

Development of the Port of Baku
Port Master Plan
Executive Summary
Phase III Final Report,
Vol I
17 November 1997

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Volume I

Executive Summary

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1. Introduction

This Final Report of the Port Master Plan Study represents the technical report of the "Takis/TRACECA - Management Assistance and Training Project" for the Port of Baku. It is the final report according to the terms of reference. The report contains on one hand all relevant findings of the project which have also been reported in the previous phases reports, on the other hand the elaborated port development concept and feasibility calculation for necessary investments are outlined according to the latest stage of discussions, conclusions and agreed proceeding with the Port, the respective authorities of Azerbaijan, the Takis management unit and monitors, the European Bank and their technical advisors, and other interfacing Takis projects such as the railways project (Tewet) and the ferry terminal rehabilitation project (Ramboll). Changes to the draft final report have been integrated into the report. Also, comments and new developments have been taken into account in the tender documents.

In general, the situation of the Port can be described as difficult, because of the recession which has not been overcome yet, the economic recovery of Azerbaijan is emerging slowly and the future transport patterns are establishing only gradually. Further, the typical future cargo handling activities are not yet clearly visible, a container block train between Poti and Baku has meanwhile been established in the course of the railways project, but it is not yet commercially operated, so the attracted cargo volume is lower than the actual potential. Likewise, the first consortia for oil exploration have established and started their first activities, but in terms of transportation the concerned cargo volume will be generated only in the forthcoming years. The same applies to the recovery of the industrial production. The described situation is not only valid for Azerbaijan's economy, it even applies to the other countries of the Caucasus and Central Asia.

Container handling facilities are virtually not existing in Azerbaijan. Therefore, the Port master planning has paid attention to this in order to equip the Port with suitable cargo handling facilities for the future transit transport along the TRACECA route and for the national Azerbaijan economy.

During the project phase a consent among the Port, the Railways and the authorities has been reached in so far, that the first container terminal of Baku should be established in the Port in order to serve the needs of the local industry and the transit transport to Central Asia. It is obvious that the future cargo handling volume will require further handling facilities in Baku, because container transport to Baku will increase. Therefore, investments for suitable handling facilities are important, because they are a vital element of the infrastructure for containerisation.

Within this economical environment the port master planning developed a concept for the Port considering the following factors:

- Rehabilitation of basic port structures in order to continue port operations
- Establishment of a multi modal container terminal in the Port to handle the initial cargo volume
- Only minimum investment should be made, not to burden the Port, and to allow a commercial operation of the cargo handling
- Provision of a commercial concept for the Port to be an attractive partner in the freight industry

This Phase 3 Final Report is structured into six volumes with following content:

Volume 1	Executive Summary
Volume 2	Traffic Forecast and Economic Assessment
Volume 3	Port Development Plan
Volume 4	Civil Engineering Assessment

Volume 5	Environmental Analysis
Volume 6	Financial and Economic Impact Analysis

Volume 2 presents a detailed traffic forecast by commodity and by country for the period 1996 - 2015, a macro-economic assessment and an analysis of the modal split of the future cargo transportation.

Volume 3 is the Port Development Plan. Additionally to the assessment of the current port operations, the cargo handling equipment and the existing port marine crafts, this volume contains recommendations for the future port development. In addition to the draft final report bulk cargo operations have been taken into consideration and included.

Volume 4 contains the civil engineering assessment and recommendations. Further, a design report for the recommended construction work and a detailed budget estimate for the allocated investments are given, as they are recommended by the Consultants.

Volume 5 contains an outline for the environmental analysis based on the "Scoping" exercise and data collection.

Volume 6 contains the feasibility calculations of the projected investments for the high growth, the low growth and the most likely forecasts, as well as an economic impact analysis.

The first five volumes of the present report give recommendations for the future development of the port. Investments proposed there are considered to be desirable and realistic in order to equip the port for the future. But in the „Financial and Economic Impact Analysis“ made in Volume 6 only the minimum investments which have a realistic chance to be financed by credits in the nearest future are taken into account in order to decrease the planned loan to a minimum and lessen the burden for the port as much as possible.

2. Background

In order to secure sustainability of the efforts the EU is putting into the TRACECA programme, the EU expressed its intention to foster projects that eliminate physical bottlenecks or increase considerably the capacity of the TRACECA Transport link. As the Port of Baku is one of the important parts of this transport link, several studies have been undertaken during the last years, aiming to arrange investments for the improvement of the port's infrastructures.

One of the main concerns is the rise of the sea level. Due to this, part of the Port facilities have been either abandoned or are threatened seriously if the trend continues. However, the sea level measurements of the last year seem to indicate that the trend of rising is slowing down, if not reversing. Two studies aiming at the preparation of tender documents for improvement works are ongoing at the moment. These studies are financed by TACIS within the TRACECA programme:

- The redesign of the Ferry Terminals in Baku and Turkmenbashi.
- The renovation of the general cargo facilities in Baku (the present addendum to the HPTI Management Assistance and Training Project).

3. Traffic Forecast and Economic Assessment

The economic output of Azerbaijan as measured by the gross domestic product (GDP) has been in continuous decline since 1990. Measured on an index with 1990 equal to 100 the output in 1995 is 39.2. The decline is expected to abate in coming years. From around the turn of the century increases in the oil production as a result of a resurgence of the oil industry spurred by new investments by international oil companies is expected to ensure economic growth above the average compared to the other countries in the region. The political uncertainty in Azerbaijan concerning the conflict with Armenia over Nagorno Karabakh and the political unrest in Georgia and Chetchnya may tend to cloud the economic outlook.

The cargo volumes handled in the port have dropped dramatically until 1995, while the preliminary cargo statistics for 1996 indicate a moderate recovery. This is illustrated in Table 1-1 below:

Table 1-1 Cargo Handling Volume of the Port of Baku

Types of Cargoes/Year	1987	1991	1992	1993	1994	1995	1996
Total Dry Cargo	1,238.1	897.4	688.5	518.1	407.3	142.0	163.4
Total Ferry Traffic	5,850.0	1,920.1	1,094.8	638.5	553.7	781.5	472.6
Total Liquid Cargo	n.a.	8,671.5	3,556.0	3,370.7	869.4	91.0	85.3
Total Turnover	n.a.	11,489.0	5,339.3	4,527.3	1,840.4	1,014.5	721.3

Source: Port of Baku

From a review of the expected economic development and transportation infrastructure in the hinterland of the Port of Baku, comprising the Central Asian republics in addition to the republics of Georgia and Armenia, it can be concluded that the port of Baku could be developed and re-emerge as a gateway for the transportation requirements of the region.

A mainstay of the position of Baku as a transportation gateway has been the ferry services operated by the Caspian Shipping Company. In the future the establishment of the TRACECA rail and road links between the Georgian ports of Poti and Batumi and Baku with further links to the Central Asian republics will again not only revive the ferry link across the Caspian Sea, but will also have the potential of attracting transit cargoes to the Port of Baku, primarily in the form of containers to be transhipped to and from the other Central Asian republics. The re-emergence of the oil industry and the substantial investments expected to be made by the international oil companies will create new cargo opportunities, particularly in the form of containerised cargoes, for the Port.

Several shipping companies in addition to the Caspian Shipping Company are providing water transportation services to and from the port of Baku and in the Caspian Sea and on the Russian waterway system. Given that Azerbaijan authorities and the Port of Baku will allow foreign flag operators to serve the transportation requirements of the country, more than adequate transportation capacity is expected to be available.

"Bottlenecks" in the form of the limited navigation season (approximately six months of the year) and draft restrictions on the Russian waterways combined with the Russian government policy of limiting access to the waterways to Azerbaijan flag vessels as a means of putting political pressure on the Azerbaijan government, are limiting the market opportunities for waterborne transport to and from the Port of Baku. Competition from the alternative rail-routes via Chetchnya when and if reopened could also present competition for the Port.

Other institutional and invisible or intangible barriers that may act as barriers to the development of the business of the port are in the main:

- Lack of a commercial, professional attitude among port management and operational personnel, which is a heritage of the former Soviet system where no competition existed.
- insufficient co-operation between the various institutions of the transport chain along the TRACECA route, such as the port, railways, shipping lines, customs, police, forwarding companies and black sea ports

A review has been made of the transportation cost of alternative routes. Due to the constant rate changes and the fact that the rates at present do not necessarily reflect the actual cost of transportation, it was concluded that this analysis should be based on estimates of the actual transportation costs rather than on existing tariffs. The observations and conclusions that can be drawn from this analysis for bulk cargoes are in the main:

- Water transportation is the competitive alternative for cargoes to and from the Southern European region represented by the North Adriatic and Northern Europe/Baltic region represented by St. Petersburg.
- The rail corridor through Chetchnya is the lowest cost alternative for bulk cargoes to and from Western Europe represented by Frankfurt and is also a serious competitor to water transportation to and from St. Petersburg. Cargoes on this route to and from the Central Asian republics will use the ferry service between Baku and Turkmenbashi.
- The TRACECA route is the lowest cost transportation alternative for bulk cargoes to and from the Black Sea region and the United States, and will represent the best alternative transportation route for bulk cargoes to and from Southern Europe when the waterways are closed during the winter.
- Elimination of the draft restrictions will change the competitive position for bulk cargoes to and from Western Europe represented by Frankfurt and will make water transportation the low cost alternative for this region. Furthermore, it will make water transportation to and from Northern Europe represented by St. Petersburg even more competitive.

For general cargoes the following observations and conclusions can be drawn:

- The TRACECA route is the lowest cost alternative for the Black Sea region and the United States. Like for bulk cargoes, the TRACECA route will be the alternative route to water transportation to and from Southern Europe.
- The Chetchnya corridor is the lowest cost alternative for general cargoes to and from Northern Europe (St. Petersburg) and Western Europe (Frankfurt). In both cases the Baku - Turkmenbashi ferry will be used to and from the Central Asian republics.
- Water transportation is the most cost effective mode of transportation for general cargoes to and from Southern Europe represented by the North Adriatic region. The TRACECA route will represent a competitive alternative when the inland waterways are closed during the winter.
- The elimination of the draft restrictions on the inland waterways will shift the competitive position of general cargoes to and from the Northern Europe/Baltic route in favour of water transportation

- The elimination of the draft restrictions on the inland waterways will shift the competitive position of general cargoes to and from the Northern Europe/Baltic route in favour of water transportation and further increase the existing competitive advantage for general cargoes to and from Southern Europe. For the other regions the elimination of draft restrictions will not change the competitive situation.

From a review of the general development trends in the world transportation industry that may influence the future development of the Port of Baku, it is concluded that the opening of the TRACECA route, the developments of the oil industry in the region and the general recovery of economic activity both in Azerbaijan and the other Central Asian republics, the overall volume of general cargoes, most of which will be containerised in the relatively near future, will create the need for the establishment of a Multi Modal Container Terminal in the Baku area. The establishment of such a terminal in the Port of Baku will represent a significant business opportunity for the International Sea Port of Baku, which will also greatly enhance the port's marketability as a multi modal cargo handling centre and thus create new business opportunities. The time frame, for which this business opportunity will be available to the port, will be relatively short, and immediate action should therefore be taken by the port management to establish a Container Terminal in the port

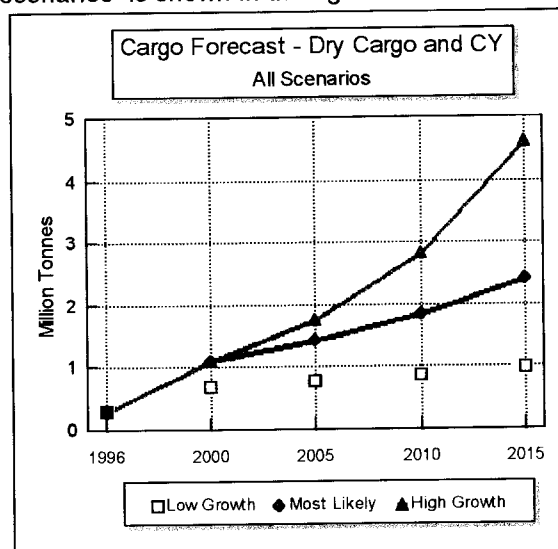
Other business opportunities and a challenge for the port will be to attract new operators to establish both bulk and regular liner services between Baku and the other ports in the Caspian Sea and on the Russian waterway system.

Based on a review of economic and cargo statistics combined with interviews with shippers and consignees, freight forwarders, officials in ministries and the ports in both Azerbaijan and Turkmenistan a baseline for the year 2000 of the cargo flows that can be expected through the Port of Baku, both through the cargo terminal as well as through the future Container Yard (CY) in the port, was developed. In addition a scenario analysis was performed to forecast the expected cargo flow developments to the year 2015 under three scenarios. These are:

- A most likely scenario
- An optimistic/high growth scenario
- A pessimistic/low growth scenario.

The projected cargo flows under the three scenarios are summarised in Volume II in Table 5-9, Table 5-10 and Table 5-11.

The development of all three scenarios is shown in the figure below:



- Cargoes generated from Azerbaijan's trade with countries with ports within the Caspian Sea basin. These can be considered captive cargoes, for which water transportation will have a competitive advantage.
- Bulk, neo-bulk and general cargoes shipped on the inland waterway system to and from Northern Russia, Northern Europe and the Baltic region via St. Petersburg on the waterway system.
- Transshipment cargoes coming by rail to and from Ukraine and Southern Russia to and from Iranian ports. Some of these cargoes will be transhipped to and from other Middle East countries in addition to India and Pakistan.
- Cargoes that for reasons of dimensions, weight and other physical characteristics cannot be handled by rail or truck and consequently have to be handled on ships via the Russian waterways and on the Caspian Sea.
- The main volume of cargoes handled will be transit cargoes coming on or destined for transshipment on the TRACECA route and the Chetchnya rail corridor. This traffic will be rail-cars in addition to increasing volumes of trucks and containers, most of which will be shipped onwards on the ferry connection between Baku and Turkmenbashi.

The forecasted cargo volume has been examined in respect of the various modes of transport and a model for containerised cargo has been assessed (See Figure 5 and 6, Volume II). The detailed modal split for the three scenarios is shown in the tables 5-12 to 5-13 of Volume II.

The modal distribution of containerised cargo for the most likely scenario is shown in the table below:

Mode of Container Transport	Import	Export
Railway Transport - traditional	2,900 TEU	2,900 TEU
Railway Transport - Block Train (Poti - Baku - Poti)	11,600 TEU	11,600 TEU
Railway - Trans-Siberian Land-Bridge (Ferry)	500 TEU	500 TEU
Caspian Sea / River vessels	2,100 TEU	2,100 TEU
Total Container Handling	17,100 TEU	17,100 TEU
for local Consignees / Shippers in Baku	13,600 TEU	13,600 TEU
for transfer to the Ferry	3,500 TEU	3,500 TEU

This distribution shows the significant share of the future multi modal container handling for cargo using the block train between Baku and the sea port Poti.

If the Port of Baku is successful in establishing the port as a multi modal container terminal in co-operation with the railways, with the seaport of Poti and with the major container operators, the port will also handle substantial volumes of containerised cargoes destined for or originating in Baku and its hinterland.

The commercial attitude of the port management to conduct business is a key prerequisites for the future success of the Port to attract cargoes that are available for handling through the port.

In this respect it will be necessary for the Port to:

- Market and sell its services to the shippers and consignees both as an independent operation and in close co-operation with ship operators and other transportation companies, their representatives and intermediaries, serving both the shippers and consignees and the transportation companies.
- Market and sell the services of the port to attract shipping companies and other transportation companies to use the port as part of their services to serve the needs of the transportation users. In this connection it is important for the port to recognise its that its primary business is cargo handling and not enter into competition with its customers/user and their representative. For example, it would be detrimental to the interests of the port to establish freight forwarding, shipping agency or other services in competition with other commercial entities.
- Ensure operation and productivity according to normal world standards. The transportation industry is an international business, and as such the user of the port services will expect that the productivity, the operating standards and the port and cargo handling charges of the port are maintained according to international norms and standards.

For the further development of the Port as a cargo centre, serving the industrial area of Baku, supporting trading and handling transit cargo to central Asia, the following steps for the Port are important:

- Establishment of a multi modal container terminal at the Port of Baku in conjunction with the Ferry Terminal and the General Cargo Complex
- Establishment of a Freeport at the Port of Baku in order to support trade and transit cargo handling for the Central Asian States (a framework study for a free port at Baku Port is attached to the Annex of Volume II of the Report).

4. Port Development Concept - Feasibility

Based on the traffic forecasts, the economic evaluation and the operations and engineering assessments the Consultants recommend a rehabilitation and development programme that is based on the following premise:

- The Main Terminal ("main complex") of the port will be rehabilitated and used as a "Multi Purpose" / "Multi Modal" common user terminal. The necessary facilities and equipment items will be made available.
- The container traffic operations at the Ferry Terminal will be executed jointly with the container operations of the Main Terminal.
- The Timber Terminal will be included in the rehabilitation programme at a later stage, when the necessity for additional facilities arises
- The rehabilitation of the Absheron Oil Terminal is not included in this proposal. The necessary works should be done with the participation of the main users and part-owners.

The investments to be made under this development programme include rehabilitation and construction of the basic infrastructure of the port as well as rehabilitation, replacement and acquisition of new cargo handling equipment. The total investments envisaged are summarised in the table below as follows :

Summary of investments in the ISPB ('000 USD)

Investment type:	Phase 1 - year 2000	Phase 2 - year 2005	Phase 2 - year 2010	Phase 3 - year 2015
Quartermen, renov. of surfaces and gen. items	10,888	8,450	999	
Buildings and utilities	3,299	4,550		
Rail mounted gantry cranes	0	0	2,300	2,300
Rail mounted yard cranes for railroad operations	0	0	1,500	1,500
Quay cranes	0	0	0	0
Reach stackers	1,200			
Empty container stacker	220			
Forklift truck 42 t	300			
Forklifts	84	168		84
Maintenance, tractors/tugmasters etc	480	240	240	90
Tandem trailer			40	
Pick up trucks, minibuses, cars	110			
Stevedoring equipment	150			
Workshop, training and eqpt. etc.	310			
Total investments	17,040	13,408	5,079	3,974
Investments to be financed by:				
Loans from EBRD	15,976	13,408	5,079	3,974
Grants from the European Union - Tacis	1,064	0	0	0

The investments in container handling equipment is scheduled to be acquired in three Phases. Phase 1 will be up to the year 2000 coinciding with the completion of the Phase I construction work of the berths and other infrastructure, while Phase 2 will be made in the year 2005 to cope with the expected increase in container traffic requiring additional equipment. An additional railway gantry crane will be required as Phase 3 in the year 20015.

Tacis plans to commit funds of about USD 2.5 million as a grant to the Baku Port to be used for initial investments in the port.

EBRD together with co-financing institutions is expected to provide financing for the remaining investments beyond the grant from Tacis in Phase 1 and 100% of the total cost of the proposed investments in Phases 2 and 3. The terms of the financing discussed with representatives of the EBRD to be used as the basis for this analysis are:

- Grace period: 3 years
- Term of repayment: 12 years
- Type of loan: Annuity with annual payment of interest and instalments
- Interest: LIBOR + 1%. LIBOR to be based on 6 months interest period
- Front end fee: 1% of loan amount
- Commitment fee: 0.5% of unused portion of loan amount granted.

It is assumed that the port will finance 100% of the project cost on the above terms.

In order to arrive at a realistic appreciation of the port's ability to serve the loan, the cost and revenue structure of the port was investigated and projected up to the end of the planning period, the year 2015.

The current accounting system is such that it is difficult to allocate the various cost items between the various activities of the port. However, some major costs and input factors were available and, therefore, where possible, the costs were based on the current cost level and adjusted for expected developments. But when appropriate data has not been available, cost factors based on those in similar ports and situations world wide have been used.

The present manpower costs, both for operational employees and for management staff, could not be used, as the present wages and salaries are at an unrealistically low level. The average port employee today needs to make up the difference between the wages received from his main place of employment and the cost to support a family from other sources or employment outside the port. At the same time it cannot be expected that the current low level of pay can persist in a future environment, where skilled port personnel can be expected to be recruited by international transport organisations establishing themselves with services competing with those of the port. As a consequence, the port will have to increase the wage and salary levels to that of the competitive local labour market. By the year 2000 they, therefore, should be brought up to this competitive level. In the following years up to the year 2015 it is assumed that the wage and salary levels will be increased to a level similar to that of other East European transition countries.

Concerning the influence of taxes the financial evaluation, it is assumed that the current tax scheme will continue into the future. Thus, the calculation of the taxation has been made on the currently levied taxes and tax basis

The method of depreciation used by the port today is straight line depreciation based on a percentage rate of the original cost of the asset and the rates stem from the former Soviet Union with times for depreciation considerably longer than the expected economic or technical life of the object to be depreciated. For the new investments to be made, an assessment has been made as to the technical and economic life span of the assets in order to depreciate these at a realistic level.

Other cost items like maintenance, utility and electricity costs, fuel costs and consumption, corporate overheads as well as other costs were evaluated and conservatively forecasted.

Based on the above, an analysis has been performed towards the feasibility of the investments proposed in the rehabilitation and development programme. The purpose of this analysis was to evaluate and assess, if the investments projects are feasible and viable, independent of the method of financing selected and the tax regime, in which the port will have to operate. The methodology used for this purpose was to make an assessment of the total revenues and costs on a pre-tax basis, excluding the depreciation and interest costs of the new investments, to find the net cash flow from port operations. The viability and feasibility of these investments were then evaluated, based on the expected internal rate of return (IRR) and the discounted net present value (NPV) of the cash flow expected to be generated from these projects.

Using the cargo flows from the Most Likely Scenario and the assumptions with respect to revenues and costs described in the main body of Volume VI, an assessment has been made of the overall viability and feasibility of the proposed investments in the cargo terminals of the port. The assessment showed that overall cargo operations are expected to be highly profitable:

The NPV is as follows:	The IRR is
<p>With a 10% discount rate: USD 53.6 million</p> <p>With a 15% discount rate: USD 30.8 million</p>	<p>39%</p>

A profitability analysis was also made under this scenario of the two different operations on this terminal, i.e. the General Cargo Terminal and the Container Terminal. For this purpose a distribution of the investments, revenues and costs were made.

The following assumptions were made in respect of this terminal:

- The overall investments in both infrastructure and equipment was divided between the two terminals
- The revenues were distributed based on the type of operation (i.e. container revenues to the Container Terminal and dry bulk, neobulk and general cargo revenues plus all ship operations were allocated to the General Cargo Terminal).
- The cost of operation and general and administrative costs was allocated based on the expected use of both manpower and other resources.

The overall results are briefly summarised below:

The Container Terminal

With modern equipment and a new management and organisational structure, this terminal is expected to operate with a productivity commensurate with world standards for similar types of operations. The profitability of this terminal will therefore be high and the operating margin in the year 2000 is expected to be 37% increasing to 49% in the year 2015. The overall conclusion is that the Container Terminal operations is expected to be exceptionally profitable under the most likely scenario.

The General Cargo Terminal

A major proportion of the infrastructure investments as well as the upgrading of the existing cranes and equipment will have to be allocated to this terminal. The work to be performed is also more labor intensive. Although it is a profitable operation, the operating margins are smaller than that of the Container Terminal. The operating margin in the year 2000 is expected to be 32% increasing to 39% in 2004, after which it is reduced to 31% in 2005 when the Phase 2 investments required to upgrade the timber terminal are made. In the ensuing years after which the profitability is expected to increase and reach 42% in the year 2015. The overall conclusion is that the General Cargo Terminal operations is expected to be profitable, albeit not at the rate of the Container Terminal.

The two terminals are, however, mutually dependent, and any investments that will be made will benefit both operations. This analysis underscores, however, the importance that the International Seaport of Baku secures the right to operate the container terminal in the Baku area.

Under the pessimistic scenario the following assumptions have been changed compared to the assumptions above:

- Investments: The lower expected cargo flows will obviate the need for the Phases 2 and 3 developments. Thus the investments will be limited to those described above as part of Phase 1.
- Manpower. The manning level of the year 2000 will be maintained for the entire planning period, and no increases will be undertaken.

The expected results can be summarised as follows:

- The profit margin of the cargo operations of the port will be reduced to 19% in 2000 increasing to 47% in the year 2015. Although the cargo flows are reduced, so are also the operating costs by the fact that no increases in manpower or additional equipment is acquired after the year 2000.

The NPV is as follows:		The IRR is
With a 10% discount rate:	USD 15.3 million	21%
With a 15% discount rate:	USD 6.1 million	

The overall conclusion is that the investment will be reduced, but still provide an acceptable level of profitability to make the investments in the port feasible and viable.

Sensitivity of reduced container handling revenues.

The current rate levels of bulk, neobulk and general cargoes are below competing ports by a margin of 15 to 20%. In addition a large proportion of these cargoes can be considered to "captive cargoes". As such the port is expected to be able to maintain these rate levels without having to resort to rebating to retain these cargoes.

The container cargoes through the CY on the other hand will be considered as highly competitive cargoes. With the expected volumes of containers under the "Most likely scenario", it is possible that commercial terminal operators may establish competing container yards in the Baku area and engage in rate cutting to obtain a share of the container handling business. The CY of the port will under such circumstances be forced to reduce their rates to retain the business.

The following assumptions are made under these circumstances:

- Container handling rates. Both the rates for the handling of containers in the CY and the stuffing and stripping in the CFS is reduced to 50% of the rates expected under normal circumstances. The bulk, neobulk and general cargo handling rates are not affected by the rate cuts by the CY.
- Cargo volumes. The CY and the CFS and also the general cargo terminal are able to retain the volume of containers.

The expected results can be summarised as follows:

- The profit margin of the CY operations of the port will be 11% in 2000 increasing to 51% in 2015.
- The overall profitability of the port will be positive throughout the planning period increasing from 25% in the year 2000 increasing to 71% in 2015.

The NPV is as follows:	The IRR is
With a 10% discount rate: USD 44.9 million	32%
With a 15% discount rate: USD 24.0 million	

The overall conclusion is that although the container operations of the CY yield a negative profitability initially, the overall profitability will be satisfactory over the planning period.

Additionally to the feasibility analysis of the rehabilitation and development programme a financial analysis of the proposed investment project was also been conducted. The purpose of this analysis is to evaluate the overall financial viability of the operations of the port.

The analysis of the Most Likely Scenario has been made with the same basic inputs as described above. In this analysis the expected income statement of cargo operations of the port has been evaluated, based on the financing terms proposed by the EBRD and the tax regime currently in effect in Azerbaijan. The result of this analysis can be summarised as follows:

- Profitability. The port will under this scenario experience an overall profitability from cargo operations starting at 28% in the year 2000 increasing to 44% in 2004. In the year 2005, during which the Phase 2 investments will become operational with increases in manpower, depreciation and maintenance costs, the cargo operations will still achieve a solid net profit margin of 36% increasing to 62% in the year 2015.
- The port will experience positive net annual cash flows of between USD 4.0 million up to USD 19.0 million (2015).
- The cumulative cash position of the cargo operations of the port will continually be increased, and the port will be able to repay the loans prior to maturity if desired or required.
- The debt service ratio will with the exception of the years 2005 and 2006, when the investments in the Phase 2 developments are made, never go below 3.0.

Under this scenario the International Seaport of Baku will have no difficulties in servicing the loans with the EBRD.

- Even with the interest and instalment payments on the loan to be taken from EBRD the cargo operations of the port will operate at profit in the entire planning period. The profitability of the overall cargo operations in the port will increase from 11% in 2000 to 53% in 2015.
- The cash flow will be positive throughout the planning period increasing from USD 1.9 million in 2000 to fully USD 7.9 million in 2015, when the loan to EBRD has been repaid in full.
- The accumulated cash flow will have reached an amount in excess of USD 52 mill. in the year 2015.
- The debt cover ratio will at no point in time be less than 1.0, indicating that the port will be able to service the loan with full payments of interest and instalments even under the "Pessimistic scenario".

After analysing the economic and financial effects of the proposed investments, the overall expected economic impact of the cargoes envisaged to be handled in and through the port of Baku have been

Covered Storage	0.287 mio t.p.a.
Direct Transhipment	2.160 mio t.p.a.
Grand Total	4.428 mio t.p.a.

Future Port Operations Concept

Beside the traditional general cargo handling, facilities for a multi modal container terminal will be established in order to handle container for all transport modes which are railways, trucks, ferry ship/shore handling and CFS operation. As new elements of this operation a container stack for container storage will be established, which should be operated by reach stackers and heavy forklift trucks in the initial phase and can be replaced for better area utilisation being replaced by a rail mounted gantry crane in the future. The loading and discharging of the railway will be operated also by reach stackers in the first phase. If the traffic increases according to the forecast, this operation system could also be replaced also by rail mounted gantry crane for better performance.

For the transfer of multi modal containers to the ferry terminal a direct connection road is foreseen where the containers will be transferred by tractors of the port. For the ship/shore container handling the existing 40t and 32t Takraf cranes and the spreaders can be sufficiently used, transfer to the stack will be carried out by a tractor trailer operation.

For the container freight station the warehouse no 5 which is a ramp shed can be adopted for this type of operations.

The main gate of the port for truck traffic will be transferred to the new location between the new new ferry terminal and the existing workshops. The new gate needs facilities for interchange, parking space for trucks and office facilities for container operation and customs clearance activities. An existing building of the port is foreseen therefore.

6. Equipment, Workshops and Marine Crafts

A thorough assessment has been made, comprising the port's cargo handling equipment, its maintenance and repair facilities and the existing marine craft. The findings are contained in a separate, detailed report.

The recommendations are as follows:

6.1 Equipment

Cranes

Of the 18 cranes existing in the port, 9 should be repaired to meet the future operational requirements, nine need to be scrapped. To establish the detailed spare part requirements, each crane has to be reassessed in detail upon approval of a budget.

Forklifts

Out of the total number of forklifts, eleven forklifts are still useable for further cargo operation. In addition, five forklifts may be transferred to the workshops for use of internal transportation. The remaining lift trucks should be scrapped or used as spare part carriers. As there is a high demand for forklifts, eight additional units need to be purchased.

Terminal trucks and Terminal Trailers

Out of the four existing terminal trucks (two of which are not operational), three units should be rehabilitated, while the fourth one should be used as spare parts carrier. In addition, two agricultural trucks are available, one of them is almost new. If regular maintenance is carried out in future, both units could be kept operational.

Rehabilitation Programme

In order to upgrade the existing equipment, a rehabilitation programme in the course of the port rehabilitation is proposed. With supply of the necessary spare parts, the port workshops can carry out the rehabilitation under the supervision of an experienced maintenance specialist. Beside the upgrading of the useable existing equipment, this programme would provide training to the workshop and technical division of the Port in the fields of modern maintenance techniques and workshop management. This rehabilitation programme has a budget volume of about US\$ 1,032,000 and can be carried out within a time-frame of 18 month.

6.2 Workshops/Stores

In general, similar conditions were found in all port workshops, these are:

- poor equipment with basic hand tools only
- old and partly insufficient machinery
- lack of spare parts
- no special tools available

In order to improve the workshop situation, the following measures should be taken:

- acquisition of basic tools,
- acquisition of the necessary machinery,
- improvement of the supply of spare parts,
- incentives to improve workers' motivation.

These measures are of vital importance to ensure a professional execution of the rehabilitation programme and to carry out future maintenance within an improved environment.

The entire stores complex is poorly organised, and goods are inadequately stored. In order to improve the situation within the various facilities, a suitable shelving system should be purchased. The existing EDP-system in the stores should be replaced by a modern system which meets the latest technical requirements and provides data interfaces to other departments. To facilitate spare parts procurement, the procurement function should be subordinate to the technical department.

6.3 Marine Craft

The major part of the marine craft should have dry docking, painting and general repairs. Some vessels should be taken out of service. Once the finance situation of the port has improved, some new marine craft should be purchased.

7. Civil Engineering

7.1 Findings

At the main complex, some old steel structures protrude at the waterfront. The surface consists partly of tarmac area, of covers of the culverts, of concrete pavement and of unpaved sections. In general, the pavement is not in a good condition. The drainage system and the waterside culvert for power distribution and water supply are poor, too. The fendering system is also not adequate any more.

The inspection of building has been limited to the warehouses. They are fit for cargo storage.

The timber terminal consists of three different construction phases. Due to high water level, the terminal was flooded until very recently. The water level had fallen a bit so that the apron is just above the water now. However, the water did some serious damage to the apron and pavement.

The Absheron Oil Terminal needs rehabilitation of some parts of the construction. However, only jetties #1 and #3 belong to Baku Sea Port. It is not yet clear who owns the breakwater and who is responsible for its maintenance. The jetties #2 and #5 are presently abandoned.

In general, emphasis should be put on the renovation of the main complex, i.e. the quay walls, the surface and some other facilities.

The port is served with water, steam heat, electrical and waste water services. All these utility services are provided from municipal sources (the municipality of Baku) and are fairly reliable.

7.2 Recommended Design

The topographical survey and the available geotechnical data building the base for the design of the new port structures. Further the current surface level of the general cargo terminal is sufficient for a maximum sea level of -25 meters, which does not require a rising of the surface in the course of the port planning.

The western quay needs to be renovated, the proposed design is a "combi wall structure" of sheet piling and steel tubes because of the consolidated clay ground where this type of structure can provide a secure and economical solution. The new quay wall will be build about 8m in front of the old structure and the gap backfilled.

The southern quay wall is not important for the port operations, therefore a cheaper solution of shore protection is recommended instead of building a more expensive quay wall.

As per the needs of the future container terminal the warehouse No 5 will be renovated and adopted to a container freight station (CFS). This measure will be financed by the EU-Takis Grant.

The surface of the terminal will be levelled and paved for in a way that swift operation with modern heavy port equipment and container stacking is possible.

The electricity supply on the terminal has to be renewed entirely, including the substation and the feeding line to the terminal. Within the design report water distribution, fire combat, sewage system, drainage, dangerous goods areas, railway tracks, terminal lighting and the new gate area considered in detail.

The budget estimate for all proposed civil works (excluding the adaptation of a warehouse to a CFS and a small part of surfacing) amounts up to US\$ 14,186,405 in the first phase of the port development.

8. Environmental Analysis

Conclusions

With respect to the present environmental situation in the Port of Baku, in the city itself and Baku Bay, which has been described as "disastrous" by nearly all institutions concerned, negative impacts of the planned rehabilitation project of the multi purpose terminal can be considered as negligible, if the construction is carried out correctly, taking all environmental precautions into account.

Recommendations

As stated before, the main negative environmental impacts are not directly related to port construction and port operations.

The sound disposal of ship's waste is only possible in connection with a municipal waste management. At present this is not the fact. The municipal sewage is obviously discharged untreated into the sea and the garbage of Baku seems to be just partly collected and disposed. A proper municipal waste management is an absolute necessity.

The Port of Baku should be prepared to respond to an oil spill, with updated equipment and training.

