of the ferries on precisely the same route for the second service. Both services heavily rely on Kazakh exports of primary and semi-processed metals to Iran, and on Uzbek cotton exports, which for reasons explained elsewhere in this Report, may be expected to be re-routed via Aktau.
- The third service investigated is assumed to be triangular on a fortnightly schedule utilising multi-purpose vessels and serving Aktau-Amirabad-Baku clockwise.
- Service No. four offers weekly sailings by multi-purpose ships in an Aktau-Baku-Turkmenbashi rotation. Subject always to the availability of sufficient quantities of empty containers requiring desirous of going west, the base cargo could be containerised cotton from Uzbekistan.
- A pendular (or shuttle) service with one multi-purpose vessel, takes care of the direct Baku-Turkmenbashi connection as the fifth route, and
- finally, a pendular service between Makhachkala and Turkmenbashi constitutes the sixth route. Again subject to the availability of empty containers it would also specialise in container shipments. The Makhachkala-Turkmenbashi service depends on the enactment of government treaties (the Nostrac agreement between Russia, Iran and India) and on the satisfactory solution of the Chechnya conflict.

The calculated traffic forecasts for the identified routes are based on certain assumptions discussed in the main body of the present Report. It should be noted that the actual cargo volumes transported by the a.m. services are not identical with the below traffic potential but can be derived from it.

**Table 2-1: Potential cargo volumes transported between Aktau and Baku v.v.**

Commodities	Routes	Annual Quantities
Crude oil and oil products (ferry)	Aktau-Baku	up to 400,000 t
Oilfield equipment (ferry/multi purpose vessel)	Baku-Aktau	up to 7,000 t
Sulphur (multi-purpose vessel)	Aktau-Baku	up to 50,000 t
Cotton (ferry/multi purpose vessel)	Aktau-Baku	up to 150,000 t
Foodstuffs, consumer goods (ferry)	Baku-Aktau	up to 40,000 t
Grain (multi purpose vessel)	Aktau-Baku	up to 200,000 t
Metal, scrap metal, ores (multi purpose vessel)	Aktau-Baku	up to 50,000 t

**Table 2-2: Potential cargo volumes transported between Amirabad and Baku v.v.**

Commodities	Routes	Annual Quantities
Foodstuffs & consumer goods (ferry/multi purpose vessel)	Amirabad-Baku	up to 30,000 t
Construction material (ferry/multi purpose vessel)	Amirabad-Baku	up to 35,000 t
Chemicals (ferry/multi purpose vessel)	Baku-Amirabad	up to 10,000 t

**Table 2-3: Potential cargo volumes transported between Amirabad and Aktau v.v.**

Commodities	Routes	Annual Quantities
Metals (ferry/multi purpose vessel)	Aktau-Amirabad	up to 900,000 t
Grain (ferry/multi purpose vessel)	Aktau-Amirabad	up to 500,000 t
Foodstuffs & consumer goods (ferry/multi purpose vessel)	Amirabad-Aktau	up to 60,000 t
Ores (ferry/multi purpose vessel)	Amirabad-Aktau	up to 30,000 t

**Table 2-4: Potential cargo volumes transported between Turkmenbashi and Baku v.v.**

Commodities	Routes	Annual Quantities
Mineral products (ferry)	Turkmenbashi-Baku	up to 250,000 t
Cotton (ferry/multi purpose vessel)	Turkmenbashi-Baku	up to 100,000 t
Foodstuffs & consumer goods (ferry)	Baku-Turkmenbashi	up to 50,000 t
Equipment (ferry/multi purpose vessel)	Baku-Turkmenbashi	up to 30,000 t
Salt (multi purpose vessel)	Turkmenbashi-Baku	up to 60,000 t
Construction material (ferry/multi purpose vessel)	Baku-Turkmenbashi	up to 30,000 t
Fertilisers (ferry/multi purpose vessel)	Turkmenbashi-Baku	up to 30,000 t
Aluminium oxide (ferry)	Baku-Turkmenbashi	up to 50,000 t

**Table 2-5: Potential cargo volumes transported between Turkmenbashi and Aktau**

Commodities	Routes	Annual Quantities
Construction material (multi purpose vessel)	Turkmenbashi-Aktau	up to 20,000 t
Salt (multi purpose vessel)	Turkmenbashi-Aktau	up to 20,000 t

**Table 2-6: Potential cargo volumes transported between Turkmenbashi and Olya v.v.**

Commodities	Routes	Annual Quantities
Consumer goods & electronics (in container)	Turkmenbashi-Olya	up to 16,000 TEU
Miscellaneous goods (multi purpose vessel)	Turkmenbashi-Olya	up to 10,000 t
Consumer goods & electronics (in container)	Olya-Turkmenbashi	up to 8,000 TEU
Equipment (multi purpose vessel)	Olya-Turkmenbashi	up to 20,000 t

## 2.5 Future Facility Requirements

The analysis of the existing vessel capacities confirms that the tonnage currently operating in the and/or owned by Caspian Sea-based owners is fully sufficient to accommodate the existing and expected flows of dry cargo. A substantial proportion of Caspian Sea tonnage is currently in lay-up (this term is deemed to include ships, which are not in an operational condition). The two shipping companies of the beneficiary countries operating in the Caspian are trading parts of their dry cargo fleets in the Black and/or Mediterranean Seas due to an acute lack of dry cargo in their home waters. Consequently, it is evident that in the short to medium term considerably larger volumes of dry cargo (irrespective of commodity groups) than at present can be transported across the Caspian Sea, in ships owned by beneficiary countries.

Having said that, the consultants emphasise that a great deal depends on the condition of the fleet(s). The importance of regular maintenance and repairs and the timely replacement of over-aged tonnage cannot be over-emphasised. The fleets are ageing, spare parts are increasingly difficult to obtain, and with scarcely any new-buildings in sight, both the quality and the reliability of shipping services across the Caspian Sea face an onerous future.

Existing facilities for dry cargo handling are unevenly distributed. Some ports are clearly under-equipped to cope with the expected rise of throughput. Certain port facilities only need proper maintenance and repair to restore their rated capacities. The port of Aktau should commence planning process for the provision of additional port infra- and superstructure.

Containers have not really made an appearance on the Caspian Sea, yet. The few containers which in fact do move across the seaway would travel east filled with imports mainly from Western, i.e. European or American ports of origin, and would either be deadheaded to the nearest suitable deep-sea port empty, or be filled with such commodities as cotton, that being one way to ease the heavy burden of long empty positioning hauls. If the industrial production in the region picks up and in its wake, exports of manufactured goods to overseas destinations similarly increase, and when consumer goods are being imported by littoral and hinterland States in significantly larger quantities than at present, will containers be seen in numbers. Therefore, the consultants are satisfied that there is no immediate need for further large-scale investments into container handling, storage, tracking and

tracing, and carrying facilities. On the other hand, and considering the dominant role assumed by containers in world-wide transportation, port authorities, ship owners and land-based transport firms should prepare for container transport by making sure that any new investments into shore cranes, new ships, lorries, rail wagons and the like are suitably dimensioned to permit hitch-free handling and transportation of 20' and 40' containers.

The Caspian ports of Baku, Dubendi, Aktau and Turkmenbashi have recently been investigated within the framework of the present TRACECA Traffic and Feasibility Studies, Module E: Feasibility Study on the Rehabilitation and Modernisation of Navigational Aid Systems in Caspian Seaports (December 2000).

Barring few exceptions (e.g., the buoys at Aktau) the aids to navigation systems were found to be in an appalling condition. Turkmenbashi suffers from a grossly inadequate aids to navigation system, which prevents vessels from entering the port at night time.

The majority of buoys in Baku, Dubendi and Turkmenbashi, being beyond repair, need to be replaced. The buoys worthy of repair require new lights, batteries, topmarks, etc. Utmost care should be exercised ensuring that the positioning and the marking of the buoys correspond to the requirements of the IALA system for Region A, which includes the Caspian Sea. The consultants also strongly recommend that a close check be carried out to make perfectly sure that all aids to navigation are properly located and of the prescribed design. Lighthouses, beacons and leading lights require major overhauls or, in some cases, outright replacement.

The consultants emphasise that aids to navigation are a means to guarantee safety at sea. If the present conditions are allowed to continue, major accidents are waiting to happen. If a ferry carrying passengers is involved in an accident the lives of innocent persons are endangered, as also the lives of the crew.

The Port Control Centres in Baku, Dubendi and Turkmenbashi must be completely modernised, the Port Control Centre in Aktau must be upgraded to meet the demands of current and future traffic. All PCCs should be equipped with radar and GMDSS (Global Maritime Distress Safety System) receivers and transmitters with decoders for VHF and MW. This equipment is compulsory world-wide since the 1<sup>st</sup> of February, 1999. The centres also require at least a minimum number of VHF hand-held radios and voice recorders.

## **2.6 General Principles of Running a Shipping Company**

The three beneficiary states each have their own national maritime carrier in the shape of a state-owned shipping company.

Caspar still engages in secondary activities such as a hotel, a hospital, and a kindergarten, not directly related to its core business. Management is on record of having stated that most of these activities are an expression of the company's social responsibility for its staff and as such, constitute an integral part of the remuneration system. The shipping company in Azerbaijan must be regarded as one component of the national maritime administration, which burdens the company with tasks far beyond those of running a commercial business.

Turkmenistan's Turkmen Maritime Line (TML) is basically structured in accordance with the traditional Eastern Bloc type of company. i.e. the shipping line owns and runs the national port(s) used by its fleet. Much like in Azerbaijan, TML also serves as the maritime administration of Turkmenistan and as such it has had to shoulder tasks which are commonly outside the scope of any shipping and/or port enterprise.

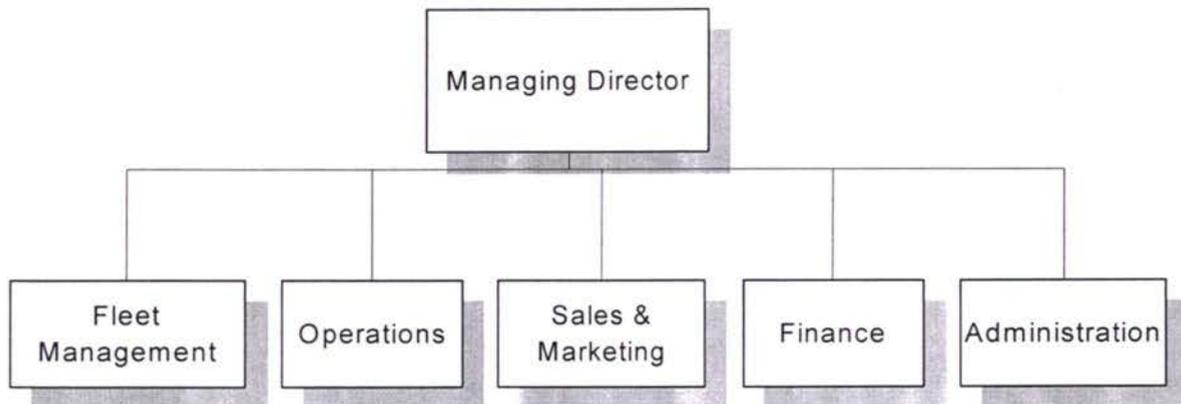
The management of the new Kazakh shipping company, Kazmortransflot, is based in Astana and its structure appears to be developing slowly. According to recent information the activities of Kazmortransflot are not going to be confined to commercial shipping only but will most probably include ship owning; port operations at Aktau or Bautino, ship agency work; plus virtually all other shipping-related services including pilotage, towing, repair yards, etc.

The type of company which will, always subject to the conclusions reached in this Report, actually run a new shipping service or services will either be a fully-fledged ship owning company or alternatively, merely be an operator which will (time-)charter-in tonnage and deploy the ships on the routes chosen.

The structures demonstrated below have deliberately been kept lean and simple, in line with the assumed size of the companies involved.

Subject entirely to the shareholding of the company, i.e. either state or privately owned and subject also to relevant corporate legislation in the country of registry, the company will presumably have a non-executive board of which the members have been elected by the general assembly of shareholders, or nominated by the relevant Government, and will be headed by a Chairman. Other forms of corporate structuring are of course feasible but shall not be further discussed here.

Reporting to the Chairman is a panel of Executive Directors under the Managing Director, of whom each will be in charge of one of the following Departments:



Reporting directly to the Managing Director is the Controller.

Fleet Management will oversee a nautical and a technical sub-department and will also be responsible for afloat staff. Thus, it carries the full weight of keeping the company's principal assets, the ships, operational and in a serviceable condition. It also recruits, promotes and trains seagoing personnel in line with highest industry standards. Fleet Management is responsible for purchasing of spare parts, bunkers and other shipboard consumables. This department will specify third-party repair work and be responsible for selecting repair yards. Fleet Management will also be responsible for the adherence, on board ship, to the various codes, rules and regulations, both national and international, which the company and its flag state have undertaken to observe.

Operations is concerned with the actual deployment of the ships, i.e. routing, cargo bookings, agency arrangements, etc. It will also negotiate such service contracts as terminal and/or stevedoring and/or towage or any other similar agreements.

Sales and Marketing, in close liaison with Operations, will seek to intensify the company's market penetration and, thereby, cargo carryings by canvassing actual and potential clients. It will study the development of new trends and trades, it will develop a flow of feedback from clients to monitor client satisfaction, and it will create and control a network of canvassing and/or booking agents throughout the company's cargo catchment area, both at home and abroad. Sales and Marketing is the company's link with its clients and maintains constant and close contacts with customers.

The Finance Department, incorporating the bookkeeping section, is responsible for all financial matters including annual and possibly quarterly balance sheets, the flow of funds, monitoring of outstanding receivables (i.e., freight amounts, etc.), taxation, salaries and wages, and will ensure the ready availability of finance-related data reflecting the company's standing at any one time.

In a lean organisation, Administration covers a fairly large diversity of activities, including but not necessarily limited to, shore-based personnel; legal affairs normally linked with ship etc. insurance and claims handling; internal organisational matters, plus any other activities not covered by the other departments.

It is conceivable, most certainly in a small organisation, that the Managing Director doubles as a department head for any one of the above departments, always provided that he shall still have

sufficient time to do justice to the duties of a Managing Director. Equally, the Fleet Manager will most probably be in charge of either the technical or the nautical sub-department.

The organisational structure of a ship operating (as opposed to a ship owning) company differs from the latter only by the absence of a fleet management department.

## 2.7 Financial Analysis

In order to calculate a financial internal rate of return and a payback period the consultants have in a first step specified the cargo volumes expected to be transported by the five identified services. These volumes are derived from the traffic forecast presented earlier under consideration of the competitive environment.

In a next step the consultants have determined the achievable rates for the different shipping services between all ports involved. These rates have been derived from an investigation into the present Caspian shipping market.

The cost side has been subdivided into four segments: (1) Investment cost for vessels, in case the services will be operated with own vessels; (2) Overhead cost, covering the land-based administration; (3) Ship Running Cost, covering the fixed cost of vessel ownership; (4) Ship Operating Cost, covering the cost of operating a liner-type service.

The result of the financial analysis for the five identified shipping services clearly indicates that investment into shipping services is a business with low rates of return. The payback period can be considered relatively long by any standards.

The analysis of the base cases revealed that of all conceivable options, a container service between Turkmenbashi and Olya seems to be the most promising. However, much depends on the development of sufficient cargo volumes within the frame of the politically promoted Nostrac corridor between the Indian Sub-continent and Russia. The consultants do not expect the full implementation of this corridor in the near future and therefore assess the downward risk for such a service as relatively high.

The financial analysis compares the purchase and operation of owned vessels on the one hand with ships on time-charter, at charter rates ruling in the region at the time of field research. However, time-chartering vessels instead of operating owned vessels has proven to be an even worse option, since the current time-charter market rates are on the high side. However, even the results of the sensitivity analysis of charter-rates do not suggest that chartering would be an instrument superior to the purchase of vessels. For none of the services was it possible to achieve revenues sufficiently high to cover these time-charter rates plus operating costs and overheads.

If 22% FIRR are regarded as a critical benchmark for the financial project viability, this rate is reached only under some far-fetched assumptions:

The main obstacle of the analysed investment is the high initial investment relative to the low revenues generated by freight income. A decrease in the investment costs leads to a significant improvement of the FIRR but, due to the low starting level of the FIRR, it takes considerable decreases in investment costs into ferries or multi-purpose vessels, before a private investor would be adequately rewarded for the risk of his engagement.

Variations of financial key parameters have shown that these unfavourable results for all services are relatively stable, stable not only with respect to overhead costs, which play but an insignificant part, but also stable with respect to variable cost. Variable cost are dominated by vessel-related port cost, which on average account for more than 50% of variable cost, and in some cases even up to 50% of overall cost. This result clearly supports the consultants' suggestion that Caspian ports are relatively expensive. Variations of port cost have revealed that the financial results are sensitive to changes in port cost. However, base results are for most services far below the benchmark FIRR of 22%, reductions in port cost have to be rather substantial before the analysed services can be rendered financially viable.

Another option for improving the FIRR is to increase the revenue side. E.g. for the Turkmenbashi-Olya service only a slight increase in freight rates of about 11% is necessary to reach the benchmark FIRR.

However, it will be very difficult to convince the market to pay higher rates than those assumed for the purpose of the present analysis. Moreover, as time passes the Caspian Sea area is expected to become an even more attractive market for goods and services. Following global trends in transport markets and given that the Caspian transport market will experience a similar development as other transport markets, transport tariffs and especially shipping freight rates are expected to remain at best constant or even drop over time.

To sum up, under the present market conditions and the institutional environment governing shipping across the Caspian Sea it is very difficult to establish any new financially viable shipping services on the Caspian Sea, even for local operators or operators having regional know-how and a regional (management) infrastructure.

## **2.8 Lessons Learnt and Recommendations**

- What follows hereunder is a summary of the consultants' opinions including suggestions directed at improving the existing situation and generally to promote the idea that professional and client-oriented transport services will positively impact the regional commercial scene.

### **2.8.1 Lessons Learnt**

- Customer oriented attitudes are not yet universally accepted in the Caspian maritime sector. Active marketing strategies have not been implemented yet.
- Co-operation among shipping lines as frequently found in western shipping has not been discovered yet as a means of improving service frequency and quality, and of reducing cost.
- Part of the Caspian shipping market is still monopolised.
- Regular (non-ferry) liner services in the past have been suffering from cargo shortage, but also from inadequate marketing strategies.
- Shipping and port tariffs seem to be rather high as measured against European standards. Some transport operators complain that the stretch across the Caspian Sea (port to port) accounts for a considerable part of the transport cost from Central Asia to Europe. Tariffs do not always seem to relate to cost but to the "what-the-traffic-can-bear" principle. This hampers the competitiveness of the TRACECA route compared to (especially land-based) alternative routes. Though the problem is clearly perceived by representatives of certain maritime entities involved in transport operations along the TRACECA route, there seems to be little initiative for a joint (cross-border) approach to improve the competitiveness of the west-east and v.v. trans-Caspian route.
- Broadly, port tariff systems in the Caspian seem to punish vessels for the low productivity of land-based handling procedures. However, ports do not always have full control over their own tariff structure as the latter is subject to political influence. Moreover, some ports have only very limited room for negotiating rebates and discounts with customers offering large cargo volumes or a certain number of calls per year.
- The modernisation of the port of Aktau together with the construction of the Uzbek railway line between Uchkuduk and Nukus has added to the attraction of the TRACECA route by offering two alternative routes from Baku to destinations east of the Caspian Sea. If one route is blocked or becomes non-competitive, traffic can be easily re-routed.
- Trade between the beneficiary states is developing slowly. Most cargoes transported across the Caspian Sea are transit traffic with oil and derivatives accounting for the lion's share.
- The concept of an intermodal chain appears to be widely unknown. The various transport operators involved seek to maximise their earnings, quite regardless of the consequences thereof. This also applies to trans-Caspian operators who have yet to understand that transport is a service industry, which will only survive provided it satisfies its clients' requirements.
- In the TRACECA countries it is often difficult to draw a dividing line between ports and the national maritime carrier. Indeed, certain ports come under the same ownership as the carriers. Certain national ports and terminal operators grant substantial rebates to their national carrier(s) which equates to flag discrimination and may frustrate the attempt of other carriers to enter the trade..
- As the Caspian Sea has become an international waterway, so international rules, regulations, codes and conventions have to be adopted, signed into law and implemented. This is urgently required, but takes time, and it pre-supposes an infrastructure in the countries concerned of admiralty law, specialised judges, legal advisers, lawyers, etc.
- In the Caspian littoral states ports and shipping lines are still publicly-owned entities. Often, they even serve as the national maritime administration, or branches thereof. This may get in the way of developing competitive market structures.
- Shipping across the Caspian Sea is still a highly political and strategic issue. The undecided status of the Caspian Sea along with the unresolved question of how to allocate the subsoil resources impede the development of efficient (private sector) shipping.
- Political forces in the northern and southern sectors of the Caspian Sea build up political pressure to obstruct the development of the TRACECA corridor.
- The results of the financial analysis have indicated that under the existing conditions it is almost impossible for a profit-oriented operator to establish new shipping services.
- All in all, the present conditions of the Caspian Shipping Market are not favourable for any newcomer almost regardless of origin to enter the market.

## 2.8.2 Recommendations

Lessons learnt by the consultants led to the following recommendations for future actions, some of them are already being put into effect.

- The beneficiary States need more powerful transport institutions, particularly maritime administrations independent of actors in the maritime markets. However, Kazakhstan, Turkmenistan and Azerbaijan have already developed draft National Maritime Codes, which are presently being discussed in the respective Parliaments. This may be seen as the first step

towards creating strong maritime administrations setting a frame for (private sector) market activities on the Caspian Sea, and should be fully supported.

- The Intergovernmental Joint Commission should explicitly include the Caspian maritime sector when concentrating on the harmonisation of transport procedures and regulations in the TRACECA region.
- Since Turkmenbashi is an important node within the TRACECA corridor, Turkmenistan should be encouraged to take an active part in the Intergovernmental Joint Commission.
- The Caspian littoral states should be encouraged to implement the international rules and regulations already acceded to by the national Governments. Many more internationally accepted rules, regulations, codes and conventions far too numerous to be listed here, can and should be signed into respective law by the littoral States. This will substantially facilitate intra-Caspian international negotiations on a host of maritime subjects requiring satisfactory solutions and which apply to all littoral States.
- The Caspian littoral states should be encouraged to terminate the practise of flag discrimination in its various forms. This recommendation applies equally to the Caspian Sea area as such as to the navigable connections between the Caspian Sea and other waterways and/or oceans.
- Other shipping companies should not be seen as enemies but as commercial competitors which under many circumstances may and indeed should be invited to enter into joint services, and to consider one of the many other internationally accepted forms of inter-company co-operation without thereby eliminating healthy competition. This could lead to improved capacity utilisation of services and reduce freight rates without in any way affecting profitability. Initiatives of this nature with the objective of improving the reputation and attractiveness of shipping across the Caspian Sea and of achieving customer satisfaction whilst at the same time creating a sound basis for sustainable growth and corporate viability should be high on the agenda of the maritime and/or transport administrations and of the national carriers, be they privately or state-owned, in the Caspian littoral States.
- Truly independent port structures enabling the ports to have a more active role in negotiating handling rates and port dues should be established.
- The consultants propose to organise round table discussions involving ports and shipping companies, as free as at all possible from political issues. The participants should discuss practical issues of vessel and port operations. The objective is to identify areas of potential efficiency gains at the ship-to-shore interface, i.e. in the ports, which, if seriously attempted and implemented, should add to the attractiveness of Caspian shipping as a whole.

### 3 Introduction

Being an integral part of the TRACECA Traffic and Feasibility Studies, a project financed by the European Commission, the following study analyses the risks and chances of establishing new shipping services on the Caspian Sea.

Shipping in the Caspian Sea is short-sea by definition and by nature, but international since true cabotage (i.e., sea transportation within the boundaries of one State) is virtually non-existent, except for some minor oil shipments e.g. between Baku and Dubendi, Alaja and Turkmenbashi, Neftechala and Baku etc.

Whereas trans-Caspian shipping operations in Soviet times were predominantly national with Iran being the only non-USSR littoral participant, the present scene is characterised by the emergence of three more littoral States, Azerbaijan, Kazakhstan and Turkmenistan, which together with the 'historical' Caspian maritime nations Russian and Iran now lay claim to national participation in trans-Caspian shipping. This brings the total number of actual or potential participants to five. Former Soviet participation was mainly confined to river-sea types of ships, Iran deployed multi-purpose single-deckers and Azerbaijan provided by far the lion's share of ships comprising many types ranging from multi-purpose dry-cargo to tankers to tugs to ferries. This amounted to a quasi-monopoly situation which has survived to the present even though Caspian Shipping Company, the national Azeri carrier, has had to reduce its Caspian fleet and deploy a certain percentage of its active fleet in the Black and Mediterranean Seas, and to consign other ships to lay-up, that being a consequence of the drastic decline of former transport volumes due to the disintegration of the former Soviet Republic and the national economy.

In the Soviet past, most if not all service companies were considered as, and in fact operated very much like, Government institutions, similar in many respects to the Post Office. Not surprisingly, therefore, the notion that customer satisfaction is vital for the survival of any service provider was largely unknown in such organisations, if only for the reason that there was no real competition. However, the commercial environment in the region has changed and keeps changing.

Cargo flow forecasts for the region suffer from a lack of reliable statistics as also from the difficulties associated with predicting the economic development of countries which became independent only a few years ago and which until then had been part of the USSR for decades and thereby, of a rigid centrally-controlled economy. The latter has successfully stifled initiative and the region has no entrepreneurial history and but a small business community, except perhaps in the field of trading, as opposed to manufacturing. Regional exports are dominated by such commodities as crude oil or mazoud at best, grain, raw cotton and semi-finished metal products all of which testify to the absence of large-scale manufacturing. It will take a long time, and substantial capital input, before the region will have a sustainable industrial basis, and given the apparent reluctance of foreign capital to fund manufacturing enterprises in the countries under review, the current situation is likely to characterise the region for the foreseeable future. The consultants have not allowed such pessimistic views overly to influence their own forecasts and calculations but they emphasise that their analyses pre-suppose a rather faster growth of the regional economy supported by a new generation of commercially-oriented and forward-looking entrepreneurs, gifted with the ability of converting oil and gas income into rewarding projects.

## 4 Potential Regional Markets

From a central European angle, the TRACECA route extends from the Ukraine via the eastern Black Sea ports of Poti and Batumi (Georgia) and via Tbilisi to the western Caspian Sea port of Baku (Azerbaijan). Here, the route basically splits into a northern lane across the Caspian Sea to the port of Aktau (Kazakhstan) and onwards via Aktybinsk to Chimkent, and a southern lane to the port of Turkmenbashi (Turkmenistan) and from that port via Ashgabat and Tashkent (Uzbekistan) to Chimkent. In Chimkent both corridors re-unite and the TRACECA route finally ends at the Kazakh-Chinese border at Druzhba (Kazakhstan).

For the purpose of the present study it is indispensable to take a closer look at the key economies and regions around the Caspian Sea. First of all, there are the TRACECA members Azerbaijan, Kazakhstan and Turkmenistan, but since the TRACECA across the Caspian Sea has strong land-based competitors the consultants have broadened their view and also briefly investigated the economy of the Iran at the southern end of the Caspian Sea and Russia at the north-western end.

### 4.1 Regional Economic, Political and Social Development and Markets

#### 4.1.1 Azerbaijan

After several years of economic decline following the disintegration of the Soviet Union, Azerbaijan experienced a turnaround showing positive growth in 1996 (1.3%). In the following years GDP growth rates fluctuated between 6 and 10%. For the year 2000, Azerbaijan has delivered impressive macroeconomic data: the GDP grew by 11.3%, the foreign currency reserves increased from zero to almost one bn. USD and the inflation rate fell well below 3%. From 1994 to 2000, the Azeri economy has attracted investments of more than USD 8.2 bn (USD 5.2 bn thereof as foreign direct investments, mostly related to oil and gas production). However it seems that the investment climate has slightly deteriorated since. Final figures have not been published yet, but according to first estimates investment activities have decreased by about 15% (OMV 2/2001, p. 11). Annual foreign direct investments have allegedly dropped to a level below USD 1 bn for the first time since 1997.

The Azerbaijan economy is more and more depending on the oil sector, which accounts for almost 80% of industrial production and over 20% of the national GDP. Consequently, the unexpectedly high oil price in 2000 accounted for the substantial increase in Azeri GDP surpassing forecasts by almost 4 percentage points.

In 1999, Azerbaijan exported 4.3 million tonnes of crude oil and 1.6 million tonnes of fuel oil. Another source of export revenue is textiles. The import side is dominated by agricultural and food products, machinery and equipment and metals.

Following independence, there has been a major shift in the geographical structure of Azerbaijan's foreign trade. In particular, trade with the CIS decreased considerably, falling from 52% in 1993 to about 35% in 1999. In that year, more than 60% of total foreign trade was conducted with non-CIS countries. Major trade partners are Italy, which is the most important buyer of Azeri oil, Turkey, Russia, Georgia, Iran, Ukraine and United Arab Emirates.

Observers note that the government's fight against corruption has not yet led to a significant improvement of the situation. Investors, both foreign and local, recently share a certain uneasiness concerning the reliability and sustainability of existing economic and legal institutions, which makes serious investment analyses rather difficult. An important improvement of the institutional framework has been the recent introduction and implementation of a new privatisation law. It remains to be seen whether this law together with the improved tax, customs and civil legislation in force since 1.1.2001 will stimulate private investments.

On the socio-economic side, population growth has been moderate (around 0.9% annually). Even though the Gross National Product (GNP) per capita has increased by 50% (from 400 to about 600 USD) over the last 5 years, rather large parts of the population were unable to gain from last year's positive development in the oil sector. The gap between the rich and poor sections of the population has widened.

In the short and medium-term a further improvement of the current economic situation in Azerbaijan is likely, provided a basic comprehension of the functioning of market mechanisms can be further increased and a more diversified industrial base developed. The medium-term prospects for Azerbaijan are potentially good, but of course they depend on political stability, successful initiatives to address corruption, public sector governance, additional legal reforms and the improvement of the business environment. In addition to the production of oil and gas, the most promising sectors for a further upswing of the Azerbaijan economy are food processing, the production of textiles and garments, as well as the production of machinery and components for the oil and gas industry. Moreover, the expected further development of an efficient and diversified logistics and transport service sector will assist the development of diversified export industries.

#### **4.1.2 Kazakhstan**

Kazakhstan possesses considerable volumes of natural resources, of which the most important are crude oil, gas and large deposits of coal, and iron and other metal ores. The major suppliers of coal, metal products, asbestos and grain are located in the north of Kazakhstan. Precious metals and oil are to be found in the west.

The Kazakhstan economy at present rests on few pillars of which by far the staunchest is the hydrocarbons sector, i.e. the vast resources of oil and gas. Ores and coal similarly play an important part, and the agricultural sector, dominated by grain, also comes into the picture. The oil and metal producing sectors account for 70% of industrial production and 20% of GDP, thus making the economic development highly dependant on external factors, i.e. world market prices for oil and metal products. In the case of oil, Kazakhstan being land-locked has the additional problem of bringing its wealth to the world markets at reasonable transport costs.

From 1996 to 1999, the development of the Kazakh economy has not made significant progress. GDP and GNP growth rates have been oscillating around zero. Inflation rates keep coming down from pre-independence high levels. The investment climate in Kazakhstan appears to be stable, annual foreign direct investments have been well above one bn USD over the last five to six years, of which most has been directed to the energy sector.

The major trading partners of Kazakhstan are the CIS countries of Russia, Ukraine, Belarus and Uzbekistan, followed by China, Iran and Turkey. The fact that import substitution in Kazakhstan is growing (i.e. local goods are becoming more and more attractive for consumers) can be interpreted as a positive sign of the Kazakh industry gradually catching up.

In 2000, Kazakhstan has finally experienced a significant economic growth. Fuelled by the weakening Kazakh Tenge and high export prices for oil and metals, the industrial sector grew by more than 15% (compared to the weak 1999), thus contributing to a double-digit increase in national GDP. This has also helped Kazakhstan in finally overcoming the balance of payments deficit through foreign investment, private capital and regular project finance, thereby eliminating the need for exceptional support from official sources.

Concerning the socio-economic development it must be stated that, due to the very moderate economic development, even though the population numbers have decreased by about 1% annually, the GNP per capita has not moved.

Kazakhstan's medium- and long-term economic prospects are promising due to the country's vast hydrocarbon and mineral resources, low external debt obligations, and well-trained work force. New legislation concerning foreign investment, taxation, and oil and sub-soil rights are expected further to improve the climate for foreign investments in the next few years.

#### **4.1.3 Turkmenistan**

Turkmenistan has a weak industrial base and mainly relies on its resources, which are gas, oil and cotton. About 20 per cent of the world's natural gas resources are assumed to be buried in Turkmenistan. Turkmenistan is the world's fourth largest producer of natural gas and ranks as the world's tenth largest cotton grower. Currently, cotton and energy together account for over 70 % of economic activities and for 80 % of export revenues. It is expected that the share of energy will rise since cotton production is stagnating due to lack of water resources.

Much like other CIS countries Turkmenistan experienced a steep decline in GDP after the disintegration of the Soviet Union, but since 1998 Turkmenistan is on a growth path with presumably double-digit GDP growth rates (starting from a very low base level). However, similar to its neighbours Kazakhstan and Azerbaijan, the dependency of the national economy on exports of raw, i.e. untreated natural resources is extremely high. The latest available information shows that exports of goods and services amounted in 1999 to 41.6 % of the GDP, up from 29.7 % in 1998. The dependency particularly on energy exports makes the national economy very vulnerable to fluctuations of world market prices of its major export commodities, which Turkmenistan has, no means of influencing.

A major proportion of Turkmen foreign trade is conducted on the basis of bartering: Turkmenistan imports from western Europe mainly consist of foodstuffs (incl. processed food), beverages, oilfield and gas treatment equipment, machinery, whereas Asia mainly supplies textiles. Turkmen exports to the west comprise oil, gas (to Western Europe, Turkey, Russia, Belarus, Ukraine) and raw cotton. In recent years the country has increased its trade with Iran and with Far Eastern countries.

Foreign direct investments have remained very moderate at some USD 100 mn p.a., due mainly to the country's unstable institutional framework.

Turkmenistan is working hard to open new gas export channels to Iran, where minor gas pipelines are now operational, and via Turkey to Europe. Also, the country started selling gas to Russia in late December 1999, thereby improving its feeble balance of payments. The country's main problem continues to be its geographical location and the problems associated with moving its export commodities to the world markets.

Compared to most of the CIS countries, Turkmenistan has been exceptionally slow in implementing economic reforms. The state remains the dominant player in the economy. Price controls are still in place for many commodities and public utilities. While import quotas have been eliminated and tariffs are moderate, imports and exports are being controlled through the State Commodity Exchange and by other registration and licensing requirements. Foreign exchange is rationed and the parallel exchange rate is reportedly about four times the official rate.

With a tribally based social structure, Turkmenistan has taken a cautious approach to economic reform, hoping to use gas and cotton sales to sustain its inefficient economy. Privatisation goals remain limited. While small-scale privatisation of retail shops and catering establishments has been more or less completed, the privatisation of medium- and large-scale enterprises has stalled.

Population growth rates have been comparatively high at almost 1.3% p.a. Even though the GNP per capita is only 660 USD, the incidence of absolute poverty is low by regional standards. Yet a large number of people lives at the verge of poverty, generously supported by government with supplies free or heavily subsidised water, energy, and other public utilities as well as basic foodstuffs.

Basically Turkmenistan has a good long-term potential for development given its natural resources, but the realisation of this potential requires not only a radical change in policies (Turkmenistan needs to mesh its ad-hoc policies into an internally consistent and coherent reform program) but also careful management of public expenditures and investments.

#### **4.1.4 Iran**

The Iranian economy not only depends on the sale of its natural resources oil and gas (Iran has the second largest gas reserves in the world), which are mainly located in the southern part of the country, but also has significant industrial activities, manufacturing mineral and chemical products, vehicles, electrical and electronic equipment, and foodstuffs.

Economic development has been moderate but stable during the last five years with annual GDP growth rates between 2 and 5%. Inflation is at a rather high level (fluctuating between 10-20%). Due to the fundamental religious and political environment foreign investors have remained shy to consider investments in Iran. Consequently, the annual net inflows of foreign direct investments remained significantly under USD 100 mn.

In 2000, the recovery of the oil price has helped Iran's trade balance but failed to spur domestic economic growth, with GDP climbing only 2.4% compared to 1999. The supply side in particular did not respond to the seemingly improved (imported) economic conditions.

In foreign trade, major export partners of Iran are Japan, USA and the European Union, which together account for about 60% of export value, largely determined by exports of oil and oil products. Non-oil related exports (e.g. chemicals, metal smelting and consumer goods) only account for about 25% of total export value and mainly go to UAE, Germany and Italy. On the import side, Germany is the single dominating trade partner with Italy, Japan and UAE as runners-up. Iran mainly imports capital goods for industry and mining but also considerable amounts of constructions. Iran's integration into the Caspian economy is yet rather low, but expected to be increasing steadily.

Population growth has been rather high during the last five years at about 1.5% p.a. Economic growth has been sufficient moderately to increase the GNP per capita to USD 1,760, which ranks Iran number 2 amongst the Caspian riparian states.

Given that political reforms will move ahead and oil prices remain firm at a high level, the future economic development will be positive. However, much depends on the development of non-oil related foreign trade, since although domestic demand is likely to grow, it will not be sufficient to spur significant investments into industry. An improvement of the investment climate may attract foreign direct investments providing much needed capital for the modernisation and restructuring of the Iranian industry.

#### **4.1.5 Russia**

In 1997 Russia slowly recovered from a period of macroeconomic instability with decreasing real GDP growth rates. First signs of positive growth were noticeable. However, the easy contagion from the East Asian financial crisis (End of 1997) clearly demonstrated that the Russian recovery was not fundamentally sound. Together with the fall of world commodity prices, the spill-over of the East Asian crisis led to a rise in real interest rates, which choked off investment and growth. The economic situation continuously deteriorated due to the inability to push forward structural reforms intended to restructure the industrial and agricultural sectors, and also due to the absence of broad-based political support for government initiatives. All of this led to the meltdown of the rouble in August 1998. Industrial output and GDP contracted significantly, inflation and the rouble exchange rate skyrocketed.

Fortunately for the Russian economy, the devaluation of the rouble enhanced (price) competitiveness of Russian products both on domestic and international markets, which fuelled a broad-based recovery of industrial output in 1999. Moreover, world commodity prices increased by 40%. By the end of 1999, contrary to many experts' expectations, the Russian economy had managed to achieve a real GDP growth of 3.3%.

This positive trend continued in 2000, with real GDP increasing by 7.5%. Thus, Russia for the first time since the beginning of the transformation process registers positive growth rates for two consecutive years. But growth has mainly stemmed from a favourable development of oil prices and the devaluation of the rouble. The government started to tackle reforms but the overall pace continues fairly moderate. Investors do not yet trust the sustainability of the economic upswing with capital flight still consuming about half of export proceeds. It remains to be seen whether the Russian government will be able to translate the current favourable economic situation into sustainable growth rates.

Due to its vast natural resources Russia is a net exporter with a positive trade balance. The export sector is characterised by a high commodity share of oil and gas exports, which in 2000 together accounted for some 50% in value terms (mainly attributable to the increase in respective commodity prices). Another very important export industry relates to the production of metals and articles thereof, at a comparatively high share of about 25%. The trade balance therefore reacts sensitively to global price changes. The following graph clearly indicates this relationship. Falling commodity prices in 1998 negatively affected the performance of the Russian export sector, while the period of high oil and gas prices in 2000 boosted the trade balance surplus to over 60 billion USD.

Following the devaluation of the rouble, imports naturally broke in, since import commodities became unaffordable for the majority of Russian enterprises and consumers. However, in the last quarter of 2000, imports soared by 20% compared to the fourth quarter 1999. This indicates an end of the import substitution process following the strong devaluation of the rouble.

Russia's trade partners can be found all over the world. The Russian statistics separate CIS trade from the commodity exchange with the rest of the world. Inter-CIS trade accounts for about 20% of overall export and 25% of overall import values. Dominating CIS partners are Ukraine, Belarus, Kazakhstan, and Uzbekistan. Exports to the CIS predominantly comprise mineral products, machinery and equipment, and metals, while imports consist of also machinery and equipment, and metals, indicating strong inter-industrial connections, no doubt dating back to Soviet times. Another very important import commodity group is foodstuffs and agricultural raw materials.

Despite the generally positive developments, Russia still faces a number of key challenges in building the foundation of sustainable growth. In the short term the real depreciation of the rouble has helped engineering a rebound in economic activity. Now, this has to be translated into sustainable growth by addressing structural issues. That in turn calls for fundamental reforms. One of the challenges is to improve the investment climate by increasing transparency, strengthening property rights and contract enforcement. With respect to foreign trade development, domestic demand is expected to be strong. Thus, import growth is likely to continue, while export revenues will decrease due to a moderate development of the oil price. But, unless oil prices slump dramatically, the recovery in Russia will continue, though at a lower pace. Growth in Russia may also support the Central Asian region.

#### 4.1.6 Conclusion and Outlook

Within the region investigated, Russia shows the highest level of Gross National Product (GNP) per capita among the Caspian riparian countries (USD 2,270), followed by Iran (USD 1,760). Of the TRACECA countries Kazakhstan seems to be relatively well off, while Azerbaijan and Turkmenistan lag behind. Over the past five years though, Azerbaijan has made considerable and steady progress in increasing the GNP per capita while Russia, Turkmenistan and Kazakhstan have barely been able to avoid reductions. Iran can also be considered to have found a moderate but nevertheless positive growth path.

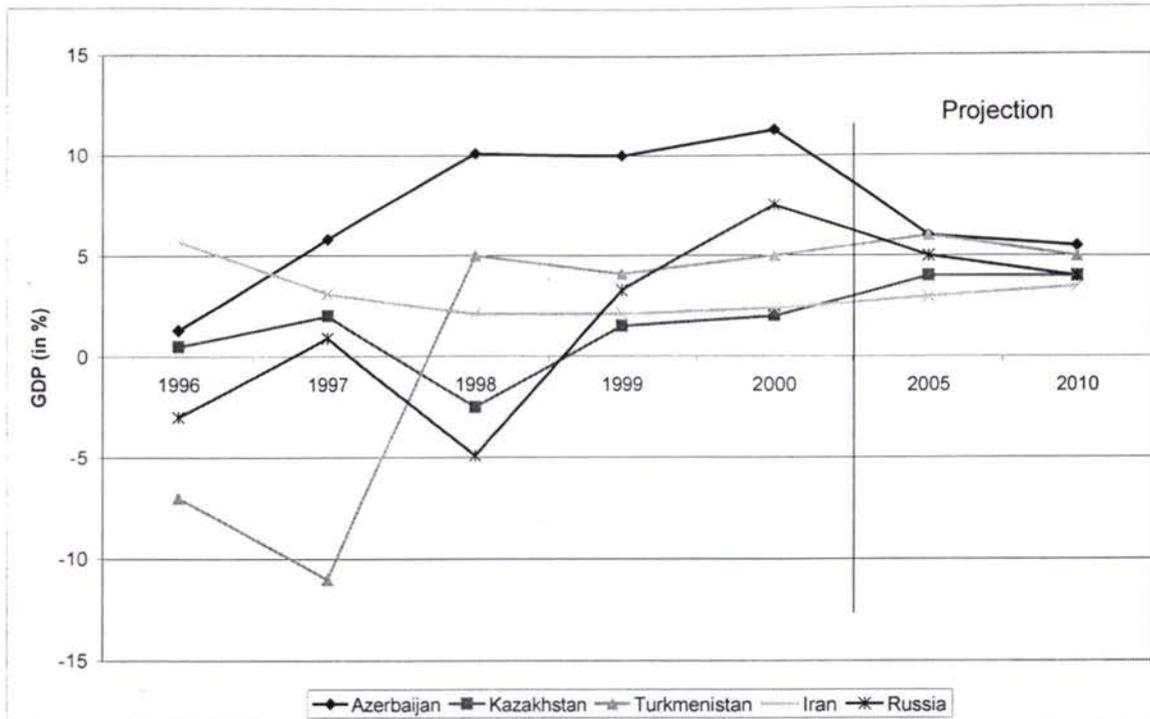
**Table 4-1: Population and GDP in the Investigated Region 1999**

Country	Population (million)	GDP (billion USD)	GNP, Atlas Method (USD per capita)
Azerbaijan	7.9	4.9	550
Kazakhstan	15.4	18.3	1,230
Turkmenistan	4.8	4.0	660
Iran	65.6	101.0	1,760
Russia	146.3	246.9	2,270

Source: The World Bank (2001), World Development Indicators 2000; national statistics, central bank information.

The GDP of the Caspian states mainly depends on the evolution of the energy industry, on world oil consumption and on solving the existing transportation problems. Economic development in recent years shows a very fluctuating pattern. Extreme economic troughs are followed by high growth rates. Subject always to the prevailing, and substantial, uncertainties, the short-term forecasts for economic developments in the region look promising. Azerbaijan and Kazakhstan stand out as being likely to achieve comparatively high real GDP and trade growth rates. Thus, given the expected positive development of the a.m. parameters and the potential of the Caspian states for catching up, also for the medium-term future a stabilisation of regional growth on a comparatively high level is most likely.

**Figure 4-1: GDP Development of Caspian Riparian States 1996-2010**



Source: The World Bank (2001), World Development Indicators 2000; Bundesanstalt fuer Auslandsinformationen, bfai-Info Osteuropa, 15/2000; own projections

The economic development of other Caspian and Caucasian countries is a determining factor for sea-borne trade. At the time of compiling this report, trade between the three beneficiary states remains at a low level. However, the countries located at the eastern side of the Caspian Sea, Kazakhstan, Turkmenistan and Uzbekistan show the highest trade values in the region. The overall value of import and export flows of these countries in 1999 amounted to almost USD 19 billion. Furthermore, Russian trade with these four countries accounts for 25% of Russian CIS trade. Goods exchange with the Iran has developed quite dynamically during the last three to four years, though starting from a relatively low level.

**Table 4-2: Foreign trade of the Caspian Countries, 1997-1999 (USD million)**

TRACECA Country	Exports			Imports		
	1997	1998	1999	1997	1998	1999
Azerbaijan	808	678	850	1,375	1,724	1,650
Kazakhstan	6,769	5,774	5,856	7,154	6,575	6,150
Turkmenistan	759	614	1,099	1,004	1,137	1,009
Uzbekistan	3,695	2,888	2,537	3,767	2,816	2,544
Russia (only CIS)	16,668	13,601	12,000	14,203	11,287	10,000
Iran	18,381	13,119	19,726	14,196	14,323	13,579

Source: The World Bank (2001); World Development Indicators 2000; IMF (2000): Staff Report Islamic Republic of Iran

Making a long-term forecast of foreign trade developments in the Caspian region is complicated by substantial uncertainties related to:

- the progress of the transformation process in the TRACECA countries and in Russia towards a market economy;
- the geopolitical situation, particularly with regard to the Chechnya conflict and the undecided situation over Nagorno-Karabakh;
- world economic developments, in particular the development of oil and gas prices.

With respect to future trends in international trade of the TRACECA countries it can be expected that trade with non-CIS countries will expand at the expense of CIS countries. Traffic flows from west to east (imports from Western Europe and North America to TRACECA) and from east to west (exports) will increase. Trade between the TRACECA countries and South East Asia is also expected to grow. Future developments in international trade of the individual countries depend on:

- the pace of economic transformation;
- the availability of natural resources;
- the competitiveness of industrial goods;
- the availability of an efficient trade and transport infrastructure.

All in all, it is expected that foreign trade growth will remain subject to considerable fluctuations, however the overall growth trend in the Caspian region will turn out to be positive. Significant changes to the commodity structure of regional exports and imports are not expected. The Caspian region will export natural resources and semi-finished products (oil and oil products, gas, cotton, metals), and import consumer goods (food and non-food) and machinery and equipment.

## 4.2 Commodities

The complex economic situation in the Caspian Sea region has direct consequences on the sea-borne trade through the ports. The past and present cargo throughput is mainly characterised by the following aspects:

- The ports are primarily serving national industrial and social centres exporting or importing raw materials, semi-manufactured or manufactured goods;
- Liquid bulk (crude oil and oil products) represents the major share of total throughput;
- Within the general cargo group, metal is the main commodity handled by the ports;
- Containerised general cargo represents only an insignificant share of total throughput.

### 4.2.1 Oil

Of the oil produced in Kazakhstan (year 2000: 35 million tonnes) and Turkmenistan (7.5 million tonnes), currently more than 200,000 tonnes per month, mainly from the Kazakh Tengiz oilfield are being carried in Azeri and Russian tankers to Baku and discharged in Dubendi, about 45 km north of Baku. The oil is then transferred to rail tank wagons and transported to the Black Sea port of Batumi. The capacity of this rail route is about 40 trains per day per direction. Currently more than 3 million tonnes p.a. of crude oil are transported over this route which has a capacity of at least five million tonnes p.a., possibly even twice that figure with rail capacities not being the theoretical limiting factor. The maximum capacity of a train on this route is some 2000 tonnes equalling 36 rail tank wagons of 60 tonnes payload.

With the opening of the new CPC pipeline from Tengiz oilfield to Novorossiysk, Tengiz oil shipments across the Caspian Sea will be reduced. The gap will be filled by increased shipments of Kumkol oil (Central Kazakhstan) and Aktybinsk oil (north-west Kazakhstan), which arrives at Aktau by rail, for Dubendi discharge. The re-opening of the rail ferry terminal at Aktau is expected to attract further oil cargo volumes for shipment in tank wagons across the Caspian Sea to Baku port.

Increasing quantities of crude oil (from Buzachi and other fields in the Mangyshlack county area) and oil products move from Aktau to Makhachkala where they connect with the pipeline from Baku to Novorossiysk. In 2000, these quantities amounted to about 750,000 tonnes.

It should be noted though that the routing of cargo via Makhachkala and Astrakhan is tantamount to a routing through Dagestan (the same applies to the pipeline from Baku to Novorossiysk). At the present stage of the Chechnya conflict these routes can neither be considered reliable nor safe.

Turkmenistan crude oil is being shipped in rail tank wagons carried by ferries from Turkmenbashi to Baku, and by tankers from Celeken and Akarem to Dubendi, Makhachkala and Neka (Iran), while oil products go by tanker from Turkmenbashi/Ufra to Baku.

In summer, i.e. when the Volga-Don Canal is open to navigation, there are occasional tanker transports (vessels of max. 3000 tdw, Russian flag) from Aktau and Turkmenbashi to Astrakhan and from there to Novorossiysk by rail or via the Canal to the Black Sea.

Carriage of oil across the Caspian Sea is dominated by the CSC, whose tankers moved about 5.7 million tonnes of crude oil and oil products across the Caspian Sea in 1999. CSC tankers serve the principal routes such as Aktau-Baku; Baku-Anzali; Turkmen ports-Makhachkala, and Aktau-Makhachkala, and are also involved in domestic Turkmen tanker transports (Akarem/Alaja – Turkmenbashi). On the other hand, the Turkmenbashi-Iran oil trade appears to be firmly in the hands of Russian operators.

Regarding alternative routes or transport modes, a trans-Caspian pipeline from Aktau to Baku is under consideration, but not very likely to be realised in the foreseeable future, due i.a. to the unsettled status of the Caspian Sea. A project closer to reality is the construction of the MEP (main export pipeline, also known as the Baku-Ceyhan Scheme), which is to take Azeri (and possibly also Kazakh) oil to the Turkish Mediterranean coast. But it is not altogether certain at this stage whether any of those grand schemes will come to fruition in the short or medium term. The new pipeline from Tengiz Oilfield to Novorossiysk, however, has started operations recently.

One major obstacle in moving Caspian hydrocarbons to market is the Turkish reluctance to permit the transit through the Bosphorus of ever-increasing quantities of potentially hazardous cargo. At an estimated cost of USD 2.9 bn the Baku-Ceyhan pipeline is very expensive. One or several pipelines from the Caspian basin through Iran and to an Iranian Gulf port would be considerably cheaper but appear to be unrealistic at this juncture, purely for political reasons.

For a more in-depth analysis of the Caspian oil transport sector reference is made to the reports of the EU TRACECA project "Traffic and Feasibility Studies, Module E: Transport of Crude Oil and Oil Products on the Caspian Sea."

#### 4.2.2 Dry Cargo

Dry cargoes shipped from Aktau to Baku on the east-west route would as a rule originate in Kazakhstan, Uzbekistan and Kyrgyzstan and comprise i.a. certain ferrous and non-ferrous metals, cement, timber, grain, cotton (the latter commodity is also carried in containers) and some chemical products. The quantities however are rather small particularly when compared with oil shipments. There may be a future demand for the shipment of some 10,000 tonnes p.a. of Kazakh grain from Aktau to Baku, plus minor quantities of non-ferrous metals, possibly in rail wagons. As of the end of 2000, the single ferry operating on this route once a week since the middle of 1999 had an extremely poor utilisation and would normally be found to carry no more than 5 to 6 trucks per voyage and up to 22 in peak times, but even the latter gives a capacity utilisation of only 50 percent. The ferry can accommodate 150 passengers but rarely carries more than 35 to 50. After rehabilitation of the Aktau rail ferry terminal (currently under way, financed by TRACECA) local experts expect a considerable increase in cargo volumes: a proportion of cargo at present moving through Turkmenbashi will be re-routed via Aktau, since Turkmenbashi port is considered by many experts to be 'difficult'. Together with the envisaged oil cargo volumes in tank wagons the expected increase in dry cargo volumes may justify the introduction of a daily service between Aktau and Baku.

Dry cargo shipments from Turkmenbashi to Baku are almost exclusively carried by the ferry service (rail wagons and road trucks) which normally adheres to its schedule. Crude oil in rail tank wagons dominates the westbound trade.

Apart from the repositioning of empty tank wagons, which claims a major percentage of eastbound rail ferry capacities (i.e., between Baku and Turkmenbashi), the principal commodities moving eastbound across the Caspian Sea are manufactured products mainly from Turkey and the EU, some oilfield equipment, and building materials. The dry cargo trade is divided between two modes, i.e. conventional cargo ships; and ferries, with the commodities split between both modes in accordance with their physical nature.

Dry cargoes shipped through Aktau, i.e. grain and a large proportion of the metal products handled at that port, are currently almost exclusively destined to Iran. The Iranian demand for metals from Russia (Magnetogorsk, Chelyabinsk) and Kazakhstan (Karagandar) at present amounts to some 700,000 t p.a. (with increasing tendency) and accounts for some 80 percent of ACSP's dry cargo throughput. It is difficult to predict whether these volumes can be sustained since much depends on the rail tariff policies of Kazakhstan and Russia. If at any time the special Kazakh rail tariffs for exports through the port of Aktau revert to regular levels, some of these volumes may be re-routed to Astrakhan, which

reportedly is making strong efforts to regain this traffic, and also to the rail corridor through Turkmenistan. Cargo volumes from the Iranian ports to Aktau are yet relatively small and mainly comprise transit consumer goods from UAE to Kazakhstan and modest quantities of ores. For all practical purposes the Aktau/Iran connection is one-way in that ships sailing southbound would usually be fully booked, but complete the voyage northbound nearly empty. This is where the recent North-South Corridor agreements between India, Iran and Russia may bring about a marked change.

The Kazakh Tengiz oil field, which is fairly close to Aktau generates considerable amounts of sulphur as by-products of crude oil processing. This commodity may be shipped to Azerbaijan for use in the Azeri chemical industry and perhaps to other countries as a base for fertiliser production. Experts opine that this sulphur will either have to be exported or environmentally safely disposed. The port is not keen to handle sulphur because it is considered to be operationally awkward, and will not canvass for this particular cargo. At the same time the port also acknowledges the need to diversify its handling business.

All recent attempts at establishing regular dry cargo services (ferry, Ro/Ro) between east Caspian ports (Aktau, Turkmenbashi) and Russian ports (Makhachkala, Astrakhan) have failed to generate sufficient cargo to guarantee the viability of such services, e.g. the publicly announced Ro/Ro link between Aktau and Astrakhan launched in May 2001 was discontinued after only one sailing due to lack of support and to high freight rates.

Before the disintegration of the Soviet Union, Baku served as the USSR gateway to Iran. The dry cargo trade between the USSR and Iran amounted to one million tonnes p.a. Today, the Iran traffic consists of rather minor quantities of bagged cement and of construction material. The current regular ferry service between Baku and Nourshahr carries only very minor quantities of trucks, however, according to the Azeri operator Caspar it is yet too early to assess the viability of this service.

### **4.3 Competitive Traffic Links**

A major feature of the TRACECA route is the incidence of multiple handling and of several border crossings. A perfectly normal transport, by container, from the EU to, say, Ashgabad will move by sea from Europe to Poti. The container will be discharged and placed on a railcar to be railed to Baku. This entails customs formalities, including deposits payable but very difficult to recover, in Poti and at the Georgian/Azeri border. The truck will then go by ferry to Turkmenbashi and onward to Ashgabad. By that time the container has crossed four borders and has been handled at least three times. All the same, transport specialists reckon that this route is safer than the (rail-)route from Europe transiting Russia and Kazakhstan and offers itself for the movement of consumer goods such as foodstuff, beverages, tobacco, electronics, and the like. However it should be noted that current practices of customs clearance are far from efficient state-of-the-art procedures. Consequently, the cargo sometimes has to bear considerable waiting times and is charged with extra 'fees' not necessarily found in printed tariffs, which altogether may contribute to a reduced attractiveness of the TRACECA route.

#### **4.3.1 Via Iran and Turkey**

At present a large proportion of cargo from Europe destined to Turkmenistan moves by land bridges via Turkey or Iran, of which again a certain proportion would be shipped to Iran and discharged at Bandar Abbas. Even though road conditions are very poor, substantial quantities of building material, among other commodities, are being trucked over this route because constant and incalculable delays in Baku and Turkmenbashi (due entirely to administrative obstructions) are not accepted by consignees who depend on timely supplies to keep their construction sites going, especially in Ashgabat.

Dry cargo movements in the east-west and v.v. directions on the TRACECA route will constantly feel the competition through Russian and Iranian efforts to improve relations with CIS member countries east of the Caspian Sea. Both powers are on record of aggressively attacking the TRACECA idea (see Chapter 4.3.3.1)

#### **4.3.2 Via Turkmenistan**

The rail corridor from Kazakhstan via Turkmenistan constitutes a competitor to the sea transport from Aktau to Iranian ports. Though being considerably shorter than the route via Aktau, this corridor is handicapped by high rail tariffs in Turkmenistan, additional customs and border-crossing procedures

and the cost for changing the gauge at the Turkmen-Iranian border (Serakhs). According to calculations by the Kazakh Ministry of Transport, the transport cost for one tonne of steel from Dzezhkazghan to Iran (Bandar Anzali) amounts to 30 USD via Aktau and 32 USD over the Turkmenistan route.

#### 4.3.3 Via Russia

The TRACECA sea route across the Caspian (Baku – Aktau/Turkmenbashi) competes with routes bypassing Baku. An unspecified amount of dry cargo from Aktau, Turkmenbashi and Iranian ports transits the Volga-Don Canal. This is an area where for obvious reasons, Russian carriers take the lions share of the traffic. The competition of this route is felt in summer, but in winter the cargo is re-routed via Baku when the Volga-Don Canal becomes ice-bound.

There is also the transport chain Aktau – (sea) - Makhachkala – (rail) – Novorossiysk. This route will be further stimulated by Russian ideas for the construction of a ferry terminal somewhere between Makhachkala and Astrakhan, capable of accommodating 280-m ferries with a capacity of up to 150 rail wagons. There is no reason why regular ferry services between Turkmenbashi and Makhachkala should not similarly be introduced, always provided there is sufficient inducement.

The construction of a new port or perhaps some off-shore facilities (single-mooring buoys) in Atyrau is not considered a threat to the Port of Aktau. The water in the Atyrau area is very shallow and the Caspian Sea north of Bautino becomes icebound for some months of the year. However, the envisaged construction of a new oil port in Bautino north of Aktau will most probably lead to a re-routing of a large part of the existing oil business to Bautino or at least affect Aktau's expected growth of oil throughput, but again that also depends on the development of the various Kazakh oil fields.

Currently about 95 percent of all Kazakh imports and exports are transported by rail. For transports to the west, Kazakh exporters have the choice of several alternative rail routes through Russia. Those routes are generally considered cheaper and more reliable for commodities moving in large quantities than the TRACECA route across the Caspian Sea. Large volumes of ferrochrome (50,000 tonnes per month) from Aktybinsk and Pavlodar move by rail to Baltic ports (75 percent) and to some Black Sea ports (25 percent). The average size of a consignment of ferrochrome is about 2000 to 3000 tonnes (50 wagons). Zinc produced in Ust-Kamenogorsk and copper produced in Dzhezhkazgan mainly go to St. Petersburg, where there are companies specialised in handling these commodities. Occasionally zinc and copper will also move eastwards to the Pacific coast, partly in containers to South-Korea, that being one way for the shipping companies to recover their empty boxes and to obtaining a slight contribution towards the deadheading costs.

##### 4.3.3.1 Northern Route of the Trans-Asian Rail Corridor: China-Kazakhstan-Russia-Europe

Closely related to the trust of transport users in the traditional railway connections is the expectation that the northern route of the Trans-Asian rail (TAR) corridor will have a bright and busy future. The TAR Corridor (Northern Corridor of the Transasian Mainline or OSJD Corridor 1) will lead from the China/the Koreas to the border crossing point between China and Kazakhstan (Alashankou/Druzhba), then to Presnogorkovskaya at the Kazakh-Russian border and further on to Brest via Jekatarinburg, Perm, Nizhny-Novgorod, Moscow and Minsk. This route will run directly parallel to the well-known Trans-Siberian route (TSR), but will have the advantage of being 1500-2000 km shorter and when fully implemented is expected to show time savings of at least 50% compared to cargo transports on the existing TSR, which currently take about 35 days. TSR management and the principal users of this route are well aware of the time element and are actively working on introducing improvements.

At the time of writing, in a first phase a special ESCAP task group concerned with customs and general rules and regulations is investigating the TAR corridor, to be followed by a second phase dealing with aspects of costing and pricing.

The market potential of this route in Asia -Europe v.v. transportation (which for some time to come will be dominated by all-water container transports) is expected to be rather limited since the border crossing point at Druzhba, where the cargo must change gauge currently has a maximum handling capacity of about 300,000 TEU p.a. However, the TAR Corridor may be of importance for the Central Asian economies as it will assist in furthering the excellent trade relations between China and South-East Asia. In 1999, 3.2 million tonnes of cargo, mainly steel, metals and mineral fertilisers for China,

crossed the border at Druzhba. The corridor offers yet another land-based alternative to the TRACECA route.

As of the present this corridor still suffers from problems waiting to be solved. Cargo transport on the TAR is still quite expensive due to insufficient co-operation between the participating railway companies who seem to be totally unaware of the one-stop-shopping concept as a vital means of streamlining transit and of attracting clients. Other problems relate to the introduction and implementation of a common data communication system, and customs procedures.

#### 4.3.3.2 New Alternative Projects

In line with a new Russian policy doctrine towards Central Asia, which aims at a) opening new markets and business opportunities for Russian companies, b) integrating Russia into the international markets and thereby, Russia into the Central Asian economies (or v.v.), and c) winning the race for energy (e.g. by routing a maximum percentage of Caspian oil and gas via Russian outlets to world markets), Russia actively participates in developing transport corridors in the Central Asia region, of which some may be regarded as competing with the TRACECA route.

In addition to supporting the implementation of the TAR corridor, Russia also promotes a route from western Central Asia to Aktau port in Kazakhstan, and from there onwards to Russia (Astrakhan, Makhachkala or Olya) and beyond.

Once cargo reaches a Russian Caspian port, there are several branch routes available for final destinations in Russia itself as well as further transit to Europe, depending on the final destination of the cargo. In addition, there are plans to improve the Volga-Don infrastructure in order more closely to connect the Caspian and Black Sea markets, and to expand (seasonal) transportation via the Volga system.

Russia more than any other country, plus arguably Iran, are currently focusing on the promotion of the 'Nostrac' North-South Corridor, a multi-modal North-South route extending from the Baltic Sea to the Iranian Gulf, and beyond to the Indian sub-continent.

In former Soviet times, there has been a considerable cargo exchange between Europe and Iran via the Soviet rail system and Soviet Caspian ports (Astrakhan) of annually up to 2 million tonnes. Although the idea of revitalising this link and using it on a more international scale as a transit route had been discussed between Russia and Iran for years, it has not seen the light of day. In September 2000, Russia signed an agreement with India (complementing a previous one with Iran) concerning the movement of Indian exports to Russia and to other European countries over a route briefly sketched below. The Indian parliament has since ratified the agreement. Other interested states including Kazakhstan, Turkmenistan, and other Iranian/ Arabian Gulf states may well consider acceding to the agreement at a later stage. The UAE conduct a flourishing trade with Iran and Central Asian countries involving substantial volumes of transshipment cargo from and to virtually all parts of the world. Interestingly, in 1999 Turkmenistan and Azerbaijan ranked as numbers 7 and 8 respectively on the list of UAE most important export partners.

India is rapidly industrialising its economy and has become quite active in the sectors of atomic energy, aircraft and space industry, and metal processing. India is one of Russia's major suppliers of foodstuffs and medical products and as such becomes increasingly important to Russia. In terms of the agreement, goods (most probably containerised) will be shipped to the Iranian port of Bandar Abbas, then conveyed by rail or truck to the Iranian Caspian Sea ports and probably to Turkmenbashi. The containers will then be shipped northbound across the Caspian Sea to one of the Russian ports of Astrakhan, Olya and Makhachkala. Of the total quantities, some 10,000 containers p.a. may in future and in terms of a Russian/Turkmen agreement be routed via Turkmenistan, provided the necessary infrastructure is in place. On-carriage further north is envisaged to be by rail.

Total transit times through the North-South Corridor from Indian sub-continental ports to places such as St. Petersburg or Helsinki are expected to take less than 20 days which compares favourably with 40 days via the traditional all-water route through the Suez Canal and the Mediterranean Sea and to Rotterdam or Hamburg for transshipment, always provided the corridor infra and superstructure is fully in place and operational. Transport costs have been calculated to be only some 60 percent of those for the traditional route.

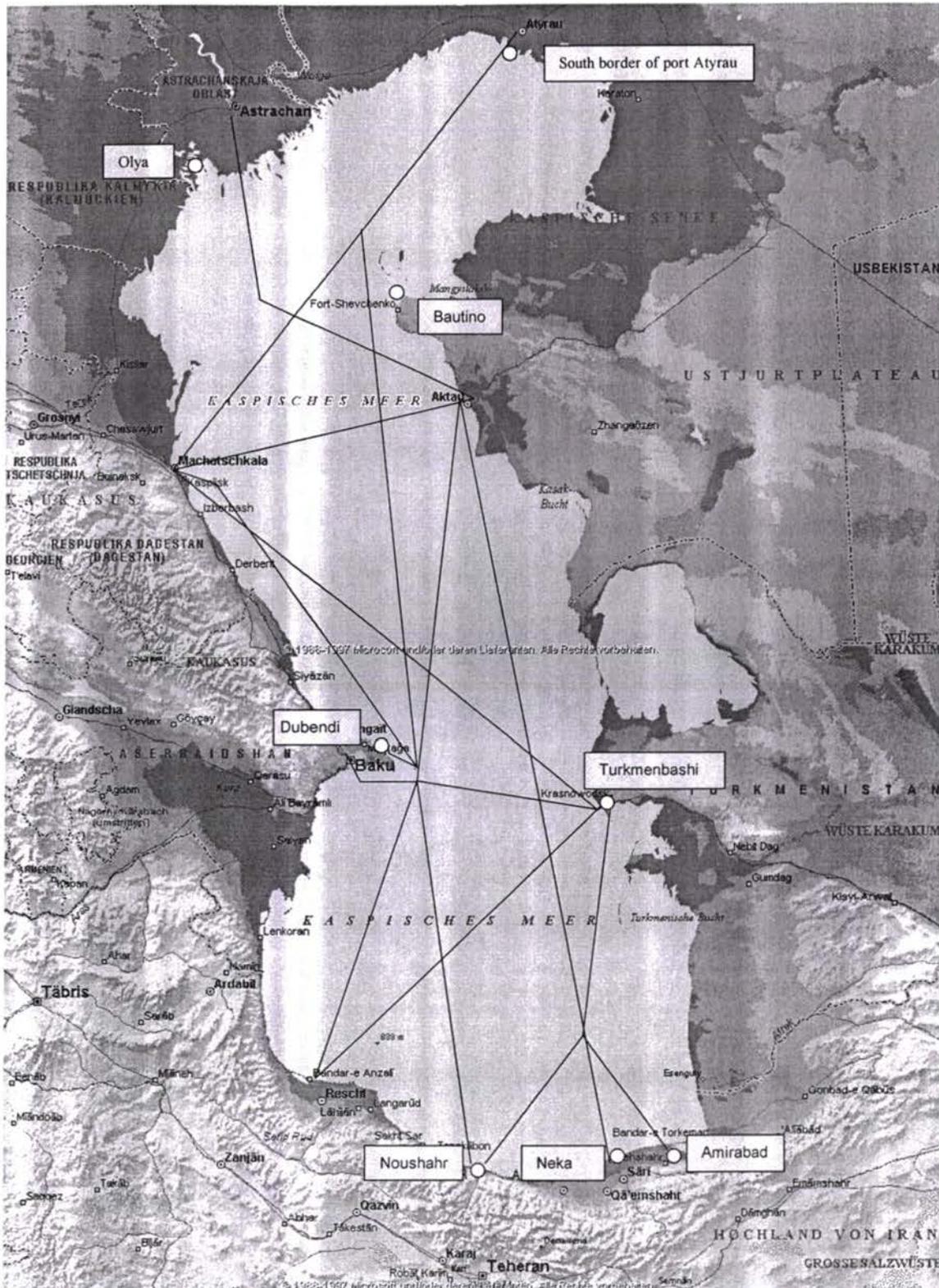
An initial shipment was supposed to have been despatched in May 2001, but no confirmation has yet been received. A partnership between an Indian shipping company and a Russian freight forwarder assumes responsibility for the transport of containers from India to Russia and other European countries via this route. The estimated transit time from e.g. Calcutta to Moscow is 33 days, and the freight charge is reported to approximate USD 2,800 per TEU.

At the time of writing, southbound shipments between Russian and Iranian Caspian ports comprise mainly bulk (metals, timber, paper, chemicals), while northbound cargo consists of foodstuffs and machinery, especially cars and buses. Since Astrakhan, the main Russian Caspian port is far from being able to handle the projected bulk and container traffic, Russia and as well as Iran are reported to expand their Caspian Sea port facilities. The Russian port of Olya situated south-west of Astrakhan and currently under construction, is reported in the first stage to have an annual capacity of up to 25,000 containers, and in the final stage shall be able to handle 8 million tonnes of cargo p.a.

Iran, endeavouring to become a hub for cargo to and from the Central Asian Republics, has recently opened a new port at Amirabad and rehabilitates infrastructure and handling facilities at Nourshahr and other Caspian ports. Reportedly the Iranian government even considers constructing a channel between the Persian Gulf and the Caspian Sea, if (expected) traffic volumes justify a project of such dimensions. Experts from the Russian Federal Ministry of Transport estimate the cargo potential of the North-South route at an annual 30-40 million tonnes (including 80-100 thousand containers within three years after project start) worth about USD 25 bn equalling 10% of the current trade between Western Europe and the Indian sub-continent

Politicians both from Russia as well as Iran quite openly declare the new North-South Route as a project directed against the EU TRACECA corridor and what they consider Western "encroachment" on the Caspian region. Consequently, this corridor probably has a stronger strategic than a (transport) economic importance. The estimated costs of USD 2.5-3 bn for the rehabilitation and new construction of infra- and superstructure seem rather low, considering the alleged quality of the railway and road network along the corridor. Moreover, the interested parties appear quite optimistically to assume that most of the necessary investment will be funded by the private sector. Last but not least, problems related to customs procedures, common tariffing, tracking and tracing and exploitation of monopolistic power which today complicate cross border transportation in the Caspian region will not disappear over night. Given the long time horizon for a full implementation of the project, it remains to be seen whether the new corridor will be accepted by the major transport users and by the operators who compete for cargo in the Asia-Europe trade, and whether the high expectations of Russian and Iranian transport experts will be justified at the end of the day.

Figure 4-2: Major Caspian ports, and existing and potential shipping routes



Note: For distances between ports see Annex 1

## **5 Existing Facilities and Market Players**

### **5.1 Port Facilities**

#### **5.1.1 Azerbaijan**

##### **5.1.1.1 Baku**

At the time of writing, Baku is the largest port in the Caspian Sea. Spread along the seashore of the Baku bay, Baku port mainly comprises a ferry terminal, a container terminal, the fishery port and the oil terminals with refineries. The former timber terminal has recently been converted into a modern oil handling facility.

Port and port facilities are owned by the public sector and managed by the Baku International Seaport (BISP), which enjoys a near-total cargo handling monopoly. The only private terminal operator in the port is in charge of the former timber terminal, now handling oil products from Aktau and Turkmenbashi. BISP works 365 days per year, 24 hours per day. Only bunkering services are dominated by private companies.

Baku port is a universal port with facilities and equipment to handle all major commodity groups. Some of the equipment requires total replacement or is in need of repair. The new container handling equipment financed by Taxis appears to be in good condition.

In the framework of the said Taxis project one warehouse was completely refurbished and dedicated as a container freight station. The construction of an internal container yard (however without direct connection to berths) as well as the supply of relevant handling equipment, as part of the European Union's Taxis program exceeding USD 3.0 mn have recently been finalised. The first small container depot for shipping agencies has been established. The port was initially used as a station for switching cargo between the road and rail transport modes. The administrative departments as well as the operational staff of the terminals can now communicate and exchange data via an EDP network.

The rehabilitation of the ferry terminal has been financially secured by the EBRD and work is under way.

Last but not least, financed by the TRACECA programme, BISP will soon start to refurbish its aids to navigation equipment in Baku and Dubendi

Baku port features six shipyards of various capacities (up to 12,300 tdw) and four floating docks. One floating dock can accommodate vessels up to 160m, i.e. the largest vessels at present operating on the Caspian Sea.

Generally, the ship yards and floating docks are in a working condition. Workers are very skilful in producing spare parts thereby overcoming shortages in the supply of original spare parts. However, some of the existing shipyards and floating docks are in need of modernisation.

**Table 5-1: Overview Port of Baku**

	Particulars	Baku
1	Position:	$\varphi = 40,0^{\circ} 23,0' N$ $\lambda = 49,5^{\circ} 51,0' W$
2	Nautical details	Protected /Bay
3	Depth (depends on wind direction)	
	Draught alongside	6 to 9 m
4	Anchorage	two inside the bay, one outside
5	Pilots	Available, compulsory only for foreign vessels
6	Customs	In the port
7	Maintenance and repair facilities	Available, also shipyards
8	Railway connection	Adequate
9	Shore-based railway ramp	Existing
10	Road connection	Adequate
11	Cranes	18 cranes of 6 to 40 t

Disregarding oil, dry cargo transits to and from Central Asia constitute the major proportion of cargo throughput. More than 90 % of the cargo is being transported by the ferry services, and more than 90% thereof sits in railway wagons.

**Table 5-2: Commodities handled at Baku Port (non-ferry traffic, tonnes)**

Main Commodities	2000
Oil & derivatives (ex timber terminal)	1,200,000e
Salt	42,000
Cement	8,000
Other	3,000
of which container (No. of boxes)	44
<i>Total</i>	<i>1,253,000</i>

e: estimate

**Table 5-3: Commodities handled at Baku Port (westbound ferry traffic in t, including tares)**

Main Commodities	2000
Oil & derivatives	300,000
Cotton	125,000
Empty railway wagons	90,000
Coke	43,000
Other	52,000
<i>Total</i>	<i>610,000</i>

**Table 5-4: Commodities handled at Baku Port (eastbound ferry traffic in t, including tares)**

Main Commodities	2000
Aluminium oxide	247,000
Frozen poultry	109,000
Empty railway wagons	43,000
Fertilisers	34,000
Pipes	48,000
Sugar	10,000
Steel, metals, fittings	16,000
Chemical products	13,000
Alcoholic beverages, cigarettes etc.	16,000
Other	104,000
<i>Total</i>	640,000

Excluding the cargo volumes handled at the former timber terminal which started oil handling operation in 2000, the dry cargo share of total throughput is about 75%, only 5% of dry cargo volumes are carried by non-ferry vessels. Consequently, (commercial) vessel traffic in the Baku Bay is dominated by ferry services, particularly the one between Baku and Turkmenbashi. In 2000, the ferry terminal handled 1.25 million tonnes in 20,300 rail wagons (of which 10,599 imports and incoming transit) and 1,800 road trucks (of which 850 imports and incoming transit).

#### 5.1.1.2 Dubendi

BISP is also responsible for the administration and for the infrastructure of Dubendi (42km by road, 92nm by sea north of Baku), where some major oil handling facilities are located (superstructure owned by the state-owned oil company SOCAR and the Azeri-Turkish joint venture company Caspian Transco). Until the nineteen seventies, the oil terminal facilities of the port of Baku handled all incoming and outgoing quantities of oil. To cope with the increasing flows during Soviet time, an additional oil terminal was constructed in the 1970s on the Apsheron Peninsula.

At the time of writing the Dubendi oil terminal mainly consists of four piers sheltered by a breakwater, and on-shore facilities such as tank-farms, a station for loading rail tank wagons, a water treatment facility, oil pipe networks, pumping stations, power stations, electricity and water networks, and administrative buildings. The draught in port is about 8m but a shoal in the access restricts ships' maximum draught to about 6.5m. The elimination of the shoal is projected. The port offers its services all year around, but bad weather conditions usually forces the port to close down for about 30-40 days p.a.

Currently the port receives just over 3 million tonnes of crude oil annually arriving from Aktau/Kazakhstan (2.4 mill. tonnes, mainly ex TengizChevronOil), and from Okarem and Cheleken/Turkmenistan (0.75 mill. tonnes, ex Mobil Oil and TotalFina). The oil would subsequently be railed to the Black Sea port of Batumi under the aegis of Caspian Transco, which operates two berths at Dubendi (Nos. 1 and 3). Dubendi port, today working at about 60 percent of its rated capacity of 5 million tonnes p.a., can be refurbished to handle 10 million tonnes p.a. It is plain to see that not all four piers are in a proper working condition (some concrete structures are severely deteriorated, cracked and show corroded steel bars).

The superstructure does handle oil but is in an advanced state of decay. Certain components should be replaced by modern equipment to increase the efficiency and the safety of the handling process.

#### 5.1.2 Kazakhstan

### 5.1.2.1 Aktau Commercial Sea Port

The Aktau Sea Commercial Port is the only international seaport of the Republic of Kazakhstan with links to Russia, Turkmenistan, Iran, and Azerbaijan. The port was founded in 1963 and is located on the Mangyshlak peninsula.

The port is managed by the state-owned Aktau Commercial Sea Port (ACSP) authority. Cargo handling operations are mainly in the hands of private companies. The port operates throughout the year, 24 hours a day.

After the recent rehabilitation of the dry cargo berths, ACSP has a capacity to handle 1.5 million tonnes p.a. of dry cargo. Some 0.75 mn. tonnes of dry cargo were handled in the year 2000, of which metals (to Iran) accounted for about 90%. A new grain terminal was inaugurated in May 2001. The rehabilitation of the rail ferry terminal is expected to be finalised by the end of July 2001, which will thus give a boost to the insignificant cargo volumes carried by (road) ferry between Aktau and Baku. A fully equipped container yard is projected, and the construction of two new oil berths and an additional berth for dry bulk (ores) are envisaged.

The existing oil facilities and pipelines permit the port theoretically to handle up to 8.5 million tonnes of liquid cargo annually. Considering that the port handled 3.4 million tonnes of crude oil and oil products in 2000, Aktau had a capacity utilisation of no more than 40%. At the time of compiling this report a large proportion of oil reaches the port by rail from the Tengiz oil field, and via a pipeline from Buzachi. A Memorandum of Understanding for an EBRD loan to rehabilitate the oil berths Nos. 4 and 5 (together with the breakwater for oil berths Nos. 9 and 10) has already been signed. Rehabilitation works are expected to start 2002/2003.

As regards hinterland transportation, plans for the construction of a road from Aktau to the Kazakh-Uzbek border in parallel to the existing railway are on the drawing board. The road between Aktau and Atyrau on the northern shore of the Caspian will be rehabilitated. Uzbekistan has constructed the missing rail link between Uchkuduk and Nukus, which will permit direct transports between Aktau and Uzbekistan. This will further increase the attractiveness of the Port of Aktau for cargo transports beyond the Caspian Sea.

At present Aktau suffers from an inadequate and expensive railway link with the main rail network. The land on which the 18-km rail connection between the port of Aktau and Mangyshlack is situated is owned by Cascor, a privatised company that charges stiff fees for using that connection. The problem has been acknowledged by the responsible decision-makers and is understood to be on the 'urgent' agenda for the very near future.

**Table 5-5: Overview Port of Aktau**

Particulars	Aktau
Position:	$\varphi = 43,0^{\circ} 36,0' N$ $\lambda = 51,0^{\circ} 14,0' W$
Nautical details	2 breakwaters
Depth (depends on wind)	
Draught alongside	5 to 7,6 m
Anchorage	In front of the port
Pilots	Not available
Custom	At port
Railway connection	Technically sufficient
Railway ramp	Available from July 2001
Road connection	At present insufficient
Cranes	Four quayside cranes 20 t, one quayside crane 32 t, one mobile crane 35 t, one mobile crane 65 t.

**Table 5-6: Handling Volumes in ACSP 2000 (tonnes)**

Commodity	Aktau-Iran	Iran-Aktau	Aktau-Russia	Russia-Aktau	Aktau-Baku/Dub.	Baku-Aktau	All
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Crude oil			767,824		2,457,243		3,225,067
Oil products			87,161		73,312		160,473
Metal, steel	671,226	42					671,268
Grain	14,502						14,502
Others	42,605	23,579					66,184
<b>Total</b>	<b>728,334</b>	<b>23,620</b>	<b>854,985</b>	<b>0</b>	<b>2,530,555</b>	<b>0</b>	<b>4,137,494</b>

**Table 5-7: Ferry Traffic ACSP 2000 (tonnes)**

Commodity	Ferry Aktau-Baku	Ferry Baku-Aktau
Motor vehicles	115	97
Trucks	2,046	4,553
Others	233	1,544
<b>Total</b>	<b>2,394</b>	<b>6,194</b>
No. of Trucks	160	214

The data clearly indicates that business in the port of Aktau is largely depending on the handling of export bulk cargo, of which crude oil (most of it is shipped to Dubendi) takes a dominating position. Imports of both liquid and dry cargo represent a share of only about 5% on total handling volumes. Consequently, vessel traffic in Aktau is dominated by tankers entering the port empty and leaving fully or in case of larger tankers partly loaded.

#### 5.1.2.2 Atyrau and Bautino

The Port of Atyrau has recently been acquired by a private company which has agreed to comply with certain state requirements, such as to guarantee minimum investments, not to change the nature of the business, and to issue job guarantees. At this stage the port depends on the fishing industry, plus the handling of oil products and some general cargo. It is not known what the new owners plan for the future of Atyrau port. It is very likely that future developments may be related to the recent rehabilitation of Atyrau refinery. However, the sea area around Atyrau port is very shallow (no more than about 2-3m) and the port freezes in winter which appears to limit future developments.

The Port of Bautino is a small port situated on the west coast of the peninsula, which constitutes the most westerly point of the eastern Caspian (or Kazakh) shoreline. The port is naturally sheltered from all directions other than north-west. The older part of the port serves as a fishery port while the newer part belongs to and is managed by the Aktau Commercial Sea Port. Bautino currently serves as a supply base for the nearby oil fields and handles only handles some insignificant volumes of construction material and oil field equipment.

Although Kazakhstan expressed its intention to avoid the Soviet-type of organisational mixture of every conceivable type of maritime and port operations, recent plans foresee to transfer of the port of Bautino to the Kazakh State Shipping Line Kazmortransflot with the instruction to convert it into an oil port. Bautino is situated very close to Tengiz and some other oil fields (a pipeline connection is projected). The underlying idea for the transfer of ownership is to provide the shipping line with an asset, thereby facilitating the development of Kazmortransflot, who may find the Bautino assets very useful as collateral for loans for the purchase of vessels. At the same time Kazmortransflot shall in the initial phase support the conversion of the port and take responsibility for operations.

Bautino Commercial Seaport at this stage belongs to the Port of Aktau. Accordingly, the EBRD as main creditor of ACSP has to agree to this transfer of property rights. Once the EBRD has agreed, the development of Bautino under Kazmortransflot is expected to be somewhat easier than under ACSP ownership since the current loan contract between the EBRD and ACSP restricts ACSP's resources for new investments to 500,000 USD annually. Thus, there are only insufficient funds to finance the conversion of Bautino under the current conditions.

The access to the port is quite deep, and Bautino could accommodate larger vessels than Aktau provided the port basin was dredged which is understood to be fairly easy due to the sandy ground.

The MoTC is convinced that both Aktau and Bautino will have enough cargo to justify further investment. It is expected that for the next five to ten years, Bautino will not be able to compete with Aktau.

**Table 5-8: Ports of Atyrau and Bautino**

Particulars	Atyrau	Bautino
Position:	Town area: $\varphi = 47^{\circ} 07' N$ $\lambda = 51^{\circ} 55' E$ Port area: $\varphi = 46^{\circ} 54' N$ $\lambda = 51^{\circ} 40' E$	$\varphi = 44^{\circ} 33' N$ $\lambda = 51^{\circ} 15' E$ 50° 15'E
Nautical details	Situated on the Ural river, icebound November to March.	Icebound between December and February, but not every year. Ice thickness less than 15 cm.
Depth (depends on wind direction)		
Draught alongside	About 3 metres, dredging is under way	4 to 5 m on the road in the port: 3,5 to 4 m, western part only 3 m, at present dredging is under way
Entrance/ approach	Dredging is under way	12 m – 13 m
Anchorage	In the river	2, outside the road
Length of quay	210 m	120 m
Pilots	Available	Available
Tugboat	Available	Available
Mooring boat	Not available	Not available
Custom	Yes, Station is 25 km off	From Aktau
Road connections	Inadequate	Insufficient
Rail connection	Adequate	Not available
Railway ramp for ferry	Not available	Not available
Ramp for Ro-Ro	Not available	Not available
Cranes and their capacity	Available, 4 to 5 tons and one up to 16 tons	Available, floating-, caterpillar- and driving cranes
Sheds, tanks, Warehouses	No information available	Tanks for water and oil products

### 5.1.3 Turkmenistan

#### 5.1.3.1 Turkmenbashi and Ufra

Turkmenbashi port is situated on the eastern shore of the Caspian Sea, just opposite of Baku. The port is owned and operated by the state-owned TML Turkmen Maritime Lines under the direct responsibility of the Cabinet of Ministers. TML serves as Turkmen maritime administration, and its General Manager has the rank of a Deputy Minister of Transport. As such TML' activities cover the management of

- Turkmenbashi port complex, including channel operation, safety and maintenance, the shipyard, the ferry terminal and the Ufra oil terminal;
- Cheleken port;
- Okarem port;
- four dry cargo vessels of about 3000 dwt each (TML ordered a new tanker, 5400 to 7500 dwt, to be built in Turkey for delivery in 2002 - maximum draft of this tanker will be 4.6 m, an option for the construction of three to four additional tankers has reportedly been signed).

Turkmenbashi port accommodates rail ferries, and conventional and multipurpose ships sailing within the Caspian Sea and from/to the Black Sea via the Volga-Don canal. Besides a ferry terminal with two berths and a new terminal building, and some general cargo facilities, Turkmenbashi Port also has a fully equipped container yard (funded by TRACECA), which is currently under-utilised.

The existing shipyard has workshops and old floating dock for vessels up to 150m. The workshops are in a workable condition and can produce simple spare parts. The floating dock currently has no class. The water and pressure tanks are corroded, the pump system is not able to keep the tanks empty. At present, the dock can only accommodate vessels up to about 30m.

Access to the port is via a narrow 15 nm approach channel, which suffers from siltation. After entering the channel, vessels pass between a peninsular and an island. In the approach, the lighted beacon and the leading lights are in a very poor condition, some of them are extinguished. The light buoys in the channel are in a similar condition, most of them are extinguished, their solar batteries broken, their top marks and radar reflectors missing. Also, their colouring and their distinguishing marks are indiscernible. Further navigational hazards are weather conditions, where the wind speed exceeds 17 m/sec (reportedly about 75 to 90 days per year). This situation is especially dangerous for high-board vessels (like the ferries) that tend to "sail" and need to maintain considerable speed in the fairway to keep the vessel steerable.

The Port Control Centre lacks basic surveillance equipment like radar and GMDSS equipment. Thus, vessels cannot approach the port nor leave during darkness, and vessels normally await daylight for operations.

However, two present TRACECA projects are expected to significantly improve the situation before the end of 2002.

**Table 5-9: Overview Ports of Turkmenbashi and Ufra**

Particulars	Turkmenbashi	Ufra
Position:	40°01' N, 52°58'E.	40°00' N, 52°59E.
Nautical details	Situated on the north-west corner of Turkmenbashi bay, connected with the open sea by a narrow channel	4 nm east of Turkmenbashi port
Depth (depends on wind direction)		
Draught alongside	5-6m	5-6m
Entrance/approach	Dredging and rehabilitation is under way	Dredging and rehabilitation is under way
Anchorage	Vessels have to wait outside the bay area	Vessels have to wait outside the bay area
Length of quay	670m + ferry terminal	Two piers with two berths each, reportedly two new piers projected
Pilots	Available on demand	Available on demand
Tugboat	Available	Available
Mooring boat	Available	Available
Custom	Available in port	Available in port
Road connections	Adequate	Adequate
Rail connection	Technically adequate	Technically adequate
Railway ramp	Available	Not available
Cranes	About 15 cranes 5-32 t + one floating crane	No cranes available
Sheds, tanks, Warehouses	Container yard	Tank-farm, pipelines, refinery,

In 1999, ferry traffic comprised the shipment of 610,000 t (excluding tares, 260,000 t of import and 350,000 t of export from/to Azerbaijan but also from/to other Caucasian and European countries) in 360 roundtrips between Turkmenbashi and Baku. In 2000, this traffic has increased to about 875,000 t (excluding tares, 425,000 t of import and 450,000 t of export) in about 400 roundtrips.

**Table 5-10: Handling Volumes at Turkmenbashi Ferry Terminal (in t, tares excluded)**

Commodity	1999	2000
Oil products (export)	245,000	210,000
Foodstuffs (import)	130,000	110,000
Equipment and means of transportation (export)	30,000	45,000
Cotton (export)	55,000	90,000
Construction material (export)	24,000	30,000
Fertilisers (export)	79,000	25,000
Aluminium oxide (import)	20,000	180,000
Others	27,000	185,000
<b>Total</b>	<b>610,000</b>	<b>875,000</b>

Vessel traffic (appr. 110 calls) in conventional and multi-purpose vessels amounted to about 150,000 t in 1999:

**Table 5-11: Conventional Handling Volumes in Turkmenbashi port (in t)**

Commodity	1999
Salt (inbound domestic traffic and export)	68,000
Chemicals (import)	13,000
Equipment and means of transportation (import)	12,000
Sugar (import)	7,000
Construction material (export)	25,000
Others (im- and export)	25,000
<b>Total</b>	<b>150,000</b>

Ufra oil terminal is located 4 nm east of Turkmenbashi city port and connected to the open sea via the same access channel as Turkmenbashi port. It comprises two old piers able to accommodate four vessels up to 7,400 tdw (Apsheron class). Pier no. 1 is dedicated to unloading crude oil (for Turkmenbashi refinery) and loading of refined products, while Pier no. 2 handles refined products exclusively. Both piers are equipped with workable fire-fighting equipment, but oil-spill equipment and the ballast and bilge water treatment system need to be replaced resp. rehabilitated.

Crude oil originating from Cheleken and Okarem is unloaded in Ufra and forwarded to the Turkmenbashi refinery; then part of the refined oil is exported as products from Ufra. In 1999, about 235 thousand tonnes of crude oil have been unloaded in Ufra (domestic traffic), which was less than the 710 thousand tonnes recorded in 1998. As far as oil products are concerned, in 1999 2.5 million tonnes were loaded at Ufra, a bit less than the 2.7 million 1998 figure. Dark and light products were shipped to Mediterranean countries (44 %), Caucasian countries (21 %), Iran/Turkey/Afghanistan (23 %) and the remaining to various countries of Eastern and Northern Europe. Lastly there is some import of oil products, mainly kerosene: 26 000 tonnes in 1998 and 2 500 tonnes in 1999.

### 5.1.3.2 Okarem and Cheleken

The ports of Okarem and Cheleken are mainly used for the export of crude oil to Dubendi (Azerbaijan) and Neka (Iran). Some share of the oil is also sent to Ufra for processing in the Turkmenbashi oil refinery.

Cheleken receives crude oil from nearby Azizbekovo and Koturtepe oilfields. The oil is stored in the vicinity of the bay at Karagel tank-farm, and then pumped to a double sided pier able to accommodate tankers up to 5,000 tdw. For the time being the pump and pipe system does not allow for simultaneous loading of tankers. The capacity of Cheleken terminal is reported to be about 3.5 mill. t .p.a., plans for the modernisation of handling facilities to allow simultaneous handling are under way. The pier is fitted with a modern fire-fighting system, and can be operated day and night.

The Port of Cheleken also possesses facilities to handle dry cargo vessels (portal cranes), but these are rarely used.

The port of Okarem mainly consists of a 20,000 m<sup>3</sup> tank-farm and a 1967-built pier able to receive 5,000 tdw tankers. Capacity is estimated at 2.5 mn. t.p.a. Fire-fighting equipment and lighting facilities are missing (no night-time operation possible). It is not foreseen to handle dry cargo vessels at Okarem.

#### 5.1.4 Russia

Russia has currently two "major" ports on the Caspian with a third one under construction.

Astrakhan is situated on the banks of the River Volga, about 170km from the Caspian Sea. The port area stretches some 50km with facilities located on both sides of the river. Entry to Astrakhan from the Caspian Sea is through the Volga-Caspian Canal (45 nm river leg, 56 nm sea leg). The canal leads from the Astrakhan Roadstead to the "0"km of the Volga River at Krasnye Barrikady village, which is situated 34km down river from Astrakhan port.

The Port of Astrakhan has passenger, ferry, general and bulk cargo facilities, as well as tanker terminals for the transshipment of oil by rail cars. Furthermore, there are well-developed shipbuilding and repair facilities.

Water depths in the canal are dredged and maintained to 4m. The entry channel freezes in winter but is navigable throughout the year, being kept open by ice-breakers from December to March.

Makhachkala has facilities for the handling of dry cargo (2 berths) and oil (4 berths). Furthermore, the port offers some ship repair services. Recently there have been several attempts to establish Ro/Ro and ferry services. The port of Makhachkala plans to construct a specialised rail ferry terminal and an access to the Baku-Novorossisk pipeline, which by-passes the port.

Reportedly, Makhachkala can accommodate the current Caspian max tankers (12,300 tdw, 8m draught) at the oil berths, while the dry cargo terminal only has a depth of 4.5m.

Olya seaport is situated about 100km south of Astrakhan. Recently the first stage of construction has been finalised allowing the port to handle general cargo vessels and ferries. In the final stage of development Olya seaport is expected to have a handling capacity of an annual 8 mill. t of dry bulk, conventional cargo and containers. However, this also requires the improvement of the hinterland connection of port facilities (e.g. the construction of a 46km-railway stretch to connect to the main railway line).

**Table 5-12: Overview Russian Ports**

Particulars	Olya (under construction)	Astrakhan	Makhachkala
Position:	$\varphi = 45^{\circ} 47' N$ $\lambda = 47^{\circ} 32' E$ 100 km in the south of Astrakhan on river Volga	$\varphi = 46^{\circ} 22' N$ $\lambda = 48^{\circ} 05' E$ on both sides of river Volga, water territory $\approx$ 50 km along the Volga	$\varphi = 42^{\circ} 57' N$ Port area: $42^{\circ} 00' N$ $\lambda = 47^{\circ} 32' E$ $45^{\circ} 00' E$ Divided in oil cargo port and dry cargo port with fishing port
Nautical details		Vessel can enter all around the year, ice-breaker available. Width of the Volga in port area: 0,6 to 1,5 km; protection against high water: artificial earth dam	Vessel can enter all around the year, ice-breaker available. Entrance to port through access channel, one-way traffic. Winds: basically SE and NW, high waves from SE
Depth (depends on wind direction)			
Draught alongside	Currently around 4 m	Around 4 m	4,5 m, dredging is under way
Entrance/ approach			Entrance day and night, but not with strong N, E or SE wind; channel less 10 m; dredging is going on
Anchorage	Temporary near the port and also on Astrakhan sea road	Near the port	Outside the port and on the road
Length of quay	250 m	1.500 m	500 m; the next 500 m are under construction
Pilots	Available	Available	On demand
Tugboats	Available	Available	Available, 110 to 880 kW
Mooring boat	Available	Available	Available
Custom	Yes	Yes	Yes
Road connections	Adequate	Adequate	Adequate
Rail connection	Not available	Only for some piers	Adequate
Railway ramp for ferry	projected	Not available	Not available
Cranes and capacity	2 of 5 tons each	From 3 to 20 t, also floating cranes available	From 3 to 20 t
Sheds, Tanks, Warehouses	Under construction	On some piers only	Warehouses, cold-storage house and oil tanks
Quays, jetties and their length	One pier 250 m	On some piers only	One pier 500 m

### 5.1.5 Iran

The Iran currently has four "major" ports along the Caspian shoreline.

The port of Bandar Anzali is the biggest Iranian oil port in the Caspian Sea and one of the largest ports on the Caspian Sea. It is situated on the banks of a river, and managed by the state-owned Bandar Anzali Port and Shipping Organisation. The port is more or less an "inland" port with berths situated on the side of the river banks. There are four dry cargo berths for general and bulk-cargoes and two oil berths. Bulk cargoes are for the most part off-loaded directly into trucks, the same applies for part of the crude oil since the port only has one combined gas and oil pipeline, which connects the port to the inner-Iranian pipeline system. Thus, crude oil is usually discharged from tankers and pumped into trucks for further transport or fed into the pipeline to nearby Reshd tank farm.

Bandar Anzali has a small shipyard able to build small vessels like fishing boats and tugboats.

The port of Nourshahr is formed as a square cut into the shoreline with two breakwaters. It is managed by the Nourshahr Ports and Shipping Organisation. Each breakwater accommodates two berths, giving

a total of three dry cargo and one oil berth. The oil berth is connected to the nearby tank farm (limited storage capacity of about 1000 m<sup>3</sup>). Two of the dry cargo berths have the ability to handle fuel oil, which is discharged directly into trucks. For dry cargoes, the port offers 15,000 m<sup>2</sup> of warehousing and 47,000 m<sup>2</sup> of open storage area.

The workshops at Nourshahr can only provide very limited maintenance and repair assistance to vessels.

The port of Neka is situated near Nourshahr port and is also administered by the Nourshahr Ports and Shipping Organisation. Being constructed as an oil port, the port accommodates 4 oil berths and one multi-purpose facility, which is today used for handling dry cargo. The oil berths are mostly operated by the National Iranian Oil Company (NIOC). Iran has converted an old gas pipeline system from Neka oil terminal to Teheran into an oil pipeline, thus there are two pipelines for the discharge of crude oil. Water depth of the access channel and along the jetties is around 5m allowing the handling of tankers up to 5000 tdw.

Neka has a small shipyard, which is able to provide maintenance and repair services to fishing boats.

The new port of Amirabad, which has recently been opened, will be one of the biggest and best equipped ports in the Caspian Sea Area. The port is located about 180 kilometres east of Nourshahr and near Neka. Rail tracks connect this port to the national railway system. One jetty and one Ro/Ro jetty are expected to be opened soon, a rail ramp is under discussion. At the final stage, there will be ten jetties available for dry cargo, oil and oil products. Local sources expect that still some inputs are required for e.g. dredging and port administration until full operability is secured.

**Table 5-13: Overview Iranian Ports**

Particulars	Bandar Anzali	Noushahr	Neka	Amirabad
Position:	$\varphi = 37^{\circ} 30' N$ $\lambda = 49^{\circ} 30' E$	$\varphi = 36^{\circ} 40' N$ $\lambda = 51^{\circ} 30' E$	$\varphi = 36^{\circ} 50' N$ $\lambda = 53^{\circ} 15' E$	$\varphi = 36^{\circ} 59' N$ $\lambda = 53^{\circ} 20' E$ 180 km east of Noushahr, near Neka
Nautical details	2 breakwaters-channel width 200 m, length east 820 m, dangerous by northerly winds < 8 Beaufort, no operations	2 breakwaters-channel width 190m, length east 820m, west 1,040 m, dangerous by north-wind, <8 Beaufort, no operations, sandy beach, mountains in the background, wind main directions: S and SW, less 9 bft. Fog: 25 days/year	Dangerous by N-wind, <6 Beaufort-stopping operation two breakwaters good objects for radar and compass bearings	
Depth (depends on wind direction)				
Draught alongside	4.5 to 5 m, at jetties up to 6	4.5 to 6 m	4.0 m, dredging is going on up to 5 m	5 m, at present dredging is going on
Entrance/ Approach	Breadth 200 m, dredged 90 m, depth min. 5m	Breadth 220m, with some shoals, depth 3.5 to 5m	>5 m	At present dredging is going on, no details available
Anchorage	Only outside, Caspian Sea	In front of the port		
Length of quay	800 m	350 m, but 250 only available	200 m	
Pilots	Compulsory	Compulsory	Compulsory	
Tugboats	2	2	1 of 1,600 hp	
Custom	Available	Available	Available	Available
Road connections	Adequate	Adequate	Adequate	Adequate
Connection to national railway	Inadequate	Inadequate	Inadequate	Adequate
Rail ramp	Not available	Not available	Not available	Projected
Ro/Ro Ramp	Not available	Available	Not available	Not available
Cranes	x 15 to 20 t, 20 X 5 to 30 t	10 x 5 t 2 x 20 t	Only jetty cranes	
Sheds, Warehouses	40,000 m <sup>2</sup>	12,000 m <sup>2</sup>	10 tanks, storage 25,000 t	
Quays, jetties and length	8 x 120 m	5 x 120 m	5 x 150 m (4 for oil products, 1 multi use berth), up to 5,000 dwt	1 x 150 m

## 5.2 Vessels operating in the Caspian Sea

Vessel operation in the Caspian Sea is determined by the (significant) draught restrictions existing in the majority of Caspian ports, and the limitations of the Volga-Don Channel, which only allows vessels up to about 3500-4000 tdw to enter and leave the Caspian Sea. Thus, the majority of (especially dry cargo) vessels are around 3,000 to 4,000 tdw, this size guaranteeing full flexibility (including Iranian ports and the Volga-Don Canal). It stands to reason that ships of that size and cargo intake have higher unit costs than larger vessels, which has a direct bearing on maritime transport costs in the Caspian Sea.

Today, the number of vessel operators in the Caspian region is rather limited, partly due to historical reason. Before the disintegration of the Soviet Union only two states bordered the Caspian Sea, the Soviet Union and Iran. East-west/west-east transportation across the Caspian Sea was monopolised by the state-owned Caspian Shipping Company (Caspar), which had its headquarters in Baku, where also (almost) all vessels were registered. The north-south traffic between the Soviet Union and the Iran was operated by Soviet (Caspar, but also some river-sea shipping lines) and Iranian vessels.

After the disintegration of the Soviet Union, there are now five states bordering the Caspian, but little has changed concerning the competitive situation in the Caspian shipping market. Caspar and its assets have been almost completely transferred to the Republic of Azerbaijan, thus Caspar is now a state-owned Azeri shipping line. Turkmenistan has established their own shipping line TML Turkmen Maritime Lines, which currently operates a rather limited number of (dry cargo) vessels. Kazakhstan has founded the state-owned Kazmortransflot, which temporarily operates with chartered (Azeri and Russian) tankers. Furthermore, some Russian river-sea shipping lines provide their services. Last but not least, the state-owned Iranian Khazar Shipping Company operates transports to and from Iranian ports.

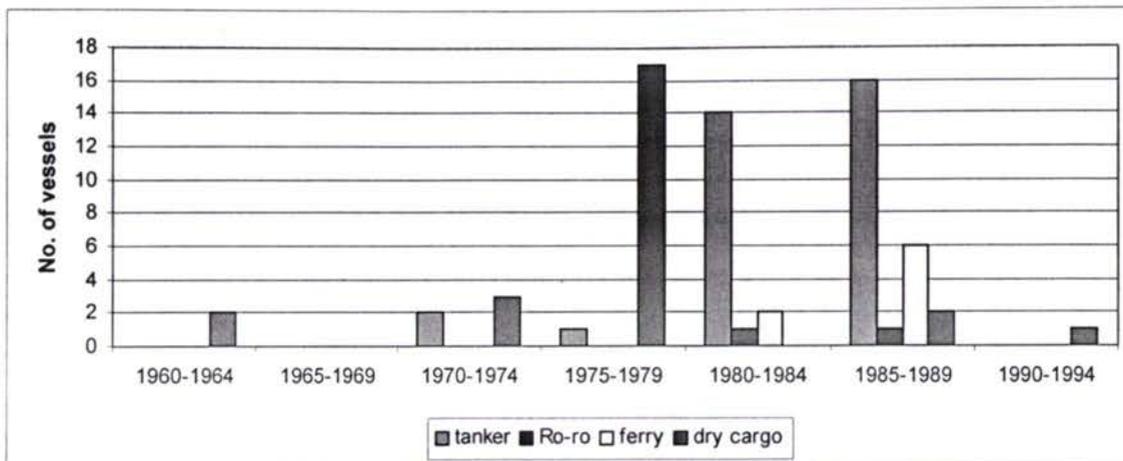
The major players on the Caspian Sea in short:

Caspian Shipping Company (Caspar, based in Baku), by far the most important player in the Caspian shipping market, owns 8 rail ferries, 33 tankers, 22 dry cargo vessels, and 2 Ro-Ro vessels. Some of these vessels are currently operating in the Black and/or Mediterranean Seas, others are laid up due to lack of employment or to outstanding repairs. The dead-weight capacity of the Caspian fleet amounts to 350,000 tons. At present 21 dry cargo vessels, 1 ferry and 1 tanker are sailing outside the Caspian Sea. CSC vessels serve all Caspian Sea ports. The company is active in the transportation of passenger, dry and liquid cargo, and operates all ferry services in the Caspian Sea (Baku – Aktau/Turkmenbashi), and has a monopoly in carrying oil from the east coast of the Caspian Sea to Baku/Dubendi

**Table 5-14: Caspian Shipping Company – Composition and Location of Fleet**

Vessel Type	Deployment	Number (2000)	Dead-weight Capacity
Ferry	Total	8	31,880
	thereof Caspian Sea	7	27,895
Ro-Ro	Total	2	9,346
	Caspian Sea	0	0
Dry cargo	Total	22	88,975
	Caspian Sea	2	7,420
Tanker	Total	33	215,888
	Caspian Sea	32	208,478
<b>Total</b>	<b>Total</b>	<b>66</b>	<b>346,089</b>
	<b>Caspian Sea</b>	<b>41</b>	<b>243,793</b>

Source: Caspian Shipping Company

**Figure 5-1: Caspian Shipping Company Fleet, Age Distribution (as of July 2000)**

Source: Derived from data provided by Caspian Shipping Company

A large part of the Caspar fleet consists of relatively old vessels. Three dry cargo vessels were built less than 15 years ago, whereas all other dry cargo vessels are twenty years or older. Vessels older than 15 years are internationally considered overaged and are being penalised by higher H&M (hull and machinery), P&I (protection and indemnity) and transport insurance premium. Most tankers (30) have been built in the eighties. In the last decade only one vessel (dry cargo vessel built in 1994) was added to the fleet. In the business plan developed by CSC in 1996, there were plans for the acquisition of new ships. These plans have not been implemented due to external circumstances and budget restrictions. At present, the Caspian Shipping Company is reportedly involved in negotiations with an international financial institution concerning the purchase of dry cargo ships. As of July 2001 it was confirmed that Caspar has ordered the construction of one 4000 tdw-general cargo vessel at an Azeri shipyard (contract value: 5.0 mn USD)

#### Russian Operators

Russia has a very large fleet of river-sea type ships of which the majority trades within the vast Russian system of rivers and other interior waterways. Also, many of the shipping companies operating those vessels serve traditional trading routes. However, that does not mean to say that their ships will never enter the Caspian Sea. The short overview hereunder of Russian shipping companies serving Caspian ports is restricted to those at present actively engaged in that trade whose number could at least in theory increase provided the Caspian business picks up. A total of 200 Russian ships have Caspian ports of register but that number includes many small vessels exclusively deployed in the domestic coastal and river trades.

North-Caspian Shipping Company of Astrakhan was reported recently as wishing to acquire a 2,500-3,000 tdw dry cargo ship for river/sea trading, allegedly together with unnamed German partners, in addition to the medium-sized fleet of similar dry cargo ships it already owns, plus one small sea-going vessel for 100 to 200 passengers. The company is engaged in the trade with Iran.

Other Russian shipping companies active in the Caspian Sea dry cargo trades are Astrakhan-based Lakor and Morcenter-tek of Moscow, as also the Vagna Shipping/Volga-Astrakhan group. No further details are available concerning the composition of these companies' fleets.

Volgotanker, a Russian company based in Samara which owns i.a. 176 tankers and 49 ore-oil carriers. As the company name suggests, Volgotanker is in the business of carrying liquid bulk commodities, mainly oil and derivatives. A rather limited number of suitably-sized river-sea tankers is operating in the Caspian Sea. Volgotanker is also very active on the rivers Kama, Don, Dnieper, Danube and their tributaries. At the time of the consultants' field research Volgotanker ships served all Caspian oil ports except Baku. Volgotanker have recently concentrated on taking oil and products from the Caspian east coast to Russian ports and to Iran. Volgotanker has foreign shareholders.

Volga-Flot Shipping Company of Nizhny Novgorod is a mixed operation. It ranks among the biggest Russian shipping enterprises, owning a fleet of some 290 tankers and dry cargo ships, predominantly of the sea-river type. A small number of the ships are engaged in the Russia/Iran and v.v. trade.

Turkmen operator Turkmen Maritime Line (TML, based in Turkmenbashi) owns four dry cargo vessels of about 3000 tdw each of which two are operating in the Black Sea due to cargo shortage in the Caspian Sea. The company has ordered a new tanker of 5,000 tdw to be built in Turkey for delivery in 2001 and reportedly holds options for four additional tankers.

The Iranian shipping line, Khazar Shipping, the subsidiary of state-owned IRISL (Islamic Republic of Iran Shipping Lines) owns 3 to 4 or perhaps five dry cargo vessels and operates between Aktau/Turkmenbashi/Astrakhan and Iran. The company is mainly involved in carrying metal products.

### 5.2.1 Tankers

The transport of oil by tankers as an alternative to pipelines (which are yet to impact on the trade) has repeatedly been mentioned as the obvious solution and seems to hold most promises for the business of Aktau and Baku. Moving oil and oil products in tankers of between 5,000 and 12,000 tdw is not very economic, but there do not at present appear to be any other, and more viable, alternatives, pending the advent of new pipelines. The existing pipelines are antiquated and of do not have sufficient capacities. Deploying considerably larger tankers of up to, say, 50,000 or 60,000 tdw would require major investments into port and terminal infra- and superstructure for which funds will most likely not be available in the foreseeable future. Carrying crude oil in small tankers across the Caspian Sea into Baku/Dubendi will continue, perhaps on a larger scale than as yet, pending the settlement of a host of political issues concerning the status of the Caspian Sea. The eventual construction of the Baku/Ceyhan pipeline may give a substantial boost to the cross-Caspian oil tanker trade.

The tanker fleet of Caspar consists of three vessel sizes: 21 vessels with a capacity of 5,000 tdw (Shikhlinsky class), 9 vessels of 7,410 tdw (Apsheron class), and 3 vessels of 12,334 tdw (Shamkhor class). The aggregate carrying capacity of the Azeri tanker fleet adds up to some tonnes. Draft restrictions prevent the use of the Shamkhor class tankers to full capacity.

Of the Shamkhor-type are at present (February 2001) three tankers listed with the Russian Register of Shipping. All three are sailing in the Caspian Sea area. Shamkhor tankers are single hull.

**Table 5-15: Caspar Tankers of Shamkhor Type**

Name	IMO No.	Validity of class (as of 28 <sup>th</sup> February 2001)
Gafur Memmedov	7235496	15.12.2000 (expired)
General Aslanov	7431296	27.04.2005
Shamkhor	7610971	10.03.2002

**Table 5-16: Details on Shamkhor-Type Tankers**

Class	Russian Maritime Register of Shipping
Type	Tanker
Port of Registry	Baku
Ship owner	Caspian Shipping Company
Years built	1972 up to 1980
Flag	Azerbaijan Republic
Length over all	146.64 m
Breadth	17.38
Draught	8.00 m
GRT	8,521
NRT	3,937
DWT all told	12,334
No. of tanks	Seven
Total capacity of cargo tanks	14,700 m <sup>3</sup>
Pumps	3 x 859 cbm
Bunker	616 tonnes
Total fuel consumption per day	18 tonnes diesel (at 13 knots)
Port: generator consumption per day	4 tonnes diesel while discharging, 1 tonne t at port
Engine	Total power output 2 x 2,500 hp
Speed	13.7 knots

In February 2001 CSC owned 9 Apsheron-type tankers, all of which classed by the Russian Register of Shipping. Except for the "Shamakhy", all vessels trade in the Caspian Sea. Apsheron type tankers are single hull with double bottom.

**Table 5-17: Caspar Tankers of Apsheron Type**

Name	IMO No.	Validity of class (as of 28 <sup>th</sup> February 2001)
Ali Bayramov	8506907	08.12.1999 (expired)
Apsheron	8404654	31.03.2001
Araz	8724755	05.12.2002
Astara	8724858	24.05.2004
Genje	8819316	10.06.2004
Khezer	8628169	30.10.2002
Lenkeran	8724846	14.08.2002
Meshadi Azizbeyov	5416358	22.12.2000 (expired)
Shamakhy	8725668	24.06.2003

**Table 5-18: Details on Apsheron-Type Tankers**

Class	Russian Maritime Register of Shipping
Type	Tanker
Port of Registry	Baku
Ship owner	Caspian Shipping Company
Years built	1983 up to 1989
Flag	Azerbaijan Republic
Length over all	146.88 m
Breadth	17.4
Draught	4.50; no. 5 & 9: 5.30 m
GRT	5,944, no. 5 & 9: 6,052
NRT	2,070
DWT all told	5,512 / 7,410
No. of tanks	3 x 3
Total capacity of cargo tanks	7.980 m <sup>3</sup>
Pumps	2 x 850 cbm
Bunker, heavy oil and diesel	314 / 134 tonnes
Total fuel consumption per day	16,8 tonnes (at 13 knots)
Port: generator consumption per day	2,4 tonnes
Engine:	Total power output 2 x 2.080 hp
Speed	13,3 knots

Caspar currently owns 21 tankers of Shikhliniski-type (February 2001). All 21 are registered with the Russian Register of Shipping, and all are sailing in the Caspian Sea. Shikhliniski-type tankers are double hull.

**Table 5-19: Caspar Tankers of Shikhliniski Type**

Name	IMO No.	Validity of class (as of 28 <sup>th</sup> February 2001)
A.A. Bakykhanov	8328721	18.09.2001
Gehreman Esedov	8227898	30.12.2001
Gehreman Hajiyev	8507248	02.02.2001 (expired)
Gehreman Hesonov	7941679	20.06.2001
Gehreman Huseynov	8507262	10.04.2002
Gehreman Israfil Mamedov	8135021	30.12.2004
Gehreman Khelilbeyli	8507274	01.10.2002
General Abbasov	8727379	16.06.2005
General Heydarov	8033833	31.03.2002
General Mehmandarov	8133619	17.02.2002
General Selimov	7833250	27.04.2002
General Shykhliniski	7832854	30.06.2003
Gobustan	8857203	10.10.2002
Islam Seferli	8228646	24.02.2005
Muhendis Mustafa Ali*	8730091	05.04.2001
Naftalan	8138906	31.05.2004
Neriman Nerimanov	8728268	12.12.2003
Nigar Refibeyli	8507250	23.04.2002
Ordubad	7943196	04.10.2001
Semed Vurgun	8728763	01.11.2003
Zengilan	8724834	01.04.2004

\* is listed in the Russian Maritime Register, May 2000, as water-carrier

**Table 5-20: Details on Shikhlinsky-Type Tankers**

Class	Russian Maritime Register of Shipping
Type	Tanker
Port of Registry	Baku
Ship owner	Caspian Shipping Company
Years built	1980 up to 1988
Flag	Azerbaijan Republic
Length over all	124.97 m
Breadth	16.63
Draught	4,15 m
GRT	4,134 up to 4,185
NRT	1,763
DWT all told	4,987
Total capacity of cargo tanks	5,903 m <sup>3</sup>
Pumps	2 x 850 cbm
Bunker, heavy oil and diesel	190 / 79 tonnes
Total fuel consumption per day	10.0 tonnes gasoil (at 12 knots)
Port: generator consumption per day	2.0 tonnes gasoil
Engine:	One engine, total power output 3,000 hp
Speed	12.3 knots

Russian tanker shipping companies use the Volganefit type of vessels. Those tankers are twin-screw motor vessels deployed in carrying crude oil and oil products of any grade through the Volga River system and navigable canals of the Russian Federation to the river ports and the ports of the Black Sea and Baltic Sea, as well as to the Russian ports on the Caspian Sea. Volganefit tankers have twin hulls.

**Table 5-21: Details on Voganeft-Type Tankers**

Class	Russian River Register and Russian Maritime Register of Shipping
Type	Tanker
Ship owner	Majority of tankers belong to JSC "Volgotanker"
Years built	1970 and later
Where built	Russia, Bulgaria
Flag	Russia
Minimum number of crew	16
GT	3,566
NT	1,760
DWT	5,011
Carrying capacity	4,800
Capacity m <sup>3</sup>	6,562
Number of tanks	12
Length over all in m	132.6
Breadth, m	16.9
Draught	3.65
Main engines:	2 x 1,000 hp
Bunker gasoil	120 tonnes
Total fuel consumption per day sailing	8 tonnes gasoil
Port: Generator consumption per day	1 tonne gasoil and 3 tonnes gasoil when discharging
Speed, knots	9.8

### 5.2.2 Dry cargo

### 5.2.2.1 Multi-Purpose

In early 2001 Caspar owned 10 dry cargo vessels of Gehreman Medhi type, of which two trade in the Caspian Sea and eight outside. All vessels hold valid class certificates from the Russian Maritime Register of Shipping.

**Table 5-22: Details on Gehreman Medhi-Type Vessels**

Class	Russian Maritime Register of Shipping
Vessel type	Gearless single-decker
Port of registry	Baku
Ship owner	Caspian Shipping Company
Years built	1971 up to 1980
Where built	Russia
Shipyard	Gorky
Flag	Azerbaijan Republic
Minimum number of crew	13
Length / Article 2 (8) SOLAS	107.54 m
Length over all	110.76 m
Breadth	13.00 m
Freeboard	1,868mm
Draught	5.50 m
GRT	2,484
Dead-weight all told	3,135
Cargo capacity	3,000 t
Container capacity	110 TEU, 50 FEU
Fuel consumption per day sailing	5.3 t diesel at 10 knots
Port: Generator consumption per day	0.4 t
Main Engine:	One engine, total power output 972 kW (built 1971 in Magdeburg)
Speed	10.4 knots

As per the first quarter of 2001, Caspar owned 10 dry cargo vessels of the Kishinyov type, all of which traded outside the Caspian Sea. The ships hold valid class certificates issued by the Russian Maritime Register of Shipping.

**Table 5-23: Details on Kishinyov-Type Vessels**

Class	Russian Maritime Register of Shipping
Type	Dry Cargo
Ship gear	2 cranes x 3.2 tons / 1 x 8 tons
Port of Registry	Baku
Years built	1975 up to 1977
Where built	Russia
Shipyard	Gorky
Flag	Azerbaijan Republic
Minimum number of crew	13
Length / Article 2 (8) SOLAS	107.54 m
Length over all	113.80 m
Breadth	15.00 m
Freeboard	2,018 mm
Draught	4.30 m
GRT	3,714
NRT	2,015
Dead-weight all told	4,150
Cargo capacity	3850 tonnes
Container capacity	120 TEU, 60 FEU
Fuel consumption per day sailing	9.0 tonnes diesel at 11 knots
Port: Generator consumption per day	1.2 tonnes diesel
Main Engine:	two engines, total power output 2 x 736 kW (built in Leningrad)
Speed	11.7 knots

At the time of field research Caspar owned two dry cargo vessels of the Buniat Sadarov type. Both were trading outside the Caspian Sea at the time, and both hold valid class certificates from the Russian Maritime Register of Shipping.

**Table 5-24: Details of Buniat Sadarov-Type Vessels**

Class	Russian Maritime Register of Shipping
Type	Dry Cargo
Port of Registry	Baku
Ship owner	Caspian Shipping Company
Year built	1988
Where built	Viano do Castelo/Portugal
Flag	Azerbaijan Republic
Minimum number of crew	13
Length / Article 2(8) SOLAS	113.05 m
Length over all	118.10 m
Breadth	13.20 m
Freeboard	350 mm
Draught	3.95 m
GRT	3,048
NRT	1,112
Dead-weight all told	3,391
Cargo capacity	3,000 tonnes
Container capacity	110 TEU, 50 FEU
Fuel consumption per day sailing	5.0 tonnes diesel at 10 knots
Port: Generator consumption per day	0.5 tonnes diesel
Main engines:	Two engines, total power output 2 x 1.280 kW (built 1988 in Magdeburg)
Speed	10.5 knots

The Iranian Khazar Shipping Company currently has five vessels in the Caspian Sea, of which four are in a workable condition. Khazar vessels are registered with western classification societies.

**Table 5-25: Details on Vessels Operated by Khazar Shipping**

	<b>Mirza Kocheh Khan</b>	<b>Iran Basheer*</b>	<b>Iran Baseer**</b>	<b>Iran Ghadeer***</b>	<b>Iran Daleer****</b>
Type	Passenger, has lost the class	Dry cargo, general & bulk, heavy cargo, container	Dry cargo, general & bulk, single deck	Dry cargo, general & bulk, single deck	Dry cargo, general & bulk, single deck
Year built		1982	1991	1992	1994
Shipyard		Hugo Peters, Wewelsfleth, Germany	Ivan Dimitrov Shipyard Ruse/Bulgaria	Ivan Dimitrov Shipyard Ruse/Bulgaria	Krasnoye Sormovo Shipyard Nizhnij-Novgorod
Flag		Islamic Rep. of Iran	Islamic Rep. of Iran	Islamic Rep. of Iran	Islamic Rep. of Iran
Port of Registration		Bandar Anzali	Bandar Anzali	Bandar Anzali	Bandar Anzali
GT (Convention 69)		2,563	3,638	3,638	4,954
NT (Convention 69)			1,235	1,235	1,663
DWT all told		2,885	3,955	3,955	5,885
Length / metres		93.6	128.2	128.2	140
Width / metres		13.40	13.4	13.4	16.54
Draft / metres		4.40	4.25	4.25	4.52
Classification Society		GL	DNV	DNV	DNV
Classification No.		GL 30462	DNV 17602	DNV 18006	DNV 18758
IMO No.		8215742	9010711	9010723	9118551
KW		Reduced: 714 kW	1,764 kW	1,764 kW	1,940 kW
Speed / knots		10.6	13.5	13.5	10.0
Fuel capacity / Diesel		216 t			
Fuel consumption per day		≈ 3.6 t Diesel	≈5.5 t Diesel	≈5.5 t Diesel	≈6.0 t Diesel
Generators		1 x 290 kW 1 x 75 kW 1 x 144 kW	2 x 80 kW	2 x 80 kW	3 x 160 kW
Generator fuel consumption per day		1 x 144 kW ≈ 0.45 t Diesel	1 x 80 kW ≈ 0.25 t Diesel	1 x 80 kW ≈ 0.25 t Diesel	1 x 160 kW ≈ 0.5 t Diesel
Nos. of cranes and capacity		2 cranes/5,0 t			
Cargo capacity		141 TEU 4,219 m <sup>3</sup> grain 4,217 m <sup>3</sup> bales	116 TEU	116 TEU	140 TEU
Special remarks		Wheelhouse lowering hydraulic			
Where the ships at present sailing		Caspian Sea	Class restricted, only Caspian Sea	Class restricted, only Caspian Sea	Class restricted, only Caspian Sea

Source: Internet webpage of Khazar Shipping under [www.khshco.com](http://www.khshco.com)

Recent checks under Port State Control:

\*Paris MOU PSC: Checked at last 05.09.2000 in Astrakhan, Number of deficiencies 9

\*\* Paris MOU PSC: Checked at last 10.01.2001 in Astrakhan, Number of deficiencies 0

\*\*\* Paris MOU PSC: Checked at last 07.09.2000 in Astrakhan, Number of deficiencies 23

\*\*\*\* Paris MOU PSC: Up to now not checked

DNV: Det Norske Veritas

GL: Germanischer Lloyd

As a rule and up to the time of writing, Russian shipping companies in the main deploy ships of one of two types in the Caspian Sea. The Volgabalt type is very similar to Caspar's "Gehreman Medhi", while the Volsky type is of the river-sea variety. There is no such thing as a permanent Caspian-based Russian fleet. As has been said earlier in this Report, the Russian ships in this category are highly flexible and are quite capable of switching from one trade to another, entirely subject to inducement. It follows that any figures concerning the number of Russian ships operating in the Caspian Sea can no more than reflect a momentary status. It is worth recording that the potential of Russian-flag tonnage on the Caspian Sea is quite substantial.

**Table 5-26: Details on Volsky-type Vessels**

Class	Russian Maritime Register of Shipping
Type	Dry Cargo (river-sea)
Ship owner	Various Russian shipping companies
Flag	Russian Federation
Length over all	107.4 m
Breadth	16.7 m
Draught	3.84 m
GT	3,188
NT	1,220
Dead weight	3,833
Cargo capacity	3 holds, 4,710/4,425 cbm
Consumption / gasoil	At sea 5.3 tonnes In port 0.73 tonnes
Engine	Two engines, total power output 2 x 885 KW
Speed	11.2 knots

### 5.2.2.2 Railway/Multi-purpose Ferries and Ro/Ro Vessels

Cross-Caspian railway/multipurpose ferry services in the east-west and v.v. direction were very busy in Soviet times. The purpose-built ships have been designed to take railway wagons, road trucks, passenger cars and other rolling cargo, plus a number of passengers.

As of early 2001 Caspar was the only operator of ferry services across the Caspian Sea. Information from around the northern part of the Caspian indicates that, subject to the successful rehabilitation of the Aktau ferry terminal, other ferry services may commence operations, though not necessarily in competition with Caspar. This company owns eight railway/multipurpose ferries, seven of which traded in the Caspian Sea. Caspar maintains a one weekly service linking Aktau, Baku and Nourshahr. Six ferries take turns to secure a daily service between Baku and Turkmenbashi. One ferry works in the Black Sea between the ports of Illychevsk/Ukraine and Samsun/Turkey.

All Caspar ferries are of the Dagestan type and are classed by the Russian Maritime Register of Shipping.

**Table 5-27: Details on Dagestan-type Ferries**

Class	Russian Maritime Register of Shipping
Type	RoRo Cargo Passenger
Port of registry	Baku
Ship owner	Caspian Shipping Company
Flag	Azerbaijan
Years built	1984 and 1986
Where built	Yugoslavia
Minimum number of crew	16, actual crew on board 40 to 44
Number of passengers	Cabins: 84; other passengers 118
Number of persons certified to carry	256
Length / Article 2(8)	147.00 m
Length over all	154.50 m
Breadth	17.50 m
Breadth over all	18.30 m
Depth	13.45 m
Free board	3,281 mm
Draught	4.20 m
GRT	11,450
NRT	3,435
Dead-weight all told	3,364 to 3,985
Lane metres / rail car capacity	420 m / 28 standard wagons
Car carrying capacity, type Lada	70
Ramp	Stern flap, clear height 5.5 m, width 15 m
Fuel consumption per day sailing	30 tonnes heavy fuel at 17 knots (reduced engines)
Port: Generator consumption per day	1 tonne diesel per generator
Engine	Internal combustion engines 2 engines, reduced to 2 x 3.200 KW
Speed	17 knots

Caspar also owns two Kompositor Kara Karaev-type of Ro/Ro vessels, both sailing outside the Caspian Sea area (one Ro/Ro vessel operates in the Black Sea between the Ukraine (Skadovsk) and Turkey (Zongulda)).

**Table 5-28: Details on Kompositor Kara Karaev-Type Vessel**

Class	Russian Maritime Register of Shipping	
Type	Ro/Ro Cargo	
Port of registry	Baku	
Ship owner	Caspian Shipping Company	
Flag	Azerbaijan	
Years built	1984 and 1985	
Shipyard	Rostock, Germany	
Length / Article 2(8)	118.00 m	
Length over all	117.50 m	
Breadth	16.20 m	
Depth	11.60 m	
Draught	5.60 m	
Gross tonnage	6,894	
Net tonnage	2,065	
Dead weight	4,673	
Cargo Capacity	Cars, type Lada	365
	Trailer	33
	Roll-trailer 20'	105
	Roll-trailer 40'	39
	Container 20'	66
	Container 40'	32
	No rails fitted	
Ramp	Stern ramp fixed to starboard side, max. 55 tonnes, clear height 5 m, length 20.5 m, width 5.5 m	
Fuel consumption per day sailing	23.3 tonnes diesel at 16 knots	
Port: Generator consumption per day	1.2 tonnes diesel	
Engine	2 engines, total power output 5296 KW, built in Germany	
Speed	16.4 knots	

The calculation of loading capacities for a.m. ferries and Ro/Ro vessels is based on the following definitions:

**Table 5-29: Definitions of Railway Wagon and Truck Standards**

Wagon / Truck Type	Length (meters) / Capacity (tons)	Remarks
Standard Wagon / container	Platform 15m, total length 16m Cargo load 60 t,	
Wagon / liquid cargo	Rail Tank Cars (RTC) 13m = 60 t 23m = 120 t	
Wagon / cement	Total 12 m, capacity 60 t	
Wagon / grain	Total 15 m, capacity 60 t	
Wagon / passenger	Total 24 m	
Trucks	Different types, a standard truck is not defined platform 12m, total 16,40 m platform 13,6, total 17 m or 18 m car-truck 12 to 24 m	Width: 2,5 m. Total capacity: 20 t 36 t up to 40 t

Russian shipping companies active in the Caspian Sea also own some "Kompositor Kara Karaev" type vessels of which at least three, the Kristina, Kompositor Novikov and Kompositor Rahmaninov are Russian flag. They have provided services –and possibly still do– between Olya/Astrakhan and Bandar Anzali, also between Olya/Astrakhan and Turkmenbashi. Owing to draft limitations their cargo intake is at present limited to 1500 tonnes.

## 6 Regulatory and Political Aspects

The analysis of information received during interviews with representatives of the beneficiaries, from previous studies, and pertinent literature has led the consultants to draw the following picture of the current regulatory and political conditions under which the Caspian shipping business is operating. In line with the Terms of Reference the consultants have concentrated their investigations on matters related to transportation, but they will say here that the question of politics plays an important part also where shipping in the Caspian Sea is concerned.

### 6.1 The Legal Status of the Caspian Sea in International Law

The legal status of the Caspian Sea in international law has yet to be defined, and thereafter agreed by the parties concerned. The littoral States are undecided whether to treat the Caspian Sea as an 'enclosed sea' or an 'international lake'. Whilst the former is a landlocked body of water that is subject to an international regime and is governed by international law, in particular by the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the latter is commonly understood to be an enclosed body of water bordered by two or more states to which non-coastal states have no access rights and which is governed exclusively by treaties among the littoral states. Obviously the Caspian Sea does not fall within either of these definitions, the matter being further complicated by the status of the only navigable access to the Caspian Sea, i.e. the Volga Don Canal which runs over Russian territory and is considered to be a part of the Russian inland waterways system and subject only to the sovereign rights of Russia. Things are not made any easier by the presence of large deposits of hydrocarbons below the sea bed and by the lack of progress made by the littoral States involved to agree a formula for division of the sea bed between themselves. The very recent incident involving Iran and Azerbaijan underscores this unsatisfactory state of affairs.

Purely from a shipping viewpoint it would be desirable to have in place, and working reliably, what may be termed a 'Caspian Treaty' which should be drawn up having due regard to the multitude of international maritime agreements, conventions, etc. in force world wide.

### 6.2 Maritime Codes

Excluding Iran, the Caspian Sea and thereby, shipping in that waterway, in Soviet times came under the exclusive jurisdiction of the USSR. This has now given way to the respective domestic legislations of the new littoral States, which to the best of the consultants' knowledge have been drafted independently. A Maritime Code is in place in Azerbaijan whereas Kazakhstan and Turkmenistan are understood to consider drafts. The consultants have been denied more detailed information on the subject on the grounds that legislation under discussion in parliament may not be disclosed. Iran and Russia, incidentally, have a long maritime tradition and their respective maritime codes.

The consultants draw attention to the urgency attaching to the matter. Modern maritime codes which should stand up to international scrutiny are a pre-requisite for international shipping in the Caspian Sea. The said codes should be modelled on internationally accepted codes of that nature but must obviously be in harmony with the respective national legislation. Ship owners regardless of nationality whose ships trade in the Caspian Sea should be satisfied that cases of, e.g., collisions, cargo damage, oil etc. pollution, ship arrest, salvage, general average, etc., involving their ship, to mention but a few items, will be treated in the same manner as in other maritime nations of the world. To the extent the littoral flag States concerned may have their own Ship Registers, the respective national shipping companies will doubtless welcome uniform rules governing the registration of vessels.

### 6.3 International Codes and Conventions

Shipping legislation has a long history and is perhaps unique in that many of its basic principles have over time been enshrined in the national legislation of virtually all maritime nations. In addition thereto, institutions such as the IMO and also many others have produced codes and conventions all designed to facilitate international shipping. The consultants suggest that membership in an organisation such as the IMO is but the first step. What is in fact required is the adoption, into national law, of the codes and conventions promulgated by the said organisations. It is pertinent to say at this juncture that national ambitions would be misguided if they were trying to create noticeable differences between the respective national maritime codes. On the contrary, the higher the degree of uniformity in this respect the easier will international shipping become in the Caspian Sea.

## 6.4 Non-Discriminatory Practices

The ultimate objective is the establishment of a set of internationally accepted and proven rules governing maritime activities in the Caspian Sea. Such rules, once adopted and voted into national law by all littoral States, will i.a. have the effect of eliminating discriminatory practices including but not limited to, different port, pilotage, cargo handling, canal, etc. tariffs which favour the national flag and discriminate against ships flying other than the respective national flag. The said practices, fairly commonplace in the Caspian Sea at the time of the consultants' field research and not in any way disguised, are considered normal by most parties but are nothing else but flag discrimination. In Soviet times, port etc. tariffs in all Caspian ports except Iran were either identical or at least very similar. Once independent, the new littoral States began to differentiate the tariffs and to use them, with tacit or open government approval, as weapons against foreign operators. In time this has developed into a mutually retaliatory system which from an international viewpoint is quite unacceptable. As in other parts of the world, all parties to the maritime trade in the Caspian Sea are entitled to, and should enjoy, perfectly equal treatment regardless of national flag or the nationality of the actual or beneficial ship owner. That having been accomplished, shipping companies competing for client support would do so on strictly commercial, or in other words, on healthy terms.

## 6.5 Conclusions

The consultants, mindful of the political aspects surrounding the subject and realising that commercial and shipping considerations normally take second place, still emphasise the desirability of coming to a mutually acceptable solution of the issue of the legal status in international law of the Caspian Sea since that would substantially benefit shipping activities.

The creation of national maritime codes, where they do not yet exist, is a matter of some urgency. Since time is of the essence, thought should, and to the best knowledge of the consultants is being given initially to model such national maritime codes on the existing Russian code. Such novel maritime codes can be amended as the necessity therefor arises. Adopting the Russian version would have the additional advantage of not creating language obstacles.

The issue of adopting the large number of international codes, conventions, rules and regulations is closely connected with the item discussed immediately above and should similarly be tackled without undue delay. It stands to reason that to deal with the subject matters requires expertise which, being a combination of maritime and legal know-how. It is true to state that the lack of exposure to international shipping legislation and related subjects in at least two of the countries concerned means that the respective governments may find it advantageous to bring in outside expert consultants on a temporary basis in order to accelerate the process.

Again as a matter of some urgency, a set of rules guaranteeing equal treatment with respect to tariffs, etc. to all participants in the Caspian maritime trades requires to be drafted and subsequently introduced in order that discrimination of any kind may be terminated.

There is one more subject which does not exactly come under the caption of this chapter but which shall still be dealt with in this context. The consultants have been told in numerous interviews conducted with national shipping companies in Azerbaijan, Kazakhstan and Turkmenistan that the idea of cross-border international co-operation in whatever manner between shipping companies will not be entertained. The consultants strongly suggest that both the national shipping companies and also the relevant Ministries of Transport –where they exist- stand to gain from comparing notes on shipping matters. International experience proves that where transport service providers which of course includes shipping, are on informal rather than official speaking terms they can resolve many a technical problem which might otherwise cause serious difficulties. Informal exchanges of views must not be interpreted as a way to abolish healthy competition. Competitors should always be competitors and adversaries by definition, but remain on good speaking terms since after all they are colleagues inside the same industry.

## 7 Traffic Forecast

In accordance with the Terms of Reference applying to their task, the consultants propose to investigate existing traffic flows across the Caspian Sea, and based thereon and on other information obtained in the course of their field research, to forecast future movements. The traffic forecast shall be restricted to dry cargo but shall include movements of crude oil and derivatives to the extent same is being carried in railway tank wagons. The movement of bulk liquids (and gas) shall be excluded throughout. Having analysed the current situation of transports across the Caspian Sea and having evaluated the information gleaned in the course numerous interviews with regional transport operators and experts the consultants have decided to proceed as follows:

- Counter-directional liner-type services (e.g. east-west and west-east) are most promising since they contribute towards the balancing of trades, an important feature of container transports, while regular calls are expected to attract and generate traffic.
- The commodity mix reveals that the bulk of the commodities at present actually moving consists of low-value, transport-cost sensitive primary goods. Such goods can only bear low or moderate transport costs and do not warrant investments into port infrastructure, shipping capacities and handling equipment for the foreseeable future. In the short to medium term, dry cargo shipping across the Caspian Sea is therefore expected to continue to rely on existing vessel types, i.e. geared and gearless multi-purpose ships, and ferries.
- Existing dry cargo ship types available in the Caspian Sea will for the foreseeable future be quite capable to cope with the types of cargo offering. If and when containerisation spreads into the region –and there is no doubt it will over time–, then a higher degree of specialisation will be required. That applies to ships as well as to container handling etc. equipment in the ports, and to overland transportation, be that by road or by rail.
- The consultants shall calculate the expected cargo volumes for ferries and multi-purpose vessels carrying dry bulk, packaged and neobulk traffics on various routes across the Caspian Sea.
- Ship operators understandably have a tendency to pick and choose cargoes yielding better than average freight rates. In their calculations, the consultants have endeavoured to simulate reality and to avoid the inclusion of low-paying bulk and dirty cargo. As in the case of ferry utilisation, the consultants have assumed an average utilisation factor of 70 percent throughout the prognosis period, realising of course that certain commodities are seasonal and that there will be times when dry cargo ships will sail fully laden, and also, that there will be slack periods. However, fluctuations in cargo offerings are perfectly normal and a fact of life in liner shipping.

With the above in mind the consultants suggest that, for the purpose of testing the commercial viability of carefully selected routes, a number of ferry and multi-purpose vessel services be calculated on the said routes. The most promising thereof appear to be those five services more fully discussed hereunder:

- The first route is a triangular ferry service between Aktau, Amirabad and Baku, with one ferry steaming clockwise and the other ferry counter-clockwise; on a weekly schedule. Amirabad is synonymous for any suitable Iranian port. This service remains a theoretical assumption until such time as Amirabad has a shore-based ferry ramp and also gauge changing equipment for railway wagons.
- Two multi-purpose ships, maintaining a fortnightly schedule, take the place of the ferries on precisely the same route for the second service. Both services heavily rely on Kazakh exports of primary and semi-processed metals to Iran, and on Uzbek cotton exports, which for reasons explained elsewhere in this Report, may be expected to be re-routed via Aktau.
- The third service investigated is assumed to be triangular on a fortnightly schedule utilising multi-purpose vessels and serving Aktau-Amirabad-Baku clockwise.
- Service No. four offers weekly sailings by multi-purpose ships in an Aktau-Baku-Turkmenbashi rotation. Subject always to the availability of sufficient quantities of empty containers requiring desirous of going west, the base cargo could be containerised cotton from Uzbekistan.
- A pendular (or shuttle) service with one multi-purpose vessel, takes care of the direct Baku-Turkmenbashi connection as fifth route, and
- finally, a pendular service between Makhachkala and Turkmenbashi constitutes the sixth route. Again subject to the availability of empty containers it would also specialise in container shipments. The Makhachkala-Turkmenbashi service depends on the enactment of government treaties (the

Nostrac agreement between Russia, Iran and India) and on the satisfactory solution of the Chechnya conflict.

In preparing the traffic forecasts discussed hereunder the consultants have, wherever possible, made use of existing studies, traffic forecasts and related information found, i.a., in the TRACECA Traffic and Feasibility Studies (Modules C and D), and of data and estimations provided by the ports analysed in the framework of the present study.

## **7.1 Forecasting Methodology and Parameters**

In forecasting future dry cargo traffic flows as defined above, the consultants have had to rely on extremely scant information. They have tackled this task with utmost care but will say that most of the volumes are the result of what may be called educated guesses. There are good cases for certain assumptions but the readers of this Report should never forget that in a region where the political and commercial environments are known to be subject to frequent and unpredictable changes, forecasts of this nature can never be an exact science

### **7.1.1 Methodology**

Forecasting traffic flows in the Caspian Sea is not made easier by the fact that past trends cannot be used as reliable indicators. The newly independent States have yet to define their economic course. Any changes in the regional economic environment will almost inevitably have substantial repercussions on the traffic scene:

- increase of oil and gas production, resulting in a higher demand for (pipeline and) sea transport, and for port capacities;
- increase of world market prices for oil and gas resulting in increased import potential and, eventually, in higher volumes requiring movement;
- development of new (or respiration of former) North-South axes of cross-Caspian sea-borne trade which will affect maritime and overland transport;
- economic development of other regional countries, trading partners of the littoral Caspian States.

Considering the virtual impossibility of reliably forecasting traffic volumes over a period exceeding ten years the consultants have restricted the present analysis to the period 2002 to 2012.

The consultants have analysed the current trans-Caspian traffic to the extent they were given access to relevant statistical etc. data, identifying main commodities and estimating growth rates for those commodities, having due regard to the expected developments of the economies involved. The consultants have also considered possible shifts of transport routes induced by recent and current infrastructure projects.

As a result, the consultants have estimated the market potentials for the assumed shipping services and routes, and they have applied the estimated cargo volumes to the said services.

It is not difficult to find fault with these forecasts, due mainly to the absence of reliable information. In making various assumptions the consultants have in the main been guided by the intention to present realistic scenarios and against that background to test the commercial viability of shipping services.

## **7.2 Results**

### **7.2.1 Aktau – Baku v.v.**

Kazakhstan and Azerbaijan may be expected to look forward to a positive short and medium-term economic future. Both countries will most likely strengthen their respective industrial bases and thereby increase demand for transport services. Provided the population gains from the expected economic growth, then the demand for (imported) consumer products may increase considerably.

The consultants understand that, in Kazakhstan perhaps more than elsewhere, the political decision-makers are keenly interested in improving and promoting the international transport corridors and in modernising the national transport sector, also with respect to institution building.

Subject obviously to the developments actually taking place as assumed, the impact on the commodity mix and on the cargo volumes moving between Aktau and Baku v.v. could be as follows:

- The ferry service between Baku and Aktau, which at the time of the consultants' field research operated on a weekly schedule deploying one vessel, has an extremely poor capacity utilisation. In the year 2000, no more than slightly over 16,000 tonnes have in fact been carried in 2000. Once the rail ferry terminal at Aktau has been rehabilitated, the service is fully expected to experience a boost. A number of arguments can be adduced in support of this assessment, viz.: Rail is, and will very likely continue to be, the principal transport mode in the Caspian region, due i.a. to the predominance of raw materials, agricultural products and semi-processed goods in inter-regional and trans-regional foreign trades. Transport distances between origin and destination of shipments are usually long, and the inter-regional road infrastructure is underdeveloped. Certain transport operators and transport users controlling cargo flows in the TRACECA region are dissatisfied with the pricing policy, the service and the flexibility of the transport providers. The criticism is also being levelled against Turkmenistan, and as a result the Uzbekistan railways (which transports over 80 percent of all Uzbek export/import cargo) is busy creating alternative routes, at considerable cost. An important part of this strategy is the recent construction of the Uchkuduk-Nukus rail link, by which cargo from the Tashkent-Turkmenbashi line can be re-directed to the new Tashkent-Aktau link. The port of Aktau is one of the key nodes for shipping Kazakh crude oil and oil products to the west. Aktau is insufficiently integrated into the Kazakh pipeline network, so crude oil and oil products usually reach Aktau by rail tank wagons. Similar to the situation in Turkmenbashi where the transport of crude oil and oil products in rail tank wagons is the core business for the Turkmenbashi-Baku ferry service, it may be assumed that oil in railway wagons will also feature prominently in the Aktau-Baku ferry trade. The establishment of CPC services from Tengiz to Novorossiysk will possibly lead to a temporary reduction of port throughput at Aktau, but it is expected that oil will remain one of the major growth factors for Aktau cargo throughput, there being enough oil companies willing to fill the gap (AktybinskOil, Kumkol). Moreover, TengizChevronOil will probably not withdraw completely from shipping crude oil via Aktau in order that they may have a viable alternative option which by-passes Russian territory. The port may also profit from rising oil production in Kazakhstan. Recent information obtained from the ACSP management confirms a high demand for the shipment of liquid cargoes by ferry already prior to the re-inauguration of the rail ferry terminal.
- Uzbekistan Rail can be expected to attract significant traffic, and thereby, revenues, through its new rail link. Prior to the opening of the Uchkuduk-Nukus link, only a small section of the TRACECA corridor via Turkmenbashi passed over Uzbek territory. The new corridor to Aktau has a considerable Uzbekistan mileage. Central Asian governments have the power, however limited, to influence cargo routes, and it is very likely that this new rail link will see a satisfactory capacity utilisation. If Uzbekistan Railways play their cards professionally by providing efficient services at reasonable tariff rates, then arguably Turkmenistan rail transits will feel the effects. Reportedly, Kazakhstan is negotiating with Uzbekistan for the shipment of cotton via Aktau.
- New dry cargo handling and storage facilities in the port of Aktau may attract cargo, which so far moves via other routes. The new grain terminal (including grain silos) may attract grain transports from the Kazakh Zap.-Kazakhstanskaya, Atyrauskaya and Aktybinskaya oblasts to Azerbaijan, which have traditionally used the northern all-rail route around the Caspian Sea. Small quantities of metals, scrap and bulk ores (from the projected Aktau dry bulk berth) destined to the modernised Azeri steel plant starting operation soon may make use of the projected Aktau dry bulk berth, for shipment to Baku.
- Some, if minor, quantities of sulphur may be shipped from Aktau to Baku. The Kazakh Tengiz oilfield generates considerable quantities of sulphur as a by-product of oil processing. This commodity may be shipped to Azerbaijan for consumption by the Azeri chemical industry as well as to other parts of the world as a base for fertiliser production. However, volumes are expected to remain small, since supply considerably outweighs demand. Transport costs for sulphur from Tengiz to the world markets may well exceed the commodity's value.
- Given that one ferry can perform two roundtrips per week, one ferry can carry a theoretical maximum of about 160,000 tonnes of crude oil and oil products per year. If the oil price in the period under consideration remains high, the transport of crude oil and oil products in rail tank wagons across the Caucasus may stay financially viable. If the ferry link Aktau-Baku will be operated at a similar frequency as the Baku-Turkmenbashi link early in the year 2001, then oil shipments by ferry could reach 400,000 tonnes per year. The major share of Uzbek export cotton is expected to come in rail wagons instead of in containers, and, depending on the final destination, a certain percentage thereof will cross the Caspian by ferry.

- Provided the new rail ferry link makes a name for itself by operating safely and efficiently, consumer goods from Europe and the USA may well find their way via Baku to Kazakhstan.
- The constant increase in the production of crude oil will stabilise the Kazakh demand for oilfield equipment at a level between 5,000-7,000 tonnes annually.

The projected developments discussed above have been summarised in the table below:

**Table 7-1: Potential cargo volumes transported between Aktau and Baku v.v.**

Commodities	Routes	Annual Quantities
Crude oil and oil products (ferry)	Aktau-Baku	up to 400,000 t
Oilfield equipment (ferry/multi purpose vessel)	Baku-Aktau	up to 7,000 t
Sulphur (multi-purpose vessel)	Aktau-Baku	up to 50,000 t
Cotton (ferry/multi purpose vessel)	Aktau-Baku	up to 150,000 t
Foodstuffs, consumer goods (ferry)	Baku-Aktau	up to 40,000 t
Grain (multi purpose vessel)	Aktau-Baku	up to 200,000 t
Metal, scrap metal, ores (multi purpose vessel)	Aktau-Baku	up to 50,000 t

The following quantities are expected to be shipped by rail ferry (after successful rehabilitation of the rail ramp).

**Table 7-2: Ferry traffic between Aktau (A) and Baku (B) v.v. (in t)**

Main Commodities	2002	2007	2012
Crude oil (A-B)	50,000	350,000	400,000
Cotton (A-B)	1,000	30,000	40,000
Equipment (B-A)	2,000	30,000	35,000
Food & construction (B-A)	2,000	20,000	40,000
Other (B-A/A-B)	3,000	5,000	10,000
<b>Totals</b>	<b>58,000</b>	<b>435,000</b>	<b>525,000</b>

The following quantities are expected to be shipped by dry cargo/multi-purpose vessels:

**Table 7-3: Non-ferry related dry cargo traffic between Aktau (A) and Baku (B) v.v. (in t)**

Main Commodities	2002	2007	2012
Grain (A-B)	20,000	100,000	200,000
Sulphur in bags (A-B)	0	20,000	50,000
Cotton in containers (A-B)	5,000	90,000	150,000
Oil field equipment (B-A)	3,000	5,000	7,000
Metal (A-B)	2,000	30,000	50,000
Others (B-A/A-B)	10,000	20,000	30,000
<b>Totals</b>	<b>40,000</b>	<b>265,000</b>	<b>487,000</b>

The following table presents the number of voyages and statistical average of quantity of goods falling within the respective category expected to be carried on each single voyage between Aktau and Baku. Multi-purpose vessels and ferries provide complementary services, there will be little competition due to the different commodity structures they serve. The figures are directly derived from cargo volumes for the different directions of cargo flows.

**Table 7-4: Number of dry cargo vessel and ferry voyages between Aktau and Baku v.v.**

Commodities	Type	Av. Size (t)	2002	2007	2012
Grain	Multi purpose vessel	3000	7	33	67
Sulphur	Multi purpose vessel	3000	0	7	17
Cotton (in containers)	Multi purpose vessel	2500	2	36	60
Oil equipment	Multi purpose vessel	2500	1	2	3
Metal	Multi purpose vessel	2500	1	13	20
Other	Multi purpose vessel	1500	7	14	20
<i>Total voyages</i>	<i>Multi purpose vessel</i>		<i>18</i>	<i>105</i>	<i>187</i>
<b>Number of Roundtrips</b>			<b>13</b>	<b>96</b>	<b>174</b>
Ferry-related cargo	Ferry (roundtrips)	1200	44	320	370

### 7.2.2 Baku – Amirabad v.v.

The exchange of goods and services between direct neighbours Azerbaijan and Iran has impressive scope for improvement.

The following developments, should they occur, are expected to have a significant effect on the commodity mix and on cargo volumes moving between Baku and Amirabad and v.v.:

- The Baku-Amirabad ferry service operates on a weekly schedule and is understood to have a capacity utilisation of around 20 percent. Service operator Caspar would not confirm this figure but maintains that it is too early to judge the performance and viability of a service which commenced late in the year 2000. The consultants are convinced that this service will not experience a significant increase in carryings as long as the integration of the Azeri and Iranian economies remains at a low level. Pending more promising developments, the exchange of goods will presumably be confined to foodstuffs and construction material such as cement and sawn timber.
- A case can be made for the transit traffic of consumer goods from Dubai (UAE) via Bandar Abbas to Azerbaijan. Part of this traffic could be routed via a ferry link between Amirabad (or any other Iranian port on the Caspian Sea equipped with a Ro/Ro ramp) and Baku. In the north-south direction a ferry link between Baku and Amirabad could possibly constitute an alternative to Baku-Turkmenbashi for (road) transports originating from or destined to Ashgabat and beyond, provided that border crossing procedures between the countries involved work efficiently.
- The implementation of the Nostrac corridor (India-Iran-Russia) across the Caspian Sea may also attract cargo to the traffic link between an Iranian Caspian port and Baku, subject to total transport costs remaining below those for the all-road connection between Bandar Abbas and Azerbaijan. The maritime link may promote and at the same time profit from increasing trade relations between Azerbaijan and South East Asia and the Indian sub-continent if found to be working efficiently. However, south-north volumes appear to be stronger at least in the medium term.

The developments described above have been summarised in the table below:

**Table 7-5: Potential cargo volumes transported between Amirabad and Baku v.v.**

Commodities	Routes	Annual Quantities
Foodstuffs & consumer goods (ferry/multi purpose vessel)	Amirabad-Baku	up to 30,000 t
Construction material (ferry/multi purpose vessel)	Amirabad-Baku	up to 35,000 t
Chemicals (ferry/multi purpose vessel)	Baku-Amirabad	up to 10,000 t

The following quantities are expected to be shipped by ferry or multi-purpose vessel, whatever will be available:

**Table 7-6: Vessel traffic between Amirabad (A) and Baku (B) v.v. (in t)**

Main Commodities	2002	2007	2012
Chemicals (B-A)	5,000	8,000	10,000
Construction material (A-B)	15,000	25,000	35,000
Foodstuffs & consumer goods (A-B)	5,000	25,000	30,000
Other (B-A/A-B)	10,000	15,000	20,000
<b>Totals</b>	<b>35,000</b>	<b>73,000</b>	<b>95,000</b>

The following table presents the number of voyages and statistical average of quantity of goods falling within the respective category expected to be carried on each single voyage between Amirabad and Baku. Multi-purpose vessels and ferries should be seen as alternatives, since the current and expected commodity structure justifies the operation of either service. The figures are directly derived from cargo volumes for the different directions of cargo flows.

**Table 7-7: Number of dry cargo vessel and ferry voyages between Amirabad and Baku v.v.**

Commodities	Type	Av. Size (t)	2002	2007	2012
Chemicals	Multi purpose vessel	500	10	16	20
Construction material	Multi purpose vessel	1500	10	17	23
Foodstuffs	Multi purpose vessel	1000	5	25	30
Other	Multi purpose vessel	1500	7	10	14
<i>Total voyages</i>	<i>Multi purpose vessel</i>		28	64	80
<b>Number of Roundtrips</b>			<b>13</b>	<b>31</b>	<b>38</b>
Ferry-related cargo	Ferry (roundtrips)	1200	21	48	62

### 7.2.3 Amirabad – Aktau v.v.

The following facts and possible developments determine the future cargo traffic between Iran and Kazakhstan via the ports of Amirabad (or any other), and Aktau:

- The Kazakh Government is determined to put the port of Aktau on the map. Accordingly, it has dropped the railway rates over Kazakh territory to a very competitive level. This has enabled Aktau to attract considerable volumes of metal cargoes produced in Kazakhstan and Russia for shipment to Iran and beyond. The year 2000 quantities exceeded 700,000 tonnes. In the process, Aktau, ably assisted by Kazakh Railways, had to compete with established routes, such as the one via the Russian Caspian port of Astrakhan and the rail route through Uzbekistan and the gauge-changing station at Serakhs at the Iranian-Turkmen border. According to figures thankfully provided by the Kazakh Ministry of Transport and Communications, the cost of moving one tonne of typical metals from Ispat Karmet in the heart of the Kazakh industrial district, via Aktau to Anzali in Iran amounts to some USD 35. Shipments via Astrakhan are dearer at over USD 50 per tonne. The rail route through Uzbekistan is slightly cheaper than the Aktau route but burdened with printed and non-printed tariffs, dues and time-consuming customs procedures at border crossings. Metals of the category discussed here come off the production line in a steady flow but take time to be sold. Manufacturers therefore take advantage of generous free-storage periods at Aktau using the port as some kind of out-sourced, and very welcome, storage facility. It may be expected that metals will be the core business for a shipping service between Aktau and an Iranian port as long as Kazakh Rail (Temir Zholy) keeps charging preferential rail tariffs for selected commodities to and from Aktau.
- A ferry service between Aktau and an Iranian port could exploit its potential to the full provided the Iranian port has a rail ferry ramp, gauge-changing equipment (similar to the facilities in Serakhs) and a direct connection to the main Iranian railway network. That would enable cargo of Kazakh or Russian origin to go all-rail from origin to destination avoiding costly handling at intermediate stations.
- Kazakhstan is one of the regional major growers and net exporters of grain, and Iran is a net importer. At and before the time of field research, Kazakhstan exported only minor quantities of grain to Iran, of which the bulk goes by rail via Uzbekistan and Turkmenistan (Serakhs). Iran would normally import grain via its Gulf ports and claims that grain transport by rail from Kazakhstan is too expensive. With the new grain terminal at Aktau now operational, Kazakhstan can offer an alternative to the rail route. Should this alternative route turn out to be competitive, which the consultants have reasons to assume, then the port can look forward to handling substantial tonnages of export grain (estimated to reach up to 0.5 mill. tonnes p.a.) to Iran. Of course this would further strengthen the southbound direction of this trade lane, meaning that even more ships will have to ballast northbound.
- It is assumed that a maximum of 10% of metals and grain will go by ferry.
- For the time being the cargo potential in the south-north direction is rather limited; some minor quantities of bulk ore, about 20,000 tonnes p.a., may be shipped to Aktau. This scenario may change quite dramatically if and when the North-South Corridor comes into full swing.
- The idea of installing a regular liner service between Aktau and Iran may be tempting at first sight but has the serious drawback of insufficient cargo for the northbound voyage. Pending a change of this situation, the scene would appear to be dominated by the tramp trade which accepts cargo at any one port but which does not serve a trade at regular intervals. This would appear to apply in particular to the southbound metals trade. Northbound cargo to the extent such is available will benefit from exceptionally low rates, considered a welcome contribution towards the costs of the northbound positioning voyage.
- A regular service between an Iranian port and Aktau is likely to attract consumer goods such as household appliances, etc., from the United Arab Emirates destined to Kazakhstan, Uzbekistan, and Russia and beyond. As of the present, this trade is being carried overland from Iranian ports of discharge such as Bandar Abbas to final destinations in the adjoining countries. At the Central Asian border crossings, customs clearance will normally be charged at a rate of up to USD 1,700 per truckload, on top of duties, if applicable. The Central Asian roads along this route are in a poor state of repair leading to frequent vehicle breakdowns. The alternative route via an Iranian port (e.g. ferry) to Aktau is a competitive option. Aktau is understood to consider the establishment of a Free Trade Zone, complete with bonded warehouses. Free trade Zones (FTZs) have proved to be eminently prosperous in certain regions, and have been utter failures elsewhere. The consultants sound a note of caution and strongly advocate in-depth studies prior to any firm decisions involving major investments. It cannot be ruled out entirely that Aktau might gain from its future role as a distribution centre for high-value consumer goods, always provided the complete trading, banking and transport infrastructure is in place and functioning properly.

- The North-South Corridor, also known as the Nostrac initiative, once implemented, will without doubt positively influence the Iran/Azerbaijan trade. Since in some countries along this transport chain political forces are able to influence cargo routing it is most likely that at least temporarily this corridor may experience considerable cargo volumes. The provision of an efficient and competitive service along the link Iranian port-Aktau may convince transport operators of the viability and sustainability of this link even at times when the politically motivated transport flows reduce to normal scale.

Possible developments described above are summarised in the table below:

**Table 7-8: Potential cargo volumes transported between Amirabad and Aktau v.v.**

Commodities	Routes	Annual Quantities
Metals (ferry/multi purpose vessel)	Aktau-Amirabad	up to 900,000 t
Grain (ferry/multi purpose vessel)	Aktau-Amirabad	up to 500,000 t
Foodstuffs & consumer goods (ferry/multi purpose vessel)	Amirabad-Aktau	up to 60,000 t
Ores (ferry/multi purpose vessel)	Amirabad-Aktau	up to 30,000 t

The following quantities are expected to be shipped by ferry:

**Table 7-9: Expected ferry traffic between Amirabad (Am) and Aktau (Ak) v.v. (in t)**

Main Commodities	2002	2007	2012
Metals (Ak-Am)	70,000	80,000	90,000
Grain (Ak-Am)	1,500	35,000	50,000
Foodstuffs & consumer goods (Am-Ak)	15,000	35,000	60,000
Ores (Am-Ak)	20,000	25,000	30,000
Other (Am-Ak /Ak-Am)	10,000	15,000	20,000
<b>Totals</b>	<b>116,500</b>	<b>190,000</b>	<b>250,000</b>

In the absence of a ferry service the following quantities are expected to be transported by multi-purpose vessels. Should there be a ferry service, then the quantities as per Table 1-2 above should be subtracted from the figures shown below for multi-purpose vessels.

**Table 7-10: Expected traffic on multi-purpose vessels between Amirabad (Am) and Aktau (Ak) v.v. (in t)**

Main Commodities	2002	2007	2012
Metals (Ak-Am)	700,000	800,000	900,000
Grain (Ak-Am)	15,000	350,000	500,000
Foodstuffs & consumer goods (Am-Ak)	15,000	35,000	60,000
Ores (Am-Ak)	20,000	25,000	30,000
Other (Am-Ak /Ak-Am)	10,000	15,000	20,000
<b>Totals</b>	<b>760,000</b>	<b>1,225,000</b>	<b>1,510,000</b>

The following table presents the number of voyages and statistical average of quantity of goods falling within the respective category expected to be carried on each single voyage between Amirabad and Aktau. Multi-purpose vessels and ferries should be seen as alternatives, since the current and expected commodity structure justifies the operation of either services. The figures are directly derived from cargo volumes.

**Table 7-11: Number of dry cargo vessel and ferry voyages between Amirabad and Aktau v.v.**

Commodities	Type	Av. Size (t)	2002	2007	2012
Metals	Multi purpose vessel	3000	233	267	300
Grain	Multi purpose vessel	3000	5	117	167
Foodstuffs	Multi purpose vessel	2000	8	18	30
Ores	Multi purpose vessel	3000	7	8	10
Other	Multi purpose vessel	1500	7	10	13
<i>Total voyages</i>	<i>Multi purpose vessel</i>		<i>260</i>	<i>420</i>	<i>520</i>
<b>Number of Roundtrips</b>			<b>250</b>	<b>400</b>	<b>485</b>
Ferry-related cargo	Ferry (roundtrips)	1200	60	96	116

**7.2.4 Turkmenbashi – Baku Traffic v.v.**

The following facts and developments, if in fact they take place, may determine the future traffic between Turkmenbashi and Baku:

- In early 2001, Baku-Turkmenbashi is the route with the highest dry cargo transport volumes across the Caspian Sea. This is due to the fact that the route is the shortest distance between an east coast and a west coast port in the Caspian. The route has a history dating back to Soviet times. The ports at both ends of the trade are equipped to deal with the cargo almost regardless of volumes. Caspar offers a regular (daily) ferry service between both ports.
- Transports between the Caspian east coast and the west coast mainly comprise bulk commodities such as oil and oil products, aluminium oxide and (Turkmen) cotton, all of which in this region are traditionally being carried by rail. At the time of writing the Baku-Turkmenbashi and v.v. trade is clearly dominated by rail/ferry transports. Turkmenbashi and Baku both have facilities to handle rail ferries.
- For the time being there are virtually no typical dry bulk cargoes seeking transportation in either direction, and if there were, there would be sufficient single-deck tonnage to accommodate such cargo. Some 50,000 to 60,000 tonnes of salt in bulk are expected to be shipped annually from Turkmenbashi to Baku. Eastbound cargo worth mentioning consists of an estimated total annual volume of 30,000 tonnes of oilfield (and gasfield) equipment, and some 30,000 tonnes of construction material.
- As discussed under item 7.2.1 above the route via Turkmenbashi will experience strong competition from the rail ferry route via Aktau. It is expected that Baku-Turkmenbashi will lose a considerable part of the current (year 2001) transit traffic to and from countries beyond Turkmenistan, thereby probably reducing cargo handled at Turkmenbashi to the volume of Turkmen foreign and domestic trade.

The assumed developments have been summarised in the table below:

**Table 7-12: Potential cargo volumes transported between Turkmenbashi and Baku v.v.**

Commodities	Routes	Annual Quantities
Mineral products (ferry)	Turkmenbashi-Baku	up to 250,000 t
Cotton (ferry/multi purpose vessel)	Turkmenbashi-Baku	up to 100,000 t
Foodstuffs & consumer goods (ferry)	Baku-Turkmenbashi	up to 50,000 t
Equipment (ferry/multi purpose vessel)	Baku-Turkmenbashi	up to 30,000 t
Salt (multi purpose vessel)	Turkmenbashi-Baku	up to 60,000 t
Construction material (ferry/multi purpose vessel)	Baku-Turkmenbashi	up to 30,000 t
Fertilisers (ferry/multi purpose vessel)	Turkmenbashi-Baku	up to 30,000 t
Aluminium oxide (ferry)	Baku-Turkmenbashi	up to 50,000 t

The following quantities are expected to be shipped by ferry:

**Table 7-13: Expected ferry traffic between Turkmenbashi (T) and Baku (B) v.v. (in t)**

Main Commodities	2002	2007	2012
Mineral products (T-B)	220,000	240,000	250,000
Cotton (T-B)	90,000	70,000	50,000
Foodstuffs & consumer goods (B-T)	100,000	40,000	20,000
Equipment (B-T)	40,000	20,000	20,000
Construction material (B-T)	25,000	15,000	15,000
Fertiliser (T-B)	30,000	20,000	20,000
Aluminium oxide (B-T)	60,000	45,000	50,000
Other (B-T/T-B)	60,000	40,000	50,000
<b>Totals</b>	<b>665,000</b>	<b>490,000</b>	<b>475,000</b>

In addition, the following quantities are expected to be transported by multi-purpose vessels:

**Table 7-14: Multi-purpose vessel traffic between Turkmenbashi (T) and Baku (B) v.v. (in t)**

Main Commodities	2002	2007	2012
Cotton in containers (T-B)	0	20,000	40,000
Foodstuffs & consumer goods in containers (B-T)	0	10,000	30,000
Salt (T-B)	40,000	50,000	60,000
Equipment (B-T)	5,000	10,000	10,000
Construction material (B-T)	5,000	15,000	15,000
Fertiliser (T-B)	0	10,000	10,000
Other (B-T/T-B)	20,000	20,000	20,000
<b>Totals</b>	<b>70,000</b>	<b>135,000</b>	<b>185,000</b>

The following table presents the number of voyages and statistical average of quantity of goods falling within the respective category expected to be carried on each single voyage between Turkmenbashi and Baku v.v. Multi-purpose vessels and ferries should be seen as alternatives, since the current and expected commodity structure justifies the operation of either services. The figures are directly derived from cargo volumes.

**Table 7-15: Number of dry cargo vessel and ferry roundtrips between Turkmenbashi and Baku v.v.**

Commodities	Type	Av. Size (t)	2002	2007	2012
Cotton (in container)	Multi purpose vessel	2000	0	10	20
Consumer goods (in cont.)	Multi purpose vessel	1000	0	10	10
Salt	Multi purpose vessel	3000	14	17	20
Equipment	Multi purpose vessel	2500	2	4	4
Construction material	Multi purpose vessel	3000	2	5	5
Fertiliser	Multi purpose vessel	2500	0	4	4
Other	Multi purpose vessel	1500	13	13	13
<i>Total voyages</i>	<i>Multi purpose vessel</i>		31	63	76
<b>Number of roundtrips by multi-purpose vessels</b>			<b>20</b>	<b>38</b>	<b>50</b>
Ferry-related cargo	Ferry (roundtrips)	1200	310	290	305

### 7.2.5 Turkmenbashi – Aktau

The following facts and developments determine the future cargo traffic between Turkmenbashi and Aktau:

- In Soviet times there has been road cargo transportation between Turkmenbashi and Aktau. Cargo would go by ferry from Baku to Turkmenbashi and then be on-carried to Aktau by trucks. In early 2001 the road system between these cities is in a poor condition, and trade relations between Turkmenistan and Kazakhstan are at a low level. Moreover, Aktau is well connected to other Caspian ports. Thus, there are almost no road cargo transports between Turkmenbashi and Aktau.
- The cargo potential for sea transports between Turkmenbashi and Aktau is expected to be insignificant, comprising only minor quantities of construction material (e.g. cement) and salt.
- Voyages from Turkmenbashi to Aktau are in fact repositioning voyages with little or no cargo on board.

The a.m. developments are summarised in the table hereunder:

**Table 7-16: Potential cargo volumes transported between Turkmenbashi and Aktau**

Commodities	Routes	Annual Quantities
Construction material (multi purpose vessel)	Turkmenbashi-Aktau	up to 20,000 t
Salt (multi purpose vessel)	Turkmenbashi-Aktau	up to 20,000 t

The following quantities are expected to be transported by multi-purpose vessel:

**Table 7-17: Multi- purpose vessel traffic between Turkmenbashi and Aktau (in t)**

Main Commodities	2002	2007	2012
Construction material (multi purpose vessel)	5,000	15,000	20,000
Salt (multi purpose vessel)	5,000	15,000	20,000
<b>Totals</b>	<b>10,000</b>	<b>30,000</b>	<b>40,000</b>

The following table presents the number of voyages and statistical average of quantity of goods falling within the respective category expected to be carried on each single voyage between Turkmenbashi and Aktau. The figures are directly derived from cargo volumes.

**Table 7-18: Number of dry cargo vessel voyages between Turkmenbashi and Aktau**

Commodities	Type	Av. Size (t)	2002	2007	2012
Salt	Multi purpose vessel	2,500	2	6	8
Construction material	Multi purpose vessel	2,500	2	6	8
<i>Total voyages</i>	<i>Multi purpose vessel</i>		4	12	16
<b>Number of Roundtrips</b>			<b>4</b>	<b>12</b>	<b>16</b>

### 7.2.6 Turkmenbashi – Olya v.v.

The following facts and developments determine the future cargo traffic between Turkmenbashi and Makhachkala:

- The new port of Olya, which is currently extended to meet the capacity requirements of the expected traffic on the Nostrac corridor, is synonymous for a Russian Caspian port. Alternatives to Olya could be Makhachkala or Astrakhan.
- Several attempts to establish a regular service between the east coast of the Caspian Sea and a Russian Caspian port have so far failed. The political instability in the Northern Caucasus region made cargo owners and transport operators look for other more reliable routes. The settlement of the Chechnya -conflict is the most important pre-requisite for the development of a regular service. For the purpose of the present traffic forecast, the consultants assume that this conflict will be solved within the next year or, alternatively, routes will be secured by-passing the core area of the conflict at a safe distance.
- Turkmenbashi's container handling facilities, which were financed by TRACECA, are currently idle since the small numbers of containers are being shipped to Baku by rail ferry. However, there exists a high-level political agreement between Turkmenistan and Russia concerning the integration of the port of Turkmenbashi into the Nostrac corridor. Reportedly some 10,000

containers from India to Russia (filled with consumer goods, pharmaceuticals, electronics) are to be routed via Turkmenbashi. Since trade between Russia and the Indian sub-continent is expected to be fairly balanced, a proportion of these containers will return to India via Turkmenbashi. In this context it should be noted that one of the most important transit corridors through Iran runs from the Gulf ports of Bandar Abbas and Bandar Emam to Serakhs at the Iranian-Turkmen border. The transit time for container block trains on this route is reportedly 4 days. Currently this service is offered three times a week.

- Container transports along the Nostrac corridor will be dominated by 40' boxes, and the average payload per TEU will be 10 tonnes. The said containers are expected to be shipped in existing Caspian multi-purpose vessels with a carrying capacity of 100 TEU.
- A service based on containerised cargo will be technically feasible provided that one of the Russian ports will be equipped with container handling facilities. The port of Olya, which is currently under construction, is most likely to meet the requirements for efficient container handling after the finalisation of the second development stage.
- The consultants expect that minor quantities of non-containerised cargo may be routed via Turkmenbashi if a regular service between Turkmenbashi and a Russian Caspian port will be established, perhaps as a result of an increase in Russian-Turkmen trade.
- The consultants wish to point out that this traffic link will heavily depend on political backing from Iran, Turkmenistan and Russia. In the near future at least one Iranian port may be equipped with modern container handling facilities, thereby beginning to compete with Turkmenbashi for container throughput.

The a.m. developments are summarised in below table:

**Table 7-19: Potential cargo volumes transported between Turkmenbashi and Olya v.v.**

Commodities	Routes	Annual Quantities
Consumer goods & electronics (in container)	Turkmenbashi-Olya	up to 16,000 TEU
Miscellaneous goods (multi purpose vessel)	Turkmenbashi-Olya	up to 10,000 t
Consumer goods & electronics (in container)	Olya-Turkmenbashi	up to 8,000 TEU
Equipment (multi purpose vessel)	Olya-Turkmenbashi	up to 20,000 t

The following quantities are expected to be transported by multi-purpose vessel:

**Table 7-20: Multi- purpose vessel traffic between Turkmenbashi (T) and Olya (O) v.v. (in t)**

Main Commodities	2002	2007	2012
Consumer goods & electronics (in container) (T-O)	10,000	140,000	160,000
Miscellaneous goods (multi purpose vessel) (T-O)	5,000	8,000	10,000
Consumer goods & electronics (in container) (O-T)	10,000	50,000	80,000
Equipment (multi purpose vessel) (O-T)	5,000	10,000	20,000
<b>Totals</b>	<b>30,000</b>	<b>208,000</b>	<b>270,000</b>

The following table presents the number of voyages and statistical average of quantity of goods falling within the respective category expected to be carried on each single voyage between Turkmenbashi and Baku v.v. by multi-purpose vessels. The figures are directly derived from cargo volumes.

**Table 7-21: Number of dry cargo vessel voyages between Turkmenbashi and Olya v.v.**

Commodities	Type	Av. Size (t)	2002	2007	2012
Container	Multi purpose vessel	90 TEU	22	210	270
Miscellaneous goods	Multi purpose vessel	2000	3	4	5
Equipment	Multi purpose vessel	2500	2	4	8
<i>Total voyages</i>	<i>Multi purpose vessel</i>		27	218	283
<b>Number of Roundtrips</b>			<b>14</b>	<b>160</b>	<b>180</b>

## 8 Future Facility Requirements

The future facility requirements are directly related to a comparison of the status quo of port handling and vessel capacities presented in Chapter 5 (with respect to quantity and quality) and the requirements derived from the forecasted handling/traffic volumes as presented in Chapter 7.

### 8.1 Vessel Capacities

#### 8.1.1 Tankers

The existing tanker fleet of Caspar alone, could comfortably accommodate a sudden surge in demand of up to, say, 10 million tonnes annually across the Caspian Sea. However, the Caspar tanker fleet is ageing and should be gradually replaced by new-buildings if it were to respond to sustained high levels of demand. Together with Russian tankers and the tankers ordered and projected by TML, the consultants estimate the annual carrying capacity of tankers in the Caspian to be well above 15 million tonnes, possibly closer to 20 million tonnes. The Russian river-sea shipping companies reportedly can make considerable tonnage available on demand. According to the forecasting results of Module E: Transports of Crude Oil and Oil Products on the Caspian Sea, being a part of the present TRACECA Traffic and Feasibility Studies, the existing capacities should be sufficient to accommodate all future traffic until 2020 even under most optimistic assumptions, subject always to the condition of the ships. For more in-depth information, please refer to the published reports on Module E).

#### 8.1.2 Ferries

At the time of the consultants' field research seven rail ferries, all owned by Caspar, were operating in the Caspian Sea, and one ferry, also owned by Caspar, works outside the Caspian Sea.

Three ferries are required to cope with the cargo volumes forecast for the Aktau-Baku string (370 roundtrips at 70 percent capacity utilisation in 2012). This calculation is based on the assumption that one ferry completes five roundtrips in two weeks, the maximum capacity of one ferry would be 212,000 tonnes annually (one way). Thus, a maximum of 636,000 tonnes can be transported between Aktau and Baku (one way).

The ferry service between Aktau and Turkmenbashi (300 roundtrips at 70 percent capacity utilisation in 2012) requires two ferries given that one ferry can perform three roundtrips per week. The theoretical maximum capacity on this string is calculated at 510,000 tonnes one way.

To operate the rail ferry service between Aktau and Amirabad (116 roundtrips at 70 percent capacity utilisation in 2012) two ferries should be made available, each performing three roundtrips in two weeks. The theoretical maximum annual carrying capacity on ferries adds up to 255,000 tonnes (one way).

According to the projected traffic figures, one ferry would be sufficient to operate the service between Baku and Amirabad (62 roundtrips at 70 percent capacity utilisation in 2012), since two roundtrips per week are technically feasible.

To sum up, even if all service alternatives discussed were to be operated as strings (as opposed to "round-the-Caspian" services) the existing number of ferries would be sufficient to cope with the forecast cargo volumes, meaning that Caspar would have to repatriate the last ferry trading outside the Caspian Sea. The above comments disregard the state of repair and the age of the Caspar-owned ferries, which however theoretically could call for replacements. However, after 2012 at the very latest new tonnage should be added provided the political and macro-economic environment remains stable.

### **8.1.3 Multi-purpose vessels**

According to the traffic forecast about 930 roundtrips of multi-purpose vessels (with a carrying capacity of 3000 tonnes each) would be necessary to transport the expected cargo volumes on the routes identified for the present study. The number of roundtrips per annum which a vessel can perform in the Caspian Sea not only depends on the route it serves but also on the type of commodity(ies) carried and also the handling facilities and port productivity. To quote two examples, the average productivity of loading and unloading metals in Caspian ports is about 1000 tonnes per day or three days for an average shipload of 2900-3000 tonnes. A vessel loading and unloading containers (160 moves) could be turned around inside 24 hours. It can be assumed that multi-purpose vessels on average spend about half of their operating time in port.

The consultants estimate that the average performance of a multi-purpose vessel is 35 to 40 roundtrips per year. Consequently about 23-27 multi-purpose vessels are necessary to transport the forecast cargo volumes, always provided that ships do not have to wait for cargo or berths and that no other down times occur.

At the time of the consultants' research Caspar operated two dry cargo vessels in the Caspian Sea, while Khazar Shipping and TML each have four such vessels. Russian shipping companies which control an unknown number of river-sea dry cargo vessels of about 3000 tdw can make available additional tonnage at reasonably short notice. Caspar could theoretically bring back to the Caspian sea, 21 of its total fleet of 23 conventional dry cargo ships aggregating more than 80,000 tdw which are being deployed elsewhere.

### **8.1.4 Conclusion on Vessel Capacities**

The analysis of the existing vessel capacities confirms that the tonnage currently operating in the Caspian Sea and/or owned by Caspian Sea-based owners is fully sufficient to accommodate the existing and expected flows of dry cargo. A substantial proportion of Caspian Sea tonnage is currently in lay-up (this term is deemed to include ships which are not in an operational condition) and the two shipping companies of the beneficiary countries operating in the Caspian have sent parts of their dry cargo fleets to the Black and/or Mediterranean Seas due to an acute lack of dry cargo in their home waters. Consequently, it is evident that in the short to medium term considerably larger volumes of dry cargo (irrespective of commodity groups) than at present can be transported across the Caspian Sea, in ships owned by beneficiary countries.

However, much depends on the condition of the present fleet. The importance of regular maintenance and repairs and the timely replacement of over-aged tonnage cannot be over-emphasised. Caspar has ordered one general cargo ship for 2002 delivery and is reported to be investigating more new-buildings to be financed by international institutions. None of the other shipping operators in the Caspian market, always excluding Russian owners, has ordered new dry cargo tonnage.

## **8.2 Port Infrastructure and Navigational Aids**

### **8.2.1 Facilities for Oil Handling**

The facilities for oil handling in Caspian ports have been analysed within the framework of Module E: Transports of Crude Oil and Oil Products on the Caspian Sea, of the present TRACECA Traffic and Feasibility Studies.

Several projects concerning the rehabilitation and modernisation of existing facilities are currently receiving attention by the parties concerned. This includes, e.g., the rehabilitation of oil berths Nos 4 & 5 at Aktau, the rehabilitation of several berths at Dubendi, as well as dredging to accommodate larger tankers. All measures will lead to an increase in terminal handling capacities much needed to handle the expected considerable growth in throughput.

For more in-depth information please refer to Module E, Technical Report: Evaluation of Existing Facilities (January 2001).

### **8.2.2 Ferry Traffic**

Rail ferry In order to establish efficient ferry services and to gain from the forecast cargo volumes, Caspian ports willing to attract rail ferries have to provide facilities to accommodate rail ferries and rail and road connections to the hinterland transport infrastructure. At the time of editing this Report only Baku, Turkmenbashi have rail ramps. Rehabilitation work on the Aktau facilities is about to be completed.

#### **8.2.2.1 Baku**

The port of Baku has a rail ferry terminal with two berths and two rail ramps. Both berths do operate but are in a run-down condition. Rehabilitation of one berth is scheduled to start in 2001, the rehabilitation of the second berth is under consideration. Provided both berths are in a proper working condition then the port of Baku should be capable of handling the rail ferry cargo volumes projected in Chapter 7.

#### **8.2.2.2 Aktau**

After the rehabilitation of the rail ferry ramp which is to be finalised towards the end of July 2001, the port of Aktau can offer a modern and efficient facility (one berth) to handle rail ferries. Simultaneously certain sections of the railway line which hooks up to the one running over Cascor territory (linking the port with the Kazakh Rail network) will be rehabilitated. Aktau will then be able to handle the cargo volumes forecast under 7.2.1 and 7.2.3.

#### **8.2.2.3 Turkmenbashi**

Turkmenbashi has a ferry terminal with two berths for rail ferries. Both can be used but are in need of rehabilitation. A new terminal building has been opened fairly recently. Reconstruction and modernisation of the ferry terminal including dredging to a draught of 8 metres are under way. Turkmenbashi should be capable of handling all cargo volumes projected under 7.2.4 without creating delays and subsequent congestion.

#### **8.2.2.4 Russian Ports**

At the time of writing, none of the Russian ports on the Caspian Sea can accommodate rail ferries. Neither Astrakhan nor Makhachkala nor Olya possess a rail ramp. In Olya a rail ramp is under discussion, but for the port to be ferry-operational the 40km gap between Olya and the Russian railway system needs to be closed. RoRo ships sporadically calling at Makhachkala and Astrakhan make use of the Mediterranean berthing technique whereby the vessels would be moored stern-to with the ramp lowered on to an ordinary quay.

There apparently being no firm plans for a rail ferry service involving Russian ports the consultants have in their projections made no provision for that type of service to or from Russia.

#### **8.2.2.5 Iranian Ports**

The Iranian situation resembles that of Russia. Railway wagons cannot be loaded or discharged from ferries at any of the Iranian Caspian ports. Neither Bandar Anzali nor Nourshahr nor Neka have a rail ramp. Nourshahr has a shore-based ferry ramp for road trucks which the consultants believe is unlikely to be 'upgraded' to take rail wagons due to that port's poor rail link with the central Iranian rail network. A rail ramp is understood to be projected for Amirabad. Reportedly a private investor is willing to finance and operate a rail ferry terminal which is believed also to include a gauge-changing facility. The latter is a 'must' as the Iranian gauge differs from that in the CIS.

If Iran seriously intends to attract cargo as discussed under item 7.2.3, then the construction of a state-of-the-art rail ferry facility is quite inevitable. Without it, there can be no rail ferry service between Aktau and Amirabad.

#### **8.2.2.6 Conclusion on Ferry Handling Facilities**

After rehabilitation and modernisation of the existing facilities in Baku, Turkmenbashi and Aktau, which are either under way or projected for the short term, these ports should be able to handle the forecast

cargo volumes. In the absence of rail ferry facilities in Iran the forecast for a route via an Iranian port is theoretical. Information obtained from Iranian sources indicate a speedy implementation of the projected rail ramp in Amirabad.

### **8.2.3 Facilities for Multi-purpose Vessels**

#### **8.2.3.1 Baku**

Baku port has a terminal with four normal dry cargo berths, of which currently only two are operational and also suitable for container handling. The other two idle berths can be rehabilitated at fairly modest costs. The port is equipped with a container yard for 500 TEU (which can easily be extended to 1500 TEU), and also has nine portal cranes of 20 to 40 tonnes lifting capacity, two reach-stackers, several tractor-trailers and a container freight station. The terminal is well-connected with the central Azeri railway system. At the time of writing the port could handle substantially more dry cargo than it does and the container handling facilities are decidedly under-utilised. The container terminal is at present mainly used as an inland terminal for the transshipment of containers from railway wagons to road trucks.

The existing facilities are in a reasonable condition and quite sufficiently dimensioned to cater for the cargo volumes forecast in Chapter 7. In the consultants' opinion there is no need for extending the existing facilities. Regular maintenance, repairs and modernisation should take place throughout the prognosis period.

#### **8.2.3.2 Aktau**

Aktau with its four dry cargo berths has a theoretical throughput capacity of about 1.5 million tonnes p.a., excluding bulk grain. Assuming that volumes predicted in the traffic forecast presented in Chapter 7 will in fact materialise, then with the current port infrastructure, capacity utilisation is expected to reach approximately 85 percent by the year 2012. At that rate the port will frequently be congested which is most undesirable for all concerned. The projected new dry cargo berth between berth No. 3 and the southern end of the main breakwater will provide short-term relief if realised quickly, indeed it is a pre-requisite for attaining the projected cargo throughput potential at Aktau. Planning for port extension towards the north should be accelerated in order that additional capacities may be available by 2012, or earlier if possible.

The port has no dedicated container terminal. At the ship to shore interface containers are at present being handled using conventional portal cranes. The port has one rail-mounted quay crane of 32 tonnes lifting capacity plus two mobile cranes of 32 or more tonnes lifting capacity subject to outreach, quite sufficient for container operations. Containers with higher gross weights can be transported by ferry. Container handling using portal cranes is a slow (about ten moves per hour) and therefore inefficient operation. To prepare for larger volumes of containerised cargo the port of Aktau might consider the installation of a container storage area and the acquisition of a (second-hand) gantry crane.

#### **8.2.3.3 Turkmenbashi**

Turkmenbashi generally offers sufficient facilities for the handling of multi-purpose vessels and even Ro/Ro vessels (small Russian type with 4m stern flaps). However, the facilities are under-utilised, since currently dry cargo almost exclusively arrives and departs by rail ferry from Baku (except e.g. for domestic salt shipments from nearby salt works).

The container terminal has yet to prove its efficiency under day-to-day operational conditions. The container yard which is similarly dimensioned as the one in Baku, is filled with conventional cargo (mainly pipes), there being only very few containers. However, if container handling catches up, the port can easily handle all container volumes forecast in Chapter 7.

#### **8.2.3.4 Russian Ports**

Astrakhan, the most important Russian Caspian dry cargo port at the time of editing this Report, has recently modernised some of its dry cargo handling facilities. The port feels the effects of a shift of

emphasis whereby Olya appears to receive more financial attention than Astrakhan port even though both units come under the administration of the Port Authority of Astrakhan. Once completed the port of Olya is expected to assume the position of Astrakhan as the Caspian gate to Russia. Existing facilities in the Astrakhan region are considered sufficient to cope with present cargo volumes and those expected in the near future. Should the Nostrac scheme materialise, starting at a modest level but arguably increasing with time, new handling facilities are required including container handling equipment, a ferry terminal etc.

It should be noted again that both Astrakhan and Olya are ice-bound in winter times and access to the port areas can only be kept open by means of ice-breakers.

Makhachkala gains from its proximity to the Russian oil pipeline network. A ferry terminal or alternatively a Ro/Ro facility is under discussion, but the consultants do not expect any short- or medium term developments.

### **8.2.3.5 Iranian Ports**

Bandar Anzali has eight dry cargo berths. All berths are equipped with portal cranes with a lifting capacity of 16 tonnes. In addition the port has 19 mobile cranes of up to 120 tonnes lifting capacity.

Nourshahr offers three multi-purpose berths. The consultants could not obtain information on the number and lifting capacity of the handling equipment.

Neka, the smallest port with only one multi-purpose handling facility will remain focused on the handling of oil and oil products.

Information on Amirabad is difficult to obtain. As discussed above the port has recently been inaugurated but parts are still under construction. The consultants understand that the port will concentrate dry cargo and will provide modern and efficient facilities. It appears to have been earmarked as the main Caspian gateway into, and out of, Iran.

Reports have it that all Iranian ports on the Caspian coast have recently undergone rehabilitation, modernisation, and partly extension. Dredging has been an important feature of the work undertaken and has given the ports deeper draughts. The consultants interpret these efforts as an expression of Iran's intention to promote the Nostrac corridor. The consultants have not visited the Iranian ports. They can only assume meanwhile all Iranian ports are sufficiently equipped to handle much larger volumes than the existing transport flows and those forecast for 2012.

### **8.2.3.6 Conclusion on Multi-purpose Handling Facilities**

Existing facilities for dry cargo handling are unevenly distributed. Some ports are clearly under-equipped to cope with the expected rise of throughput. Certain port facilities only need proper maintenance and repair to restore their rated capacities. The port of Aktau should commence planning for the provision of additional port infra- and superstructure.

Containers have not really made an appearance on the Caspian Sea, yet. The few containers which in fact do move across the seaway would travel east filled with imports mainly from Western, i.e. European or American ports of origin, and would either be deadheaded to the nearest suitable deep-sea port empty, or be filled with such commodities as cotton, that being one way to ease the heavy burden of long empty positioning hauls. If the industrial production in the region picks up and in its wake, exports of manufactured goods to overseas destinations similarly increase, and when consumer goods are being imported by littoral and hinterland States in significantly larger quantities than at present, will containers be seen in numbers. Therefore, the consultants are satisfied that there is no immediate need for further large-scale investments into container handling, storage, tracking and tracing, and carrying facilities. On the other hand, and considering the dominant role assumed by containers in world-wide transportation, port authorities, ship owners and land-based transport firms should prepare for container transport by making sure that any new investments into shore cranes, new ships, lorries, rail wagons and the like are suitably dimensioned to permit hitch-free handling and transportation of 20' and 40' containers.

## **8.3 Navigational Aid Systems**

### **8.3.1 Findings**

The Caspian ports of Baku, Dubendi, Aktau and Turkmenbashi have recently been investigated within the framework of the present TRACECA Traffic and Feasibility Studies, Module E: Feasibility Study on the Rehabilitation and Modernisation of Navigational Aid Systems in Caspian Seaports (December 2000).

Barring few exceptions (e.g., the buoys at Aktau) the aids to navigation systems were found to be in an appalling condition. Turkmenbashi suffers from a grossly inadequate aids to navigation system which prevents vessels from entering or leaving the port during the hours of darkness.

The majority of buoys in Baku, Dubendi and Turkmenbashi, being beyond repair, need to be replaced. Those buoys worthy of repair require new lights, batteries, topmarks, etc. Utmost care should be exercised ensuring that the positioning and the marking of the buoys correspond to the requirements of the IALA system for Region A, which includes the Caspian Sea. The consultants also strongly recommend that a close check be carried out to make perfectly sure that all aids to navigation are properly located and of the prescribed design. Lighthouses, beacons and leading lights require major overhauls or, in some cases, outright replacement.

The consultants emphasise that aids to navigation are a means to guarantee safety at sea. If the present conditions are allowed to continue, major accidents are waiting to happen. If a ferry carrying passengers is involved in an accident the lives of innocent persons are endangered, as also the lives of the crew.

The Port Control Centres in Baku, Dubendi and Turkmenbashi must be completely modernised, the Port Control Centre in Aktau must be upgraded to meet the demands of current and future traffic. All PCCs should be equipped with radar and GMDSS (Global Maritime Distress Safety System) receivers and transmitters with decoders for VHF and MW. This equipment is compulsory world-wide since the 1<sup>st</sup> of February, 1999. The centres also require at least a minimum number of VHF hand-held radios and voice recorders.

### **8.3.2 Conclusion on Navigational Aid Systems**

Research conducted in the year 2000 has resulted in invitations for tenders for the supply and installation of basic aids to navigation. It is expected that the ports of Baku, Aktau and Turkmenbashi, and thereby, shipping in the Caspian Sea, will benefit from this action late in the year 2001 or in 2002.

## **9 General Principles of Running a Shipping Company**

### **9.1 Management and Staffing**

#### **9.1.1 General**

The type of company which will, always subject to the conclusions reached in this Report, actually run a new shipping service or services will either be a fully-fledged ship owning company or alternatively, merely be an operator which will (time-)charter-in tonnage and deploy the ships on the routes chosen. Items 9.1.3 and 9.1.4 below discuss, and compare, the basic structure of both types of companies but will ignore, under this heading, the proposed seat of the business. The structures chosen have deliberately been kept lean and simple, in line with the assumed size of the companies involved.

#### **9.1.2 Existing Shipping Companies in the Beneficiary States and their Management Structures – An Overview**

The three beneficiary states each have their own national maritime carrier in the shape of a state-owned shipping company.

From the information thus far gleaned the consultants are led to believe that the management structure of the Baku-based national Caspian Shipping Company (Caspar) has largely remained identical with that found at the last in-depth investigation conducted for the European Commission in 1993/94. Caspar still engages in secondary activities such as a hotel, a hospital, and a kindergarten, not directly related to its core business. Management is on record of having stated that most of these activities are an expression of the company's social responsibility for its staff and as such, constitute an integral part of the remuneration system. The port and the shipping company in Azerbaijan are two separate, state-owned enterprises. Between them both companies look after duties of the national maritime administration which burdens the companies with tasks far beyond those of running a commercial business.

Turkmenistan's Turkmen Maritime Line (TML) is basically structured in accordance with the traditional Eastern Bloc type of company (cf. Chapter 5.1.3.1). i.e. the shipping line owns and runs the domestic port(s) used by its fleet. Much like in Azerbaijan, TML also serves as the maritime administration of Turkmenistan and as such it has had to shoulder tasks which are commonly outside the scope of any shipping and/or port enterprise (for an overview on the management structure of TML cf. Annex 5).

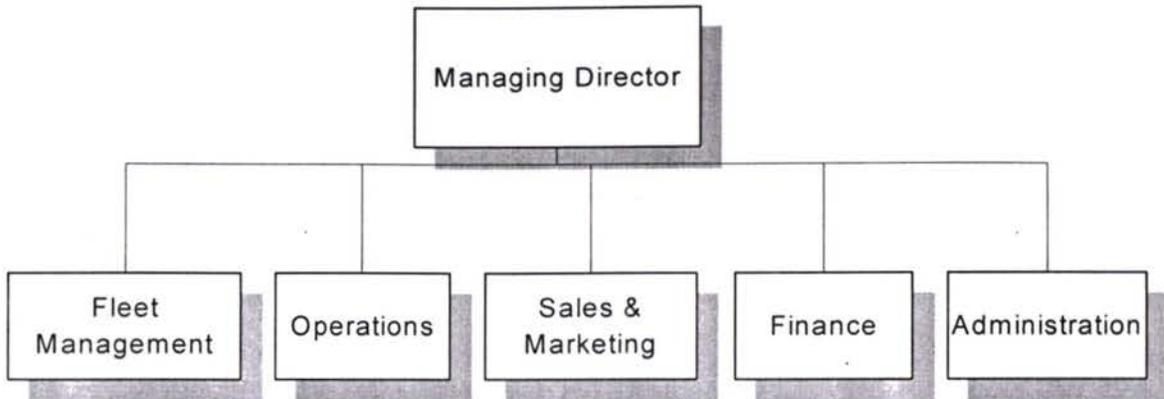
The management of the new Kazakh shipping company, Kazmortransflot, is based in Astana and its structure appears to be developing slowly. In March 2001, Kazmortransflot was headed by a president assisted by two vice-presidents responsible for strategy development and finance. Furthermore, there was a legal department and a separate division made up of the staff delegated to Aktau. According to recent information the activities of Kazmortransflot are not going to be confined to commercial shipping only but will most probably include port operations at Aktau or Bautino, ship agency work; plus virtually all other shipping-related services including pilotage, towage, repair yards, etc.

#### **9.1.3 Ship Owning Company**

As the denomination suggests, a ship owning company actually owns one or several vessels. For the purpose of this Report it is assumed that the said company will, as a maritime carrier, also be actively involved in seeking employment for its ship(s) and in operating the same.

Subject entirely to the shareholding of the company, i.e. either state or privately owned and subject also to relevant corporate legislation in the country of registry, the company will presumably have a non-executive board of which the members have been elected by the general assembly of shareholders, or nominated by the relevant Government, and will be headed by a Chairman. Other forms of corporate structuring are of course feasible but shall not be further discussed here.

Reporting to the Chairman is a panel of Executive Directors under the Managing Director, of whom each will be in charge of one of the following Departments:



Reporting directly to the Managing Director is the Controller.

Fleet Management will oversee a nautical and a technical sub-department and will also be responsible for afloat staff. Thus, it carries the full weight of keeping the company's principal assets, the ships, operational and in a serviceable condition. It also recruits, promotes and trains seagoing personnel in line with highest industry standards. Fleet Management is responsible for purchasing of spare parts, bunkers and other shipboard consumables. This department will specify third-party repair work and be responsible for selecting repair yards. Fleet Management is responsible for the planning of new-buildings and for relevant negotiations with shipyards. Fleet Management will also be responsible for the adherence, on board ship, to the various codes, rules and regulations, both national and international, which the company and its flag state have undertaken to observe.

Operations is concerned with the actual deployment of the ships, i.e. routing, cargo bookings, agency arrangements, etc. It will also negotiate such service contracts as terminal and/or stevedoring and/or towage and any other similar agreements.

Sales and Marketing, in close liaison with Operations, will seek to intensify the company's market penetration and, thereby, cargo carryings by canvassing actual and potential clients. It will study the development of new trends and trades, it will develop a flow of feedback from clients to monitor client satisfaction, and it will create and control a network of canvassing and/or booking agents throughout the company's cargo catchment area, both at home and abroad. Sales and Marketing is the company's link with its clients and maintains constant and close contacts with customers.

The Finance Department, incorporating the bookkeeping section, is responsible for all financial matters including annual and possibly quarterly balance sheets, the flow of funds, monitoring of outstanding receivables (i.e. freight amounts, etc.), taxation, salaries and wages, and will ensure the ready availability of finance-related data reflecting the company's standing at any one time.

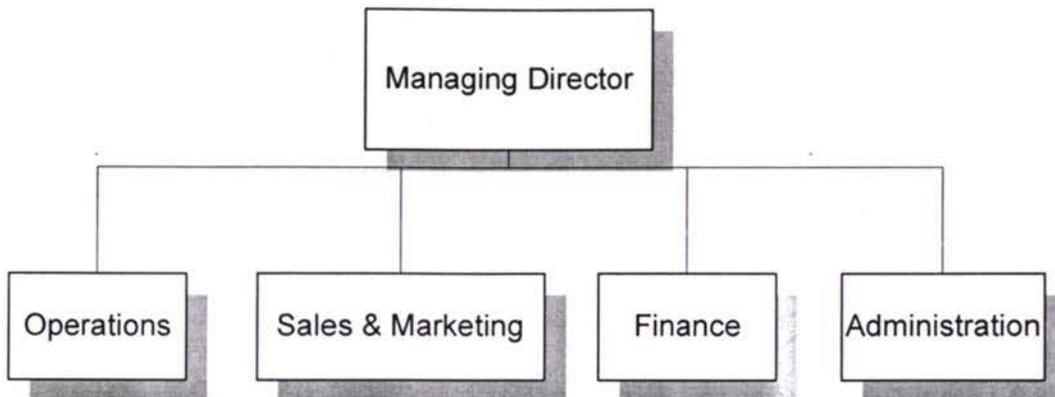
In a lean organisation, Administration covers a fairly large diversity of activities, including but not necessarily limited to, shore-based personnel; legal affairs normally linked with ship etc. insurance and claims handling; internal organisational matters, plus any other activities not covered by the other departments.

It is conceivable, most certainly in a small organisation, that the Managing Director doubles as a department head for any one of the above departments, always provided that he shall still have sufficient time to do justice to the duties of a Managing Director. Equally, the Fleet Manager will most probably be in charge of either the technical or the nautical sub-department.

The above makes no attempt fully to describe the extremely wide area covered by the business of ship owning. The list merely highlights the principal fields of activities and responsibilities of the main departments in a shipping company, which by any standards must be called a minor operation.

#### 9.1.4 Ship Operating Company

Again for the purpose of this Report, a Ship Operating Company does not own any ships but will hire or, in shipping terms, charter in, what tonnage may be required. It follows that its organisational set-up can afford to be leaner still than that of a ship owner, viz.:



As in a ship owning company, there may be a non-executive Board and a panel of Directors headed by a Managing Director.

Again, the Controller reports directly to the Managing Director. The responsibilities of the Operations Department are identical with those in a ship owning company except that Operations will also have to purchase bunkers. The functions of Sales and Marketing are perfectly identical with those in a ship owning company, as above. The tasks of the Finance Department are largely identical with those in a ship owning company, as described above. Administration is similar to what one will find in ship owning but excluding ship insurance, which is a ship owner's, responsibility.

#### 9.1.5 Staffing

Any new shipping operation in the Caspian region will find it difficult to recruit professional shore-based staff with shipping expertise. As explained elsewhere in this Report, the only major shipping company in the region has been, and is to this day, Caspar of Baku. A number of managerial and also subordinate staff have left Caspar and may find it worth their while to join a new shipping venture. Failing that and not advocating head-hunting, the consultants strongly suggest that prior to embarking on a new shipping venture, those responsible for the project should bring in trained and fully competent personnel, or alternatively retain the services of outside consultants. Shipping is of course a commercial activity and the manager of the Finance Department does not necessarily have to have a shipping background, even though it would help if he did. However, all other department heads and certainly also their immediate subordinates should have shipping, or at least freight forwarding experience, failing which not only the individuals concerned but also the company itself will find the going very hard.

The consultants wish to make the point at this juncture that shipping is a commercial business like any other. It follows that a person with a maritime background such as, e.g., of a master mariner, does not per se qualify as the Chief Executive Officer of a shipping company, even though former shipmasters frequently occupy just that position. The consultants suggest that a successful commercial record is an indispensable pre-requisite for the post of a CEO in any company, including shipping ventures.

A large number of seafarers is at home in the Caspian region. Many of them have been trained in specialised institutes in e.g. Odessa, Baku and Batumi. An overview over maritime schools in Georgia, Ukraine, Azerbaijan, Kazakhstan and Turkmenistan may be found in Annex 2. The countries under review are members of the IMO and as a result they are, or should be, aware that they have an obligation to man ships flying their national flag in strict accordance with the relevant regulations. Attention is drawn in this context to the stipulations of the STCW Standards of Training, Certification and Watchkeeping.

## 9.2 Composition of the Fleet

For obvious reasons the composition of the fleet, i.e. the specification of the ships involved, is directly related to the intended trade and the type or types of cargo to be carried. For more details please refer to Chapter 10.

## 9.3 Ship Owning vs. Ship Chartering

Ship owning ties up considerable funds, and unless a new shipping company is well endowed it will most likely revert, certainly in the initial stage, to chartering. Any company purchasing a ship should be convinced of the sustainability of the future profitable employment of its costly asset. This is very rarely the case during the early stages of a new venture.

In the case under review the fact must be faced that the choice of ships eligible for chartering-in is rather limited. Draft and other size restrictions in the Caspian Sea reduce the number of candidates, and it appears highly unlikely that foreign-flag ship owners other than Russian or perhaps Ukrainian would seriously consider to commit their tonnage to the region. The few owners of eligible tonnage are aware of their near-monopolistic position which will show up during chartering negotiations, meaning that in what may be called a seller's market the rates will be on the high side, and charter party conditions not necessarily always in charterers' favour. However, charterers' commitment to such tonnage can be comparatively short term (say, a few months) enabling the termination of an unsuccessful venture without incurring excessive losses.

Ship purchasing, on the other hand, means long-term commitment. Negotiations leading up to a formal purchasing contract follow time-honoured procedures and are fair to both parties. The buyer will have to settle for a flag and a ship register, the latter depending, i.a., on the actual funding of the acquisition. Assuming that sufficient funds are available from the company's own resources, then the buyer enjoys a measure of freedom. If the buyer has to resort to foreign credit, then immediately the foreign bank will have a say concerning the flag under which the ship is to be registered so as to enable the bank to re-possess the ship in case the buyer defaults on servicing the loan. There are a number of reputable and equally experienced foreign banks specialising in ship financing. Understandably, such banks will expect the prospective buyer to table a great deal of information, including but not limited to its shareholders, its capital structure, its organisational set-up, its managers, and the business plan. Intimate questions will be asked and are expected to be answered fully, failing which the deal may fall through.

Ship owning obviously involves the many tasks associated with taking care of the asset, i.e., the ship, and of the crew on board. Consequently, a ship owner will have to install a Fleet Management Department, unless of course the ship owner elects to assign the said tasks to an international firm of professional ship managers. By doing that the ship owner will avoid a top-heavy shore-based organisation and will also be able to draw on the considerable experience of a ship manager, but of course, at a price. There is no reliable rule as to when the services of a ship manager are superior to the in-house efforts of a ship owner, there being both one-ship companies and also fairly large fleets in the care of ship managers, or of their respective owners. Much depends on the circumstances of the case.

## 9.4 Vessel Deployment and Ship Operations

Basically, a ship owner not only owns his fleet, he also deploys its tonnage. The charterer, by contrast, is only concerned with operating the ship or ships it has chartered, leaving the ship-owning duties to the owner itself.

Focusing on vessel deployment, both the owner and the charterer find themselves in the role of the ship operator when it comes to finding employment for, and to making optimum operational use of, the ship or ships.

Several options are open to a ship operator, depending naturally on the type of service it intends to offer. Some of the more likely options are discussed hereunder:

### 9.4.1 Liner Service

A liner service has often been equated with running an operation broadly resembling a bus service, meaning that the ship owner has to send its ship or ships to a pre-announced number of ports, and

offer regular sailings, irrespective of the actual availability of cargo. It will appoint agents at every port of call and be prepared to have many, including very minor, clients.

#### **9.4.2 Parcel Service**

Parcel services will in the main not operate to fixed schedules, as a liner service will do, and will carry reasonably large parcels of cargo but not necessarily full ship loads. Parcel services can be regular but need by definition not adhere to timetables or serve pre-determined ports.

#### **9.4.3 Tramp Services**

Tramp ship operators look for full shiploads, which they will preferably load in one port, and discharge in another. The tramp ship owner rarely has regular clients, unless it engages in a Contract of Affreightment in terms of which it is obliged to carry a defined quantity of cargo, inside an equally defined period of time, from one or several ports of loading to one or several ports of discharge.

The most likely type of operation to be encountered in the region where a new operations is concerned is a liner service or, perhaps even more likely, a semi-liner operation, the latter being a hybrid liner and parcel service.

#### **9.4.4 Port Agencies**

The consultants realise that as yet another legacy of the Soviet times when national or at least regional shipping activities including ports normally came under the roof of one single organisation, port agents in virtually all Caspian ports are either dominated by, or in fact identical with, the national shipping company. Assuming that there will be one or more additional shipping lines operating on the Caspian Sea and given the competitive nature of shipping, to force such newcomers to entrust the national line in foreign ports with its agency business is tantamount to forcing the newcomers to throw open to their competitors, a great deal of confidential information including freight rates, cargo volumes, shipper and consignee names, etc. Also, port agents will in many cases be expected actively to canvass clients, to negotiate freight rates and contracts, and eventually to book cargo. Any port agent whose prime allegiance should be towards its shareholder will be in a very difficult position when it has to decide whether to direct the cargo into its shareholder's ship, or towards the one of its foreign principal. A port agent should put up a fight if it finds that a ship of its foreign principal is being delayed for no other reason than to give preferential treatment to the ship of the national carrier. That port agent has its hands tied behind its back if the other ship is that of the national carrier, i.e., its shareholder. Therefore, the consultants come down firmly in favour of free port agents, as opposed to agents who in fact are a part of the national carrier's organisation.

### **9.5 Co-operation**

Unless it can rely on staunch client support any newcomer to a trade will most probably seek allies. The consultants are well aware that co-operation in one or other of the manners briefly described below calls for a complete re-think on the part of the various national carriers, Ministries of Transport, etc., but as has been mentioned elsewhere in this Report, so obvious are the advantages of co-operation in shipping that they should not be passed up. However, interviews conducted with major players in the Caspian shipping market revealed that there is some disagreement or unawareness regarding the benefits of co-operation, which may to an extent be based on prejudice concerning the ability and trustworthiness of potential partners. At the same time the consultants concede that healthy, as opposed to destructive, competition should always be maintained. Co-operation can assume a number of forms, such as, e.g.:

#### **9.5.1 Joint Service**

In a joint service, two or more operators undertake jointly to serve a trade. Each operator will as a rule run its service for its own account, even though the joint service may present a united front vis-à-vis shippers and consignees. This type of operation is frequently found in liner services where in the vast majority of cases ship scheduling is a joint responsibility but sales and marketing remain strictly separated, thereby maintaining the overriding principle of competition. Joint services are commonplace in the container trades where the members of a joint service will make use of space chartering enabling all partners in a service to offer space in all ships on the berth.

#### **9.5.2 Joint Venture**

Depending on the circumstances of the case, a joint venture calls for much closer co-operation between the parties thereto, ranging from the inevitable central management of the service to pooling (which see) to actual merger.

### **9.5.3 Pooling**

Many shipping ventures have considered it expedient to pool their resources, i.e. their fleets and place the same under one single management, or still further to intensify their mutual co-operation by pooling revenues and expenses. There are rather many different forms of shipping pools, which cannot be fully discussed here, it being considered sufficient to mention the existence of pools in the industry. Pooling has the effect of spreading, and thereby cushioning, risks but equally of spreading profits among all members of a pool.

## **9.6 Company and Vessel Registration**

### **9.6.1 Company Registration**

The consultants take it for granted that individuals and/or companies interested in establishing a new shipping venture are fully conversant with the statutory requirements for company registration in the country eventually earmarked to serve as the seat of business.

The beneficiary countries, be they Azerbaijan, Kazakhstan or Turkmenistan generally license private companies in the transport sector. Companies providing maritime services such as, e.g., shipping agencies require registration with the national maritime administration in certain countries. Where the maritime administration and the national shipping company are inter-related, clashes of interest are not unlikely and could protract the registration process.

### **9.6.2 Vessel Registration**

This is a subject requiring great circumspection. A number of factors may influence the registration (i.e., the flag) of a ship, including but not confined to the following:

- National legislation may commit a ship owner to have its ship registered in the country of registry of the owning company.
- Ship financing banks may, as briefly discussed further above, force the owner to have its ship registered under a flag other than that of the owners' or owning company's nationality.
- An owner seeking to avoid national regulations concerning, i.a., taxation or manning, may wish to have its ship registered under a 'soft' flag, also referred to as a flag of convenience or a flag of necessity, depending on the relevant viewpoint. The consultants sound a note of warning and seriously suggest to avoid the pitfalls of seemingly advantageous flags but much rather to follow the advice of reliable experts.

## 10 Financial Analysis

### 10.1 General Principles

To assess the commercial viability of the project, the most commonly used financial indicators have been calculated: (1) financial internal rate of return (FIRR), and (2) payback period.

(1) The financial internal rate of return (FIRR) is the discount rate at which the present value of all outflows of cash (e.g. investment cost, operational expenses) is exactly equal to the present value of all inflows of cash. It indicates the actual return of the total investment outlay and is a good indicator of the profitability of the project. It enables the investor to compare projects quantitatively, and the higher the FIRR the higher the profitability of the project. The FIRR calculated from the project cash flow is an indicator for the overall viability of the project. It can also be used to determine the maximum interest the project can bear without incurring any losses to the investor.

(2) The payback period is the time required to recover the original investment outlay through the profits earned by the project. It is sometimes interpreted as an indicator of the degree of risk attached to a project, though this should be treated with caution since it does not take adequate account of any reward for the shouldering of the risk. It should therefore be regarded only as an additional indicator.

Normally, the financial analysis of a transport project covers an operational period of about 20 years, in order as accurately as possible to take into account the life cycle of port investments. However, since additional second-hand vessels are assumed to have a maximum remaining life time of 10 years, and no major port investments have been assumed to be required, the following financial analysis covers the time horizon of the traffic forecast as calculated in Chapter 7, i.e. for the years up to 2012.

Start of shipping operations would be in the year 2002. The remainder of the year 2001 would be spent with the rehabilitation of existing vessels and/or acquisition of required additional ones, and the installation of port facilities where necessary, and Aids to Navigation equipment. Any assumptions regarding real price changes over a long period of time are highly speculative and open to manipulation. Thus, the financial viability of the project activities has been calculated on constant price basis, whereby current prices have been applied.

Financial evaluations are based on the projected investment programme and on the expected cash flow development. The analysis is done at project level, i.e. without financing and before taxes. In other words, the financial analysis has been carried out as if the project were funded entirely by equity. At the present stage, this approach is suitable to assess the financial viability of the operator's business in principle. It is assumed that a private operator will accept the project if it can earn an FIRR exceeding that of an alternative investment, say on the financial markets. Currently, the Central Bank of Azerbaijan offers about 20 percent for USD accounts. It can be assumed that the opening of a new shipping service incorporates at least as many risks as lending money to the Central Bank of Azerbaijan. Consequently, an investor would require from the shipping operations an FIRR, comfortably above 20 percent, say 22% (before taxes and financing). If the financial analysis reveals an FIRR below this level, the private provision of transport services in the Caspian Sea can be assessed as not financially viable (i.e. taking into account only the revenues and costs borne by the private operator).

All calculations are based on USD, since most commonly this currency is used for calculation and settlement of financial obligations not only in the Caspian Sea but also in the world-wide maritime business.

Finally, in order to assess the possible impacts of risks on the project profitability, a risk analysis has been carried out, and a sensitivity analysis investigates the degree to which the revenue and cost parameters (1) need to improve (to meet the financial acceptance of a private operator), or (2) can deteriorate to cover the risks.

### 10.2 Revenues

Revenues are generated by combining the results of the traffic forecast of Chapter 7 with the achievable freight rates for different cargo groups.

The consultants draw attention to a Caspian peculiarity: freight rates are invariably being charged on a fio ('free in and out') basis, leaving cargo interests, i.e. shippers and/or consignees, to absorb the cargo handling charges at both ends of a voyage. This applies to liner and non-liner shipments alike.

## 10.2.1 Expected Cargo Volumes for Different New Services

### 10.2.1.1 Aktau-Amirabad-Baku v.v.: Rail Ferry

The proposed service will have the following features:

- A weekly counter-directional rail ferry service with rail two ferries of the type already existing in the Caspian Sea. It is very difficult to bring in ferries from outside the Caspian Sea since a) there is only a very limited market for used rail ferries, and b) rail ferries of similar size as the Dagestan class will have difficulties to transit the Volga-Don Channel due to limited height of bridges, or, in shipping terms, due to the air draught of the vessels.
- 50 roundtrips per direction per year.
- Between Aktau and Baku v.v. the proposed service will compete with the existing service. Between Aktau and Amirabad, and Amirabad and Baku v.v. the regular service will only compete with the tramp trade. This leads to the following cargo potential for the proposed service:

**Table 10-1: Cargo Potential for a Rail Ferry Service Aktau-Amirabad-Baku v.v. (in tonnes)**

Route	2002	2007	2012
Aktau-Amirabad	64,000	64,000	64,000
Amirabad-Baku	25,000	55,000	64,000
Baku-Aktau*	2,500	8,000	10,500
Aktau-Baku	64,000	64,000	64,000
Baku-Amirabad	10,000	15,000	20,000
Amirabad-Aktau	40,000	64,000	64,000

Given the cargo potentials calculated in 7, the consultants assume an average capacity utilisation of 75% where the cargo potential exceeds the theoretical annual maximum capacity per direction of a weekly ferry service (excluding tares: 1,700 tonnes X 50 roundtrips = 85,000 tonnes p.a., of which 75% is 64,000 tonnes p.a.).

\* In competition with existing ferry services, this figure for the new service indicates an estimated share of 50% (2002), 16% (2007), and 13% (2012) of the total cargo volumes on this route.

### 10.2.1.2 Aktau-Amirabad-Baku v.v.: Multi-purpose Vessel

The proposed service will have the following features:

- A weekly counter-directional cargo service with multi-purpose vessels of the type similar to those existing in the Caspian Sea (around 3300 tdw). It is possible to bring in this type of vessel from outside the Caspian Sea since a) there is a regular market for such second-hand vessels, and b) these vessels will have no technical difficulties to transit the Volga-Don Channel.
- 25 roundtrips per direction per year. Port times for this service are longer than for the ferry service, since average loaded and discharged cargo volumes per call are considerably higher, and crane operations take longer. Loading or unloading railway wagons from a ferry. Moreover, sailing times are longer since the existing Dagestan ferries travel at a higher speed than the average multi-purpose vessel.
- The theoretical maximum capacity of the service between two ports is 75,000 tonnes per direction (3000 tonnes X 25 voyages), or at 75% capacity utilisation, 57,000 tonnes.
- Between Aktau and Baku v.v. the proposed service will compete with the existing ferry service. Between Aktau and Amirabad, and Amirabad and Baku v.v. the regular service will compete with multi-purpose vessels engaged in tramp trades. This leads to the following cargo potential for the proposed service:

**Table 10-2: Cargo Potential for a Regular Service with Multi-purpose Vessels between Aktau-Amirabad-Baku v.v. (in tonnes)**

Route	2002	2007	2012
Aktau-Amirabad	57,000	57,000	57,000
Amirabad-Baku*	20,000	44,000	57,000
Baku-Aktau**	4,000	7,500	11,000
Aktau-Baku***	16,000	57,000	57,000
Baku-Amirabad*	8,000	18,500	24,000
Amirabad-Aktau****	4,000	4,000	5,000

\* In the absence of a ferry service will be available, the new service is expected to have a market share of 80%.

\*\*In competition with charter vessels, this figure for the new service indicates an estimated share of 50% of the total cargo volumes on this route.

\*\*\* In competition with charter vessels, this figure for the new service indicates an estimated share of 50% (2002), 23% (2007), and 13% (2012) of the total cargo volumes on this route.

\*\*\*\* In competition with charter vessels, this figure for the new service indicates an estimated share of 10% (2002), 6% (2007), and 5% (2012) of the total cargo volumes on this route.

### 10.2.1.3 Aktau-Amirabad-Baku/Aktau-Baku-Turkmenbashi: Multi-purpose Vessel

The proposed service will have the following features:

- A weekly counter-directional cargo service with multi-purpose vessels of the type similar to those existing in the Caspian Sea (around 3300 tdw). It is possible to bring in this type of vessel from outside the Caspian Sea since a) there is a regular market for such second-hand vessels, and b) these vessels will have no technical difficulties transiting the Volga-Don Channel.
- 25 roundtrips per direction and year. Port times for this service are longer than for the ferry service, since average loaded and discharged cargo volumes per call are considerably higher, and crane operations take longer than loading or discharging railway wagons from a ferry. . Moreover, sailing times are longer since the existing Dagestan ferries travel at a higher speed than the average multi-purpose vessel.
- The theoretical maximum capacity of the service between two ports is 75,000 tonnes per direction (3000 tonnes X 25 voyages), or at 75% capacity utilisation 57,000 tonnes.
- Between Aktau and Baku v.v., and Baku and Turkmenbashi the proposed service will compete with the existing ferry service. Between Aktau and Amirabad the regular service will compete with the charter business deploying multi-purpose vessels. Between Turkmenbashi and Aktau the proposed service will have a monopoly since the expected cargo volumes do not justify the establishing of a competitive service. This leads to the following cargo potential for the proposed service:

**Table 10-3: Cargo Potential for a Regular Service with Multi-purpose Vessels between Aktau-Amirabad-Baku and Aktau-Baku-Turkmenbashi (in tonnes)**

Route	2002	2007	2012
Aktau-Amirabad	57,000	57,000	57,000
Amirabad-Baku*	20,000	44,000	57,000
Baku-Aktau**	4,000	7,500	11,000
Aktau-Baku***	16,000	57,000	57,000
Baku-Turkmenbashi*****	10,000	22,500	32,500
Turkmenbashi-Aktau *****	5,000	15,000	20,000

\* If no ferry service will be available, the new service is expected to have a market share of 80%.

\*\*In competition with charter vessels, this figure for the new service indicates an estimated share of 50% of the total cargo volumes on this route.

\*\*\* In competition with charter vessels, this figure for the new service indicates an estimated share of 50% (2002), 23% (2007), and 13% (2012) of the total cargo volumes on this route.

\*\*\*\* In competition with charter vessels, this figure for the new service indicates an estimated share of 10% (2002), 6% (2007), and 5% (2012) of the total cargo volumes on this route.

\*\*\*\*\* In competition with charter vessels, this figure for the new service indicates an estimated market share of 50%.

#### 10.2.1.4 Baku-Turkmenbashi v.v.: Multi-purpose Vessel

The proposed service will have the following features:

- A weekly counter-directional cargo service with multi-purpose vessels of the type similar to those existing in the Caspian Sea (around 3300 tdw). It is possible to bring in this type of vessels from outside the Caspian Sea since a) there is a regular second-hand market for these vessels, and b) these vessels will have no technical difficulties transiting the Volga-Don Channel.
- 50 roundtrips per direction per year.
- The theoretical maximum capacity of the service between two ports is 150,000 tonnes per direction (3000 tonnes X 50 voyages), or at 75% capacity utilisation, 112,500 tonnes.
- The proposed service will compete with the existing ferry service and possibly with the charter business deploying multi-purpose vessels. It is assumed that a regular weekly service can attract about 80% of non-ferry cargo volumes. This leads to the following cargo potential for the proposed service:

**Table 10-4: Cargo Potential for a Regular Service with Multi-purpose Vessels between Baku and Turkmenbashi v.v. (in tonnes)**

Route	2002	2007	2012
Baku-Turkmenbashi	16,000	36,000	52,000
Turkmenbashi-Baku	40,000	72,000	96,000

#### 10.2.1.5 Turkmenbashi-Astrakhan/Olya v.v.: Multi-purpose Vessel

The proposed service will have the following features:

- A weekly counter-directional cargo service with multi-purpose vessels of the type similar to those existing in the Caspian Sea (around 3300 tdw). It is possible to bring in this type of vessels from outside the Caspian Sea since a) there is a regular second-hand market for these vessels, and b) these vessels will have no technical difficulties transiting the Volga-Don Channel.
- 50 roundtrips per direction per year.
- The theoretical maximum capacity of the service between two ports is 150,000 tonnes of conventional cargo per direction (3000 tonnes X 50 voyages), or at 75% capacity utilisation, 112,500 tonnes. This service is assumed to focus on containers. Therefore, alternatively a quantity of 5,000 TEU p.a. (about 50,000 tonnes) can be transported per direction (50 roundtrips X 1000 TEU), or at 90% capacity utilisation, 4,500 TEU (about 45,000 tonnes).
- The market share of the proposed service will vary between 100% (2002), 50% (2007), and 40% (2012).
- The proposed service will compete with the tramp trade utilising multi-purpose vessels. This leads to the following cargo potential for the proposed service:

**Table 10-5: Cargo Potential for a Regular Service with Multi-purpose Vessels Between Turkmenbashi and Astrakhan/Olya v.v. (in tonnes)**

Route	2002	2007	2012
Turkmenbashi-Astrakhan/Olya	15,000	45,000	45,000

of which containerised	10,000	40,000	40,000
Astrakhan/Olya-Turkmenbashi	15,000	30,000	40,000
of which containerised	10,000	25,000	35,000

## 10.2.2 Freight Rates

### 10.2.2.1 Ferry Services

For the calculation of revenues from ferry operations, information on existing fare rates have been collected. Rail wagons and trucks carried on board ferries are being charged by lane meter, depending on the shipping route. At the time of the consultants' last mission to the Caspian Sea region (June 2001) the one-way freight rate for ferry transport between Turkmenbashi and Baku (165 nm) was quoted at 36 USD per lane meter (a 50% reduction applies to empty rail wagons), which equates to 0.218 USD per lane meter (lm) per nautical mile (nm). For Baku-Aktau the rate is 44 USD per lane meter (USD 0.174 per lm and nm, 50% reduction for empty rail wagons). Considering the distances involved, the consultants classify the rates as high. Therefore, the consultants have assumed significantly lower rates to attract cargo to the proposed new services and also to make allowance for economies of scale due to longer sea distances. The assumed rates vary from 28 USD between Baku and Turkmenbashi (0.17 USD per lm per nm), over USD 38 per lane meter (0.15 USD per lm per nm) between Baku and Aktau, 41 USD between Baku and Amirabad (0.148 USD per lm per nm), to USD 46 USD between Amirabad and Aktau (0.112 USD per lm per nm).

Passenger fares per person have been calculated at 140% of the cargo rate per lane meter. E.g. the one-way fare between Baku and Aktau valid at the time of field research stood at 60 USD per person. According to the consultants' model calculations the one-way passenger fare between Baku and Aktau is 53 USD, which is about 50% of the current airfare of 105 USD between these cities.

**Table 10-6: Ferry Rates between Caspian Seaports (as of July 2001, in USD, incl. VAT)**

From	To	Cargo (per lane meter)	Passengers (I class / IV class)
Baku	Aktau	42	60 / 46
Aktau	Baku	42	60 / 46
Nourshahr	Baku	42	60 / 46
Baku	Nourshahr	42	60 / 46
Aktau	Nourshahr*	48	110 / 60
Nourshahr	Aktau*	48	110 / 60
Baku	Turkmenbashi	36	60 / 46
Turkmenbashi	Baku	36	60 / 46

Source: Various local transport operators, Caspar  
\* via Baku

#### 10.2.2.2 Dry Bulk and Conventional General Cargo

For services on multi-purpose vessels, freight rates were quoted for the route Baku-Turkmenbashi v.v. at 7 USD per tonne of dry bulk cargo (0.042 USD per tonne per nm), and 7 USD per tonne of conventional general (packaged) cargo (0.042 USD per tonne per nm).

Quotations for general cargo and dry bulk for Aktau-Amirabad were in the range of 13 to 14 USD per tonne (0.032-0.034 USD per tonne per nautical mile). In the opposite direction the freight rate for both categories is lower at around 10-11 USD per tonne (0.024-0.027 USD per tonne per nm). As mentioned above, the main cargo flow runs north-south, meaning that having discharged e.g. Kazakh steel in an Iranian port vessels frequently complete the round trip virtually empty. Understandably, vessel operators will accept almost any northbound cargo at almost any rate.

For shipments between Baku and Aktau v.v. shippers pay 12 USD per tonne for dry bulk (0.047 USD per tonne per nm), and 11 USD per tonne for general cargo (0.043 per tonne per nm).

For dry bulk and general cargo from Baku to Amirabad the freight rate is 11 USD per tonne (0.040 per tonne per nm), and in the opposite direction 10 USD per tonne (0.036 USD per tonne per nm).

Dry bulk and general cargo from Turkmenbashi to Astrakhan v.v. pay 16 USD per tonne (0.032 USD per tonne per nm).

**Table 10-7: Shipping Rates between Caspian Seaports (as of July 2001, in USD per tonne)**

From	To	Dry bulk	General cargo
Baku	Aktau	12	11
Aktau	Baku	12	11
Aktau	Amirabad	13-14	13
Amirabad	Aktau	11	11
Amirabad	Baku	10	10
Baku	Amirabad	11	11
Baku	Turkmenbashi	7	7
Turkmenbashi	Baku	7	7
Turkmenbashi	Astrakhan	16	16
Astrakhan	Turkmenbashi	16	16

The ferry trade is virtually monopolised, there being no other ferries in the regional market. This does not apply to other dry cargo trades as multi-purpose vessels from a number of operators compete with one another. The consultants have assumed that a new entrant to the scene will not deviate from the well-known pattern whereby newcomers 'buy' their way into a market by lowering prices, i.e., freight rates. The consultants have further assumed that there will be no all-out rate war as the newcomer is not expected to swamp the market with tonnage which would create a totally unnecessary over-supply. Therefore, the new entrant is expected to enjoy a level of freight rates no more than a shade below the one ruling at the time of field research.

### 10.2.2.3 Containers

Caspian Sea container transport techniques, other than by ferry, are anything but sophisticated, due without doubt to the very limited number of containers actually moving. In early 2001, freight rates for containers between Baku and the Caspian East Coast v.v. on multi-purpose vessels were roughly equivalent to those of container transports by ferry. E.g. between Baku and Turkmenbashi two full 20' containers or one 40' container on a 16m rail wagon would be charged around 600 USD from Baku to Turkmenbashi whereas a 40' container on a 13m road trailer (without articulated truck) pays only 470 USD (excluding port handling charges throughout). Container transports across the Caspian Sea between Iranian and Russian Caspian ports are too few to mention. Rates depend on the number of TEU per shipment and are subject to negotiations. However, similar to conventional cargo, northbound container movements from Iran to Kazakhstan take advantage from the low utilisation rate of northbound ships. The consultants understand that the occasional northbound laden 20' container carried on deck as 'top-up' cargo may be charged less than USD 200, one-way Iran-Aktau, pier to pier. For container transports across the Caspian Sea, the consultants received the following information:

**Table 10-8: Container Freight Rates between Caspian Seaports (as of July 2001, in USD, excl. THC \* )**

From	To	20' one-way full	20' roundtrip (full-empty)	40' one-way full	40' roundtrip (full-empty)
Baku	Aktau	270	400	540	810
Aktau	Baku	270	400	540	810
Aktau	Amirabad	n.a.**	n.a.**	n.a.**	n.a.**
Amirabad	Aktau	200	n.a.**	300	n.a.**
Bandar Anzali	Baku	n.a.	n.a.	n.a.	n.a.
Baku	Bandar Anzali	220	n.a.**	375	n.a.**
Baku	Turkmenbashi	240-300	360-450	480-600	720-900
Turkmenbashi	Baku	240-300	360-450	480-600	720-900
Turkmenbashi	Astrakhan	n.a.**	n.a.**	n.a.**	n.a.**
Astrakhan	Turkmenbashi	n.a.**	n.a.**	n.a.**	n.a.**

Source: Various operators and freight forwarders

\*:THC terminal handling charges

\*\*n.a.: no information obtained

For the purpose of the following calculations the consultants have assumed that a private operator on routes where there is some, but no fierce, competition with ferries should obtain rates close to those paid for container shipments by ferry. For routes without ferry competition, the consultants assumed rates in the range of 80-90% of the level in force at the time of field research.

**Table 10-9: Container Freight Rates between Caspian Seaports (New Services, in USD, excl. THC\* )**

From	To	20' one-way full	20' roundtrip (full-empty)	40' one-way full	40' roundtrip (full-empty)
Baku	Aktau	230	350	450	700
Aktau	Baku	230	350	450	700
Aktau	Amirabad	300	450	600	900
Amirabad	Aktau	200	450	350	900
Amirabad	Baku	230	350	450	700
Baku	Amirabad	230	350	450	700
Baku	Turkmenbashi	180	270	360	540
Turkmenbashi	Baku	180	270	360	540
Turkmenbashi	Astrakhan	250	380	500	760
Astrakhan	Turkmenbashi	250	380	500	760

## 10.3 Cost

### 10.3.1 Investment Cost

Assuming that one of the proposed services was to be operated with owned vessels, the operator would of course have to purchase the ships, be they new or second-hand. Newbuilding prices for robust and basic single-deckers ships in the 3000 tdw bracket are around the USD 4-5 million USD. Shipyards would not quote prices for rail ferries of the Dagestan type unless there was a chance for an actual order, but estimates put the price for a ferry of that type at USD 10 million 'plus'. Accordingly, the consultants have based their calculations for the proposed services on proven market prices for second-hand vessels. One of the key criteria was that the ships had to be 'Volga-Don-Canal fitted', i.e., they would have to be able to transit the canal without undergoing alterations to their superstructures, masts, etc. Whereas that will not normally create problems with ordinary single-deckers of the 3000 tdw category, Dagestan type ferries, if at all available, would have to have their funnel and bridge deck removed and fitted back on completing the canal transit, obviously involving time and money.

The asking price for a Mediterranean-based 3000 tdw single-decker of some 15 to 20 years of age (over-aged, of course, but tonnage of more recent vintage proved far too expensive for this exercise) has been ascertained at about USD 1 million. The highly hypothetical price for a Dagestan type ferry has been estimated at USD 2.6 million. Theoretically ships of the same types could be purchased from Caspian owners, except that the owners of Caspian ferries have let it be known that they will not consider a sale.

Realistically the consultants have for the purpose of the calculations allowed for ship rehabilitation and/or modernisation, resulting in investments of USD 3 million for one ferry and USD 1.2 million for one 3000 tdw multi-purpose single-decker.

Shore-based administration which starts from scratch requires accommodation and office equipment such as furniture, computers, communication devices, etc., estimated at USD 20,000.

### **10.3.2 Charter Hire**

An alternative to operating the services with owned vessels could be the operation with chartered, i.e. with rented, vessels (cf. Chapter 9.3) Disregarding voyage charters which do not apply to liner-type services, there are two main types of charters, viz.: a time charter, in which the owners of the ship provide the vessel itself plus the crew and all other requirements for operating the ship, and a bareboat charter in which the charterer provides the crew and all other requirements.

A brief investigation of the European charter market revealed that there are very few ship owners who might seriously consider to commit their ships into a time of bareboat charter in the Caspian Sea. Even assuming that there are rail ferries for charter, which is doubtful, their owners would hardly be willing to make the alterations to their ship without which it could not transit the Volga Don Canal. The only ferry operators in the Caspian have expressed their reluctance to charter out any of their ferries, certainly in the near future.

Time-chartering a 3000 tdw multi-purpose single-decker from outside the Caspian Sea can prove expensive, if not altogether impossible: The Volga Don Canal transit fees could amount to some USD 40,000 or more, one way; the crew may well have to be paid ITF wages which are many times those earned by littoral States' crews; the Caspian Sea being almost totally unknown to most outside ship owners, and the latter will add a risk surcharge, not least also to cover them against unforeseen incidents in a region where international maritime legislation is not yet firmly established. On the other hand, the consultants understand that Russian ship owners might consider chartering their ships out for Caspian trading, at time-charter rates of around USD 1800 to 2000 (rate level as of March 2001).

For the purpose of the following financial analysis, the consultants have compared running the new proposed services with owned multi-purpose vessels to the operation with time-chartered vessels.

### **10.3.3 Overhead Cost**

Overhead cost have been estimated at the price level obtaining in early 2001 and comprise (1) rental for 150 sqm of office space, (2) salaries etc. for an office staff of one or two managers, two specialists and two clerks, and (3) lump-sums for telecommunication, office material, capital services, and legal, audit and statutory expenses.

#### **10.3.3.1 Office Rental**

To start a new shipping service does not require very much space for shore-based management and administration. The consultants suggest an office of 100 to 150 sqm. Office space e.g. in Baku can be rented at around 12 USD per sqm per month all in, thus a monthly provision of around 1,800 USD should be made for office rental. In case the rental per sqm is higher than indicated above, then the size of office space should be adjusted accordingly in order not to exceed the maximum of 1,800 USD per month.

#### **10.3.3.2 Staff Cost**

Chapters 9.1.3 and 9.1.4 discuss the set-up of a lean shipping company providing limited operational services.

For the purpose of the following financial analysis the consultants have assumed that the managing director is also in charge of sales and marketing, while operations (and if necessary fleet management) will be covered by a senior technical specialist. Finance and administration will be in the hands of one or two senior economic specialists. Two clerks complete the small but efficient team of the new shipping operator.

A brief investigation of the private income structure in the maritime sectors of Kazakhstan, Azerbaijan and Turkmenistan revealed that while the average income from semi-skilled and unskilled work differs significantly (the average income level in Kazakhstan is considerably higher than in Turkmenistan and Azerbaijan), wages/salaries for skilled and highly skilled labour are approximately at the same level. Much depends on the ownership structure of the new shipping company service. If the new service were to be integrated into an existing (state-owned) shipping company, then wages and salaries are expected to be lower than if the company were privately owned and run independently.

In order to be on the safe side, the consultants have assumed that the new service will start as a private company perhaps trading as a joint-venture involving one or even several existing state-owned companies. To attract sufficiently qualified personnel, the company is expected to pay the following monthly salaries: 800 USD to the managing director, 600 USD to a senior specialist and 400 USD to an office clerk. All salaries proposed include social on-costs.

### **10.3.3.3 Sales & Marketing**

In order successfully to start a new shipping service it is important to attract sufficient cargo, preferably from the very beginning. Marketing plays a crucial part in the company's success. Potential customers need to be informed about the features of the service and the benefits of using it. This causes sales and marketing costs for the conception, printing and distribution of brochures and for other promotional activities.

Of course, marketing is not only important in the start-up phase of an enterprise. Constant follow-up activities are necessary to sense new market developments and to react appropriately. Better still is a pro-active and creative marketing strategy designed to further the company's commercial success, and to ensure customer satisfaction.

The consultants have very conservatively estimated the monthly budget for sales and marketing activities at 1,000 USD.

### **10.3.3.4 Telecommunication, Office Material, Capital Services and Contingencies for Legal, Audit and Statutory Expenses**

Central Asian telecommunication markets are not yet fully deregulated, so even a small business operating internationally should make ample provision for telecommunication services. Moreover, office material for the most part is high-priced imports.

Not unusually, a temporary negative cash-flow may be the result of start-up costs and low levels of earnings necessitating debt (e.g. overdraft credit) servicing. Moreover, some provisions for legal, audit and statutory expenses should be made.

The consultants estimate that the latter items amount to about 2,000 USD per month.

### **10.3.4 Ship Running (Fixed) Costs**

The following cost items can be considered fixed (in the short-term) for the operation of a regular liner-type service since they have to borne by the operator quite irrespective of business development.

#### **10.3.4.1 Seafarer Wages**

In case the operator of a new service decides to operate with owned or bareboat-chartered vessel(s), it has to bear all cost related to the manning of the vessel(s). By international standards the model ships used for the purpose of this exercise are decidedly overstaffed.

Crew costs are based on the (1) manning schedules and (2) the wages and social on-costs of the various categories of seafarers. A ferry crew consists of one master, nine officers/ engineers and twenty-two ratings, and a multi-purpose ship crew of one master, nine officers/engineers and eleven ratings. Moreover, per diems must be added for man-days of crew members spent at sea.

The investigation of regional maritime schools and/or colleges has revealed that there are numerous trained seafarers in the Caspian region. Accordingly it is not expected that a new service will have to pay significantly higher wages for seagoing personnel than the present shipping operators on the Caspian Sea. The consultants have based their calculations on reference wages and per diems supplied by a local shipping company. The wages include social on-costs.

The manning schedules differ substantially from the present levels in Caspian vessel operation. A Dagestan type ferry with over 40 crew is heavily overstaffed, and so is a 3000-ton multi-purpose single-decker, which at the time of the last visit of the consultants (June 2001) had a crew of more than twenty. The consultants have scaled down the manning schedules and would add that there further cuts can be made without in any way jeopardising ship safety.

**Table 10-10: Manning Schedule and Monthly Staff Costs for a Multi-purpose Vessel Crew**

Position	Number	Monthly Wage (in USD, incl. social on-costs)	Per Diems (in USD)
Master	1	150	7.5
Chief Mate	1	130	6.0
2 <sup>nd</sup> Mate/Wireless Operator	1	120	5.5
Chief Engineer	1	135	7.0
2 <sup>nd</sup> Engineer	1	115	6.0
3 <sup>rd</sup> Engineer	1	100	5.5
Boatswain	1	85	5.25
Sailor 1 <sup>st</sup> Class/Able-bodied seaman	2	70	4.5
Electrician	1	70	4.5
Fitter	1	65	4.5
Oiler	1	65	4.5
Messboy	1	55	4.5
Cook	1	60	4.5
<b>Totals</b>	<b>14</b>	<b>1,290</b>	<b>Depending on the number of days at sea</b>

**Table 10-11: Manning Schedule and Monthly Staff Costs for a Ferry Crew**

Position	Number	Monthly Wage (in USD, incl. social on-costs)	Per Diems (in USD)
Master	1	180	9.0
Chief Mate	1	150	7.5
2 <sup>nd</sup> Mate/Wireless Operator	1	145	6.75
3 <sup>rd</sup> Mate/Wireless Operator	1	125	6.0
Chief Engineer	1	160	8.25
2 <sup>nd</sup> Engineer	1	140	7.5
3 <sup>rd</sup> Engineer	1	120	6.75
Boatswain	1	100	6.0
Sailor 1 <sup>st</sup> Class/Able-bodied seaman	3	70	4.5
Electrician	1	70	4.5
Fitter	1	65	4.5
Oiler	1	65	4.5
Messboy	1	55	4.5
Steward	3	65	4.5
Cook	2	80	4.5
Cleaner	2	60	4.5
<b>Totals</b>	<b>22</b>	<b>2,060</b>	<b>Depending on the number of days at sea</b>

As a sideline the consultants might add that the total monthly wages (excluding per diems) for 21 seafarers, i.e. the crew of a small ship, of USD 2,060 is less than the monthly remuneration of one (1) able-bodied seaman fixed by the ITF at USD 2,340. This indicates that ships manned by ITF seafarers will bear a severe cost disadvantage compared with local, i.e. Caspian, shipping companies.

Statistically, two-and-one-half crews are required to operate one vessel, allowing for statutory leave, sick leave etc. However, a single ship would be over-crewed with two full crews. The solution is to provide three crews for two ships on the basis of eight months on and four months off, intermittent training periods, etc.

**Table 10-12: Staff Costs (3000-tdw multi-purpose, 14 crew members, 2 vessels, 3 crews)**

	No.	Total (No.)	Total/Month (USD)	Total/Year (USD)
Master	1	3	450	5,400
Officers/Engineers	5	15	1,800	21,600
Ratings	8	24	1,620	19,440
<b>Totals</b>	<b>14</b>	<b>42</b>	<b>3,870</b>	<b>46,440</b>

**Table 10-13: Per Diems (3000-tdw multi-purpose, 14 crew members, 2 vessels, 3 crews)**

	No.	Two vessels	Days at Sea / Month	Total Man-days per Month at Sea	Per Month (USD)	Per Year (USD)
Master	1	2	13	26	195	2,340
Officers/Engineers	5	10	13	130	468	5,616
Ratings	8	16	13	208	955	11,460
<b>Totals</b>	<b>14</b>	<b>28</b>		<b>364</b>	<b>1,618</b>	<b>19,416</b>

**Table 10-14: Staff Costs (Dagestan type Ferry, 22 crew members, 2 ferries, 3 crews)**

	No.	Total (No.)	Total/Month (USD)	Total/Year (USD)
Master	1	3	540	6,480
Officers/Engineers	6	18	2,520	30,240
Ratings	15	45	3,120	37,440
<b>Totals</b>	<b>22</b>	<b>66</b>	<b>6,180</b>	<b>74,160</b>

**Table 10-15: Per Diems (Dagestan type Ferry, 22 crew members, 2 ferries, 3 crews)**

	No.	Two vessels	Days at Sea / Month	Total Man-days per Month at Sea	Per Month (USD)	Per Year (USD)
Master	1	2	13	26	234	2,808
Officers/Engineers	6	12	13	156	1,112	13,344
Ratings	15	30	13	390	1,794	21,528
<b>Totals</b>	<b>22</b>	<b>44</b>		<b>572</b>	<b>3,140</b>	<b>37,680</b>

#### 10.3.4.2 Victuals

The consultants have assumed a monthly ration scale equating to about 70 USD per crew member as being sufficient. This figure has been confirmed by local shipping experts. Therefore, the monthly victualling budget for one ferry should be about 1,500 USD, and USD 1,000 for a 3000-tonne multi purpose vessel.

#### 10.3.4.3 Lubricants

Lubricants are a minor position in the running cost calculation. However, for reason of completeness consumption of lubricants has been calculated at 1 gram per kWh engine power. E.g. for a 3000 tonne vessel of the Gerehman Mehti type with a 972 kW main engine, consumption of lubricants is 23,3kg/day at sea. Assuming 150 days p.a. at sea, annual consumption of lubricants amounts to 3.5 tonnes or roughly 4 tonnes including lubricants for the ancillary diesel engines. During the consultants' last mission to the Caspian Sea (June 2001), lubricants were sold at 400 USD/tonne. The annual costs for lubricants on a 3000 tonne single-decker amount to 1,600 USD.

Likewise, a single ferry operator will have to take into account about 8,000 USD annually for lubricants (6,400 kWh, no shaft generator, 150 days at sea).

#### 10.3.4.4 Insurance

Vessel related insurance is not compulsory, but prudent ship owners invariably take out insurance cover for the main risks associated with operating a ship. The two main categories of maritime insurance cover are Hull and Machinery insurance, and Protection and Indemnity (also referred to as ship owners' liability) insurance.

Of course, the exact premiums for H&M and P&I depend on various parameters including but not limited to the type and size of the vessel, trading area, type(s) of cargo, etc. For the purpose of the following calculation the premiums for the a.m. insurance cover were put as USD 10,000 each.

#### 10.3.4.5 Classification

Ships run by reputable owners are classified by one of the national or international classification societies. Classification is the degree of seaworthiness of a ship determined by a survey based upon her construction and the size, or scantlings, of the materials used in her building. Classification certificates are issued for a definitive period of mostly five years and have to be renewed, or prolonged, as the case may be, on normal expiry or following a major disaster. Classification Societies usually subject ships to annual, or alternatively to continuous, surveys, and to renewal surveys.

Class is neither compulsory nor statutory. However, ships out of Class for whatever reason will find it extremely difficult to obtain insurance cover and will be disregarded by shippers. The majority of vessels operating in the Caspian Sea is classed by the Russian Maritime Register of Shipping, which is one of the ten major classification societies organised in the IACS International Association of Classification Societies.

According to information obtained from the Russian Maritime Register of Shipping, class renewal for a 3000-ton dry cargo vessel (e.g. of the Gerehman Mekhti type) is priced at around 4,500 USD, while for the Dagestan type ferry, class renewal will cost about 10,500 USD.

#### 10.3.4.6 Maintenance and Repairs, Surveys

Maintenance and repairs (M&R) costs of vessels have been estimated as 3 percent of the purchase price. The estimated costs cover the purchase of spare parts and renewals and certain repairs at specialised workshops. Not included are the costs for annual surveys conducted by the classification societies, which are charged separately and estimated at about 20% of class renewal cost.

**Table 10-16: Average Annual Vessel Maintenance Costs (USD)**

	Multi-purpose vessel (3000 tdw)	Dagestan type Ferry
Purchase Price	1,200,000	3,000,000
<b>Annual Maintenance &amp; Repairs</b>	<b>36,000</b>	<b>90,000</b>
<b>Annual Surveys</b>	<b>1,000</b>	<b>2,000</b>
<b>Annual M&amp;R Cost</b>	<b>37,000</b>	<b>92,000</b>

### 10.3.5 Operating Costs

#### 10.3.5.1 Agency Commission

Liner agents will usually be paid a commission on the freight intake for cargo booked by them, and on the freight earned for cargo discharged in their port. Considering the limited quantities expected to be carried by the ships subject to this exercise, commissions have been fixed as follows:

- 2.5% for outward (loaded) and inward (discharged) cargo carried by ferries;
- 5.0% for outward generals and bulk cargo, and 2.5% for inward generals and bulk cargo.

The level of commissions appears to be roughly in line with local practice.

#### 10.3.5.2 Stowage and Lashing Equipment

Costs for stowage and lashing equipment depend on the cargo mix. The consultants have estimated expenses for stowage and lashing equipment for ferries at a low 0.5% of freight revenues, whereas for multi-purpose vessels these expenses have been calculated at 1% of freight revenues.

#### 10.3.5.3 Bunkers

Fuel cost is based on the average service speed and relevant fuel consumption of both vessel types selected, the number of annual operating hours and the number of nautical miles sailed per year.

Caspian Sea ferries consume heavy fuel oil, whereas multi-purpose vessels of about 3000 tdw and of the vintage as currently trading in the Caspian Sea will as a rule consume gas oil. At the time of the consultants' last Caspian mission, the posted price for heavy fuel oil (380cSt) was about 100 USD per tonne, and for diesel oil (MDO) 200 USD per tonne.

Fuel consumption also includes the consumption of auxiliary engines. In the absence of shaft generators, one auxiliary (diesel) engine will be working constantly (24 hours a day), whereas the second auxiliary engine is being used only to supply additional electrical energy. (e.g., when manoeuvring).

From information provided by local shipping operators and shipping experts the consultants have compiled the following parameters for vessel operations:

**Table 10-17: Dagestan-type Ferry: Operating Parameters**

	Consumption
<b>Main engine:</b> Fuel consumption per hour sailing (at 15 knots)	1 tonne heavy fuel oil
<b>First auxiliary engine (constant operation)</b> Fuel consumption per operative hour	41.6 kg marine diesel oil
<b>Second auxiliary engine (only used for manoeuvring and navigation in confined waters):</b> Fuel consumption per operative hour	41.6 kg marine diesel oil

**Table 10-18: 3000-ton Multi-purpose Vessel (~1000 kW): Operating Parameters**

	Consumption
<b>Main engine:</b> Fuel consumption per hour sailing (at 9 knots)	137 kg marine diesel oil
<b>First auxiliary engine (constant operation)</b> Fuel consumption per operative hour	16.6 kg marine diesel oil
<b>Second auxiliary engine (only used for manoeuvring and navigation in confined waters):</b> Fuel consumption per operative hour	16.6 kg marine diesel oil

**Table 10-19: Dagestan-type Ferry: Distances and Sailing Times Between Selected Caspian Ports (at 15 knots)**

String	Distance	Sailing Time (hours) including approach
Baku – Aktau v.v.	253 nm	18
Aktau – Amirabad v.v.	410 nm	29
Amirabad – Baku v.v.	277 nm	20

**Table 10-20: 3000-ton Multi-purpose Vessel: Distances and Sailing Times Between Selected Caspian Ports (at 9 knots)**

String	Distance	Sailing Time (hours) including approach
Baku – Aktau v.v.	253 nm	29
Aktau – Amirabad v.v.	410 nm	47
Amirabad – Baku v.v.	277 nm	32
Baku – Turkmenbashi v.v.	165 nm	20
Turkmenbashi – Olya v.v.	450 nm	51

#### 10.3.5.4 Port Dues

To the consultants' amazement, the subject of port dues proved to be exceptionally difficult to explore. Whereas in the Soviet past, all Soviet ports arguably had fairly identical tariffs, the position has changed radically with the new littoral States apparently trying to demonstrate their independence by creating their very own, and very special, port dues tariff.

Internationally, a dividing line has to be drawn between port dues which have to be borne by the ship, and cargo handling charges of which at least a part is borne by shippers and/or consignees. Not so in the Caspian Sea where also in the case of liner-type services and contrary to, e.g., the internationally accepted Incoterms such as FOB, CIF, etc., cargo handling charges are exclusively absorbed by the cargo interests, but even this rule is not without exceptions.

Official, i.e. printed, tariffs in the various Caspian ports visited by the consultants, with the exception only of Kazakhstan, distinguish between national-flag ships and foreign ships. The latter are burdened with higher port dues. The consultants understand that this may be a retaliation against the Russian practice of charging Russian-flag ships preferential rates for Volga Don Canal transits. At the time of the consultants' field research bilateral agreements between certain littoral States including Azerbaijan and Kazakhstan as also Kazakhstan and Iran, based on the Most Favoured Nation concept had either

already been signed or were in the process of finalisation which eliminated most if not all such discriminatory practices.

International finance institutions and notably the EBRD who assist Caspian port administrations in establishing modern accounting systems have brought pressure to bear on their clients to modernise their tariff systems at the same time. This is beginning to show results.

Vessels calling at Caspian ports are usually subject to several charges from the following list which does not claim to be complete:

- harbour dues,
- channel dues,
- lighthouse dues
- pilotage (usually compulsory for foreign flag vessels)
- mooring and unmooring
- tug assistance (often compulsory)
- anchoring dues
- environmental dues
- port health
- veterinarian, etc. dues
- ice-breaker assistance ( in ports depending on ice-breakers in winter )

The various tariffs in force at the time of the consultants' field research would either show lump sums against the entries, or alternatively, structured rates based on, e.g., ship dimensions, duration of berth occupancy, frequency of ship calls by an individual operator, and even an agency fee which is very unusual (Aktau).

Caspian port dues are high by western European standards. E.g. in the port of Hamburg a 3000-4000 tdw multi-purpose vessel would pay about 2000 USD per call (excluding pilotage). The consultants admit that superficial comparisons do not take care of historical developments, the main commodities moving through a port, the split, where this applies, between actual ownership of port infrastructure and superstructure on the one hand and terminal operations, plus a host of similar items. Basically, ports should be rewarded for giving ships a quick turn-round.

The following table shows port dues totals per call (excluding cargo handling charges) for the various Caspian ports

**Table 10-21: Port Dues (in USD)**

	Dagestan-type Ferry	3000-tdw Multi-purpose Vessel
<b>Baku</b>		
National Flag (paid in Manat)	800	1,200
Foreign vessels	~ 5,000	~ 10,000
<b>Aktau</b>		
National Flag	2,800	~ 6,000
Foreign vessels	2,800	~ 6,000
<b>Turkmenbashi</b>		
National Flag	0	0
Foreign vessel	3,000	~ 8,000
<b>Olya</b>		
National Flag	n.a.	n.a.
Foreign vessels	~ 5,000	~ 10,000
<b>Iranian Ports</b>		
National Flag	n.a.	n.a.
Foreign vessels	~ 6,500	10,500-13,500 depending on the cargo and time spent in port

**Note:** It is assumed that where a national operator charters a foreign-flag ship, dues for calls at the operator's national port(s) will be charged at 'national' rates.

In almost all ports rates are negotiable, especially for regular services or operators guaranteeing a minimum number of annual calls. In such cases ports grant discounts on dues significantly below the printed tariffs.

The interrelationship between the port of Baku and Caspar is very special, and not surprisingly, Caspar ships calling at Baku are given preferential treatment also with regard to dues and fees. Ferries on the Baku/Turkmenbashi run pay an all-inclusive lump sum of USD 800 per call, and multi-purpose ships owned by Caspar are charged a flat fee of USD 1,200 per call. Foreign ships, provided they guarantee a minimum number of calls, may find the port negotiable on the dues.

In Kazakhstan, the port of Aktau has the port tariff system vetted and approved by the Ministry of Transport and Communications and the National Anti-Monopoly Commission. Once approved, the tariffs are not negotiable. The Caspian exception is the ferry terminal which apparently is exempt from the otherwise strict rules of non-negotiable port and handling tariffs. E.g., the Caspar-owned ferry calling at Aktau pays 2,800 USD per call instead of an estimated USD 11,000-12,000 according to the printed tariff. The port would be willing to grant this rate to other ferry operators always provided there was a system of reciprocity.

Ferries engaged in the Baku/Turkmenbashi service are granted a discount of 50% on all printed Turkmenbashi.

For an overview of port tariffs in Baku, Aktau and Turkmenbashi see Annex 6.

For the purpose of the present financial analysis it is assumed that an operator offering a bi-weekly regular service with multi-purpose vessels could negotiate a flat rate of 4,000 USD per call in all Caspian ports. A weekly service could be granted 3,000 USD per call.

For ferry services which have a much shorter dwell time in ports the operator should be able to negotiate even lower rates. A weekly service might reduce port dues per call to 2,500 USD.

#### 10.4 Results

For the purpose of the present analysis the consultants have defined a base case using the above information and assumptions, and also alternative cases with variations of the three key parameters "purchase price of vessel", "shipping rates", and "port dues".

The base case has been calculated both for a ship owning company and for a company deploying chartered ships. The sensitivity analysis concentrates on the more profitable alternative of the two base variants and indicates the reduction in investment cost, the increase in tariffs, and the reduction in cost necessary to reach the key FIRR of 22%, whenever the base case itself is not sufficiently commercially viable. Alternatively it demonstrates the downward risk of increasing vessel prices, decreasing tariffs, and rising cost in case the base case already hints at the financial viability of the respective shipping service.

Port dues have been chosen as a key parameter for the financial sensitivity analysis, since on the one hand it is the single most important cost item in some case accounting for almost 50% of overall cost, on the other hand it seemingly is the item easiest to influence because port dues for liner services offering a certain frequency are in fact open to negotiations.

The results of the following analysis are derived from the data tables in Annex 7.

#### 10.4.1 Aktau-Amirabad-Baku v.v.: Rail Ferry

##### 10.4.1.1 Base case

For the base case of the analysed service the consultants have assumed the purchase of two rail ferries, each having a market price of about 3 mn USD including rehabilitation and modernisation. Thus, the overall investment cost amount to 6 mn USD. The table below shows the annual cash-flow that can be expected based on the information and assumptions indicated in the present chapter.

**Table 10-22: Ferry Service Aktau-Baku-Amirabad: Cash-flow in USD**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Revenues	2,742,050	2,800,370	2,858,690	2,917,010	2,975,330	3,033,650	3,068,290	3,102,930	3,137,570	3,172,210	3,206,850
Fixed Costs	609,160	479,160	479,160	479,160	479,160	599,160	479,160	479,160	479,160	479,160	479,160
Variable Costs	1,769,560	1,764,118	1,779,231	1,781,446	1,783,661	1,785,876	1,787,775	1,789,674	1,791,573	1,793,472	1,795,371
Cash Flow	363,330	544,194	600,299	656,404	712,509	648,614	801,355	834,096	866,837	899,578	932,319

Note: Cash Flow in this context is the result of Revenues less Fixed and Variable Costs.

Clearly, variable cost make up for the major share of total cost, but it is worth noting that the cost of regular port calls account for about one third of overall cost.

The key results of the detailed cash flow for a service with owned vessels are:

- FIRR: 2.4 percent
- Payback Period: 9 years

Obviously, the cash flow surplus is by far not sufficient to generate an attractive FIRR. The reason can be seen in rather high investment cost for the purchase of the two ferries. It takes nine years just to recover the money initially invested.

If operating this service with owned vessels does not seem feasible due to the high investment cost, can time-chartering ferries be an alternative? The financial model gives a negative answer. Only when assuming a time charter rate of 1,200 USD can the consultants generate a positive cash-flow for all years of the time horizon. The surplus ranges from 477 USD in 2002 to 460,000 USD in 2012. This time charter rate is clearly way below the rate quoted by the only ferry owner in the Caspian Sea. Thus, time chartering of ferries does not seem to be a feasible option for operating a shipping service on the Caspian Sea.

##### 10.4.1.2 Risks and Sensitivity

What changes are necessary to render the investigated ferry services profitable? First of all, the potential vessel operator could try to reduce investment cost by negotiating hard and successfully with potential sellers of rail ferries. However, the financial model calculates that a 60%-reduction in vessel

purchase price would be necessary to reach an FIRR of 22%, i.e. the operator would only pay 1.2 mn USD per ferry which is quite unrealistic. Moreover, risks relate not only to financial parameters but also to the availability of suitable vessels since the only ferry owner in the Caspian Sea has informed the consultants that the company does not intend to sell any of its vessels.

In the unlikely case of this company changing its mind the increase in annual revenues necessary to reach an internal rate of return attractive for private investors would amount to 32%. The consultants are convinced that the market is very unlikely to accept a 30%-increase in freight rates (or cargo volumes) due to the competition not only by alternative shipping connections but also by land bridges.

As for the cost side, even by reducing port cost to zero, which effectively is a reduction in overall cost of more than 30%, the consultants could only generate an FIRR of 18.7%, thus failed to reach the key rate of 22%.

#### 10.4.2 Aktau-Amirabad-Baku v.v.: Multi-purpose Vessel

##### 10.4.2.1 Base case

For the base case of this service, which envisages the above regular service provided by multi-purpose vessels, which are much lower-priced and have lower operating cost, the consultants have assumed the purchase of 3000-ton vessels, each having a market price of about 1.2 mn USD including rehabilitation and modernisation. Thus, the overall investment cost amount to 2.4 mn USD. Unfortunately, serving this line with multi-purpose vessels cannot match the level and quality of rail ferry which reduces the expected revenues. The table below shows the annual cash-flow that can be expected, again based on the information and assumptions indicated in the present chapter.

**Table 10-23: Multi-purpose Service Aktau-Baku-Amirabad: Cash-flow in USD**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Revenues</b>	1,127,333	1,299,533	1,471,733	1,643,933	1,816,133	1,988,333	2,047,367	2,106,400	2,165,433	2,224,467	2,283,500
<b>Fixed Costs</b>	358,335	329,335	329,335	329,335	329,335	338,335	329,335	329,335	329,335	329,335	329,335
<b>Variable Costs</b>	915,466	930,103	944,740	959,377	974,014	988,651	993,669	998,687	1,003,705	1,008,723	1,013,740
<b>Cash Flow</b>	-146,468	40,095	197,658	355,221	512,784	661,347	724,362	778,378	832,393	886,409	940,424

Again, variable cost make up the major share of total cost, and again port cost account for a significant part thereof. In the base case port cost have a share of about 45% of overall cost

The key results of the detailed cash flow are:

- FIRR: 11.95 percent
- Payback Period: 7.1 years

Similar to the case of ferry operations, the cash flow surplus is not sufficient to generate an attractive FIRR, though the FIRR is considerably higher than in the ferry case. This is not only due to the lower investment cost for the purchase of two vessels but also to the lower vessel operating cost. It now takes only seven years to recover the money initially invested.

Can time-chartering be a viable option? Even if assuming a time charter rate of 900 USD per day, which is about half of the market rate ruling early in the year 2001, the consultants could not show a positive cash-flow for all years of the time horizon. A small surplus will not occur before 2006, and then increase to 522,000 USD in 2012. However, during the first years of the time horizon the cumulated losses amount to more than 1.2 mn USD. Thus, time chartering of multi-purpose vessels does not seem to be a feasible option for operating the analysed shipping service on the Caspian Sea.

##### 10.4.2.2 Risks and Sensitivity

What changes are necessary to render the investigated service with multi-purpose vessels profitable? Again, the potential vessel operator could try to reduce investment cost by negotiating with potential sellers of 3000-ton multi-purpose vessels. However, the financial model calculates that a 47%-

reduction in vessel price would be necessary to reach an FIRR of 22%, i.e. the operator would only pay slightly more than 600,000 USD per vessel. This again seems to be unrealistic. However, contrary to the ferry case the availability of suitable vessels does not seem to be a problem since there is an international market for adequately sized vessels, and it is technically possible to bring this kind of vessel into the Caspian Sea from outside.

The increase in annual revenues necessary to reach an internal rate of return attractive for private investors would now amount to only 20%. However, given the a.m. competitive environment this increase in freight rates is unlikely to be acceptable to shippers and consignees alike in the Caspian transport market.

Only by reducing port cost to fifty percent of the value assumed for the base case, which effectively is a reduction in overall cost of more than 23%, could the consultants demonstrate an FIRR of 21.7%, thus almost reaching the key rate of 22%.

#### 10.4.3 Aktau-Amirabad-Baku/Aktau-Baku-Turkmenbashi v.v.: Multi-purpose Vessel

##### 10.4.3.1 Base case

The analysis of the previous multi-purpose service has indicated that the financial viability is adversely affected by low expected cargo volumes between Baku and Amirabad, and Amirabad and Aktau. Therefore, the consultants have investigated the financial viability for a similar service as above but with a different routing for the counter-clockwise line. For the base case of this service, the consultants have assumed the purchase of two 3000-ton vessels, each having a market price of about 1.2 mn USD including rehabilitation and modernisation. Thus, the overall investment cost amount to 2.4 mn USD.

**Table 10-24: Multi-purpose Service Aktau-Amirabad-Baku/Aktau-Baku-Turkmenbashi - Cash-flow in USD**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Revenues</b>	1,112,667	1,303,800	1,494,933	1,686,067	1,877,200	2,068,333	2,143,500	2,218,667	2,293,833	2,369,000	2,444,167
<b>Fixed Costs</b>	358,335	329,335	329,335	329,335	329,335	338,335	329,335	329,335	329,335	329,335	329,335
<b>Variable Costs</b>	895,344	911,591	927,837	944,083	960,330	976,576	982,965	989,354	995,744	1,002,133	1,008,522
<b>Cash Flow</b>	-141,013	62,874	237,761	412,648	587,535	753,422	831,200	899,977	968,755	1,037,532	1,106,310

As a result, this service has slightly higher revenues and slightly lower cost. Clearly, the fixed cost remain unchanged. As expected the key results of the detailed cash flow indicate an improvement compared to the afore-analysed multi-purpose vessel service:

- FIRR: 12.6 percent
- Payback Period: 6.5 years

Port cost account for between 60 and 65% of annual variable cost, and slightly more than 45% of overall cost.

Again, the time-charter option does not provide a positive outlook considering the project from an investor's viewpoint. Even calculating a time charter rate of only 900 USD per day, the consultants could not show a positive cash-flow for all years of the time horizon. A small surplus will not occur before 2005, and then increase to 715,000 USD in 2012. However, during the first years of the time horizon the cumulated losses amount to more than 1.0 mn USD. Thus, time chartering of multi-purpose vessels does not seem a feasible option for operating the analysed shipping service on the Caspian Sea.

##### 10.4.3.2 Risks and Sensitivity

The results of the financial calculation indicates that a 43%-reduction in vessel price would be necessary to reach an FIRR of 22%, i.e. the operator would pay slightly less than 700,000 USD per vessel. It cannot be ruled out that there will be an owner somewhere in the world willing (or forced) to

sell his vessel at such a price. However, it is not expected that this vessel will be in a fully operational condition. Consequently, provision must be made for rehabilitation and modernisation, which will considerably increase investment cost. Moreover, it is unlikely to find two vessels at similar (financial) conditions.

The increase in annual revenues necessary to reach an internal rate of return attractive for private investors would now reduce to 16%. Again, it will be very difficult to convince the market to pay higher than the going rates assumed for the purpose of the present analysis. Moreover, as time passes on the Caspian Sea region is expected to become an even more attractive market for goods and services. Given that the Caspian transport market will experience a development similar to that of its western counterpart then transport tariffs and particularly maritime freight rates are expected to remain constant at best or even drop over time.

By reducing port cost to fifty percent of the value assumed for the base case, which effectively is a reduction of overall cost of about 22%, the consultants could generate an FIRR of 21.8%, thus almost reaching the key rate of 22%.

#### 10.4.4 Baku-Turkmenbashi v.v.: Multi-purpose Vessel

##### 10.4.4.1 Base case

Baku-Turkmenbashi has traditionally been the most important link across the Caspian Sea. Today, this link is mainly served by a ferry line. The consultants have analysed whether there is room for an additional regular service with multi-purpose vessels. To establish this service only one vessel would be necessary to guarantee a service with a weekly frequency, reducing initial investment cost to 1.2 mn USD.

Table 10-25: Multi-purpose Service Baku-Turkmenbashi - Cash-flow in USD

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Revenues</b>	432,000	514,080	596,160	678,240	760,320	842,400	909,120	975,840	1,042,560	1,109,280	1,176,000
<b>Fixed Costs</b>	236,731	212,231	212,231	212,231	212,231	226,731	212,231	212,231	212,231	212,231	212,231
<b>Variable Costs</b>	422,334	429,311	436,288	443,265	450,241	457,218	462,889	468,561	474,232	479,903	485,574
<b>Cash Flow</b>	-227,065	-127,462	-52,359	22,745	97,848	158,451	234,000	295,049	356,097	417,146	478,195

The results clearly indicate that this service cannot compete with the almost daily ferry services. Revenues remain low, thus within the given time horizon the investor barely recovers his investment. The financial internal rate of return is even negative. The key results of the detailed cash flow are:

- FIRR: -0.2 percent
- Payback Period: 10 years

Port cost account for a very large share of the cost side. Between 60 and 70% of annual variable cost, or slightly less than 45% of overall cost can be attributed to vessel calls in ports.

Even assuming a time charter rate of 900 USD per day, the consultants could not generate a positive cash-flow before 2008 the cumulated negative earnings summing up to almost 1.3 mn USD. To generate positive cash-flows from 2005 onwards the consultants had to lower the time-charter rate to an unrealistic level of 400 USD per day. Thus, time chartering of multi-purpose vessels does not seem a feasible option for operating the analysed shipping service on the Caspian Sea.

##### 10.4.4.2 Risks and Sensitivity

The realisation of the analysed shipping service does seem rather hopeless. This is also indicated by the sensitivity analysis. With respect to variations of the vessel purchase price, the regular multi-purpose service between Baku and Turkmenbashi can only bear about two percent of the assumed investment cost.

The increase of revenues necessary to reach an internal rate of return attractive for private investors, must be in the range of 45%. Given the present market environment and the global trends in transport tariffs, this high increase in rates seems to be out of the question.

Likewise, only in the extremely unlikely event of zero port cost, which effectively is a reduction in overall cost of almost 45%, could the consultants generate an FIRR of 22%, the key rate for a private investor.

#### 10.4.5 Turkmenbashi- Astrakhan/Olya v.v.: Multi-purpose Vessel

##### 10.4.5.1 Base case

The service between Turkmenbashi and Astrakhan/Olya is based on the assumption that the agreement between Russia and Turkmenistan for the integration of Turkmenbashi into the Nostrac Corridor comes into force and proves to be a viable option with respect to transit procedures and overall transport chain cost. In order to run a service concentrating on the expected container volumes only one multi-purpose vessel is necessary to guarantee a weekly service since vessel dwell times in ports are expected to be rather short (due to the productivity advantage of handling containerised cargo). Thus, investment cost amount to 1.2 mn USD.

**Table 10-26: Multi-purpose Service Baku-Turkmenbashi - Cash-flow in USD**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Revenues</b>	514,615	687,692	860,769	1,033,846	1,206,923	1,380,000	1,418,462	1,456,923	1,495,385	1,533,846	1,572,308
<b>Fixed Costs</b>	236,731	212,231	212,231	212,231	212,231	226,731	212,231	212,231	212,231	212,231	212,231
<b>Variable Costs</b>	507,832	522,543	537,255	551,967	566,678	581,390	584,659	587,928	591,197	594,467	597,736
<b>Cash Flow</b>	-229,947	-47,082	111,283	269,649	428,014	571,880	621,572	656,764	691,957	727,149	762,341

The results of the financial analysis indicate that a positive cash-flow can be achieved already from 2004 onwards. In 2012, the positive annual cash-flow has increased to more than 760,000 USD giving hope to achieve the benchmark FIRR of 22%. However, the key results of the detailed cash flow analysis reveal that even this service will fail to attract private investors under the market environment as of the first part of 2001

- FIRR: 15.9 percent
- Payback Period: 6.1 years

Port cost still account for a considerable share of between 50 and 60% of annual variable cost, and slightly less than 40% of overall cost.

As for all previous analyses, time chartering does not provide a feasible option since naturally the charter rate does not only have to cover all cost but also includes a profit margin for the vessel owner. A market charter rate of 1,800 USD gives negative cash flows until 2006 accumulating to losses in the range of almost 2 mn USD. Even if we assume a time charter rate of 900 USD per day, which is about half of the going market rate, the consultants could not generate a positive cash-flow for all years of the time horizon. A small surplus will not occur before 2005, and then increase to 570,000 USD in 2012. However, during the first years of the time horizon the cumulated losses amount to more than 400,000 USD.

##### 10.4.5.2 Risks and Sensitivity

An internal rate of return of 16% for the base case raises hope to achieve the benchmark under slightly changing conditions. A reduction of about 35% in investment cost is necessary to render this service financially viable. Thus, an investor would ceteris paribus pay slightly less than 800,000 USD for a 3000-twd multi-purpose vessel operating between Turkmenbashi and Olya. However, similar comments as for the service between Turkmenbashi and Baku discussed above also apply here.

The increase in revenues necessary to reach an internal rate of return attractive for private investors should be around 11%, while by reducing port cost by thirty-five percent of the figure assumed for the

base case, which effectively is a reduction of overall cost of almost 15%, the consultants could generate an FIRR in the range of the key rate of 22%.

Looking at the bare figures, the service between Turkmenbashi and Olya focusing on container shipments seems to be the most interesting of the five services analysed above. However, this service perhaps more than others is associated with risk not related to financial parameters since the underlying forecast for traffic between Turkmenbashi and Olya is subject to very restrictive assumptions. Much depends on political moves within the Central Asian transport market and the timely creation of suitable and efficient infra- and superstructure along the Nostrac corridor to make the investigated service a commercially viable option for a new shipping service across the Caspian Sea.

## 10.5 Conclusions

The result of the financial analysis for the five identified shipping services clearly indicates that investment into shipping services is a business with low expected rates of return. The payback period is comparatively long by any standards.

The analysis of the base cases revealed that of the five options, a container service between Turkmenbashi and Olya holds most promise. However, much depends on the development of sufficient cargo volumes within the frame of the politically promoted Nostrac corridor between the Indian sub-Continent and Russia. The consultants do not expect the full implementation of this corridor in the near future and therefore assess the downward risk for such a service as fairly high.

The financial analysis compares the purchase and operation of owned vessels with the operation of time-chartered ships at market charter rates ruling in the region during the first half of 2001. However, time-chartering vessels instead of operating owned vessels has proven to be an even worse option due to the level of time-charter market rates. However, even the results of the sensitivity analysis of charter-rates do not suggest that chartering would be an instrument superior to the purchase of vessels. For none of the services was it possible to achieve revenues sufficiently high to cover these time-charter rates plus operating costs and overheads.

If 22% FIRR is regarded as a critical benchmark for the financial project viability, this rate can be attained by stretching very theoretical, as opposed to realistic, assumptions.

The main obstacle of the analysed investment is the high initial investment relative to the low revenues generated by the freight rates. A decrease in the investment costs leads to a significant improvement of the FIRR but, due to the low starting level of the FIRR, it takes considerable decreases in investment costs into ferries or multi-purpose vessels before a private investor may be adequately rewarded for the risk of his engagement

Variations of financial key parameters have shown that these unfavourable results for all services are relatively stable, not only with respect to overhead costs, which play only an insignificant part, but also stable with respect to variable cost. Variable cost are dominated by vessel-related port cost which on average account for more than 50% of variable cost, and in some cases even up to 50% of overall cost. This result clearly underscores the consultants' statement that Caspian ports are expensive. Calculations discussed above revealed that the financial results are sensitive to changes in port cost. However, base results are for most services well below the benchmark FIRR of 22%, so reductions in port cost have to be rather large before the analysed services can be rendered financially viable.

Another option for improving the FIRR is to increase the revenue side. E.g. for the Turkmenbashi-Olya an increase in freight rates of about 11% is necessary to reach the benchmark FIRR. However, it will be very difficult to convince the market to pay higher than the rates assumed for the purpose of the present analysis. Moreover, as time passes the Caspian Sea region is expected to become an even more attractive market for goods and services. Following global trends in transport markets and given that the Caspian transport market will experience a similar development other international transport markets, overall transport cost and more particularly, freight rates are expected to remain constant at best or even drop over time.

To sum up, under the present market conditions and the institutional environment governing shipping across the Caspian Sea it is very difficult to establish any new financially viable shipping services even for local operators or operators having regional know-how and a regional (management) infrastructure.

## 11 Lessons Learnt and Recommendations

The consultants propose to submit a number of suggestions which if implemented they feel can contribute towards an improvement of the situation. Subject always to the availability of sufficient amounts of cargo it is not impossible to envisage the eventual appearance of new and successful shipping services as between littoral Caspian States and even beyond that.

### 11.1 Lessons Learnt

- Customer oriented company attitudes are in their infancy in the Caspian maritime sector. Active and innovative marketing strategies have not been implemented yet.
- Co-operation among shipping lines may be frequently found elsewhere in the maritime industry has not been discovered yet as a means of improving service frequency, e.g. through mutual slot chartering arrangements, and quality, and of reducing cost.
- Part of the Caspian shipping market is still monopolised.
- Regular conventional liner services in the past have been suffering from cargo shortage, but also from inadequate marketing strategies.
- Freight rates and port tariffs seem to be rather high, but the consultants acknowledge that short sea distances and small ships do not automatically translate into low freight rates. Some transport operators complain that the stretch across the Caspian Sea (port to port) accounts for a substantial part of the overall transport cost from Central Asia to Europe. Tariffs do not always seem to relate to cost but to the "what-the-traffic-can-bear" principle but economies of scale are rare. This does not help the competitive position of the TRACECA route against land-based alternatives. Though the problems are clearly perceived by various maritime entities involved in transport operations along the TRACECA route, there seems to be little initiative for joint (cross-border, regional) initiatives to improve the competitiveness of the trans-Caspian route.
- Port tariff systems in the Caspian have the effect of punishing vessels for low productivity of shore-based handling procedures. However, ports do not always have full control over their own tariff structure as the latter is subject to political influence. Moreover, some ports have only very limited room for negotiating rebates and discounts with customers irrespective of the size and attractiveness of an individual account.
- The modernisation of the port of Aktau together with the construction of the Uzbek rail stretch between Uchkuduk and Nukus has added to the attraction of the TRACECA route as now two alternatives exist to reach destinations east of the Caspian Sea from Baku. If one route is blocked or becomes non-competitive, traffic can be easily re-routed.
- Trade relations between the beneficiary states are developing at a slow pace. Most cargoes transported across the Caspian Sea consist of transit traffic with oil and derivatives accounting for the lion's share but being a special type of cargo.
- Modern transport philosophies are conspicuous by their absence from the Caspian region, with certain exceptions confirming this rule. Along the stretch across the Caspian Sea there is no "end-to-end" strategy and an almost total lack of the basic concept of the supply chain. As long as each participant (or link in the chain) tries to maximise its profit regardless of what happens further up or further down that chain, there can be no progress. Once all links in the chain are prepared to facilitate true through transports by simplifying, technically and administratively the various interfaces, cargo will take note and may well stop looking for other, smoother, less expensive routes.
- In some Caspian littoral countries ports are considered cost factors for shipping lines which own the ports. Instead, ports should be transformed into independent entities which will make them important nodes in the transport chain. Flag discrimination through the medium of port tariffs is still considered by some as an adequate instrument to protect the commercial interest of the national carriers. The consultants suggest that this attitude is obsolete and counter-productive in the medium to longer term.
- The implementation of international maritime rules and regulations as well as maritime legislation which should sit comfortably with international maritime legislation.

- The consultants come down firmly in support of an early, and mutually acceptable, settlement of the many questions attached to the status of the Caspian Sea in international law. The sooner this matter has been satisfactorily settled, the easier, the consultants suggest, will it be for the Caspian shipping industry to find ways and means to co-operate on a regional basis.
- Political forces which may not be under-estimated to the north and the south of the Caspian Sea build up political pressure to interfere with the future development of the TRACECA corridor.
- The results of the financial analysis have indicated that under the existing conditions it is almost impossible for a profit-oriented operator to establish new shipping services in the region.
- The conditions of the Caspian shipping market are not favourable for foreign (or third-flag) shipping companies regardless of origin or nationality, to enter this market.

## 11.2 Recommendations

Lessons learnt by the consultants led to the following recommendations for future actions, some of them are already being put into effect.

- The beneficiary states need stronger transport institutions, particularly maritime administrations independent from actors in the maritime markets. National maritime codes under discussion in Kazakhstan, Azerbaijan and Turkmenistan in the first half of 2001 may well be the first step towards the creation of such institutions.
- The Intergovernmental Joint Commission should explicitly include the Caspian maritime sector when considering the harmonisation of transport procedures and regulations in the TRACECA region.
- Turkmenbashi is an important node within the TRACECA corridor. Therefore, Turkmenistan should be encouraged to take an active part in the Intergovernmental Joint Commission.
- The Caspian littoral states should be encouraged to implement the international rules and regulations already signed by the national Governments. This will help to find a common base for negotiations on e.g. a joint standard for vessels operating on the Caspian Sea, navigational safety regulations, safety in ports. Etc.
- The Caspian littoral states should be encouraged to end the regime of flag discrimination in its various shapes and forms in the Caspian region and in force with regard to the navigable access to international waters.
- Other shipping companies should not be seen as enemies but as commercial competitors. Shipping operators should be encouraged to co-operate wherever such co-operation may produce tangible results in terms of better service, improved capacity utilisation, reduced cost and customer satisfaction. Co-operation should not eliminate sound competition.
- Truly independent port structures enabling the ports to have a more active role in negotiating handling rates and port dues should be established.
- The consultants propose to organise round table conferences involving ports and shipping lines which should not be overloaded with political issues. The participants should discuss practical issues of vessel and port operations. The objective is to identify areas of potential efficiency gains at the ship-to-shore interface which will extend to a port and shipping companies interface and will contribute towards the improvement of the Caspian shipping scene.