



Forwarding - Multi-modal  
Transports Systems

**Draft Final Report**  
February 1997

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Although Poti still remains a port for Oil and Dry bulk, its traffic is diversified. It must be underlined the rapid containerisation process in progress: imports and export containers increased from 23 000 tons in 1992 to about 90 000 tons in 1995 (9000 TEU).

- With 50% of the container traffic passing through the port, Armenia is the biggest user of container, followed by Georgia (30 %) and Azerbaidjan (20%). The traffic is largely unbalanced. Most of the containers must be sent back empty.
- Other general cargo traffic consisting of pipes, metal products, or homogeneous cargo in bags are not containerisable. Containers excluded, the Georgian trade generates 60% of the traffic, Armenia 22 % and Azerbaidjan 18 %.
- Container movement from/to Central Asia is included in the 20% of container traffic registered with Azerbaidjan. According to discussions with some forwarders, container traffic from Central Asia represents only about 3 % of the container traffic of Poti (270 TEU). It is mainly a question food products forwarded by the Food World Programme.
- There is a significant traffic of RO/RO vessels carrying cars and trucks from/to Bulgaria

### 3.1.2.8. Traffic from/to the Port of Batumi.

The following table summarises the traffic movements from/to the Georgian port of Batumi in 1995, expressed in thousands tons/year:

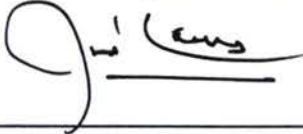
Nature of the traffic	1 000 T.	%	Origin/Destination
<b>IMPORT. TOTAL</b>	<b>894</b>	<b>100 %</b>	
<b>Bulk</b>	<b>533</b>	<b>60 %</b>	
Coal	4	:	
grain	529		
<b>Oil</b>	<b>238</b>	<b>27 %</b>	<b>Georgia / Armenia</b>
<b>General cargo</b>	<b>122</b>	<b>13 %</b>	
flour/Foodstuff, sugar	115		Georgia / Armenia
equipment	1		
other break bulk	6		Georgia/Armenia/Azerbaidjan
<b>Containers</b>	<b>0</b>	<b>0 %</b>	
<b>EXPORT. TOTAL</b>	<b>490</b>	<b>100 %</b>	
<b>Bulk</b>	<b>18</b>	<b>4 %</b>	
Manganese ore	18		Georgia
<b>Oil</b>	<b>404</b>	<b>82 %</b>	<b>Azerbaidjan</b>
<b>General Cargo</b>	<b>68</b>	<b>14 %</b>	
metal products	46		Georgia
foodstuff	20		Georgia
other	2		
<b>Containers</b>	<b>0</b>	<b>0 %</b>	
<b>GENERAL TOTAL</b>	<b>1 384</b>		

Main comments from this table are as follows:

- The traffic has declined from 3 millions tons in 1990 to 1.4 million in 1995: currently, the traffic level is, as compared with Poti, almost the same. However, being found more convenient, Poti is expected to play a greater role on exports/imports operations, specially for general cargo.

**DRAFT FINAL REPORT**

PROJECT TITLE	FORWARDING-MULTI-MODAL TRANSPORT SYSTEMS
PROJECT NUMBER	TELEREG 9201
COUNTRIES	SOUTHERN REPUBLICS OF THE CIS AND GEORGIA

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Draft Final Report  
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# 1. PROJECT SYNOPSIS

PROJECT TITLE	FORWARDING-MULTI-MODAL TRANSPORT SYSTEMS
PROJECT NUMBER	TELEREG 9201
COUNTRIES	SOUTHERN REPUBLICS OF THE CIS AND GEORGIA
PROJECT OBJECTIVES	<p>The overall objectives of this study are to assess the condition of the multi-modal transport system, determine priority actions for the design and development of commercially oriented multi-modal transport services in the TRACECA Region. This is to be achieved, first by enhancing the capability of various groups of technical and administrative staff, and secondly, through providing assistance and training to intermodal organisations on multi-modal business management.</p>
PROJECT OUTPUTS	<ul style="list-style-type: none"><li>* Phase 1: identification of the existing problems and recommendations to organise the multi-modal transport.</li><li>* Phase 2: transfer of intermodal technologies to a TRACECA intermodal freight transport working group through practical studies, «on-the-job training» activities including a study tour in E.U.</li><li>* Phase 3: proposals for future investment to promote and develop commercially attractive and competitive intermodal services from both the economic and technical point of view</li></ul>
PROJECT ACTIVITIES	<ol style="list-style-type: none"><li>1. Assessment of the existing multi-modal transport services in the area.</li><li>2. Setting up an intermodal freight transport group, which will carry out a series of activities:<ul style="list-style-type: none"><li>* examine Western countries multi-modal systems from a technical and commercial point of view;</li><li>* familiarise with intermodal E.U. technologies</li><li>* creation of contacts with potential customers of TRACECA intermodal transport services (meeting with relevant multi-modal transport companies and organisations).</li></ul></li><li>3. Elaboration of a case study and proposals directed at promoting and developing commercially attractive and competitive intermodal services</li><li>4. Training on concrete problems</li></ol> <p>Follow up and overall review of the project</p>
PROJECT START	30 January 1996
PROJECT DURATION	11 months: from February 1996 till January 1997



## 2. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The Technical Assistance programme was commissioned in December 1995. The project was started in January 1996. The initial programme consisted of a survey of the existing technology through specific questionnaires and a series of on-the-spot visits to each of the eight TRACECA countries. These two activities were designed to provide a comprehensive view of the nature of multimodal sector problems and design appropriate strategies and investment projects to develop freight movements by container. In phase II, in May 1996, a Multi-modal Transport Group was set up and in June 1996 this Group participated in a Study Tour in E.U. countries in order to examine intermodal technologies and organisations. A third and final phase included a set of case studies prepared to facilitate the development of Multi-modal transport. The practical workshop which followed allowed the team of experts to present the case studies and discuss the proposed strategy with local counterparts.

Additionally, the Multi-modal Project Team conducted a specific survey of the cotton market in Uzbekistan to examine the potential for using multi-modal techniques in the export of cotton from Uzbekistan. This enabled the project to examine the buyers' attitudes towards the use of multi-modal transport technology. The main conclusions and recommendations of the whole Project are set out below.

### PHASE 1: Analysis and Recommendations

#### Conclusions:

1. The main theoretical requirements for the development of multi-modal traffic flows on the TRACECA routes are generally satisfied:

- General goods traffic is expanding
- Distances are generally well above 1000km
- The railway network includes considerable spare capacity
- A network of transshipment terminals already exists

2. A generally favourable context, an expanding traffic, but a low usage of containers.

Since independence, commercial exchanges between TRACECA Countries and Europe have been growing rapidly. They already represent 27% of Caucasus international trade, 21% in Central Asia (outside Kazakhstan) and 8% in Kazakhstan (the largest exporter in terms of volume).

Given the nature of exchanged goods and the origin-destination, the potential for container traffic that could use the TRACECA itinerary is about 80600 TEU per year (1550 TEU per week).

But container traffic available without modification of the present transport system, is much lower for two reasons: firstly, the limited capacities of the port of Poti, estimated at a maximum of 10000-12000 TEU per year (6000 m<sup>2</sup> of storage area). Secondly, the limits imposed by the system of ferry-wagons used on the Caspian Sea: the three usable ferries could carry a volume of containers of up to a maximum of 10000 TEU per year<sup>1</sup>, in each direction of traffic flow.

Since 1993, cross Caspian traffic has been expanding. It is increasing at a rate of 30% per year in the Baku-Turkmenbashi direction (240000 tons in 1995) and of 20% in the opposite direction (360000 tons in 1995). If this current trend carries on, and if the present conventional system is not modified, saturation could appear in 2001, in five years time<sup>2</sup>.

<sup>1</sup> There are 10 ferry wagons in total: 5 of these are severely damaged, two are capable of being repaired (one fairly easily) and the three others currently remain in service. Each ferry could achieve on average three round trips per week. They could transport a maximum of 200 TEU/week in each direction because conventional traffic remains important and about 50% of available capacity is taken up by trucks. In total the four available boats could transport a maximum of 10,000 TEU/year (a total 20,000 TEU/year for both directions combined).

<sup>2</sup> The three boats currently in service have a maximum capacity (in terms of conventional traffic) of 650,000 tonnes/year.

Almost all cross Caspian traffic is transported on conventional rail wagons and on lorries. However, the nature of traffic moves towards an easier containerisation. Given the composition of that traffic, the potential of containerisation can be estimated at 13000 TEU (20 foot equivalent units) per year. But traffic effectively containerised represented only 1% of the global volume on the Caspian Sea in 1995, that is 400 TEU per year. Further, in most countries, a worrying decrease in container activity has been noticed in railway terminals over the last three years.

It must be said that, despite a theoretical environment extremely favourable to multi-modal container transport, in practice it has had great difficulties to win ground.

3. This paradoxical situation is rooted not only in the deficiencies on the supply side (see 3.1), but also in the particular characteristics of demand related to container usage (see 3.2 below).

### 3.1 The deficiencies of multi-modal transport provision

They deficiencies of multi-modal transport provision exist at four levels:

- technological,
- operational,
- organisational and
- commercial.

#### 3.1.1 Deficiencies at a technological level.

The existing transport system, mainly concentrated on rail technology, shows rigidities proper to this type of transport, which reduces the efficiency of container transport. This is particularly true in ports and slightly less in railway terminals.

In the ports: the choice of direct train-ferry transshipment system, well adapted to rail wagons carriage, provokes bottlenecks in the case of pure container traffic: rails which are not embedded in the ground make it difficult for fork lift trucks and lorries to manoeuvre. As the storage function is not part of the concept, container freight handling areas are much too small.

Also, vertical handling equipment is insufficient, even for 20 feet containers (especially in the port of Turkmenbashi).

In railway terminals: Transshipment technology, designed to handle small containers is also a handicap (lifting capacity is limited to 20 feet containers)

The predominance of the railway side explains also the slow technological development of the road side: poor provision of road chassis and road trailers for the organisation of the concentration flows by road around the rail terminals.

#### 3.1.2. Deficiencies at an operational level

Container transport, mainly subjected to classical railway running regulations, is carried out through the simple addition of separated "mono-modal" services, almost without any intermodal coordination.

Road operations are disconnected from the rail activity. There is no system specifically designed to concentrate/distribute available freight in a given area. Local companies do not have contractual partners to operate at the "other end" of the chain.

As any other type of traffic, container train formation is carried out by a hierarchical three level system of marshalling. The notion of "specialised freight container through train"<sup>3</sup> is not applied. Port and maritime operations are suffering from the lack of special facilities for container traffic. All consignments are on direct delivery basis whereby cargo is loaded straight from vessels onto rail cars for immediate dispatch. This

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<sup>3</sup> Traction between two quite distant terminals, a fixed timetable, no intermediate stopping or sorting, evolving in an integrated transshipment process of a container between one point close to the producer and another point close to the customer.

explains the limited storage facilities, and the lack of CFS shed (Container Freight Services) for stacking and unstacking containers. Furthermore, the technique of ferry-wagons means 35% of the shipload is tare and waste of space (no stacking possibilities).

### 3.1.3. Deficiencies at an organisational level

Multi-modal provision is also affected by the lack of specialised operators within this type of transport. As a consequence of the choices of the Soviet Era, the current trade participants (sellers, buyers, operators) are not experienced enough in the process of commercialising and organising container transport at an international level. Such operations were carried out by two or three experienced operators based in Moscow. Therefore, there is no real multi-modal traffic management structure left.

The lack of entity capable of grouping and coordinating all transport operations required to ship containers on the TRACECA itinerary does not encourage traders to use multi-modal techniques. The recent initiative carried out in Uzbekistan to compensate for this deficiency, is quite promising and should be highlighted as a possible model for the future<sup>4</sup>.

### 3.1.4. Deficiencies at a commercial level

Current uni-modal operators have a poor perception of marketing techniques. They do not have any elaborate marketing strategy. Customers often have to rely on their own to transport their freight to the destination point using their own trucks or a trucking company they selected and paid. The tariffs applied to container traffic are still based on the general railways regulations used in the past. As a result, container transport tariffs are particularly high. The addition of rates from the various mono-modal services makes a "door-to-door" overall operation rather prohibitive.

## 3.2 The attitude of traders related to the use of containers

Independent of providers deficiencies, commercial operators have real difficulties in satisfying both commercial requirements related to special exchange modalities and the requirements of efficient container transport: "door to door" transport<sup>5</sup> and using the container in both directions of traffic flow.

In the Europe → TRACECA direction, the most common commercial practice is a direct relationship between a maker-seller and a final buyer there is no intermediary buyer, or when there is one, he is situated near the final buyer. The first condition of efficiency for container transport is fulfilled ("door to door"). The choice of container therefore seems particularly appropriate.

But the container must also be useful on the return journey. In the TRACECA → Europe direction, packing the goods in containers from a place near the sender is not easy, as commercial practice often requires the services of an intermediary selling agent, situated far from the final destination. In this context, the producer-seller knows the content of the agent's order, but not the requirements of the final customer: quality and quantity per type of product, size of parcel, frequency required, etc. Not being able to anticipate final buyers orders, he must follow transport requirements set out by the intermediary commercial agent. The commercial agent tends to prefer rail wagon transport solutions for the first phase of transport, as they offer a better loading capacity and therefore a lower cost per ton transported. If the intermediary agent was to receive the load in containers, he would need to unload them in his depot in order to reorganise the goods according to the requirements of the final buyer. This requirement for loading and unloading imposed by commercial practice dissuades operators from using containers in this direction of exchange flow.

<sup>4</sup> The enterprise "Shosh-Trans" is in fact the only proper multi-modal organisation currently operating in the TRACECA region.

<sup>5</sup> A proper multi-modal corridor in the TRACECA region involves at least 6 transshipment operations (two on land and four at ports). In the purely transport sense, containers can only be efficient if there is no requirement for supplementary manipulation: the contents of the container does not permit manipulation between one extremity and the other. In terms of commercial agreements, this type of operation implies that the "cost and risks" are transferred from the seller to the buyer at one of the two "doors". As a result, the terms of sale can only be: "free delivered" or "Ex-works". The expression "Ex-works" means that the seller's only responsibility is to make the goods available at his premises. The buyer bears the full cost and risk involved in bringing the goods from there to the desired destination. The term "Free delivered" denotes the other extreme: the seller's maximum obligation. All other types of sale are not well adapted to the circumstances.

This difference in commercial practices certainly has a negative impact on the use of containers, as the condition of making use of the container in both directions is often not satisfied. At the present time only some 10-20% of containers used for import are reutilised for export purposes.

The example of cotton transport provides a good illustration of the current situation. Current methods of commercialisation of cotton<sup>6</sup>, combined with mediocre configurations of the means of transport and storage facilities of the seller (designed around the notion of transport of semi-finished products by rail wagon), result in a situation which is not really favourable to the more intensive use of containers<sup>7</sup>. Despite this, it should be emphasised that in 15-20% of cases, the Uzbek seller is aware in advance of the final order and therefore could adapt to the use of containers for the required volumes.

In order to overcome the problem of "empty running" of containers during the return trip, some operators resort to the solution of "last trip container"<sup>8</sup> for sporadic sales or sales of minor importance. For markets of an industrial character, which are more or less permanent and where mainly new containers are used, the question of the return of containers used for imports provides a real headache.

### **Main Recommendations**

There is unanimous agreement about the need to develop multi-modal transport along this commercial itinerary. The political will to bring about the transformation of the existing non-integrated transport system into a modern integrated transport corridor to serve the trade development between the TRACECA States and Europe has been clearly expressed<sup>9</sup>.

The necessary redefinition of the multi-modal transport system requires not only investment to readapt the existing installations, but also - and of particular importance - modifications to the whole structure. This includes changes to the management methods, from both a technical and commercial point of view, of multi-modal traffic and also the regional harmonisation of regulations and transshipment and customs documentation<sup>10</sup>.

This process of redefinition can only be carried out efficiently through a strategic approach whereby all the different elements are considered within the context of the system as a whole. It would be a mistake to invest large sums of money in multi-modal transport, without ensuring the creation of the necessary conditions for its successful development. It is therefore essential to install an adequate structure for the management of multi-modal traffic as well as carrying out the required infrastructure investments.

The implementation of a strategy of simultaneous actions is proposed in two related programmes :

1. A programme of technical assistance : Proposal to create the basic conditions for the development of the multimodal transport system :
2. A programme of investments for the modernisation of the multi-modal transport system :
  - \* Investment projects to re-adapt port container facilities
  - \* Investment project to up-grade rail terminal equipment

<sup>6</sup> See in relation to this subject, the first results of the study "Transportation of Ouzbekistan cotton" produced jointly by Scott Wilson Kirkpatrick and BCEOM.

<sup>7</sup> The cotton is actually sold "FOB" (Free-on-board) to intermediate buyers and shipped to the ports in conventional wagons. At a lower unit cost, shipment by wagon is preferred to shipment by container (a train with 50 wagons can carry up to 2,500 tonnes, whilst a train carrying containers cannot carry more than 1,500 tonnes). From the ports, the intermediate buyers resell, after classification, under "free delivered" terms and expedite it by container on a "just-in-time" basis. This enables the buyer to avoid costly stockpiling, but requires on behalf of the seller an efficient and reliable means of transport.

<sup>8</sup> The use of this type of container is considered viable because it reduces the overall cost of imports compared with the use of a new container which is returned empty.

<sup>9</sup> A series of initiatives both in Central Asia and the Caucasus ("Regional Agreement on Transport Issues, treaty signed on the 14 May 1996 by Uzbekistan, Azerbaijan, Georgia and most recently by Kazakhstan) as well as at the European level (the TRACECA programme).

<sup>10</sup> The recommendations presented hereafter are based on the needs for the planning of the infrastructure, organisation and management of operations for containerisation and multi-modal transport on the TRACECA itinerary. Actions in the regulatory and customs documentation fields and related to the facilitation of commercial activity form the basis of other complementary TRACECA projects, most notably "Trade Facilitation and Customs Procedures" and "Legal Issues".

### **3. A programme of technical assistance : Proposal to create the basic conditions for the development of the multimodal transport system.**

The technical assistance proposed has as its aim the creation of the basic conditions for the development of multi-modal transport. The Technical Assistance Programme consists of the two following modules:

- Step 1: Creation of favourable conditions to give rise to at least a minimum level of container traffic,
- Step 2: Creation of a network of multi-modal transport companies in the region.

#### 1.1. Step 1: Creation of favourable conditions to give rise to at least a minimum level of container traffic.

The Technical Assistance Programme incorporates the four following tasks:

- ⇒ Task 1: To define the minimum level of traffic available to amortise the operating costs,
- ⇒ Task 2: To identify and bring together all the partners involved in multi-modal transport,
- ⇒ Task 3: To produce an "Operational Plan" for Transport, which specifies the role of each participant and defines working procedures,
- ⇒ Task 4: To implement the "Operational Plan" and carry out regular monitoring of progress.

##### 1.1.1. Task 1: To define the minimum level of traffic available to amortise the operating costs.

A study of the market in each country will be carried out in to fix the objective of the minimum traffic level. This will include specifying the types of products and initial volumes which could be shipped by containers in the TRACECA corridor. At this stage, support from the responsible public authorities is essential as the activation of the TRACECA corridor (a corridor of common collective interest) can only be successful if a minimum level of traffic necessary to amortise operating costs is reached : a volume of 1000 TEU/country/year<sup>11</sup> would be enough to produce multi-group container trains from Almaty to Poti. This traffic corresponds to a 20 wagon container train, three times a week (that is 120 to 150 containers per week).

##### 1.1.2. Task 2: To identify and bring together all the partners involved in multi-modal transport.

It is essential to create a "High Level Working Party" in each of the interested countries, consisting of representatives of the different groups involved in multi-modal transport (Ministry of Transport, railways, road companies, forwarders, shippers and TRACECA experts). The aim of this working party would be to identify the conditions necessary to achieve container traffic volumes of the order of 1000 TEU per year and to specify the role of each participating partner.

##### 1.1.3. Task 3: To produce an "Operational Plan" for Transport, which specifies the role of each participant and defines working procedures.

A group of TRACECA experts (both local and foreign) working on behalf of the "High Level Working Party" should prepare a "Transport Plan". This plan must specify in detail the method of operation to be applied in order to achieve the threshold level of container traffic along the whole TRACECA multi-modal traffic chain. Preparation of this plan will comprise two tasks:

- \* Sub-task A: A market appraisal
- \* Sub-task B: A description of the operating methods (Operational Plan)

<sup>11</sup> This is equal to 50,000 tonnes/year for the five Central Asian countries (or 5,000 TEU/year) corresponding to 30% of the present system capacity (and 6% of the whole potential traffic).

#### 1.1.3.1. Task 3, Sub-task A: Market Appraisal

In addition to the market study carried out in TRACECA countries (Task 1), it is also necessary to survey the opinions of European buyers in order to better understand the commercial constraints and to adjust the operating methods in order to satisfy the stated desires of the two parties involved. Conducted under the guidance of the "High Level Working Party", a TACIS marketing expert in Europe and a local expert in each TRACECA country should produce within one month a report on the traders' position in this respect.

#### 1.1.3.2. Task 3, Sub-task B: Definition of an Operational Plan

The local and TACIS European experts should prepare, within three months after the market survey, an "Operational Plan" that clearly specifies how the first container shipment should be handled. This plan will include the following items:

- I. organisation of the shipment to and from terminals,
- II. definition of the conditions under which the railways make transport rolling stock available,
- III. organise the administrative aspects and transport documents,
- IV. negotiate tariffs with the Shipping Companies and international railways (tariff, availability of means of transport, choice of routes, documentation..),
- V. negotiate the conditions under which empty containers generated by import flows can be used by TRACECA State exporters,
- VI. establish co-operation agreements with the owners of containers,
- VII. establish a "Specification Manual" for the loading of containers and the certification of goods,
- VIII. organise the transfer of responsibility along the entire combined transport chain,
- IX. assign a representative from the "High Level Working Party"
- X. establish a commercial agreement with European shippers exporting to Central Asia and the Caucasus in order to encourage them to accept the return of containers to Europe loaded with "targeted" products.

#### 1.1.4. Task 4: To implement the "Operational Plan" and carry out regular monitoring of progress.

Once the "Operational Plan" has been designed and approved by the national working groups, a multi-lateral meeting should be organised in one of the countries of the region in order to establish a regional accord relating to three issues:

- I. shipment using a specialised multi-modal train via the essential "key" terminals with a fixed train schedule coordinated with the "Trans-Caucasian-Container Train", and further with the Pan-European network (specific case study has been prepared within this project)
- II. the tariff policy to be applied to multi-modal transport (specific case study has been prepared within this project),
- III. simplification of the paperwork and procedures (to be based on the "Document Package" proposed by the project "Trade facilitation and Customs procedures").

The first shipments should then be initiated and monitored by the same team of specialists. The problems encountered should be reported to the "High Level Working Party". They must decide, during a second multilateral meeting (if required) how to resolve them.

## 1.2. Step 2: Creation of a network of multi-modal transport companies in the region.

Once the technical and operational conditions are in place, it will be necessary to encourage the signature of partnership agreements between the various participants in order to create, within each country, truly independent multi-modal transport companies.

A programme of technical assistance will include the two following tasks:

- ⇒ Task 1: The creation of multi-modal transport companies at national level,
- ⇒ Task 2: The creation of a regional multi-modal transport network connected to the Pan-European network.

### 1.2.1. Task 1: The creation of multi-modal transport companies at the national level

Specific technical assistance is required to create the multi-modal transport companies (statute, organisation, financial management, definition of activities etc.) and in order to assist with the search for potential Western European partners who may be willing to invest in the capital of these enterprises.

### 1.2.2. Task 2: The creation of a regional multi-modal transport network connected to the Pan-European network.

It is envisaged that a true TRACECA Multi-modal Transportation Union should be set up, capable of integrating the inter-modal activities in an international community of interests at the TRACECA corridor level.

The technical assistance programme represents an effort of 17 man-months of expatriate TRACECA experts and 42 man-months of local experts per country involved.

## **2. A Programme of Investment for the modernisation of the multi-modal transport system**

The existence of an appropriate operational and institutional framework will enable the necessary finances to be obtained and properly managed in order to carry out improvements to the existing physical infrastructure. The programme of investments proposed will be aimed at the modernisation of:

- The existing rail terminal infrastructure,
- The port container facilities and maritime transport.

### 2.1. Upgrading the existing rail terminal infrastructure

These investments are urgent in character, but must be carried out selectively. They are intended to increase the capacity of transshipment of large containers at a target number of terminals located on the main branches of the TRACECA corridor. This will involve investment in reach stackers with spreaders for 40 foot containers (one per terminal), repair of one crane per terminal with folding grapple arm (or simple gear to lift 20 foot containers) and paved surfacing of the storage areas.

These investments must inevitably come from external sources of financial aid because the initial returns will inevitably be modest. The newly-created multi-modal transport companies will be unable to provide sufficient levels of investment to finance these improvements during the initial years of operation. However, in the medium to long term, as their activities increase, these companies will increasingly be capable of reinvesting the profits from their activities and should create, on their own, the required supplementary container infrastructure: new terminals, handling equipment, nodal points, etc.

The preliminary evaluation carried out within the framework of the current study has led to the estimation of a short term volume of investments in handling equipment per terminal of the order of ECU 0,516 million (\$US

0,6 million). The reconstruction of the « key » terminals, to be considered in medium term, has led to the estimation of a volume of investments of the order of ECU 0,860 million (\$US 1 million) per terminal (20 key terminals).

## 2.2. Modernisation of port container facilities and maritime transport

At the level of the Caspian Sea, the existing conventional system designed around rail transportation and horizontal transshipment direct from rail to ferry, results in containers being relatively inefficient both in terms of capacity and in terms of unit costs per ton transported. Within this system, which is currently on the brink of saturation with conventional traffic, containerised transport will have great difficulties in evolving in a satisfactory manner. There is an urgent need to examine relatively quickly other alternatives in order to give containerised traffic a real chance of developing in the future. This can be achieved by putting into service vessels which are better adapted to container traffic and by modernising the handling equipment and storage areas.

The investment required depends on the transport technique to be used. There are two alternatives: use of a RORO vessel or a container ship.

The first alternative consists of using one of the two RORO vessels belonging to the Caspian Shipping Company (capable of transporting 33 trailers and 105 TEU). This solution has the advantage of being able to accommodate, with containers, the growth of truck traffic (which constitute 40-50% of ferry traffic). The existing ferry wagons are also better able to accommodate conventional traffic. This alternative implies (in addition to various restoration works to ground surfaces in order to allow for the circulation of trucks and fork-lift handling vehicles) the construction of a RORO ramp at the port of Turkmenbashi.

The RORO alternative appears to be an interesting short-term solution because present container traffic is quite low and truck traffic is increasing. However, if the intention is to develop an efficient multi-modal transport system in the longer term, the use of a container-ship is certainly a much better solution. A container-ship is specially designed for containers and its operating cost is lower enough (compared with a RORO vessel) to compensate the doubled handling expenses at the inner ports. However, the investment required to facilitate the vertical transshipment of containers will also be necessary. A preliminary study, carried out within the framework of the present study, has shown that the resulting reduction in operating costs compares favourably with these required investments which include:

- ⇒ Modernisation of the system of vertical transshipment, notably at the port of Turkmenbaschi, and to lesser extent at Baku, where special cranes for lifting 20 foot and 40 foot containers must be provided,
- ⇒ Adaptation of the port facilities at the TRACECA ports concerned, involving:
  - creation of a CFS (Container Freight Services) in all the ports by the re-allocation of some of the available space or by creating new storage areas near the ports and equipping the ports with reachstackers and trailers for moving containers to the storage areas and stacking them,
  - rebuilding of the pavement: part of the rail tracks must be embedded into the ground to facilitate the circulation of trucks and trailers,
- ⇒ Bring back into use in the Caspian Sea a cargo ship of the type such as the "Buniat Sardarov" or put into service a RORO vessel. In that case, the RO/RO ramp of the Port of Turkmenbaschi must be renewed.

A detailed cost benefit analysis is necessary in order to verify the economic viability (for containerised traffic) of moving from the existing conventional system to a proper multi-modal system. The preliminary evaluation carried out within the framework of the current study has led to the estimation of a volume of investments in the Caspian Sea ports of the order of ECU 8,6 million (\$US 10 million) if the RORO alternative is adopted and ECU 12,7 million (\$US 14.8 million) for the second container ship alternative. Depending on the alternative adopted and the traffic level, the payback period for the investment is estimated to be between 7 and 30 years time. For the Black Sea ports, the payback period on investments for a total of amount of a little more than ECU 19,2 million ( \$US 25 million) is estimated to be 25 years.



## PHASE 2: Study Tour in E.U. Countries.

A Study Tour in Europe was carried out during the period 15-27 June 1996. The Tour programme was designed to ensure a real exposure of Traceca multi-modal groups to the European Unions' practices through a series of visits to selected multi-modal sites and organisations.

The Study Tour covered the different means of transport (rail; road and maritime) and facets of multimodal transport as well as technologies and associated logistics-related services in two European countries (Germany and France). Among others, it included meetings and visits to multimodal companies belonging to INTERCONTAINER and the IURR<sup>12</sup> (the two European competing groups) as well as the EUROPEAN INTERMODAL ASSOCIATION. It also comprised the visit to multimodal operators: Maritime operators' facilities (The Hamburger Hafen und Lagerhaus-Atiengesellschaft) and Road companies (Calberson-GE and TAB).

In the opinion of all the participants the objectives of the Study visit matched with TRACECA Countries multi-modal needs. All the participants stated their satisfaction with the information received, and the opportunity they have had to create good contacts (specially with INTERCONTAINER and NOVATRANS, a IUUR's member) and are ready to develop them. Unanimously, what the participants appreciated most was the organisational aspects related to the multi-modal transport system in Europe. They concluded that such a multi-modal chain is not only feasible in the TRACECA region, but also essential.

## PHASE 3: Case Study and Training

Inter-modal case studies were prepared to provide short-term solutions to facilitate container traffic, to train staff in appropriate technology and medium-term solutions for advanced systems. The different topics were addressed during a practical three-day seminar held in Tashkent on the 15, 16 and 17 January 1997. The seminar also allowed organisations from different countries and from different transport modes to be brought together around the same table to discuss the Multimodal Transport Strategy proposed by the European team of experts.

During a round table, the participants concluded that the seminar's case studies and investment projects, and the presentations of results from other related projects<sup>13</sup>, were prepared and conducted at the right level. However, the participants stated their concerns on the financing means to achieve the proposed technical assistance and investment projects.

Unanimously, the possibility to meet each other at the same table during three days was found to be one of the most important aspects of the seminar. The various delegations have had the opportunity to meet individually with Uzbek transport authorities involved in the TRACECA programme as well as with the recently created Multi-modal Committee to facilitate Uzbek cotton movement. Furthermore, various delegations were invited to visit the installations of the Uzbek Multi-modal company SHOSH-TRANS and mutual cooperation agreements were discussed.

<sup>12</sup> International Union of Rail-Road Companies.

<sup>13</sup> Presentation of the special "Container pilot train" serving Baku-Poti, prepared by TEWET, and the preliminary results from the project "Uzbek cotton Movement" conducted by Scott-Wilson Kirkpatrick and BCEOM.

## Report structure

The present Draft Final report summarises the results from these three Phases. The structure of this report is as follows:

Section 1: Project Synopsis

Section 2: Summary of Conclusions and Recommendations

Section 3: Identification of the existing problems and Recommendations (PHASE 1)

Section 3.1: Main Problems Identified. This details the results of the survey and the assessment of the intermodal network conducted during the month

Section 3.2: Recommendations

Section 4: Study Visit in EU Countries (PHASE 2). This details the results from the Study Tour in E.U. countries, designed to set up a multimodal transport group and examine the organisation of multimodal system in Europe.

Section 5: Proposals for Improvements, Investment Projects and Case Studies (PHASE 3). This provides a detailed description of the proposed strategy for the development of a well-functioning intermodal network. The structure of this section is as follows:

Section 5.1: Proposal to create the basic conditions for the development of the multimodal transport

Section 5.2: Investment projects to re-adapt port container facilities.

Section 5.3: Investment project to up-grade rail terminal equipment.

Section 5.4: Development of a terminal network in Kazakhstan.

Section 5.5: Case studies and training.

Section 6: Lessons learnt and recommendations

Section 7: Project tables report

**Annexes**: this presents detailed information on the various project components.

## 3. PHASE 1: ANALYSIS OF THE CURRENT SITUATION

This section provides a comprehensive view of the multimodal sector problems and summarises the proposed strategy and investment projects to develop freight movement by container on the TRACECA corridor. The information is based on a survey on the existing technology and interviews. The consultant's team travelled along the whole corridor and met with the main organisation involved in each of the eight TRACECA countries.

### 3.1. The main problems identified

To gather intermodal transport supply and demand data, a Survey of the Multimodal system (Task 3) was conducted through a specific questionnaire shown in annex 1. The information collected was then completed through a series of visits: in February 1996, in May and during the period July to August 1996. The interviews with relevant counterparts (the list of relevant contacts made is shown in Annexe 2), allowed the team of experts to produce the assessment of the existing system (Task 4).

The results from these two activities are summarised here below. The organisation of this part of the study is as follows:

- General multimodal transport environment,
- Traffic flows through the selected TRACECA corridor,
- Technological aspects,
- Operational aspects,
- Management and marketing aspects.

To facilitate the understanding of what the experts have identified to pose a problem, the concept used as reference is, whatever necessary, introduced.

#### 3.1.1. General multimodal transport environment

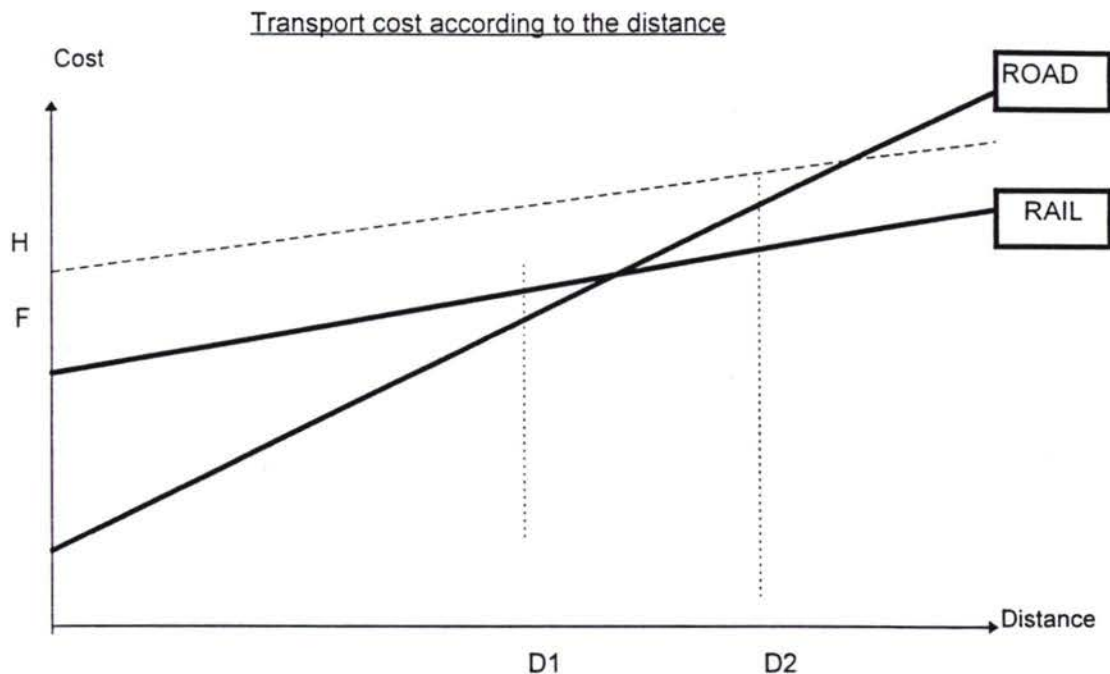
##### 3.1.1.1. The concept of multimodal transport

The concept of multimodal transport is here defined as:

« The « organisation of carriages of goods in one and the same loading unit (container, swap body or semi-trailer) which uses successively several modes of transport without handling of the goods themselves in changing modes. The organisation falls under the control and responsibility of one unique organiser (ex; freight forwarder, etc.) ».

Given the landlocked position of Central Asian countries and the long distances to reach the main trade markets, the multi-modal transport technique appears to be a more cost-effective choice, as compared with the dominant mono-modal current practices.

The economic advantage results from the modal complementarity, as it shows the following chart.

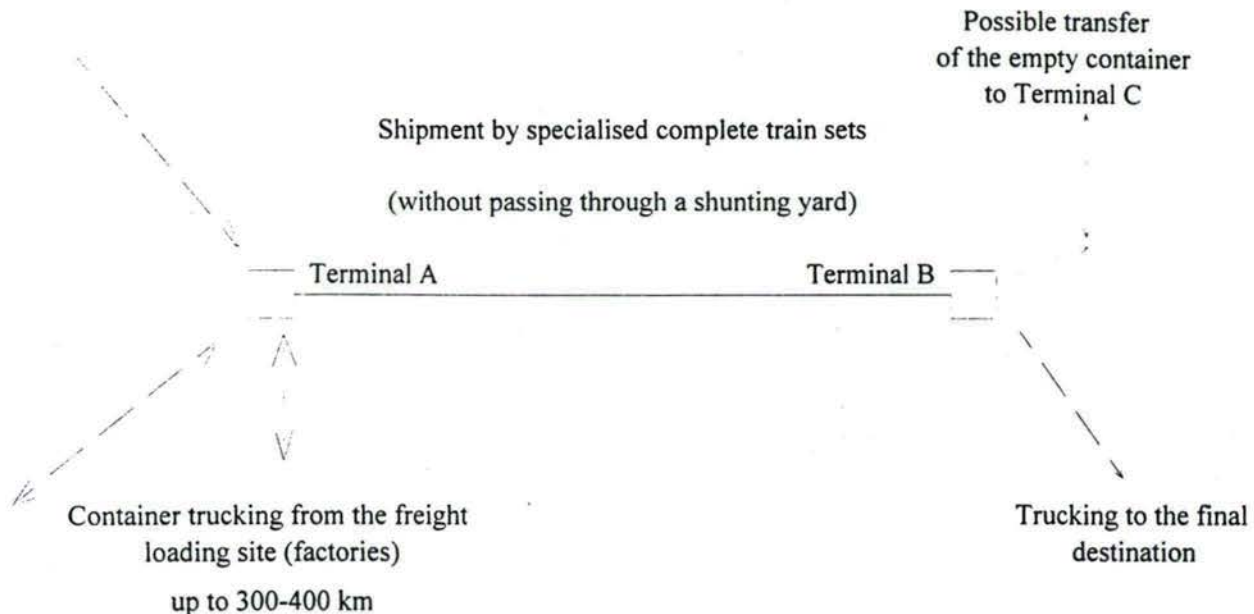


The importance of fixed cost (OH) makes container transport more expensive by rail than by road for short distances since the transport costs by road are largely variable (fuel, tyres, maintenance, driver cost, etc., represents about 70% of the total cost). On the contrary, the variable cost by rail increases slower than road costs. As a result, up to a certain distance (D1), road transport is more economic. For longer distances (distance > D1) rail transport has a clear economic advantage. However, multimodal transport requires to invest in handling equipment. When taking account of handling costs (FH), this « break-even distance » is longer (D2, approximately equal to 1000 km). To combine within a single chain the advantages from all transport modes, the conditions required are:

- The concentration of container traffic flows by road at selected reduced number of rail-road terminals (In Europe, small countries, this « catchment area » is about 150 km<sup>2</sup>). In the TRACECA region, it is conceivable to collect container up to 400 km far from a main terminal). Road carriers must also be able to operate at the other « end » of the single chain. To this end, they must negotiate and establish co-operation agreement with fellow companies.
- A rail traction from terminal to terminal by specialised container freight train (« Block Trains »). These are trains running directly from one terminal to another terminal located quite distant from the origin (more than 500 km in Europe), without marshalling operations and without stops.
- A maritime transports of container from/to ports requires specific container facilities at this ports (a CFS container freight service, fixed and mobile handling equipment),
- The grouping and co-ordination of intermodal transport operations require a specific Management organisation<sup>14</sup> working for the benefit of all the partners involved. Furthermore, tariffs must be different from those applied to the general railway traffic. Tariffs must be simple, easily applicable, understandable and competitive in comparison with those applied to other single mode transportation organisations or competitive routes. This implies co-operation international agreements between railways companies concerned by the operating corridor.

<sup>14</sup> By evaluating the transport needs of individual firms, the independent combined transport company is able to negotiate attractive tariffs from the Railways Company (they buy rail traction on a basis of the wholesale price). By reselling these services to individual firms (on a basis of attractive retail prices) they make a profit. The benefits are reinvested to finance the required infrastructure (they act precisely as a "freight transport wholesaler". Examples of such organisations are INTERCONTAINER and the IURR companies (International Union of Rail-road Companies), two structures visited during the study tour (more details in the Task 11).

The following chart summarises the principles behind the functioning of the multimodal chain:



As it is shown, the whole system is based on the notion of modal complementarity. Such a system helps operators to increase their profit margins (by reducing operating costs) while providing cheaper and better services to their customers:

- Shipper's benefit from cheaper, faster and better quality transports: the use of containers eliminates the needs for manipulation of goods themselves (only the « boxes » are handled). It improves the security (against breakage, theft, etc., ...) and reliability of transport made under the responsibility of a combined transport operator. It makes transportation time shorter, it simplifies commercial, transport and customs procedures and payment transactions,
- Road carriers can find a solution for the long-distance transports: reduced need for investment in truck fleet, lower driver cost, better quality service,
- Railways and Shipping Companies benefit from additional freight traffic while optimising the use of the existing infrastructure and fleet (rolling stock and vessels).

### 3.1.1.2. Organisational environment in TRACECA countries

The observed situation in TRACECA countries is characterised by a poor perception of the notion of complementarity between the various transport modes. Main reasons are:

- strong preference of railways which have practically been the only transport mode in use: the transport policy, was and still remains focused chiefly on the railways,
- organisation largely compartmentalised at the economical and political level: poor interaction between transport modes, with a large predominance of railway structures,
- poor development of road transport companies,
- poor adaptation to multimodal transport at the factories' premises,
- competition from other traditional or new mono-modal routes.

Currently, each participant (railway, national and international trucking companies, etc.) has a specific and mono-modal approach which excludes any type of collaboration and joining interests with other partners. Thus, there is no independent combined transport operator able to assume the responsibility of organising international multimodal container traffics from the origin to the final destination.

Railways continue to use the general organisation and procedures (tariffs, liability regulations, container exchange, use of wagons, etc.) which were in force for container traffic in the former Soviet Union. The fracturing of rolling stock resources (specialised wagons and container fleet) between the various national railway networks did not facilitate common work. Indeed, container traffic is considered by each railway network as a type of railway traffic used for a specific type of goods. It is never dissociated from railway operations set up for freight traffic. Although the technology used is specific to container traffic, old habits and behaviours inherited from the Soviet era continue to prevail. Specific technical and operational constraints (final collect and delivery by truck, provision of containers, special tariff for containers, special high speed through trains, simplified documents, procedures and regulations, etc.) are not integrated and accomplished.

As for trucking sector, whereas its traditional role, largely confined to local distribution by small lorries, is changing. The direction of such changes is not altogether the right one: instead of concentrating in the natural short/medium distance market, most of the road hauliers, poorly equipped, are operating individually in a particularly very long distance market, far from co-operating with railways (no sub-contracting agreements to perform the main long distance traction by rail, from terminal to terminal).

However, in most of TRACECA countries a reorganisation of trucking activities is under development thanks to the efforts of freight forwarders such as « TERMINAL » and « KAZINTERFRAKT » in Kazakhstan and « CAUTREX » in Georgia, BK-INTRANS in Uzbekistan. They are able to propose International container services. These dynamic private companies are partially filling the gap left by the absence of specialised combined transport companies.

The most remarkable company is SHOHSTRANS (Uzbekistan), a specialised subsidiary company which represents the Uzbek Railways General Management and manages container traffic in a relatively autonomous way. The company was established two years ago by an initiative from the Cabinet of Ministers; The creation of this company was decided by the authorities to reduce the dependence on foreign forwarders for the Uzbek international traffic. Nevertheless, SHOHSTRANS mixes the functions of a multi-modal transportation operator for the Railways and a forwarding agent. Although the firm's effectiveness is reinforced by this situation, other container traffic operators have doubts regarding the neutrality of the firm. Indeed, even if SHOHSTRANS can take advantage of its railway affiliation, the firm is submitted, as any other container traffic customer, to the rules and regulations regarding multi-modal traffic enacted and applied by the Railways.

The multimodal transport business is also restricted by the low number of local shipper using container instead of the traditional transport by rail wagons for their export operations. In the same order of ideas, local established foreign firms are suffering from this situation because they cannot easily make use of unloaded containers used for imports. Most of the containers are parked or sent back empty.

Although the TRACECA corridor involves various transport modes, the existing system, strongly concentrated on railways technologies, presents a rigidity peculiar to this mode which makes a full container transport rather inefficient. This is particularly true for the maritime facet of the corridor: transshipment systems and storage function have been designed for rail-wagons. Such a configuration handicaps the TRACECA as compared with traditional mono-modal competing routes. The North route, a rail link via the Russian Federation, under strong influence of the MPS (Russian railways information system), is quite reliable. For countries such as Kazakhstan, and to a lesser extent for Kyrgyzstan, Tadjikistan and even Uzbekistan, this corridor is still the first choice. « Pure » road transport is significantly developing in all directions, including with Turkey and Iran and, to a lesser extent, with Pakistan and Afghanistan.

## 3.1.2. Traffics flows and planning aspects

### 3.1.2.1. Introduction

For planning purposes it is important to inventory and compare the existing infrastructure and equipment with the minimum physical requirements for the practicability of container transport, taking account of traffic flows on the main links. The organisation of this part of the study, as far as traffic is concerned, is as follows:

- Traffic from/to main rail terminals,
- Traffic from/to Caspian Sea and Black Sea Ports:
  - \* from/to Aktau,
  - \* from/to the port of Turkmenbashi,
  - \* from/to the port of Baku,
  - \* recent container traffic flows trend (between Turkmenbashi and Baku),
  - \* from/to the port of Poti,
  - \* from/to the port of Batumi
- Container traffic recent trends and forecast

### 3.1.2.2. Traffics from/to main rail terminals

Available statistics are particularly poor: as rarely dissociated from the railway normal traffic, data on the number of containers handled is unreliable and uncompleted. Final destinations are not known or in the best case just up to the « destination frontier ».

The following table summarises the container traffic: loaded and empty containers in the TRACECA rail terminals (detailed traffic figures, terminal by terminal, are attached in annexe 3).

## Container Movement in Railway Terminals ( Year 1995 )

COUNTRY	TERMINAL	LOADED			EMPTY		
		Large size (ISO 20-40")	Medium size	Total	Large size (ISO 20-40")	Medium size	Total
ARMENIA	Karmir/Blur	158	0	158	426	6	432
AZERBAIJAN	Baku	0	400	400	0	166	166
GEORGIA	Total (country)	74	757	831	58	20	78
KAZAKHSTAN							
Almatinskaya		4 597	34 098	38 695	1 344	9 317	10 661
Tselinaya		2 859	24 171	27 030	2 648	5 163	7 811
Z.Kazakhstanskaya		2 923	13 690	16 613	NA	0	0
Total (country)		10 379	71 959	82 338	NA	14 480	18 472
KYRGYZSTAN		1 300	7 895	9 195	2 583	842	3 425
TADJIKISTAN	Total (country)	8 421	16 507	24 928	407	940	1 347
TURKMENISTAN		1 789	11 605	13 394	NA	0	0
UZBEKISTAN	Total (country)	6 983	31 640	38 623	NA	0	0
Total Caucasian C.		232	1 157	1 231	484	186	676
Total Central Asia.		28 872	139 606	168 478	NA	16 262	23 244
<b>TOTAL MOVEMENT</b>		<b>29 104</b>	<b>140 763</b>	<b>169 709</b>	<b>NA</b>	<b>16 448</b>	<b>23 920</b>

As the table shows, it is rather hazardous to base a serious analysis on the available data. However, some comments, exclusively made on large containers (20 feet ISO-container), are as follows:

- In the Caucasian countries, the container traffic from/to rail terminals is reported to be low. Not having any rail terminal in good conditions, Azerbaidjan is serving container traffic by trucks. Similarly, in Georgia and Armenia, traffic is largely served by road transport. Loaded container represents only 37% of the overall large container movements. It reflects the « unbalanced » character of the traffic. It results in low productivity as most of the container must be sent back empty.
- in Central Asian countries, large containers (95 % are of 20 ISO container type) represent only 17% of the total « loaded » containers, reflecting the large predominance of small containers, mainly used in the domestic market. The traffic appears to be unbalanced in all cases, but the reason differs from one country to another. An in-depth analysis would be necessary to explain this contrasted situation. (domestic and international traffics are considered together). However, from discussions with large operators, specially in Uzbekistan and Kazakhstan, the international traffic is largely unbalanced. This is posing a huge problem to foreign firms established in the country because about 80 % of unloaded large container must be parked somewhere or sent back empty.

Considering all containers type, it is possible to recalculate traffic volumes expressed in TEU. The results, presented in the following two tables allow to classified rail terminals according to the present traffic volumes



Concentration area <i>/from West to East/</i>	Terminals	Formation in main corridor TRACECA	number of containers (TEU)			
			per year	per month	per week	per working day
Tbilissi / Eastern Georgia	Tbilissi Tov., <i>Rustavi gruz.</i> , <i>Gori Gruz.</i>	yes	200-300	< 50	< 10	< 5
Armenia	Karmir Blur, Abovyan, Vanadzor, Sevan 2	no	1000-1500	100-150	20-30	5-10
Western Azerbaidjan	Gyandzha	yes	<100	< 50	<10	< 5
Baku / Eastern Azerbaidjan	Baku-Kishly (Khyrdalan)	yes	500-1000	< 50	10-20	< 5
Turkmenbashi	Turkmenbashi, Nebit-Dag	yes	300-500	< 50	< 10	< 5
Ashgabat	Obezberdy Kuliev, <i>Tedzhen</i> , <i>Kizil-Arvat</i> , <i>Kaakha</i>	yes	1500-2000	200-300	30-50	5-10
Tchardzhev/Mary	Mayskaya (Mary), <i>Zerger</i> , <i>Bairam-Ali</i> , <i>Tchardzhev 2</i> , <i>Sejdy</i> , <i>Amudarya</i>	predominantly	1500-2000	100-150	30-50	5-10
Atyrau	Atyrau	no	500-1000	50-100	10-20	< 5
Aktau/Mangyshlak	Mangyshlak	no	1000-1500	100-150	20-30	5-10
Tashauz/Nukus	Gazatchak, Tashauz (TUR), Nukus, Urgentch, <i>Kungrad</i> , <i>Khodzhejli</i> (UZB)	no	1000-1500	50-100	10-20	< 5
Bukhara/Navoi	Bukhara 2, Tintchlik, <i>Kyzyltepe</i> , <i>Utchkuduk</i> , <i>Yangizerafshan</i>	predominantly	1000-1500	100-150	20-30	5-10
Samarkand	Ulugbek, Karshi, <i>Kattakurgan</i>	partly	2000-3000	150-200	30-50	5-10
Southern Tadjikistan/Termez	Dushanbe 2, <i>Kurgan-Tyube</i> (TAD) <i>data ?!</i> <i>Termez/Galaba</i> , <i>Denau</i> (UZB)	no	> 5000	> 500	> 100	> 20
Fergana Valley	Andizhan Sev., Asaka, Kakir, Margilan, Raustan, <i>Kokand</i> , <i>Utchkurgan</i> , <i>Namangan</i> (UZB), <i>Khodzhand</i> , <i>Kanibadam</i> (TAD), <i>Osh</i> , <i>Dzhalal-Abad</i> , <i>Kyzylkiya</i> (KYR)t	no	> 5000	300-500	> 100	> 20

considering the volume of all container transport (incl. medium-sized) recalculated in TEU

Concentration area	Terminals	Formation in main corridor TRACECA	Number of containers (TEU)			
			per year	per month	per week	per working day
Tashkent	Tashkent-Shumilova, Dzhizak, Angren, Akhangaran, Syrdarya, Tashkent Tov., Khavast, Tchirtchik, Yangiyul, Bekabad	predominantly	> 5000	> 500	> 100	> 20
Tchimkent/Dzhambul	Tchimkent, Dzhambul, Arys, Turkestan, Zhanatas, Karatau	predominantly	3000-5000	200-300	50-100	10-20
Kzyl-Orda	Kzyl-Orda, Tyuratam	no	500-1000	50-100	10-20	< 5
Aktyubinsk	Aktyubinsk	no	2000-3000	200-300	30-50	5-10
Uralsk	Zhilayevo	no	500-1000	50-100	10-20	< 5
Tchu	Tatty, Lugovaya, Kuragaty, Tchu, Sary-Shagan	predominantly	300-500	< 50	< 10	< 5
Northern Kyrgyzstan	Bishkek-Alamedin, Rybatchye, Bishkek 1, Karabalta	no	2000-3000	150-200	30-50	5-10
Dzhezkazgan	Dzhezkazgan, Karazhal	no	300-500	< 50	< 10	< 5
Akmola/Karaganda	Akmola, Karaganda, Agadyr, Zhana-Arka, Osakarovka, Temirtau, Aksu, Atbasar, Yementau, Maj-Kuduk	no	3000-5000	200-300	50-100	10-20
Arkalyk	Arkalyk, Derzhavinskaya, Dzhaksy, Yesil	no	300-500	< 50	< 10	< 5
Pavlodar/Ekibastus	Pavlodar Yuzhn., Ekibastus, Pavlodar, Yermak, Yermak Gruz., Shtcherbakty	no	1000-1500	100-150	20-30	5-10
Koktchetav	Koktchetav, Novoishimskaya, Volodarskoye, Suly, Tajntcha, Makinka, Kzyl-Tu	no	500-1000	50-100	10-20	< 5
Kustanaj	Kustanaj, Amankaragaj, Dzhetygara, Mailin	no	1500-2000	100-150	30-50	5-10
Almaty	Almaty 2, Taldy-Kurgan, Almaty 1, Sary-Ozek, Ush-Tobe, Otar, Tekeli	predominantly	> 5000	> 500	> 100	> 20
Druzhba	Druzhba (no data for local shipment)	yes				
Semipalatinsk/ Ust-Kamennogorsk	Semipalatinsk, Zashtchita, Ayaguz, Konetchnaya, Korshunovo, Neverovskaya (Russia), Shemonaikha, Leninogorsk, Serebryanka, Zyryanovsk	no	2000-3000	150-200	30-50	5-10

**Comments:** Four terminals register a traffic of more than 20 TEU/day (Termez; Fergana; Tashkent and Almaty). For upgrading purposes, they must be considered with the highest possible level of priority. Two terminals (Akmola and Tchimkent) are between 10 and 20 (Level 2). Ten are between 5 and 10 containers/day (Level 3).

As for recent trends, available figures produced by railways companies suggested that container movement in rail terminals is rapidly decreasing.

#### Recent Trends in Container Movements in Railway Terminals

COUNTRY	Railway Company	LOADED CONTAINERS					
		Large Size			Medium Size		
		1993	1994	1995	1993	1994	1995
Armenia			135	158		14	0
Azerbaijan					2 451		400
Georgia			466	74		3 505	757
Kazakhstan	<i>Almatinskaya</i>		7 927	4 597		66 401	34 098
	<i>Tselinaya</i>	8 586	5 206	2 859	58 713	42 986	24 171
	<i>Zapado-Kazakh.</i>	8 760	4 739	2 923	36 135	27 182	13 690
	Total (country)		17 872	10 379		136 569	71 959
Turkmenistan		7 311	4 025	1 789	40 807	24 117	11 605

In Kazakhstan and Turkmenistan rail container traffic is decreasing respectively from 9000 units in 1993 to 3000 units in 1995 and from 7300 units in 1993 to 1800 units. From discussions with freight forwarders, road container traffic (mainly carried by Iranian and Turkish hauliers) is developing fast in detriment to the railways. The deterioration of the rolling stock and handling equipment at rail-terminal as well as at customer's premises also helps to explain this situation.

#### 3.1.2.3. Traffic from/to the Port of Aktau

Still low, container traffic from/to Aktau is rapidly increasing. The following table summarises the situation (in thousands tons):

	Export	Import	Total
1993	0	1.1	1.1
1994	2.2	1.0	3.2
1995	3.5	6.6	10.1

During the first 8 months of 1996, the number of loaded containers (exports) represented 1, 512 tons (or about 150 TEU) while the empty containers represented 1,183 tons. Virtually, all movements of containers are with Iran. They contain consumable goods, asbestos, polystyrene, plywood. There are loaded containers on the deck of cargo ships with a maximum of 30 units per trip. This means that not always all containers can be loaded on a particular ship.

In the short-term only limited volumes of containers from Aktau can be expected to follow the TRACECA corridor. Long distance traffic cannot justify a ferry service between Aktau and Baku. But trade between Azerbaijan and Kazakhstan (petroleum products from Azerbaijan, cereals from Kazakhstan) may be sufficient to justify it.

The oil industry may be interested in transporting cargo from Europe and USA through the Black Sea. An oil company visited during on-site visit last August says that they are bringing 20-25 containers/year from the US through St Petersburg Port and further down by railways. The interviewed company is not satisfied with present transport conditions. A difficulty they face is the absence of forwarders. Several companies expressed interest in setting up an office in Aktau - including SAGA of France - but it has not been done yet. On the other hand, some spare parts or drilling equipment are coming from Frankfurt by air with transshipment in Baku.

### 3.1.2.4. Traffic from/to the Port of Turkmenbashi.

The following table summarises the general traffic trend (including the two existing terminals included), since 1987, expressed in thousands tons.

	1987	1991	1992	1993	1994	1995
<b>Via Ferries terminal</b>	5 803	2 061	1 247	855	698	782
<b>Via Piers</b>	2 132	2 032	991	388	214	263
<b>Total (oil excluded)</b>	7 835	4 093	2 238	1 243	912	1 045

In general, the traffic has dramatically decreased: from almost eight millions tons in 1987 to only one million in 1995.

Detailed 1995 traffic nature figures provided by the port of Turkmenbaschi (in tons) are as follows:

Nature of the Traffic	incoming	out-coming	Main destinations
<b>VIA PIERS</b>			
Building materials	42 000	42 000	to Baku and other ports
Salt	79 000		from Bekdash ( 46 000 are sent to Turkmenistan by train)
cotton		33 000	to Baku
metal products		12 000	to Baku for Azer. textile factories
Chemicals/fertilisers		10 000	export
flour	4 000		imported via Baku
equipment and others	27 000		from Iran
full containerised (in 20 TEU)	4 000		about 400 TEU
<b>TOTAL via piers in tons</b>	<b>156 000</b>	<b>107 000</b>	<b>TOTAL in and out = 263 000 T.</b>
<b>VIA FERRY TERMINAL</b>			
Total volume from BAKU	314 000		
Total volume to BAKU		468 000	
Num. rail cars from BAKU	4 133		
Num. rail cars to BAKU		5 663	
<b>TOTAL via ferry services in tons</b>	<b>314 000</b>	<b>481 000</b>	<b>equals to 782 000 Tons</b>
<b>TOTAL OF RAIL CARS</b>	<b>4133</b>	<b>5 663</b>	<b>equals to 9 799 units</b>

## Comments:

- Apart from 47 000 tons of salt<sup>15</sup> and 27 000 tons of equipment from Iran, the traffic of this port is connected with Baku (about 90 %). Via piers, commodities such as equipment, cotton, fertiliser and part of the metal products (ingots) are containerisable. However, only 4000 tons are full containerised traffic (about 400 TEU, in 1995).
- The traffic via ferry terminal is more than three times higher than the traffic via piers. Two ferries, three times a week (12 round trips/week) are deserving this connection. The number of trucks and rail cars are reported. Trucks represent in average 50% of the loads embarked into the ferries. (10 000 rail cars made the rest). Some of them are carrying containers.

## 3.1.2.5. Traffic from/to the Port of Baku

The following figures provided by the Caspian Shipping company summarise the structure and trends of the traffic registered in 1989 and 1995, expressed in thousands tons/year:

	1989	1995	1995 (in %)
<b>TOTAL LIQUID BULK CARGO</b>	<b>7 753</b>	<b>797</b>	<b>47.1 %</b>
Crude oil inbound	3 076	66	3.9 %
Oil products outbound	4 247	164	9.7 %
Oil products inbound	0	300	17.7 %
Fresh water outbound	430	267	15.8 %
<b>TOTAL DRY BULK CARGO</b>	<b>493</b>	<b>112</b>	<b>6.6 %</b>
Building material inbound	398	7	0.4 %
Salt inbound	95	105	6.2 %
<b>TOTAL FERRIES ( tares included)</b>	<b>4 126</b>	<b>782</b>	<b>46.3 %</b>
Baku to Turkmenbashi	1 995	314	18.7 %
Turkmenbashi to Baku	1 722	468	27.6 %
Baku to Bektash	0	0	0 %
Bektash to Baku	392	0	0 %
Baku / Aktau round-trip	17	0	0 %
<b>TOTAL ALL KINDS INCLUDED</b>	<b>12 372</b>	<b>1 691</b>	<b>100.0 %</b>
<b>of which ferry terminal</b>	<b>4 126</b>	<b>782</b>	<b>46.3 %</b>

## Comments:

- the total cargo loaded and unloaded via all the berths declined from 12.4 millions tons in 1989 to 1,7 millions tons in 1995. As a result, the port infrastructure is under used. The decline has been more pronounced for bulk traffic than for general cargo.
- At present, liquid bulk cargo and ferry traffic are the two main activities of the port.
- Ferry traffic representing 30 % in 1989 is now amounting near to 50 % of the total throughput. Container traffic, via ferry terminals, is reported to represent only about 300 TEU.

<sup>15</sup> salt represents 50 % of the incoming traffic, via piers. It comes from the small port of Bekdash.

### 3.1.2.6. Recent traffic flows trends between the ports of Turkmenbashi and Baku

The following two tables produced by the Caspian Shipping Company summarise the traffic flows nature and trends, in both ways, between these two ports for the period 1993-1995 (in thousands tons/year):

	1993	1994	1995
<b>BAKU - TURKMENBASHI</b>			
Perishable foodstuff	1.3	8.8	0.8
Frozen food		8.6	15.5
Beverages	12.1	11.0	7.9
Textile	67.0	2.9	5.9
Ore	4.4	23.	25.4
Raw mat./ Building materials	9.3	5.1	7.9
Chemicals		9.4	10.6
Oil products	5.8	9.6	9.5
Equip/vehicles/metal products	11.2	57.9	132.1
Other	22.7	18.2	19.2
Tares of rail cars	74.2	86.5	79.2
TOTAL WITH TARES	208.0	241.0	314.0
TOTAL WITHOUT TARES	133.8	154.5	234.8

	1993	1994	1995
<b>TURKMENBASHI - BAKU</b>			
Grain	23.6	34.5	39.4
Salt		4.4	7.3
Sugar	1.8	11.5	14.5
Perishable foodstuff	2.9	8.8	5.8
Frozen food	0.8	5.3	2.8
Beverages...	0.3	1.9	3.6
Raw textile / Cotton	0.3	1.0	2.0
Cement	16.4	11.4	83.5
Raw mat;/ Building Materials	30.3	7.8	32.8
Timber		.5	1.3
Chemicals	13.4	4.0	27.3
Oil products	46.4	60.6	6.2
Metal products	5.6	9.8	11.5
Equip./vehicles/metal products	77.8	50.9	106.5
Paper / Cellulose		0.6	0.9
Other	18.6	4.2	13.5
Tares of rail cars	81.0	92.4	109.1
TOTAL WITH TARES	319.2	309.6	468.0
TOTAL WITHOUT TARES	238.2	217.0	358.9

#### Comments:

- the traffic is unbalanced: traffic from Turmenbaschi to Baku is one third higher than the traffic in the opposite direction. As a result, the net rate of loading is quite low. Tare of rail cars in the total throughput is particularly high: the ferries are carrying about 35 % of dead-weight.
- The traffic from Baku to Turkmenbaschi is increasing faster than the traffic on the opposite direction. From 1993 to 1995, the total traffic from Baku to Turmenbaschi (without tares) doubled. This is mainly due to the spectacular growth of equipment/vehicles/metal products, specially in the direction Baku -->Turmenbaschi (multiplied by 12). As rail tare is almost stable, there is reason to believe that the largest part of the traffic increases (100.000 tons) is passing by trucks (via ferry terminals). It seems that road traffic is filling in the gap left by the disorganisation of the railways and the absence of combined transport organisation.

- To a lesser extent, perishable goods traffic such as fruit and vegetables (available from June to September) is also rapidly increasing. In 1995, foodstuff and beverages, textile products and equipment represented about 53 000 tons in Eastbound (22 %) and 28 000 tons in Westbound (8%) . If fertilisers are added (most of this traffic is prepacked in bags), the volume of containerisable is to 63.000 tons in East bound (about 6 300 TEU).
- Although the nature of the traffic is evolving towards easier containerisation, the use of this technique remains minor: less than 1% of the total traffic is containerised (About 350 TEU).

### 3.1.2.7. Traffics from/to the Port of Poti

The following two tables summarises the traffic movements from/to the Georgian port of Poti in 1995, expressed in thousands tons/year:

Commodities	1 000 Tons.	%	Countries Origin/Destination
<b>Total IMPORT</b>	<b>1 388</b>	<b>100</b>	
<b>Bulk</b>	<b>697</b>	<b>50 %</b>	
Coal	4		
grain	641		Georgia
ore	2		Georgia
bauxite	50		Azerbaijan
<b>Oil</b>	<b>476</b>	<b>34 %</b>	<b>Georgia / Armenia</b>
<b>General cargo</b>	<b>137</b>	<b>10 %</b>	
flour/Foodstuff, sugar	115		Georgia / Armenia
meat	5		Azerbaijan
equipment	9		Georgia/Armenia/Azerbaijan
other break bulk	9		
<b>Containers (1000 t.)</b>	<b>78</b>	<b>6 %.</b>	<b>Georgia,/Armenia/Azerbaijan</b>
<b>N° of units</b>	<b>(5 999)</b>		

<b>Total EXPORT</b>	<b>389</b>	<b>100 %</b>	
<b>Bulk</b>	<b>145</b>	<b>37 %</b>	
Manganese ore	43		Georgia
Copper concentrate	46		Armenia
scrap iron	36		Georgia
other	20		
<b>Oil</b>	<b>146</b>	<b>37 %</b>	<b>Azerbaijan</b>
<b>General Cargo</b>	<b>81</b>	<b>22 %</b>	
metal products	48		Georgia / Azerbaijan
timber	1		Georgia
fertilisers / chemicals	23		Georgia / Azerbaijan
equipment	5		
other	4		
<b>Containers (tonnage)</b>	<b>17</b>	<b>4 %</b>	<b>Georgia/Armenia/Azerbaijan</b>
<b>N° of units</b>	<b>(3 296)</b>		
<b>GENERAL TOTAL</b>	<b>1 777</b>	<b>60 %</b>	<b>Georgia (containers exc.)</b>
		<b>22 %</b>	<b>Armenia (containers exc.)</b>
		<b>18 %</b>	<b>Azerbaijan (cont. exc.)</b>

Main comments from this table are as follows:

- As others ports in the former Soviet Union ports, traffic in Poti has dramatically declined: from 4.5 millions tons in 1989 to 1.1 million in 1992. Nevertheless, from 1993 to 1995, the traffic increased to 1.6 million tons. This is mainly due to food products generated by the World Food Program and to the recent oil equipment traffic connected with oil industry. Part of the World Food Program traffic has been forwarded to Kyrgyzstan, Tadjikistan and Moldavia (about 15% of this food traffic).

- The port of Batumi does not have container or RO/RO traffic. The existing traffic is mainly composed by bulk trade (oil and grain) which constitute 84 % of the total throughput: grain amounted 529 000 tons and oil 238 000 tons. As for general cargo, this is only 190 000 tons, essentially food products from the World Food Program (flour, rice, sugar and foodstuff).
- There is about 10 000 tons of Uzbek cotton shipped by rail and stored in the sheds of the port. It is said to be a traditional practice of Uzbeks traders: to store the cotton at ports sheds and commercialises it from there (15.000 tons in Le Havre; 15.000 tons in Bremen, 15.000 tons in Trieste, Baltic ports, etc.).
- The road network around the Batumi port is in bad condition and very sinuous: grade is up to 20%. Consequently, articulated trucks are experiencing difficulties to reach the port. This explains the larger use of the railway and somehow, the traders' preferences for Poti.

### 3.1.2.9. Container traffic trends and forecast

It is very important for railway companies as well as for road carriers to forecast container movements so that they can plan investment and adapt their capacity to demand. On the other hand, it is very difficult to make such forecast with accuracy because containers use much depends on tariffs and quality of service offered to transport users.

In TRACECA countries, the proportion of goods transported by container is presently very low. Traffic figures produced by within the TRACECA project « Trans-Caucasian Pilot Train » shows that the current volume is 92 TEU/week on the Poti-Baku line. Only 2 TEU/week are from/to Central Asia. The same study produced container traffic forecast: by substituting the road transport container movement on this line (120 TEU/month) and taking account of the growth potential, the container traffic would reach 261 TEU/week by the end of 1997. These developments mean that container movements could experience a fast growth in the coming years. By the year 2015, according to the same project, the transit traffic would represent a volume of about 700 000 tons (equivalent to 70, 000 TEU/year).

Within the present Multimodal project, the potential for containerised traffic has been estimated. A good indicator of the potential for growth is the number of containers which would be utilised if containerisation rates were coming close to those observed in international trade between industrialised countries.

Such an indicator of potential for container movements was calculated using available figures for year 1995. The result of the calculation is interesting as it shows that present container traffic represents only a small proportion of the potential traffic. In other words, even if interzonal or international trade does not grow, transport by container could still develop considerably. Since the TRACECA Multimodal Transport Project is essentially concerned by international traffic, the calculation of container potential was based on foreign trade statistics in volume as collected under the TRACECA « Regional Traffic Forecasting Model Project ». The calculation was done in six steps as indicated in detail in the section 5.4. Case studies. TRACECA countries were divided into three groups:

1. "Caucasian Region" including Armenia, Azerbaijan and Georgia;
2. "Mid-Asian Region" including Kyrgyzstan, Tadjikistan, Turkmenistan and Uzbekistan; and
3. Kazakstan considered separately as transport route in the North of the country can be substantially different from routes for other Central Asian countries.

In the first five steps, calculation was done separately for the three groups.

- Step 1: Group countries and commodities according to the probability of using containers in transport of those commodities to/from those countries.
- Step 2: For each element of commodity / country matrices  $M_1$ , calculate export and import volumes.
- Step 3: For each element of the commodity / country matrix, determine the proportion of goods which may be transported by container.
- Step 4: Multiply each element of matrices  $M_1$  by respective element of matrices  $M_2$ .
- Step 5: For each country group, determine which percentage of the containers will take a specific corridor.

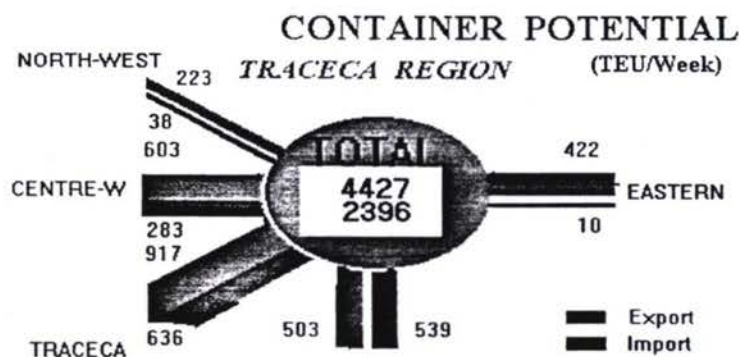


The resulting matrices are given in the section 5.4. Case studies. The corridors correspond approximately to the following routes:

- North-Western Corridor: from Central Asia to Moscow and then to Finland and other Scandinavian countries or to Poland and Baltic Sea through Brest.
- Central-Western Corridor: from TRACECA countries to Central and Western Europe through European Russia or Ukraine,
- Southern Corridor: to Persian Gulf through Iran or to Indian Subcontinent and Indian Ocean through Kashgar or possibly Afghanistan.
- Eastern Corridor: from Central Asia to East Asia through Sino-Kazak border crossings, particularly Druzhba station, or through Siberia and Far-East ports.
- TRACECA corridor considered at two locations: Caspian Sea crossing and Georgian ports on the Black Sea (Poti and Batumi).

Step 6 - Multiply each element of matrix  $M_3$  by the corresponding element of matrix  $P_1$ .

The result of calculation represents the potential container traffic on each corridor by direction expressed in both TEU/year and TEU/week. It can be summarised on the diagram shown below for all TRACECA countries.



From the diagram, the potential for development of transport by container seems very high since present volumes represent less than 10% of the computed potential volumes. The diagrams show that traffic will be unbalanced. If containerisation develops as could be expected, particularly for the transport of textile fibres, potentially more containers could be used for export than for import. Detailed results by region are presented in the section 5.4. Case studies.

In that sense, the « Regional Agreement on Transport Issues » (Uzbekistan, Turkmenistan, Azerbaidjan and Georgia) is an essential event which should boost the traffic from Central Asia to Georgia. The Government of Uzbekistan decided to ship part of the cotton exports to Europe through the TRACECA corridor: 10 000 tons in 1996, 30.000 tons in 1997 and 100.000 by the year 2000. More recently, the Uzbek authorities decided to increase these volumes and sent an important part of 30 000 tons of cotton by containers (3 000 TEU/year). TRACECA Project Managers were requested to incorporate active assistance

to facilitate cotton movement by containers. The Inception study given in Annexe 9 has been produced by the multimodal team and a specific project started in November 1996.

Preliminary results from the TRACECA project « Uzbek Cotton Movement » show that existing trade and transport conditions must be improved before the introduction of new container techniques. Indeed, if cotton is containerised in Uzbekistan, it will be moved on a door-to-door basis. It means that the terms of sales must change from the current FOB (Free-on-Board) to a « Free-delivered » or « Ex-works ». Further investigations on the different terms of sale options adapted to container movements should be evaluated before introducing door-to-door container movements. On the other hand, there is a problem of credibility concerning Poti which will need to be addressed. Indeed, cotton merchants do not consider Poti to be an attractive port of shipment. According to them, storage facilities in Poti are still inadequate to cope with this additional cotton traffic.

Furthermore, the rehabilitation of the oil industry in Azerbaidjan results in import containerised traffic and will soon contribute to boost container traffic on the Poti-Baku relation to a higher level.

### 3.1.3. Technological aspects

#### 3.1.3.1. Introduction

The organisation of the technological aspects are centred around the following broad headings:

- rail and road infrastructure,
- ports infrastructure and equipment,
- rail terminal network,
- others technological aspects : road fleet and rolling stocks, loading units and unit loads.

#### 3.1.3.2. Rail and Roads Infrastructure

The railway network in all TRACECA-countries is a broad gauge network (Russian gauge with 1520 mm). Thus, normal gauge wagons (1420 mm large) can't be used and the freight has to be unloaded on the interface points (such as Brest, Druzhba, Sarakhs). In case of urgent need, it is necessary to change the bogies of the wagons or the space between the wheels in the wheelsets (this is needed for special wagons).

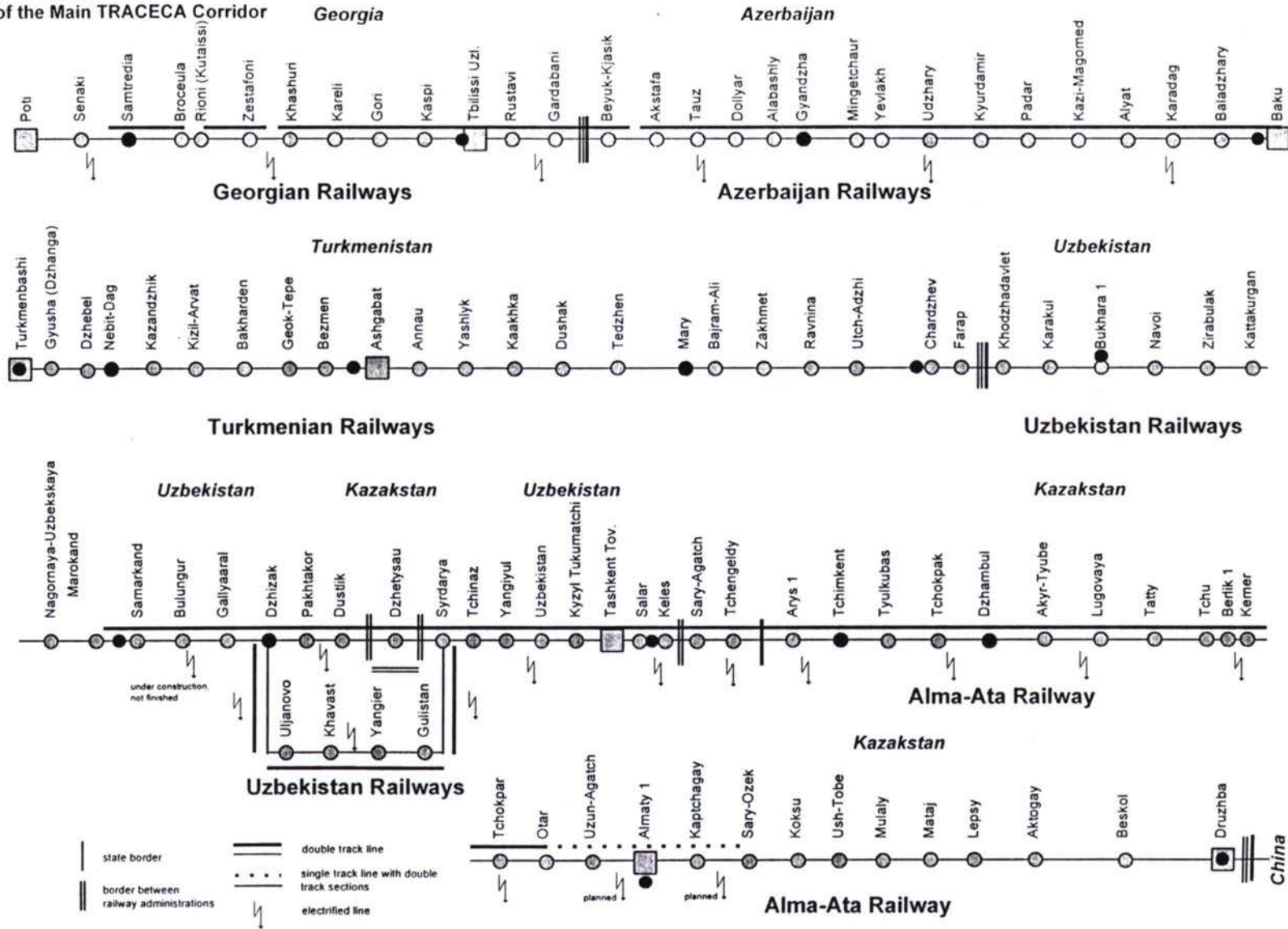
The types of permanent way on CIS-railways are heavier than on the UIC-Railways. Thus, the maximum load per axle for trunk lines is defined with 23 - 24.5 t (most of the railways visited defined the maximum load with 23 t). The track layout and the gradients used on the main lines cause no special problems for the practice of multimodal transport. However, it must be noted that the Georgian section Sestafoni - Khashuri has a particularly high gradient: 32% between the stations Kharagouli and Likhi. On this section, an assisting pusher locomotive is often needed.

In general, the maximum train weights amount to about 3000-3500 t with some exceptions (e.g. between Sestafoni and Khashuri 2500 t). The maximum train length is 850 m (on some sections 1050 m). Thus, there is no major problem to organise special multimodal trains as container trains are normally shorter and lighter than normal heavy freight trains (container special trains capacity is usually 20 wagons and 60 TEU).

The following table as well as the chart at the end this section, summarise the current state of the main rail infrastructure along the TRACECA corridor. (A detailed description of rail and roads infrastructure, as well as a series of country maps is presented in Annex 4).

**Present State**

**of the Main TRACECA Corridor**



**Alma-Ata Railway**

The connecting lines to Armenia (from Tbilisi Uzl.), Kyrgyzstan (from Lugovaya station in Kazakhstan) and Tadjikistan (from Samarkand or Bukhara in Uzbekistan) are single track lines and with the exception of the line to Armenia (Tbilissi - Gyumri - Vanadzor - Yerevan) non-electrified.

As for roads, the existing infrastructure, being rather in good state, does not represent any impediment for the practice of multimodal transport. In Kazakhstan, nearly the entire road network is made up of at least two lanes. In general, roads are in a relatively good state. Over 50 % of the 20.000 km of roads of Kyrgystan are paved and in sufficiently good condition. However, one of the main roads connecting Bishkek to Osh, the two major industrial centres, is degenerating. Road transport, with about 72% of the freight traffic, is by far the most important transport mode of Kyrgystan.

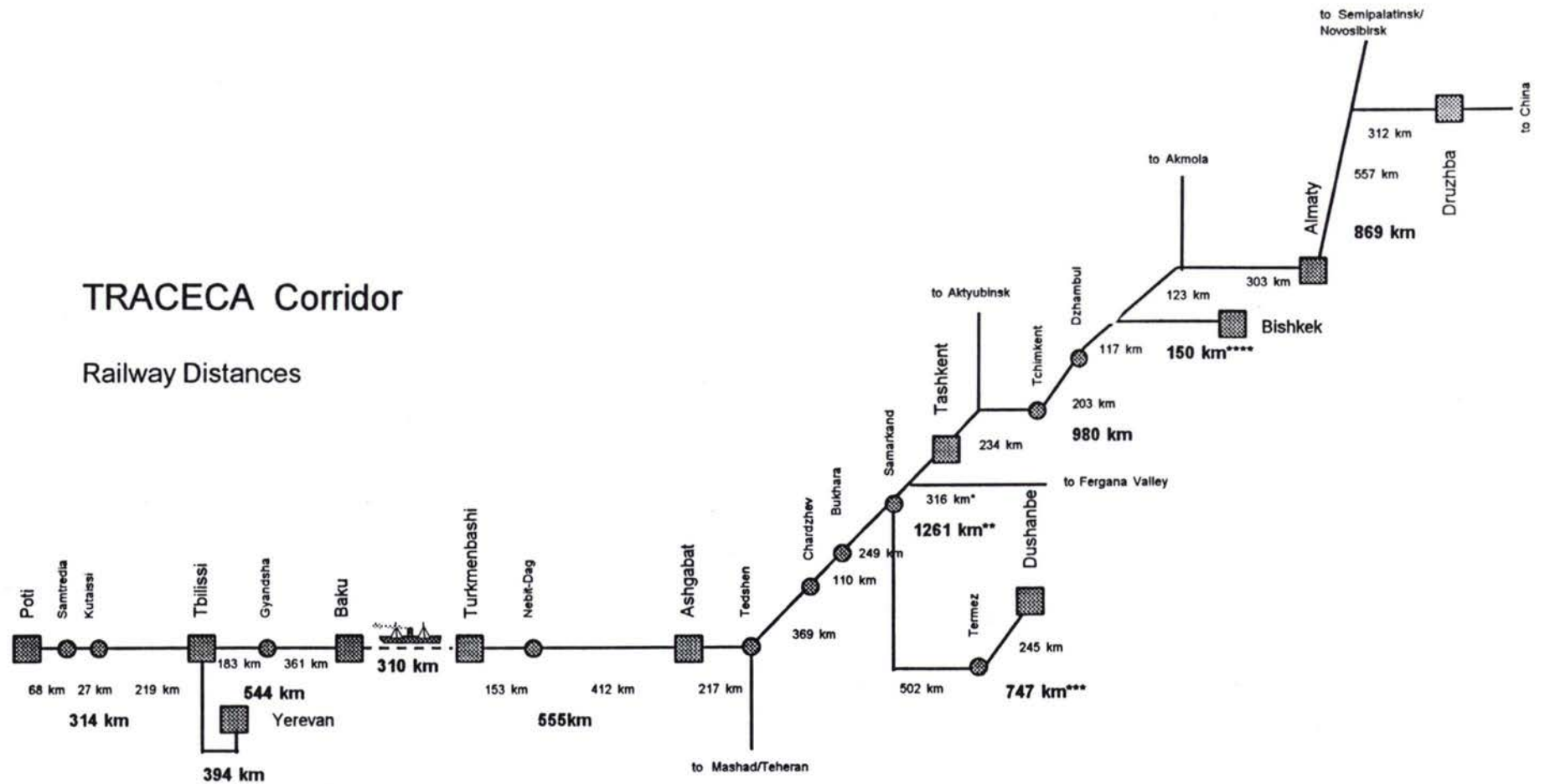
In Uzbekistan, there are two main links:

- \* A north-east↔south-west link connecting Tashkent to Karakul in Turkmenistan, (through Bukhara, Navoi and Samarkand) is estimated to be as follows: 42% of the road from Tashkent to Karakul is in good state,
- \* A south-west↔north-west link between Termez and Nukuss via Bukhara (677 kilometres) is good state or under repair while 58% is deemed to be in fair conditions. The road from Turkmenbaschi to Chardjiev is in good condition.

In the Caucasian region, the principal road in Georgia, the « Magisterial », running from the Azeri border through Tbilissi, along the Valley between the two ranges of the Caucasus has a pavement in a acceptable condition.

# TRACECA Corridor

## Railway Distances



\* via Dzhizak - Dustlik - Dzhetyysaj - Syrdarya  
(the distance via Dzhizak - Khavast - Yangier - Gulistan - Syrdarya is 354 km)

\*\* via Dzhizak - Dustlik - Dzhetyysaj - Syrdarya  
(the distance via Dzhizak - Khavast - Yangier - Gulistan - Syrdarya is 1299 km)

\*\*\* from Samarkand

\*\*\*\* from station Lugovaya

### 3.1.3.3. Ports Infrastructure and equipment

The multimodal essential elements to examine are confined to:

- Container ports related design (container terminal and RORO terminal),
- The storage container capacities,
- Handling facilities,
- Vessels (here only RO/RO vessels and ferries).

#### Container ports related design

Ideally, a terminal designed for containers consists of a large enough platform totally free of any building where the storage and circulation around the containers rows are easy to perform. Along the quay wall, rail mounted cranes of 40 tons are available to handle the container from a ship to any type of land transport support. To facilitate operations (circulation of trucks, roll-trailers, transfers, storage, etc.) rail tracks (from cranes or railways) are embedded into the floor. At one border of the platform, there is a CFS shed (Container Freight Service) for storing the containers. At the opposite border, railway tracks are located. To accelerate the handling and transfer, the terminal is provided with mobile equipment (tractors, trailers, or roll-trailers, straddle carriers or stackers and forklifts). The administrative building is located at the entrance gate of the terminal so that the container movements can be controlled.

As for RO/RO terminals, the main platform, large enough, must be free of building or rail tracks to make trucks circulation and control procedures (clearance before embarking, etc.) as easy as possible. According to the type of RO/RO vessels, a RO/RO ramp is needed or not. For ships with a stern ramp, it must have an inclined slop on the quay apron. For ships with a quarter ramp or a side ramp, no specific installation is needed.

The following table summarises the situation observed in the TRACECA countries.

	PORTS	Key observations
General remarks	all ports	<p>Apart from Baku, there is risk to be flooded by the rising level of the Caspian Sea (2 meters from 1977), particularly in Turkmenbaschi: at the ferry terminal the maximum operating limits are almost attained.</p> <p>Problems with the rail tracks (from railways and cranes) not embedded into the floor makes operations difficult (open storage, circulation of trucks, waste of time, etc.) in all the ports.</p> <p>The backup areas for efficient container operations have been seriously underestimated in all ports. In Baku, there is a serious lack of parking space for trucks. It makes the co-ordination and operations particularly difficult (trucks represent about 50% of the ferry traffic).</p>

		Key Observations
Handling facilities	Aktau	Poorly underprovided because of the tradition of loading and discharging direct to rail wagons. Containers are currently handled over the general cargo berth, without specialised equipment.
	Turkmenbaschi	Restricted lifting capacity of the 6 cranes (insufficient for 20 feet containers). There is no RORO ramp.
	Baku	Sufficient handling equipment: 8 cranes along the western quay side of the mole (40 tons) and 3 other along the eastern quay side (20 tons) are sufficient to handle 40 feet ISO-containers. The 50 roll-trailers available are under utilised. Two of these cranes are located on the western side of the mole which could be dedicated to containers.
	Poti	The general cargo has cranes with a pulling capacity of 16 to 32 tons. On the container terminal, there are 3 rail mounted cranes capable of handling 40 feet's containers. One floating crane of 100 tons is also available.
Storage container facilities	Aktau	Poorly underprovided because of the tradition of loading and discharging direct to rail wagons. There is no yard available for stacking containers.
	Turkmenbaschi	Poorly underprovided. As container traffic is only 400 units, problems are not serious. If the traffic increases, as it is expected, if the cotton is containerised, the port will not be able to operate efficiently.
	Baku	Only 2 ha out of 8 ha of the main complex can be used for container storage (most of the available area is congested by rail tracks not embed into the floor. This could be largely sufficient, even if there is a traffic of 10.000 TEU to be handled.
	Poti	The container terminal has a platform of 24 000 m <sup>2</sup> (congested by rail tracks). Only 6000 m <sup>2</sup> are available for operating and storing containers (about 560 TEU). The general cargo and grain berth are also congested by rail tracks not embedded into the ground. This restricts the storage capacity to only 16.000 m <sup>2</sup> . Difficult circulation for trucks.
	Batumi	There is only a small container terminal. Limited port storage facilities for general cargo.
Vessel fleet	Caspian Shipping Company	<p>The fleet of the Caspian Shipping C.o. includes:</p> <ul style="list-style-type: none"> <li>• 20 tankers, of 5 000 Dwt</li> <li>• 5 tankers of 12 000 Dwt</li> <li>• 9 tankers of 5500/7500 Dwt</li> <li>• 12 dry cargo ships of 3000 Dwt</li> <li>• 11 dry cargo ships of 4 000 Dwt</li> <li>• 2 RO/RO ships 125 m. long, with a capacity of 365 cars or 84 trucks and 107 cars, or 33 trailers and 105 TEU.</li> <li>• 8 Railroad sea cargo-passenger ferries of 154 m. long</li> </ul> <p>There are no specialised container carrier ships (containers cross the Caspian Sea loaded on trucks or wagons). Most of the container carrier ships owned by the company have been chartered and operate out of the Caspian Sea. Only ferries operate on the Caspian Sea. Out of ten, five are hardly damaged, and two could be repaired. Three are serving on the Caspian sea, (three trips a week, each).</p>
	Georgian Shipping Company	The GSC is no the only company operating at this port. The GSC has 44 vessels. One third is reported too expensive to operate. They need repair but are technologically obsolete. Joint ventures with foreign firms are under negotiation to repair 19 vessels.

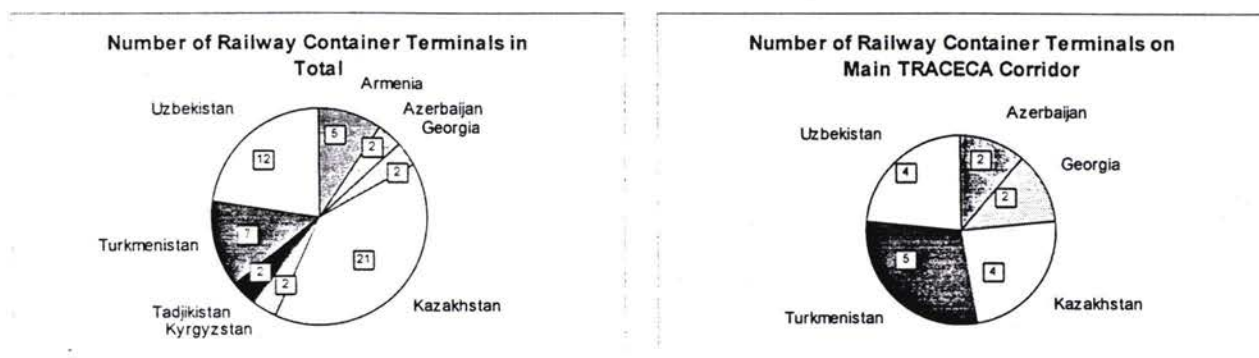
### 3.1.3.4. Rail container terminal network and handling equipment

The FSU railways operated about 240 container terminals. About 50 of them (excluding terminals for medium sized containers) are located in the TRACECA region (20 %). About 20 rail terminals are directly located on the main TRACECA corridor. Besides the railway terminals, some large industrial plants receive containers in their own private sidings. Representative terminals from the three categories have been visited.

- large: Almaty 2 , Shumilovo (old + new), Obesberdyev-Kuliyev
- medium: Alamedin, Tbilissi Tov., Khyrdalan
- small: Serger, Bukhara 2

Unfortunately it was not possible to visit and get reliable data from private sidings<sup>16</sup>.

Most of the railway terminals in the region are concentrated in Kazakhstan (about 40 %) and in Uzbekistan (about 25 %). An under developed network of container terminals has been working in Azerbaidjan, Georgia, Kyrgyzstan and Tadjikistan, consisting of two terminals per country only. The following figures summarises the situation:



The level of coverage of the territory by container terminals as well as the physical position of the terminal network are not worth mentioning as major weak points of the multimodal transport system. Existing terminals are located near by all capitals of the TRACECA countries and all the most important industrial regions and large cities in Central Asia<sup>17</sup>.

Taking into account the terminal location and the industrial centres around the terminal, it is possible to define the efficient area or field of activities for road transport<sup>18</sup>. In Europe, relatively small countries with a high industrial density, the distance from a considered customer to the closer rail terminal is under 120 km. The area of influence of a terminal, called « catchment area », is expressed in km<sup>2</sup> and has been defined for the main TRACECA-corridor.

The following table summarises the « catchment area » for the 18 terminals directly located on the alignment as well as for two others which can also easily be involved in container traffic services along this corridor.

<sup>16</sup> Some of the railway administrations informed that the use of containers on private sidings of former large industrial plants has collapsed as a result of the economic crisis. Most of these local companies had no own terminals, they loaded and unloaded the containers directly on the railway wagon (because of the lack of heavy cranes or reach stackers). Doing this they need assistance of a terminal nearby to twist the containers in this way to be able to open the front wall doors. This does not concern some Western companies (e.g. Daewoo in Uzbekistan) which are at present working with containers as they are using private terminals.

<sup>17</sup> such the Fergana valley (with Andizhan, Fergana, Kokand, Margilan, Namangan, Osh, etc.); Gafurov (Tadjikistan), Akmla, Aktyubinsk, Atyrau; Bukhara/Navoj, Chardzhev, Dzhabul, Dzhezkazgan, Ekibastus/Pavlodar, Karaganda/Temirtau, Karshi, Koktchetav, Kustanaj, Kzyl-Orda, Nukus, Petropavlovsk, Samarkand, Semipalatinsk, Taldy-Kurgan, Tashaus, Tchimkent, Uralsk, Urgentch, Ust-Kamenogorsk. Similar, in the Caucasus region, Gyandzha, Gyumri, Kutaisi (only via Samtredia, about 50 km distance), Rustawi (via Tbilissi), Sumgait, Vanadzor (former Kirovakan) are well covered.

<sup>18</sup> Under the multimodal concept, the role of road transport is to concentrate traffic flows around the closer rail terminal.



**Average (Theoretical) Catchment Area of the Railway Container Terminals on the Main TRACECA-Corridor**

Terminal	Theoretical « Catchment area » covered by TRACECA terminals <sup>19</sup> , in km <sup>2</sup>
(Poti Sea Terminal)	34
Samtredia	168
Tbilissi Tov.	154
Gyandzha	314
Khyrdalan (or Baku Sea Port)	188
Turkmenbashi	77
Nebit-Dag	271
Obesberdyev-Kulijevo	379
Mary	287
Serger	133
Bukhara 1	155
(Tintchlik)	95
Ulugbek	152
Dzhizak	192
Shumilovo	148
Tchimkent	312
Dzhambul	378
Almaty 2	454
Taldy-Kurgan	210
Druzhba	498

A chart produced at the end of the section summarises the location of the main railways container terminal on the main TRACECA corridor.

Comments from the table:

- The catchment area is particularly high for small countries because of the high industrial density. Kyrgyzstan, a mountainous country, and Kazakhstan terminal network are less « catching ».
- Five terminals in Turkmenistan, four in both Kazakhstan and Uzbekistan as well as two both in Azerbaidjan and Georgia are directly on the corridor.
- Additionally to these terminals, there are some terminals located on some branch lines very closed to the main corridor<sup>20</sup>: Taldy-Kurgan in Kazakhstan (about 50 km of the main corridor) and Tintchlik in Uzbekistan (near Navoj, about 20 km of the main corridor).
- The network is coherent enough and, in general, there is no need for new terminals to cover existing freight potential. The biggest terminal problem is connected with necessary improvements of technical standards.
- To handle 40 feet's containers, terminals operations require to use 2 cranes. The terminal Shumilovo (Shoshtrans) is an exception. This is the only terminal equipped with modern reach stackers and spreaders able to lift 20' and 40' containers and stacking 5 x <sup>21</sup> (Boss G36-38 Retractor) of the BOSS company (UK). From the handling equipment point of view, this is the best terminal of the TRACECA region.
- To handle 40 feet containers, an automatic fixing of 40' containers is impossible to use because of problems of adjusting the spreaders. Telescopic spreaders with folding grapple arms or simply gears for lifting 40 feet containers are cruelly lacking.

<sup>19</sup> The catchment area of a terminal on the corridor was defined as the half way to the neighbouring terminal (in both directions) or the way to the border, if the neighbouring terminal will be a foreign terminal.

<sup>20</sup> not mentioned in the figures (Annex)

<sup>21</sup> there is practised maximal a threefold stacking because of the local conditions

- Small terminals are equipped (Gyandzha, Samtredia) with only two cranes per 10 t lifting capacity only. These cranes have to work synchronously to lift together one 20' containers ! At present about 40 or 50 % of terminal cranes are out of operation (lack of spare parts, no necessity given the low volume of traffic). Many of them were cannibalised.
- Most of terminals have a maximal length capacity, under the crane, to operate with a maximum of 10-12 flat wagons. Therefore, there is a restricted possibility for a full direct train (normally composed by 20 flat wagons), to enter into the terminal. This restriction makes it necessary to shunt part of the train from/to the neighbouring station, or to use shunting locomotives to shunt part of the train to a shunting yard.
- The available storage areas under the crane are not paved. Additional storage areas are located outside of the crane area but the pavement is in poor condition. The connecting roads to the terminal are in poor condition, specially at the well-equipped terminal of Shumilovo. Damaged pavements obstruct the use of mobile reach stackers,
- There is only one or two tracks under the crane/cantilever. Only one loading lane for lorries exists under the cantilever. The chances for future development are restricted by the lack of available areas on-site (e.g. Tbilissi Tov. Bukhara 2, Almaty 2, etc.)<sup>22</sup>. Furthermore, the terminals have not "independent" facilities. The available areas are part of the loading and unloading facilities of the existing railway station. There is a need to repair the fences to prevent the entrance of non-authorized persons and of larceny of freight.

Khyrdalan terminal near Baku (out of operation for more than one year) is in a particularly critical situation.

- \* The terminal is poor designed to be served by road trucks carrying containers,
- \* Most of the cranes are out of order (no spare parts, partly cannibalised),
- \* Very poor condition of pavement of the storage areas and the loading lines (large potholes, steel reinforcement jut out of the concrete),
- \* Vences damaged or not at all, no illumination,
- \* Poor condition of rail tracks.

The consultants were said that there is a project to reconstruct this terminal reconstruction (one Million USD investment, according to the Azerbaidjan railways). But the lack of funds has halted the work. Taking into consideration the unfavourable location of the terminal (with respect to the city), the bad climatic conditions (exposed to stormy winds weather, force more than 6, and this during about 240 days per year the wind), it is advisable to reconstruct the terminal in an other location, near Baku (e.g. in the port of Baku).

New terminal projects are underway (in Buchara in Uzbekistan, Akmola/ Tchimkent and Aktau). The Kazakh Transportation Ministry hopes to stir national and international interest from participants to involve them in the financing of these new facilities. However, funding and profit margins of improvements required are not covered due to low traffic context. In any case the organisation of these traffic concentrations, in favour of multi-modal transportation, remains to be defined.

In spite of the poor condition of the terminals, the Consultant considers in the short and medium term there is no major impediment for the handling of 20 feet container traffic. However, in the long term, many of the old cranes should be replaced. When planned (there is no urgent need), these improvements should be concentrated on a selected and rather reduced number of terminals from which container traffic flows should be concentrated by road companies. These terminals are: Baku, Tashkent<sup>23</sup>, Almaty and may be Tbilissi, Ashgabat, Bukhara or Samarkand as well as the Fergana valley or Akmola/both aside of the main corridor.

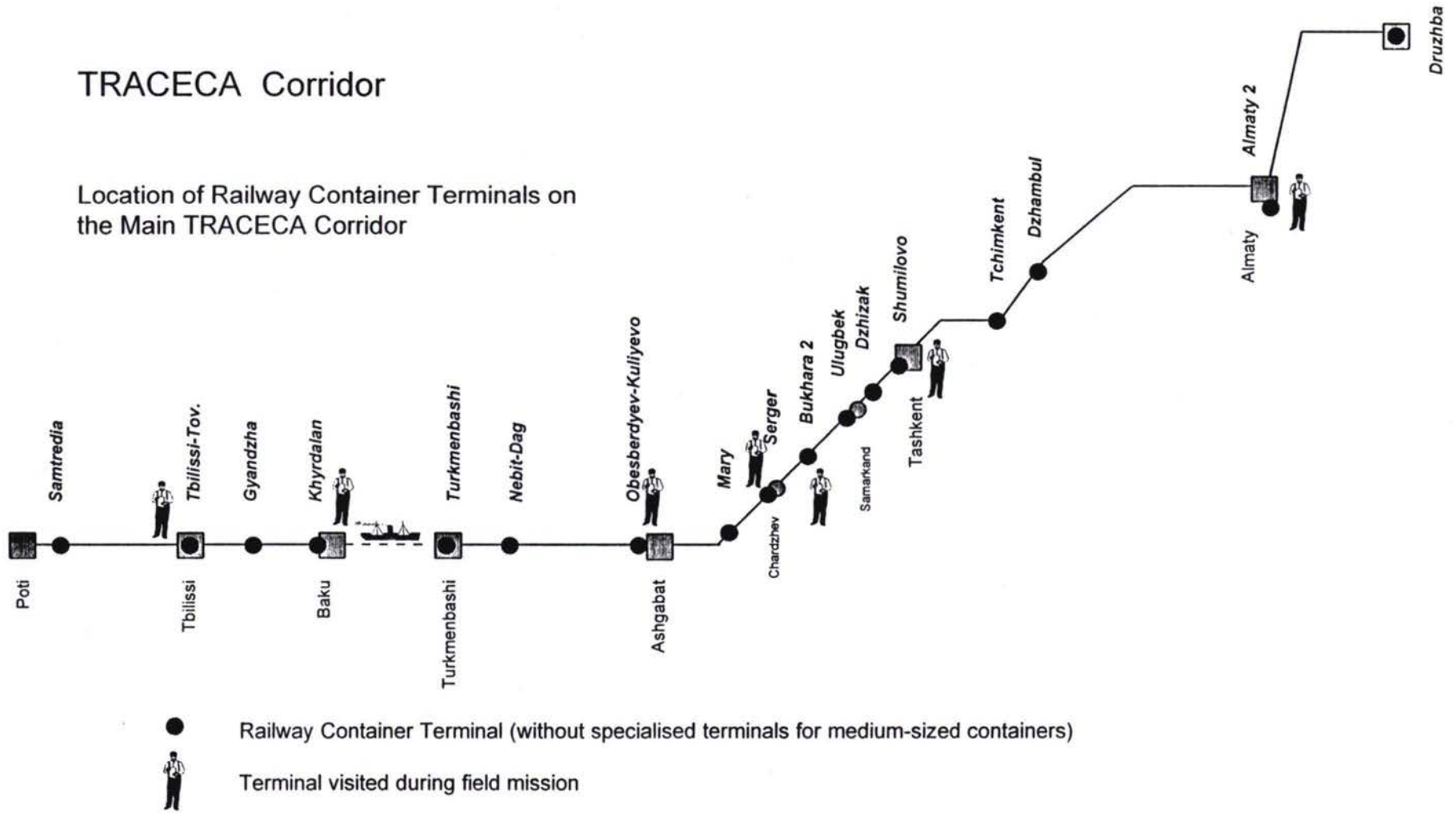
A detailed description of these terminals is given in Annex 5.

<sup>22</sup> this does not concern to some terminals built outside or on the edge of existing stations (e.g. Khyrdalan, Obesberdyev-Kuliyev, etc.)

<sup>23</sup> already done taking into consideration the well developed state of the Shoshtrans-Terminal in Tashkent-Shumilovo

# TRACECA Corridor

Location of Railway Container Terminals on the Main TRACECA Corridor



### 3.1.3.5. Other technological aspects (rolling stocks, truck fleet, containers and pallets)

#### Rail wagons

For carrying of 20' and 40' containers on the railways the following wagon types are used:

- Series-produced specialised container flat cars with prolonged axle-base and cushioning devices for three 20' containers or one 40' container and one 20' container,
- Converted wagons (former normal flat wagons or wagons with stanchions) for two 20' containers (or one 40' container)<sup>24</sup>,
- Normal flat wagons or open wagons (specially for empty containers), in this case additional fixing of the containers is required.

Normal flat wagons or open wagons will be used in case of non-availability of specialised wagons only. In general the railway administrations informed that the use of these wagons is insignificant, but during the mission, in some terminals this type of wagon with containers was seen.

The specialised container flat cars are only cars with twin-axle bogies and roller bearing axle boxes. Two-axle cars are not used in commercial operation. The broad-gauge wagons of all CIS railways are coupled by means of automatic central buffer couplers. The coupling of these wagons with wagons of European standard-gauge railways (screw couplings) is not possible without additional technical equipment.

Most of the railways (Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan) have no problems in covering the demand of wagons for container traffic. For example the Kazakh Ministry of Transport and Communication estimates that for the next 5-7 years no procurement of wagons will be necessary (with the exception of specialised tank wagons). Similar information was given by Turkmenian and Uzbek railway authorities<sup>25</sup>. On the other hand, many of freight cars are out of operation and turned off (especially normal open, covered and flat wagons). In the medium/long term, if the increases strongly, it could be some problems on the smaller railways like Azerbaidjan and Georgia<sup>26</sup>.

A big problem with container carrier wagons is connected with the lack of means to cover the maintenance requirements. Such problems differ from one country to another. In their own workshops or wagon depots, Kazakhstan and Uzbekistan are perfectly able to produce a high level of maintenance. Kyrgyzstan has plans to built a maintenance workshop, but is now in a deficit position. In the Caucasus region as well as in Tadjikistan, maintenance is posing some problems, especially for container flat cars.

#### Truck Fleet

In general, TRACECA countries are poor equipped with trucks and chassis capable of carrying containers. The availability differs from one country to another: very limited in Tadjikistan, Turkmenistan, in the Caucasus. Kazakhstan, Uzbekistan, Kyrgystan are better provided. Turkish and Iranian operators, largely represented in the region, compensate the lack of semi-trailers capable of carrying 20 and 40 feet ISO containers. However, they do not take part in multimodal traffic (even if they are carrying containers).

#### Containers

The concept of container is the only type of modern unit load known in the TRACECA countries (swap body is unknown). Container transport is predominantly based on handling of 20' containers.

<sup>24</sup> a big proportion of the rebuilt of old flat wagons into container cars (3000 wagons per year) was done at the Bukhara repair shop (Uzbekistan) of the former Soviet Central Asian railways. Now this programme has been stopped.

<sup>25</sup> The Uzbekistan railways plan only the procurement of specialised covered wagons for cotton transport

<sup>26</sup> In general as a result of the specific problems of the last years in these two countries the rolling stock situation is poorer than on the Central Asian railways.

According to the former Soviet standards the system of unified transport units is divided into three groups:

- Large containers (20', 40')<sup>27</sup>
- Medium-sized containers (3 t and 5 t)
- Small containers (0.25 and 1.25 t)

As can be seen, medium-sized containers are largely predominant and only used for domestic traffic and for internal CIS-traffic. The real stock of large containers consists of a fleet of 20' and 40' containers. The stock of 20 feet container is large enough compared to the potential traffic. These containers comply with the international ISO-standards and other international rules for container traffic (e.g. CSC). The 20 feet container fleet are only universal 20' ISO-containers (1-CC, 1-C) with a door on one front wall of the container. Special containers such as open-top, open-sided, flats as well as tank containers and refrigerator containers are not available. Some local industrial chemicals companies have their own tank containers (Kazakhstan). Concrete data on this was not available.

The owners of 20' containers are the railways, the sea shipping companies, the inland navigation companies, road traffic companies, forwarders and industrial and trading companies. The proportion of the railways in the overall FSU 20' container stock amounted to about 45 %.

The stock has to be divided between new independent railway authorities. In 1992, a methodology of division of container stock between the railways has been prepared by the Moscow Railway Research Institute and agreed between the Railways in the Framework of the Railway Transport Council of the CIS. The date of real division and the future technology of container operation are still under discussion. Railway administrations of the TRACECA countries expect the following numbers of 20' ISO containers:

Railway administration		number of 20' containers expected
Armenia		
Azerbaijan		1817
Georgia		1719
Kazakhstan		9179
of them	Alma-Atinskaya Railway	36 % = about 3300
	Tselinnaya Railway	26 % = about 2400
	Western-Kazakh Railway	38 % = about 3500
Kyrgyzstan		
Tadjikistan		
Turkmenistan		1649
Uzbekistan		about 10000

After the division of the container stock an outsized container stock will be available. Thus, there is probably no necessity for the railways to obtain new 20 feet containers within the next few years.

The biggest problem with the containers is their poor condition. One of the reasons is often the improper handling of the containers at the terminals and at the customers premises. As the current stock is getting old the condition of the containers has significantly worsened. Only two of the 19 FSU railways repair shops for containers are located in TRACECA region (Almaty/Kazakhstan/ and Termez /Uzbekistan/).

As for the 40 feet containers, the FSU railways did not own any 40' containers at all. The use of such containers is increasing, but, as noticed, there are various problems connected with: lack of cranes or reach stackers able to handle them, lack of semitrailers/chassis, no return cargo, etc.

### Pallets

In TRACECA countries, palletisation is almost unknown: even for goods which can by essence be palletised, (i.e. non-ferrous metals in Uzbekistan). Operators do not consider the use of pallets as a module/fraction of an ISO container. The main reason has to do with the structure of the existing distribution channels, still largely dominated by small shop owners. Although, major retailers distribution networks are

<sup>27</sup> the standards did foresee also 10' and 30' containers which were not used in reality

under development, the use of pallets is confined to some recent supermarkets created by foreign firms. The question of getting back the unloaded pallets dissuades exporters from systematic palletisation of their consignment. When used, pallets are of « last use » type. Furthermore, the lack of pallets handling equipment (lift, trans-pallets, etc.) and appropriated stacking installations explain the little use of pallets made. This situation slows down the process towards the containerisation.

### 3.1.4. Operational aspects

#### 3.1.4.1 General

As it was previously explained (see the concept of multimodal transport in the section 3.1.1. ), the multimodal system is based on the notion of modal complementarity. Road and Rail must « combine » their respective advantages in order to make the system at least as competitive as single mode operations. The question of reducing operating cost at each link of the single chain is the central key to reach this objective. This is:

- To reduce the cost of road haul operations which usually represent 35% of a combined transport operation. This can be achieved by reducing the number of trucks affected to long distance transport and concentrating the available road fleet on moving container to the nearest main terminal, within the « catchment area ».
- To reduce the rail traction cost which usually represents 30% of the total cost of combined transports. This is by introducing « Block Trains » techniques in replacement of traditional A to B traction by individual wagons through successive shunting.
- To reduce the maritime transport cost by using specific vessels such as container ships or even RORO instead of ferry-wagons which are an excellent support but for wagons (ferry wagons do not allow to stack containers on the ship and this makes the container an inefficient support in terms of capacity carried),
- To reduce the handling operations costs by improving the organisation of the rail terminal: direct transshipment from the road truck to the rail wagon instead of transshipment via the storage area. This requires to modernise handling equipment and as far as possible, introduce the automatisisation of terminals.

The organisation of this part of the study is as follows:

- Road operations from/to terminals,
- Rail container terminal operations ,
- Rail traction operations,
- Operations at Ports,
- Documentary issues.

#### 3.1.4.2. Road Operations from/to Terminals

Besides the higher cost on the long distance journey, a driver alone is no able to deliver a shipment by road over distances more than 400 kilometres/day. To offer attractive freight rates on the long distance market, roads carriers should concentrate their activity on the haulage of containers from the user's premises to the closer combined rail terminal. Ideally, the main traction may be subcontracted to one independent combined transport operator (in its turn, this company should subcontract main traction to the railways)

To assume the responsibility for the delivery from the destination terminal to the consignee, road carriers and/or freight forwarders must extend their operations at the « other end » which implies to find reliable

contractual partners. All these operations must be carried out carefully as they represent, in general, 35% of a total cost of a combined transport.

In TRACECA countries, the trucking sector, traditionally confined to local distribution by small lorries, did not use to work together with the railways. Poorly equipped, the road sector is increasing its market share on detriment to the railways. The road industry is competing with the railways on long distance transport instead of concentrating its activities in short/medium distance market, which is the natural market segment for the road sector. They approach container traffic as a type of long distance freight forwarding towards Russian ports in Europe or in Asia for freight loads requiring a high level of transportation protection and safety. The overall container profit margins are necessarily low.

The existing terminal trucking of containers has been designed by the Railways as a simple extension to the railway freight forwarding system. The system has not been specifically designed to group and concentrate/distribute available freight in a given geographical area. Customers use this railways-organised services under exceptional circumstances. Otherwise, from each railway terminal, they have to rely on their own to transport their freight to the destination point, using either their own trucks or those of a trucking company they selected and paid (i.e. « Militzer und Munch » in Ashgabat, « Kazinterfreight » in Almaty, « Cautrex » in Georgia).

This general context partly explains why the system is encountering difficulties to spontaneously generate a multi-modal organisation with additional services, re-loading of containers, and possible re-use of empty containers. Empty containers often remain idle: i.e. BOUYGUES containers in Turkmenistan (Bikrava), DAEWOO containers in Uzbekistan, MAV in Ashgabat, etc. The recent evolution is rather far from what could be the logical choice in the TRACECA geographical context: the multimodal choice where an independent management should work for the benefit of all partners involved.

#### **3.1.4.3. Rail container terminal operations**

With the exception of the Shoshtrans-terminal in Shumilovo all the terminals are property and are under direct management of the railway administrations. The technology of the terminal operation is closely connected to the technology of the work of the whole railway station. The terminal siding service is as a rule, organised by using the facilities and the rolling stock of the neighbouring freight station.

Direct entrance of trains from the network into the terminal sidings as well as direct departure from the terminal sidings respectively is impossible. It has never been required in the past because of the lack of specialised container trains. The transfer of the wagons with containers to/from neighbouring stations (or inside the station respectively) is organised by traditional shunting trips.

If at the at the beginning of the chain, containers are direct loading from the road chassis to the rail wagon at the end of the chain the operations of unloading from rail wagon to the road chassis are based on a very high proportion of transshipment via the storage area.

Containers are loaded so as the front wall door is inside (door-to-door or door-to-front wall if there are three 20' containers on one wagon) whereby the containers can not be opened on the way to prevent larceny of goods. Consequently, single containers have to wait for a second container to the same station or to the same CIS-railway. As a result, container terminal operations are time consuming.

#### **3.1.4.4. Rail traction operations**

The performance of combined transport rail operations essentially depends on the transport techniques adopted: rail traction from A to B by « Block trains » or traction individual wagons trains by successive shunting. Special « Block trains » means suppression of costly shunting operations, stops. These techniques are the key to reduce rail traction cost which usually represents 30% of the total cost. They also help to increase the quickness, reliability and security of transport operations. Furthermore, by suppressing the shunting operations railway companies do not need to deal with the collecting and delivery operations:

immobilisation of the rolling stock at the users' premises is suppressed and the turnover is therefore improved; working procedures are simplified and the need for infrastructure is reduced to a lowest possible level. However, block trains need regular traffic (as an example : 100.000 tons/year allows to compose a daily 20 wagons special container train with a capacity of 40 TEU).

In Central Asia, a specialised freight container rail traction system does not exist yet. The transport of containers is still subjected to freight traffic rules and regulations applied by each railway network to a general rail freight traffic: no transportation masterplan. The train path of the schedule is only used if the number of wagons matches the pre-defined gross weight or length of trains. Otherwise the train path is not respected. Thus, all the train paths are in principle only optional trains (they only run if the number of wagons is found sufficient). As there is no real constant timetable for goods trains, clients cannot rely on the railway operational system: no guarantee of a regular or just-in-time train service.

In others words, as container is subject to the same general railway rules, the train formation, as for the general traffic, is still based on the « operational targets »: the stations form trains only when a pre-defined « target » ( maximal gross weight or with the maximal train length) is attained. The carriage of single wagons and groups of wagons is realised by a hierarchical system of marshalling and shunting yards:

- The first level: The marshalling stations as well as the border stations are connected by inter-marshalling yard trains.
- The second level: small shunting yards are subordinated to the marshalling stations. They have to form/split up primarily local freight trains to/from neighbouring marshalling yards.
- The third level: stations (including the private sidings connected with them) are subordinated to the stations with shunting yards. Between the stations and the shunting yards transfer trains are running.

This results in irregular freight forwarding, a much lower level of traffic on the main line, excessive wagon downtime on singular points along the route: borders, etc. This is a major drawback as compared to the average freight forwarding time required for exchanges between TRACECA countries and Western Europe through competing routes (via Chop and Brest). What's more, no complete train set, shuttle train or trains can cross the boarder without being further re-assembled. Besides, as the trucking activity is disconnected with the rail activity, the concentration of freight loads at main terminals is made too slowly.

Furthermore, the poor condition of rail tracks, rapidly worsening in the last few years, results in an average service speed very low:

- Azerbaidjan 35 - 40 kph
- Georgia 20 - 30 kph
- Kazakhstan 35 - 40 kph
- Kyrgyzstan 35 - 40 kph
- Turkmenistan: 40 - 45 kph
- Uzbekistan 40 - 45 kph (on some TRACECA sections up to 70 kph)

The maximal possible speed on the line amounts to 80 kph only (only some sections specially in Uzbekistan with 90 or 100 kph). The lack of rail track maintenance means that thousands of kilometres are permanently under speed restrictions.

In the Caucasian region there is, since November 1996, a specialised freight container rail traction system. The experience from the « Trans-Caucasian TRACECA Container Train » (described in further section: Phase 3: case studies and training) should be beneficial to develop a connection with the Central Asian network.



### 3.1.4.5. Operations at Ports

The existing transport system concentrates on railway techniques and direct transshipment from rail cars to vessels. This makes the container an inefficient support in terms of capacity as well as in terms of cost per ton carried. Within this system - about to be saturated - the container traffic can not properly evolve. As previously noticed, the layout of the Caspian Sea ports are not designed for containers: There is no CFS area (Container Freight Service) for storing and un-storing containers. The storage capacity has been largely underestimated because all consignments are on direct delivery basis whereby cargo is loaded straight from vessels onto rail cars for immediate dispatch. The Caspian Sea ports (Turkmenbashi and Baku) are not equipped for handling and storing/un-storing containers.

The ships of the Caspian Shipping Company are not suitable for the transport of insulated containers; those ones are carried on trucks or rail cars. There are no staking possibilities. This generates waste of space and results in high transport costs because 35% of the shiploads is related to the empty-weight of the wagons. For a fully loaded ship of 2550 Dwt capacity, only 600 or 800 tons of goods can be loaded. Such a low loading rate obviously restricts the profit margin. RO/RO ships and container-ships belonging to the Caspian shipping Company are currently chartered in other seas because there is not enough container traffic. A large stock of roll-trailers in good conditions is underused in Baku. The current ferries used on the Caspian sea can load either 28 rail cars or 30 trailers. + 4 trucks + 150 passengers. If the wagons are carrying containers, the maximum capacity of the ferries is about 60 units. When only wagons embark, operations take one hour (40 minutes for disembarking). Taking account of time for embarking passengers and some idle time for administrative procedures, the call lasts between three and five hours.

### 3.1.4.6. Documentary issues

For the practice of international transportation the following documents are in general necessary.

#### Administrative documentation:

- A set of bills issued by the client which are accompanied by a « list of content: goods description » commercial invoice, etc. These bills must in certain cases contain specific details as required by the country's administrative bodies, the sender or receiver.
- A « transport instruction note » made out by the loader who takes on, if need be, the obligations of the transport operator in the carrying out of his duties.

**Transportation documentation:** a contract of transport: bill of lading, waybill, international transport document LTA. This transport document may be established for the whole of the journey or broken down into corresponding sections of the journey. These take into consideration the journey taken through each country and the mode of transport used.

**Legislative documentation:** Upon leaving the country of origin, at each border crossing and at the moment of entry of the country of destination, the respective customs' administrations require the presentation of documents concerning the freight and the mode of transport used.

**Financial documents:** in order to process certain means of international payment, the following documents are required:

- On the part of the forwarding agent: a paper vouching for the taking in charge of the merchandise, e.g. a « Through bill of lading » TBL.,
- On the part of the receiving agent: partaking in the obtention of certain methods of payment on receivership:
  - \* acceptance draft,
  - \* bill of exchange,
  - \* bank statement, (freezing of funds), etc.

In the TRACECA countries, apart from the sending of SMGS rail waybill or CMR<sup>28</sup> international consignment, the above procedures along with their corresponding documentation are not well known by the senders and operators. In the part, all these operations were carried out under the responsibility of the sales centre locates in Moscow.

As it has been described and analysed within the TRACECA Project « Trade Facilitation and Customs Procedures », border customs offices are not set up with uniform custom procedures and standard formalities. This causes long delays which slows down the commercial train speed and increases the travel time. Transportation operations are not facilitated by the current heavy procedures. The INCOTERMS are poorly understood (confusion between CIF and FOB). The implementation of simplified paperwork package as proposed by the above mentioned TRACECA project would be welcomed and appropriate staff training would be essential.

### 3.1.5. Management and Marketing Aspects

#### 3.1.5.1. Management Structures

The large Central Asian countries are the most land-locked countries in the world. Four of them are 1500 kilometres far from the nearest seaport. To Western Europe markets, distances involved can reach up to 10 000 kilometres. From Tashkent, the distances by land and by « pure » rail, are:

- 4200 km to Brest;
- 4000 km St Petersburg;
- 5200 km to Chop;
- 4985 km to Istanbul;
- 3885 to Bandar Abbas; 4230 to Odessa.

The export/import transport problems posed by the land-locked position combined with the remoteness from main trade markets calls for specific transport answers. Current alternatives are just insubstantial: high transport costs, poor quality service (delivery time, reliability, safety, etc.). These handicaps are obviously affecting the competitiveness of export/import and consequently the trade development with Europe.

The multimodal transport alternative through the Caspian Sea (2950 kilometres to Poti and Batumi) provides the possibility to shorten this distance by at least 1000 km. The transit of goods through the TRACECA countries allows take under only these countries control all the transport cost, at least up to Poti. In principle, these two advantages are sufficient to compensate the cost resulting from the additional handling cost required to cross the Caspian Sea. A multimodal operating approach is the logical and interesting alternative to meet the customer's desires (low cost, good quality) and facilitate the international commercial integration of the whole region.

Multimodal Management Structures do not exist (see section 3.4.1.2. Organisational environment). The creation of a multimodal management system is one of the key issues of the present project. Specific recommendations and case studies have been prepared to reach this objective. A case study on Multimodal management structure describes who is in charge of what in the field of multimodal transportation. The section 5.2. Recommendation for improvement of systems presents the different step to built a multimodal management system in TRACECA countries.

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<sup>28</sup> Convention on the contract for the international carriage of goods by road

### 3.1.5.2. Multimodal Tariff aspects

Multimodal transportation combines transportation services:

- Transportation of containers or intermodal transportation units, ITU, loaded on wagons, trucks or ships) and,
- Logistical services (handling freight from one transportation mode to the next, data regarding the location of the ITU).

Currently, TRACECA tariff services are obtained by addition of:

- An international railway tariff used on other routes than TRACECA,
- Domestic railway tariffs applied for domestic runs following the last border point prior to the final destination,
- Handling tariffs of each terminal,
- Ferry-related costs (Caspian sea) deducted according to wagon-related costs,
- Trucking tariffs more or less negotiated with the trucking company in charge of transporting containers to the destination terminal,
- Possibly container supply costs in the terminal where the freight will be loaded.

If such a situation can ensure that individual interests will be protected, it is non-transparent for customers who are not able to itemise each transportation cost. Such opaqueness impacts negatively on the development of multimodal transportation.

To evaluate the competitiveness of the TRACECA route as compared with competing alternatives, a specific survey was carried out. It firstly consists of establishing the breakdown of tariffs for each segment and then a comparison of transportation tariffs for a 20' container of approximately 10 tons shipped from the Tashkent region to Paris (Valenton terminal) or Milan (Rogoredo terminal). Calculations are not based on negotiated tariffs. They are approximate prices based on data from various sources from Uzbekistan, Georgia, Italy, Basel and France. It is obvious that the market reality is different, however these tariffs are indications of the tariff policy implemented on the different routes or by the different transportation organisations.

Presented in detail in the section 5 (case studies and training), the result from the calculation is summarised in the following table.

For a 20' container weighing 10 tons between TASHKENT and Western Europe (US Dollars).

<u>TASHKENT - MILAN</u>		<u>20 foot (10t)</u>
VIA	COP	3040
	Riga	3920
	Bandar Abbas	4410
	<b>TRACECA</b>	<b>5590</b>
 <u>TASHKENT - Paris</u>		
VIA	BREST	3170
	RIGA	3860
	BANDAR ABBAS via	4975
	Mediterranean ports	
	<b>TRACECA</b>	<b>6150</b>

The table shows that compared with various competitive routes, TRACECA is not currently competitive in view of the high volume of sea freight shipped towards POTI. For a 20' container weighing 10 tons between Tashkent and Western Europe, the freight rate is approximately similar up to the different CIS Borders or even Bandar Abbas. It amounts about 2500 USD although the distances are quite different (4286 km via Riga; 4761 km via Cop; 3100 km via Bandar Abbas and 2000 km via Poti). On the contrary, the prices differ a lot between these exit points and the final destination in Milan or Paris. In particular, the current high maritime cost between Poti and the Italian ports reduces the attraction of the TRACECA alternative. It means that serious efforts must be done to reduce transport cost Tashkent-Poti to be in a competing position: the estimated reduction to be considered is about 15 to 20%. Besides, there is an effort to find agreement with Shipping lines to serve Poti more regularly. This will depend on the traffic and should encourage TRACECA countries to join their effort to attain a minimum traffic level.

Currently, main operators are mostly using competing routes. For instance, the French company BOUYGUES, is forwarding containers by « pure » rail (100 containers/month with furniture and heavy equipment) from France and Benelux countries to Ashgabat through Cop (Zahony) and Brest (Malazsevice). The alternative was found to be the better, after preliminary studies. Organised by MILITZER and MÜNCH, the shipment, although requiring up to 27 days, is considered cheaper and reliable enough. Some other examples, (imported traffic from Italy to Kazakhstan organised by DOLPHIN, via COP (ZAHONY); food aid supplied by the European Community to Turkmenistan via Riga) shows that trade operators and freight forwarders are currently preferring « pure » rail alternatives.

The absence of true operators in TRACECA countries and the situation described in previous sections are the main reasons. The Railways as forwarding agents and land terminal managers, the Poti Port as port servicing operators and the Ferry Company operating on the Caspian sea deal with freight traffic in containers as with any other type of traffic, using similar statistical and tariff methods.

If the trucking undertaken by customers or trucking companies selected by them is contractually negotiated, railway transportation tariffs, servicing in land terminals, trucking by companies selected by the Railways and transit tariffs for wagons crossing the Caspian Sea are based on published tariffs. Railway tariffs are always calculated on the basis of the MTT (Transit tariff applied by railway networks under the Soviet influence) kept as a tariff tool and reference for international traffic along TRACECA routes.

Today as in the past, container traffic is still discriminated because the standard tariffs exceed those applied by wagon loads (tariffs are expressed in monetary units/ton). No economic justification provided by the Railways can explain this discrimination which maintains high level of wagon traffic which could be transported by containers. It also introduces trucking as a false alternative to ship containers over long distances. Rebates granted for certain types of traffic (i.e. export of Uzbek cotton) are based on tariffs where the cost per container always exceeds that per wagon. Certain regular export trends (Uzbek fertilisers) cannot sustain such tariffs (Poti-Baku: one 20 feet container is about 400 USD).

It should be noted again that there is no door to door set freight forwarding tariff and that each current participant (railway or ferry network) draws its fee without any concern for what the customer should pay for a door to door service.

Payment terms and conditions for railway transportation are those specified by the MTT: they indicate tariffs applied by each network in local currencies (e.g. Swiss Franc) to the last border prior to the destination station. This tariff can at times be negotiated with the railway network of the destination station. The tariff system is based on the former Soviet Union's approach to container traffic. None of the participants have a cost/profit oriented approach.

The fact that the railway production is not based on the concept of a direct container train crossing the border, prevents any type of tariff policy proposal per train scheduled with a minimum number of wagons. A satisfactory organisation of multi-modal transportation generating major savings in terms of railway operations expenses is cruelly lacking. Nevertheless, the low level of railway traffic combined with the lack of organisation hampers any type of productivity increase for TRACECA railway networks.

### 3.1.5.3. Marketing related aspects

Current participants in container freight forwarding have a poor perception of marketing techniques as a tool to increase sales. They just try, when asked, to meet the needs of freight forwarders or shipping companies which intend to use container transportation in Caucasian countries or in Central Asia. In most cases, the initiative comes from the customer himself. Operators have no elaborated marketing strategy. Customers usually require special tariff measures or a general rebate, in the form of commissions shared with an intermediary company (i.e. Zheldor or "transit" subsidiary company of the railway networks as Azerail in Baku). However, certain national transportation intermediary companies which display a great deal of imagination and use innovative approaches (CAUTREX in Georgia, SHOHSTRANS or BK-INTRANS in Tashkent, KAZINTER FREIGHT or TERMINAL in ALMATY) gradually replace specialised railway departments and try to successively require lower tariffs from multi-modal transportation suppliers as well as an increased service quality.

### 3.1.5.4. Commercialisation and logistics

Container technology has been conceptually designed to prevent goods themselves from any manipulation during the transportation process. Only the « boxes » must be handled, and this is to be made from a place near the producer to a place situated near to the final consumer. A second condition for efficient container transport consists of using the boxes in both ways of a traffic flow. These two requirements mean that containers are efficient when used in « door-to-door » transport operations, between two regions exchanging equilibrated volumes of containers, in order to avoid excessive empty returns.

As a consequence, The use of containers implies that only two terms of sale can be efficiently applied : « Ex works » or « Free delivered ». The term « Ex-works » means that the buyer is responsible for the total transportation, from its warehouse or factory up to the final consumer. The term « Free delivered » means the opposite: the seller is responsible for all possible damages during the transportation and must pay for all transport charges from his warehouse to the end-user's premises.

In the Europe --> TRACECA direction, the most common commercial practice is a direct relationship between a maker-seller and an end-buyer. There is no intermediary buyer, or when there is one, he is situated near the final buyer. The first condition of efficiency for container transport is fulfilled ("door to door") and the choice container seems to be judicious. The problem is that « boxes » often return empty, because In the TRACECA -->Europe direction, packing the goods in containers from a place near the sender up to the final user is not easy. For leading exports products such as the cotton, commercial practice often requires the services of an intermediary selling agent which is often situated too far from the final-user.

If producer-seller knows the content of the intermediary agent's order, he does not know the requirements of the final-user in terms of logistics: quality and quantity per type of product, size of parcel, frequency required, etc. As final consumers in Europe used to manufacture on « just-in-time » process (to avoid costly storage), a reliable and time-adjusted transport delivery is required. Currently, the lack of reliability of the current TRACECA corridor joint the poor adaptation to containers of the storage facilities makes obstacle to the easy use of containers in this sense of the traffic flow.

Currently, the intermediary selling-agent prefers to buy on « FOB » basis (Free-on-Board) and tends to prefer rail-wagon transport solutions for the first phase of the transport as wagons offer a better loading capacity - therefore a lower cost per ton transported - . They are not in favour of containers for this phase, also because he needs to reorganise the goods (unload the container) according to the requirements of the final buyer. From his warehouses, they proceed to sell on « free-delivered » and « just-in-time », by container.

If producer-seller from the TRACECA region desires to efficiently introduce « free-delivered » container sales, they must re-adapt their logistics and storage policy in accordance with the end-user requirements. This implies to re-adapt the handling facilities at the factory premises, still often wagon-oriented, and improve the layout of warehousing facilities. In this case, the TRACECA transport companies will also have to make agreements with European companies particularly when organising end-haulage transports.

If the producer-seller desires to efficiently introduce « Ex-works » container sales, it is necessary to clarify the relationships between the sellers and the intermediary merchants. They must also accept the real meaning of ex-work contracts which implies that the trader has total freedom regarding the choice of the mode and conditions of transport. In this case, local companies should take part in the transport activity, under the responsibility of the buyer's operator choice.

Despite the above mentioned difficulties, opportunities already exist. Up to 20% of the Uzbek cotton, for example, could be containerised at the origin because the producer-seller is in direct commercial relationship with the end-user.

### 3.1.6. Summary of strengths and Weaknesses of the existing system

The next table synthesises the strengths and weaknesses of the existing system (Task 5).

Definition	Strengths	Weaknesses
<b>Organisation</b>	Some dynamic private companies are partially filling the gap left by the absence of specialised combined transport companies	Each participant has a mono-modal approach which excludes any type of collaboration with other partners. There are no <u>independent</u> combined transport operators capable of assuming the responsibility of organising international multimodal container traffics from the origin to the final destination.
<b>Traffics</b>		
From/to rail Terminals	« Regional Agreement on Transport Issues » (Uzbekistan, Turkmenistan, Azerbaidjan and Georgia) is expected to boost the traffic from Central Asia to Georgia.	In the Caucasian countries, the traffic from/to rail terminals is reported to be low. It is « unbalanced » ; Most of container must be sent back empty. In Central Asia, although the overall traffic is increasing, rail container traffic is dramatically decreasing at present time.
From/to Ports	<p><u>Turmenbaschi</u>: commodities such as equipment, cotton, fertiliser and part of the metal products (ingots) are containerisable</p> <p><u>Baku</u>: From 1993 to 1995, the total traffic from Baku to Turmenbaschi has doubled. The nature of the traffic is evolving towards easier containerisation. The volume of containerisable is at least 63.000 tons. (6 300 TEU).</p> <p><u>Poti</u>: from 1993 to 1995, the traffic increased to 1.6 millions tons. Rapid containerisation process in progress: from 23 000 tons in 1992 to about 90 000 tons in 1995 (9000 TEU)</p>	<p>But <u>only 4000 tons are full container traffic</u> (about 400 TEU, in 1995). The traffic via ferry terminal is more than three times higher than the traffic via piers. The ferries are carrying about <u>35 % of dead-weight</u>.</p> <p>The largest part of the traffic increases (100.000 tons) is passing by trucks (via ferry terminals). <u>Less than 1% of the total traffic is containerised</u> (About 350 TEU).</p> <p>Container traffic from Central Asia is very low: about 3% of the overall container traffic.</p>

<b>Technological Aspects</b>		
Rail and Roads	In general, there is no major problems to organise special multimodal trains as container trains are normally shorter and lighter than normal heavy freight trains.	However, it must be noted that the Georgian section Sestafoni - Khashuri has a particularly high gradient: 32% between the stations Kharagouli and Likhi. On this section, an assisting pusher locomotive is often needed.
Ports		Rising level of the Caspian Sea. Problems with the rail tracks (from railways and cranes) not embedded into the floor makes operations difficult.
General		
Storage capabilities	Largely sufficient in Baku, even for a traffic of 10 000 TEU. 6000 m <sup>2</sup> in Poti.	The backup areas for efficient container operations have been seriously underestimated.
Handling equipment	Sufficient in Baku and in Poti.	In Turmenbaschi, the lifting capacity of the 6 existing cranes is insufficient for 20 feet (but possible).
Vessel fleet.	The Caspian Shipping C own two RO/RO ships capable of carrying up to 66 containers (equivalent to a 28 wagon container train).	These vessels have been chartered and operate out of the Caspian Sea. Currently, there is no RO/RO deserving Baku-Turmenbaschi
Roads	Pavement is in acceptable conditions. There are problems to organise the collection and deliveries by road from/to terminal.	
Rail container terminal	The number of rail terminal and their alignment, as well as the area of coverage, allows the practice of Multimodal transport.	Technical standards of main terminals are poorly adequate to the handling of large containers. Critical Situation in Azerbaijan: the Khyrdalan terminal must be reconstructed.
Rail wagons	Most of the railways (Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan) have no problems to cover the demand of wagons for container traffic	Some problems to meet the maintenance requirements.
Truck fleet		Underprovided.
Container	The stock of 20 feet container is large enough compared to the potential traffic. These containers comply with the international ISO-standards and other international rules for container traffic (e.g. CSC). Some local industrial chemicals companies have their own tank containers (Kazakhstan), concrete data on this was not available.	The biggest problem with container is their poor technical condition.  Special containers such as open-top, open-sided, flats as well as tank containers and refrigerator containers are not available.
Pallets		Operators no not consider the use of pallets as a module/fraction of an ISO-container. This slows down the process towards containerisation.



<p><b>Operational Aspects</b></p> <p>Road operations</p> <p>Terminal operations</p> <p>Rail operations</p> <p>Port operations</p> <p>Documentary issues</p>	<p>Some dynamic private road companies are able to propose international container services. These companies are able to work together with railways, within a Multimodal approach of international container transport.</p> <p>At the beginning of the chain, containers are directly loaded from the road chassis to the rail wagons.</p> <p>Railway staff has a large experience on railway traction and train formation techniques.</p> <p>High level of skills.</p>	<p>Customers have to rely on their own to transport their freight to the destination point, using either their own trucks or those of a trucking company they selected and paid. A railway system exists, but has not been specifically designed to group and concentrate available freight in a given geographical area. As a result, empty container, often remains idle.</p> <p>At the end of the chain the operations of unloading from rail wagon to the road chassis are based on a very high proportion of transshipment via the storage area. This slows down the operations.</p> <p>Train formation for containers is subject to the same general rules, based on « operational target »: the train run only when a pre-defined number of wagons is attained. Traction is realised by a hierarchical system of successive shunting operations.</p> <p>Only via ferry: 35% of the load embarked is tare weight.</p> <p>No uniform border customs procedures, no standard formalities: long delays.</p>
<p><b>Marketing Aspects</b></p> <p>Tariff</p> <p>Marketing</p> <p>Commercialisation</p>	<p>Agreements on attractive container tariffs have been established within the project Trans-Caucasian Container Pilot Train.</p> <p>About 20% of the cotton, the leading export product could be sold on a door-to-door basis. This volume could be sent by container. Provided some changes on the logistics (storage and handling at the level of the seller) and some improvement on the Black Sea ports (extension of warehouses areas), the volume of containerised traffic could be largely higher.</p>	<p>Container traffic is discriminated because the standard tariffs exceed those applied by wagon loads (tariffs are expressed in monetary units/ton).</p> <p>Operators have no elaborated marketing strategy.</p> <p>Leading exports are generally sold « Ex-works » instead of « FOB ». Local operators have a poor control on transport from origin to final destination.</p>

## 3.2. Recommendations for Improvements

The analysis of the current situation shows that a Multimodal system, as it works in western countries, is a concept relatively unknown in the TRACECA region and the introduction of such a transport system is a necessity to facilitate the expansion of Europe-TRACECA trade. The analysis reveals the need not only for investments to re-adapt the current facilities but, - just as important - the need for a specific management structure able to deal technically with multimodal traffic in a competitive manner.

The redefinition of the multimodal system could be ill-conceived if based only on investments to improve the infrastructure without creating the basic organisational and operational conditions necessary for its development. The proposed strategy for the development of a well-functioning intermodal network answers, all at once, the need for appropriate infrastructure and the need for a management structure. The proposed strategies, thus, include two different but complementary action programmes:

- *A technical Assistance programme to create the basic conditions and management structures for the development of the multimodal transport system,*
- *An investment programme to re-adapt the existing physical multimodal infrastructure.*

The technical assistance programme comprises a series of measures to be implemented in a « step-by-step » approach, within a time period of 18 months. The investment programme, contemplated in parallel, is focused on immediate improvements at selected segments of the multimodal chain, specially in the field of handling systems and container storage facilities.

To avoid redundancies, all the proposed recommendations have been integrated within these two programmes. They are presented, under the form of « Bankable Reports », within the first part of the Phase III: Proposals for Improvements. Furthermore, « Case studies » have been prepared so as to complete, with detailed information, the main proposals.

## 4. PHASE II: TRANSFERT OF TECHNOLOGIES

### 4.1. Introduction

The section details the results from the activities aimed at transferring intermodal technologies and know how. It consisted of three main components:

- Summary of E.U experience with multi-modal transport (Task 7),
- Study Tour in E.U. countries (Task 8 to 11),
- Evaluation of the Study tour (Task 12).

A Summary of E.U. experience with multimodal (Task 7) was prepared to clear out the key for the success of European countries with intermodal transport, and to facilitate the understanding of European multi-modal systems principle of functioning (as compared to the TRACECA region system).

The Study Tour involved a series of preparatory activities: Technical preparation (Task 8); Setting up an intermodal transport group (Task 9), Practical organisation (Task 10). The technical programme covered the different European organisations, vectors (road; rail; maritime) and facets of multi-modal transport chains as well as technologies and associated logistic related services of multimodal plates-forms (A detailed programme of the Study Tour as well as the list of participants is given in Annex 6). After the Consultant definition of the required profile of the participants (one high ranking decision-maker and one high level specialist per country), an intermodal transport Group was set up to participate in the Study Tour.

The execution of Study Tour in Europe (Task 11) allowed to ensure a real exposure of Traceca multi-modal groups to European Unions' practices through a visit to selected multi-modal sites and organisations to identify relevant information and training needs. Furthermore, the TRACECA participants create permanent contacts with West European multi-modal bodies such as the UIRR<sup>1</sup>, the EIA<sup>2</sup> and INTERCONTAINER.

At the end of the Study Tour an evaluation was carried out (Task 12) through a specific 10 questions questionnaire. The result of the evaluation is summarised in a final section of this part of the report.

### 4.2. Summary of E.U. countries with Multimodal Transport

#### 4.2.1. Introduction

The term "multimodal transport" corresponds to the carriage of goods by at least two different modes of transport. When a loading unit of merchandise is sent in this manner and remains unchanged throughout the chain of transport, this comes under the term of "intermodal transport". A characteristic of intermodal transport in Europe is the maximum use of rail, waterway or sea so that the distance covered by road at the commencing and terminal points is kept to a minimum. This is known as "combined transport".

Multimodal transport makes the most of the advantages particular to each mode of transport it employs. Rail transport is appropriate for transporting large quantities over long distances whereas transport via heavy goods vehicles (HGV) is pertinent for the collection and distribution of goods over medium and short distances. This means that rail and road modes are not so much seen in competition with each other but rather as complimentary. Furthermore, by benefiting from the advantages of each, multimodal transport responds well to the growing environmental constraints imposed on transportation.

<sup>1</sup> International Union of Rail-Road Combined transport Companies.

<sup>2</sup> European Intermodal Association

## 4.2.2. Non-accompanied Transport

The most common form of multimodal transport is via containers, swap body (freight carrying units used only in rail/road movements) and articulated lorry. This non-accompanied transport, within which only the loading unit is transported by rail, represents about 80% of the market for combined transport.

Non-accompanied transport requires a whole range of techniques, organisation and infrastructure. This means that transport and consignment companies need to be equipped with special containers which may be transhipped by means of mobile or gantry crane for vertical loading. These road vehicles equipped with swap bodies or in the form of semi-articulated lorries are slightly more expensive than standard lorries. Furthermore, the transport company must be careful that the container which is to be off loaded at the terminal is directed to the correct destination. To this end, a number of companies have come round to either setting up their own office at the other end or entrusting this to another partner.

## 4.2.3. Accompanied Transport

The Rolling Road is a train that allows a heavy goods vehicle to be carried as a whole along with its driver, hence the term "accompanied" transport. The road vehicle is loaded onto a special low loader wagon via a ramp which is known as horizontal loading. A wagon equipped with sleep-beds is assembly to the train for the use of the accompanying driver. At the end of the rail journey, the driver recuperates his/her lorry in order to take the goods to their destination.

The great advantage of this is that the driver can rest during the train journey. The duration of the train journey is recognised by legislation in several countries as rest time which allows the adhering to of working hours. Moreover, working conditions are improved by avoiding night shifts.

The Rolling Road trains can be rapidly loaded and unloaded and so are particularly adept to cases where multimodal transport needs to take place in a relatively short space of time. It is a very flexible technique which is accessible to all road hauliers including small companies and occasional users. This is because this method does not require special equipment or adaptation neither on the side of the hauliers, the users nor the infrastructure of the terminals. For this reason, they are often used for short and medium haul transportation (200 to 400 km) as well as for cases where the rotation of trains needs to be quick. Given these facts, the Rolling Roads technique could be the answer to multimodal transport in Central and Eastern Europe.

However, there is a downside to this system. The principal inconvenience of the Rolling Road is that, in addition to the goods, the whole of the lorry needs to be transported as well. Also, the height of the wagons needs to be 40 to 50 cm greater than the norm, which may cause problems with existing transport infrastructure (height of bridges, width of tunnels). Thus, where fully equipped terminals are available, the practice of accompanied transport is less economically efficient than non-accompanied transport.

## 4.2.4. Rolling Stock

Road hauliers are not alone in investing in multimodal transport. The need for appropriate rolling stock is indispensable for the system to be economically viable. The railway companies are currently equipped with several thousand wagons designed for the transportation of different types of loading units. Furthermore, a good number of multimodal firms own sizeable private wagon stocks. These include low loader wagons used for the Rolling Road, pocket wagons which have recessed pockets to accept the road wheels of semi trailers and swap bodies, double stack wagons which carry containers on two levels as well as non-accompanied types of containers and swap bodies.

## 4.2.5. Freight Villages

An appropriate set-up is required for the practice of non-accompanied transport. Large sites known as freight villages have evolved which include a terminal along with the necessary administrative facilities associated with goods handling. A dense freight village network has emerged in the most parts of Western European states and this continues to develop. The presence of a terminal has not necessarily been the result of heavy financial input. A mobile crane is sufficient for a start although the largest terminals generally work with gantry cranes.

## 4.2.6. The Railway Operators and Companies

Multimodal transport relies on the expertise and the co-operation of different parties. The railway companies provide the network and rolling stock along with necessary staffing. The operators buy the rail traction from them. The acquisition of wagons is shared between the railway companies and the operators. The terminals are run by the railway companies in conjunction with either the operators or private local users. The operators establish their services based on these elements and market either the whole of the loading chain or the terminal traffic to carriers and forwarding agents.

Over the past few years, more and more transport for swap-bodies and articulated lorries has been offered to road hauliers. The creation of multimodal transport companies structured on a co-operative model roots from an initiative taken by agents and transport companies as well as their federations.

The national railway companies only own a minor part of the capital. At present, more than 1000 transport companies and agents, often small and medium enterprises of which many have heavily invested in multimodal transport, have joined the 17 companies belonging to the International Union of Combined Rail-Road Transport (UIRR). The members of UIRR organise and market the transport from terminal to terminal by rail. It is the road haulier who sees off the merchandise at the terminal and who will see that a handling company or a partner at the arrival terminal will dispatch the goods to the client. It is the transport hauliers and marketers themselves who mastermind the transport system, investing in equipment such as swap bodies and liftable articulated lorries. They also participate in the financing of the UIRR members, thus contributing in the development of activity in multimodal transport. The organised co-operation between road and rail is the principal foundation of the success that the multimodal transport groups are bringing about.

There also exist several private operators who take part in multimodal transport on their own accord. These tend to concentrate on certain categories of goods, such as chemicals and cistern tanks, or offer haulage capacity on multimodal trains to a third party.

The railway transport market is becoming more liberal. The original principal established that containers were only to be transported by either container firms or railway companies and that lorries and their loading units only by multimodal transport companies. This practice is beginning to die out with the growing presence of operators in all sections of the market. However, complex questions result over the matter of monopoly rights. For example, the members of UIRR are in competition with the railway companies who are their exclusive suppliers.

In most of the European countries, the railway companies come under private law. The railway legislation 91/440 obliges all EEC members to reduce the debts of the railway companies and guarantee them a management system separate from the state. These two measures have radically changed the outlook for railway transport.

It is the responsibility of the State members to ensure the obligatory separation of the railway operation and the rail tracks as well as overseeing the option of institutional separation. With respect to the transport sector of the railway companies, this needs to intervene on the market side as an private company, whilst the railway network comes under national management of the concerned States. It is these two groups which will cover the financial costs of infrastructure and who will deduct fixed user prices in function of distance, train composition and other criterion (speed, axle loading, etc.).

Within the international multimodal transport sector, all the railway companies, including the private companies recently formed, will be able to have free access to the whole of the European railway network. The multimodal transport as such is in a unique position given that, for the rest of the passenger and goods traffic, the railway companies themselves can only offer the use of railway infrastructure in their originating countries.

Even though the aims are clear, it is difficult to imagine the scenery of railways will be tomorrow. One thing is sure however: multimodal transport is called to play a key role in the development of goods trafficking.

#### 4.2.7. The Haulier's Choice

Multimodal transport is generally accepted for its environmentally friendly aspects. However, this fact alone will not convert more than a few companies and transportation agent to this technique. Although the loading scene does not benefit from any environmental bonus, multimodal transport brings economic advantages which constitutes the determining factor for a haulier company.

Multimodal transport, whether it be in the form of accompanied or non-accompanied transport, helps the companies to lower their variable costs of petrol, tyres and vehicle maintenance. Furthermore, the vehicle life is prolonged and the vehicle stock can be diminished as a consequence if the company invests in the appropriate multimodal transport equipment.

The savings made on staffing costs should not be underestimated. By switching to multimodal transport, a company can transport greater quantities of merchandise for the same number of staff. Given the current strict legislation on the subject of rest and driving time, a single driver can only make up to 700 road km in one particular day. Checks on driving and resting time will become more rigorous over the course of the next few years.

Many firms are now sending dangerous goods by rail or water way at every possible instance. The more condense the transport network becomes, the more companies are trying to send their goods by rail.

It is not unusual to find companies who, because of time saving on round trips, have had a 20% augmentation in goods transported with the same number of personnel and overhead costs. Still more companies have found damages to goods is notably reduced when using multimodal transport. However, there needs to be the assurance that the transport cost by rail does not grow more rapidly than that of road so that companies will be at less risk when investing in multimodal transport equipment.

#### 4.2.8. Operational Aspects

From the point of view of the hauliers and rail companies, the direct train is the most advantageous because it is highly cost saving in terms of manoeuvres of wagons at the railway terminals. For this same reason, these trains are very reliable which is a must when dealing with "just-in-time" operations. Wagons are added or taken off at the terminal in function of required capacity. The navette trains are a special variety of direct trains: their composition is fixed.

Next to the direct trains, the grouping trains constitute the base of the multimodal network. They are trains made up of envois headed for two or more destinations. The groups of wagons are swapped between trains at the rail depots to form new trains with one destination. The nodal points or "hubs" allow a particularly advanced form of train. The principal railway operators adopt more and more the solution of nodal points for technical and quality reasons.

Certain criteria must be taken into account when road vehicles with their unit load use the rail in the form of multimodal transport. The usual dimensions of rail wagons is superseded. The upper limit for the height and the breadth of unit loading is defined in the rail dimensions. This is restrained in certain conditions when encountering tunnels, bridges and even the roofs of stations. The draft of all the unit loads used in multimodal transport is thus coded by means of a yellow panel which informs the train driver of the dimensions of their unit loading. These permit the differentiation of loading units. The dimensions of all the

rail link infrastructure are known. As a general rule, there are few restrictions for the containers and the swap-bodies. Even the alpine tunnels have been enlarged over the past few years in such a way that the articulated lorries used in multimodal transport can take them. It is the "jumbo" containers that continue to cause a problem and generally the British articulated lorries. As for the Rolling Road which permits the loading of whole lorries, this only exists in countries where the present network has an adequately dimensioned infrastructure.

Multimodal transport is in principle apt to transport all goods which would otherwise be transported over long distances of road. In practice, only the goods with specific requirements of strict time limits are restricted. Goods which need to be transported under controlled temperature (i.e. refrigerated) are mainly sent by fast and direct trains. "Green" freight, that is to say fruits and vegetables, have other rules: they must often be delivered by 04.00 a.m. in markets, a time that does not correspond to a previously practised timetable. On a positive note, it is better to transport dangerous goods by rail as the safety records of rail are much better. Over the last years, legislation has rendered the conditions of the transportation of dangerous goods more strict. The higher the safety requirements on the road are enforced, the more goods will be assigned to multimodal transport.

Several criteria come under consideration over the acceptability of multimodal transport. One of these is timetabling. The timetable plans in most demand are, on a national scale those of type A/B -leave in the evening, arrive the next morning - and internationally, those of type A/C - unloading the following day. Thus, multimodal transport takes advantage of night time travel which allows the carriage of goods to their destination in time for processing the following morning.

More often than not, the demands of the client represent a difficult task for the railway companies who need to fit these into their plans. The same goes for the operators who must make the offer to the client and, in most cases, provide the wagons. Not every demand of the clients can be satisfied. One major factor is that freight traffic must share the railway capacity with passenger traffic. Added to this are stoppages for technical reasons such as the change of locomotives at borders require because of different electric systems.

The need for international links in multimodal transport is becoming more vital with the growing integration of Europe. In correspondence with that which has happened with passenger travel, real quality offers are being developed for stronger links across Europe.

#### **4.2.9. Offers to the Client**

Multimodal transport is in an ever continuing process of diversification and orientation towards the needs of the client. Performance links are now offered even for the furthest destinations.

Multimodal transport has seen important development over the past few years between the largest port in the world Rotterdam and its hinterland. This primarily concerns rapid transport of containers by rail. The direct train destination Prague is one of the most recent trains in service. In mid-May 1995 a shuttle train was put into service following A/B plan between Rotterdam and Switzerland. A multimodal set-up consisting of a train link between Rotterdam and France, Spain and Italy, has been operational since the end of June 1995. This train called the "Mediterranean Shuttle" circulates 5 times a week both ways. This offers transit times within 24 hours for Spain as well as for Central and Southern Italy.

Hungary is on the way to transferring a considerable part of its traffic to rail. Between Wei (Germany) and Szeged (Hungary) some 25 000 road trains took the Rolling Rail in 1994. Hungary is well equipped with ports situated at the North Sea, Brême and Hamburg. The Hansa-Hungari-Container Express which carries almost all types of containers offers branch trains from the Hungarian terminal to countries such as Romania, the Ukraine, Greece, Bulgaria and Turkey.

These are examples of multimodal transport systems that have been set up whenever potential markets permit.

## 4.2.10. Mobilisation Constraints

The European transportation market is in full growth. The exchange of goods and the resulting demand in transport services are growing even more rapidly as trans-border economic activity intensifies. The abolition of the iron curtain at the end of 1989 has furthermore accelerated traffic growth. The experts estimate that international transport will have a 60 % growth rate over the period 1988 to 2010.

The traffic however is being presented with more and more constraints. Transport infrastructure is desperately saturated and traffic congestion is part of every day life in all European states.

In response to this, a number of states are taking great measures to compensate for deficiencies in infrastructure. In 1994 the European Commission put forward a plan of action under the title of Trans-European Network (TEN). This defines the principle projects of the Community on the subject of infrastructure and co-ordinates the adopted measures through the different State members. Pressure will continue to be applied for the financing of the modes of transport which best respect the environment, that is to say rail and water ways.

Moving on from the financial problem comes the acceptability of traffic politics. Today, it is not possible to just decide to pump financial resources necessary for the construction of infrastructure projects. The people of the European states are less ready to accept the construction or the extension of infrastructure on a large scale. Opposition on all sides lengthens the planning time table.

Along the same line, there is a greater public awareness of the fact that growth of traffic has damaging effects on the environment. Traffic has been defined as one of the determining factors of the greenhouse effect. The European office of Statistics, Eurostat, estimates that the consumption of crude oil in 1988 solely by the transportation sector in the European Community lies at 211.5 million tonnes. This represents 30 % of the total energy consumed by these countries. It is road transport which far outstrips all other modes consuming 84.4 % compared with 2.5 % for fluvial and 2 % for rail. In the mean time, the most industrialised states are committed to the reduction of harmful gasses into the atmosphere. Concern resides mainly over carbon dioxide emissions because of its links with the greenhouse effect.

Pollution is not the only inconvenience caused by traffic. Scientists have endeavoured for several years to evaluate the whole of the damaging effects of traffic and to gather these under the term "external costs". From the calculations of the OECD (Organisation for Economic Cooperation and Development), the global economic cost of road traffic - that is to say atmospheric and sound pollution, traffic congestion and accidents - would in itself attain 5 % of GDP (gross domestic product).

It is clear that any methods of action to be adopted need to ensure a mobility system which respects the environment. The necessity of associating different modes of transport and integrating them in a global concept is becoming obvious as traffic congestion becomes a more pressing matter. The European Commission, however, sticks to solutions which conform to the marketing laws. So, it is not a question of looking for directives from above. The optimal solution must result from different forces present in the market. The policies decided upon will have to determine and influence the conditions of competition in a way that all the modes of transport contribute fairly to the social costs of infrastructure which concern them. Until this point can be guaranteed, public support will be necessary for certain modes of transport to develop.

The turning of Europe towards multimodal transport does not in any way signify that competition between the modes of transport will be excluded. Nor does it mean that the lorry will be excluded from the market. Quite the opposite. It is in the nature of multimodal transport to bring together the use of different modes of transport. This is seen by the fact that it is precisely the companies and marketers of transport as well as their respective organisations who have participated and will continue to participate towards numerous European companies of multimodal transport.

## 4.2.11. Promotion Measures

Multimodal transport is presented by international transport policies as potentially the most beneficial. It is with this vision that the European Commission has established a multimodal European network which is of



great community interest. Moreover, a series of legal measures have been undertaken over the course of the last years in order to improve the framework conditions of multimodal transport. This support towards transport policy aims to compensate multimodal transport for the contribution in capital that they bring in the form of reduction of social costs. These include the reduction of costs borne by the economy following accidents causing damage to the environment. Whilst pushing for all modes of transport to pay for social costs they cause, the European Commission feels that it is necessary to promote multimodal transport. It has therefore brought in a series of measures to compensate for inconveniences intrinsic to multimodal transport. This is known as compensation for disadvantage.

The companies who use multimodal transport can, in the most part of countries, economise on transportation tax. A company which uses multimodal transport lessens the road congestion of infrastructure it otherwise might have caused. This goes against equality in treatment if this company must support the costs of road use (taxes on vehicles, petrol and road tolls) as well as the costs of the use of a second mode of transport. This haulier thus acquires the right of reimbursement of the taxes corresponding to the non utilisation of road infrastructure. The sum of this tax reimbursement is a function of the number and the length of journeys made with multimodal transport. Another measure is the exemption of prohibition of running times (weekends, public holidays) or, in the case of the Rolling Road, the recognition of the rail travel time as resting time for the lorry driver.

The possibility of introducing public means of investment in multimodal transport is of great importance. This would include, for example, the purchasing of wagons or other specialised equipment necessary for complete multimodal set up. In certain cases the European Union authorises the Member States to subsidise the running costs over the course of the introduction of a multimodal project. It is quite an exception that the European Commission has established regulations authorising state aid towards multimodal transport development. Normally, the principle of community backing is to eliminate in all measures possible state aid.

Apart from the European Commission, there are other institutions from the European Union structure which are committed to multimodal transport. Also, the UN has stated in the document "European Agreement on Important International Combined Transport Lines and Related Installations" the primary objectives on the subject of multimodal infrastructure. This document includes the augmentation of average speed for multimodal trains to 100 to 120 km/h. Taking this further, this document rules that the length of trains can be 600 to 750 metres. There is further discussion on the increasing of permissible loading.

#### **4.2.12. Development and Perspectives**

The success of multimodal transport will depend on commitment to its development. For years now, the technique of transshipment has been the subject of intense research and alternative solutions are already being implemented. The aim is to achieve the transshipment of one mode of transport to another as automated as possible, directly from one train to another, in the same way that rail passengers make connections.

Over the last few years, research has been going on into what is known as bimodal systems. This technique is already being used in the USA with the "Road-Railer" or rail-road. During the rail journey the articulated lorries are supported by bogies which transform them into a sort of "wagon unit" for transport by rail. Upon reaching the destination terminal, the articulated lorries are separated from their bogies. The trailer can thus continue its journey without a great loss of time. This system is also well adapted to traffic which is unequal in different directions. The bimodal system is only being slowly introduced in Europe. A direct service between Munich and Verona was opened in 1995 with the support of the European Union.

Loading units (containers and swap bodies) are also in the forecourt of technical development. The aim is to improve the swap body which, as freight carrying units, are not strong enough to be stacked. A growing number of transport companies and agents rely on "Jumbo" and "Mega" crates to send bulky goods. In order to be able to integrate these at a later stage with other intermodal chains, there is more and more call for the crates to be technically adapted. The possibility of stacking the crates in the same way as containers is another part of the idea.

It is no longer possible to imagine multimodal transport without modern computerisation techniques. Given that the physical transport of goods is considered more and more by industry as being an integral part of production itself, the information concerning the transport must be available as quickly as possible. Modern information technology allows the merchandise to be followed throughout its journey. This is possible thanks to automatic identification which, in the USA, already takes part in railway companies. This technique will also be introduced in Europe with pilot studies being currently undertaken by several railway enterprises and hauliers.

The European Commission supports the development of multimodal transport through different promotion programmes of which the pilot programme called "PACT" (Pilot Actions for Combined Transport) is part. The aim of this programme is to make intermodal transport even more efficient in the short term, by helping the existing techniques in the domain of transshipment, information technology and telecommunications to be introduced on site.

The progress that has taken place up until now is most encouraging. As multimodal transport includes such a wide range of demands and techniques any development calls for a united effort from all concerned parties. In this way, long term growth in the multimodal sector will be able to respond to transportation problems.

### 4.3. Study Tour in E.U. Countries

The Study Tour was carried out during the 15 - 27 June 1996. The activities performed involved the following organisations:

- International European Multi-modal Organisations.**
  - The INTERNATIONAL UNION OF RAILROAD COMPANIES (IURR) and INTERCONTAINER (ICF): the two European Combined Transport competing groups (The IURR is the Combined Transport Group dominated by the road hauliers and their federation, while INTERCONTAINER, the second largest competitor, is dominated by the railways companies).
  - The EUROPEAN INTERMODAL ASSOCIATION (E.I.A). The EIA forms the European structure which promotes the components of the intermodal products (techniques, equipment, organisation of the chain and the definition and creation of supply).
- Multi-modal National Authorities and Professional Unions.**
  - Combined transport Authorities from the FRENCH MINISTRY OF TRANSPORT
  - The « GROUPEMENT NATIONAL DE TRANSPORT COMBINE » (GNTC) . One of the largest French Professional Union.
- The Maritime Facet of Combined Transport**
  - PORT OF HAMBURG,
  - The Hamburger Hafen-und Lagerhaus-Aktiengesellschaft (HHLA),
  - Container Terminal division of HHLA at Burchardkai,
  - « POLZUG » a German-Poland joint venture company specialised in Combined Transport.
- European rail « Nodes »**
  - The « European Nodal Point » managed by INTERCONTAINER. Metz (France).
- Regional multi-modal platform**
  - Visit of the Multimodal regional Complex of Avignon, managed by NOVATRANS

- Rail-road terminals**
- The Hamburg-Billwerder Combined Transport Terminal managed by « KOMBIVERKEHR »,
  - The Combined Transport of Creteil managed by NOVATRANS.
  - The Combined Transport Terminal of Valenton (France), managed by the SNCF and the CNC (Compagnie Nouvelle de Conteneurs).
- The Road Facet of Combined Transport**
- The medium size French transport company « T.A.V », specialised in Rail-Road Transport by swap bodies (90 % of the Traffic).
  - CALBERSON- Grand Export » the largest French forwarding Company, with multimodal activities throughout the world.

### 4.3.1. International European Multi-modal Organisations.

#### 4.3.1.1. The « INTERNATIONAL RAIL-ROAD UNION » (IURR).

The IURR responsible for Marketing and European affairs, Mrs Susanne Kuschel presented to the participants the structure, the role, the activities and the position of the IURR in the combined transport market.

With a traffic of 3.7 million TEU (Twenty-foot Equivalent Units), which represents more than 50% of the total European combined transport output, the IURR is the largest group of combined transport in Europe. Members of the IURR are present in 17 countries in Europe. Their clientele is strongly oriented towards the road sector. In most cases, the IURR companies are the largest operators in their respective countries and to fulfil their role they generally own their wagons and run the terminal they serve. A KOMBIVERKEHR terminal, in Billwerder (Germany) was visited to illustrate the presentation of the activities of IURR members.

Transport by container<sup>29</sup> and swap-bodies<sup>30</sup> (the dominant techniques within the IURR) represents two-thirds of the total number of consignments, while transport by semi-trailers<sup>31</sup> lies at 16%. The annual average growth rate of traffic is nearly 3%. More specific data show that the international traffic of the IURR companies largely exceeds national traffic. International traffic is growing by 14% a year. The average distance for multi-modal transport, national and international, is 755 km. (Brochures describing the company and its activities were distributed to the participants)

#### 4.3.1.2. « INTERCONTAINER »

The presentation of INTERCONTAINER was carried out during a conference held in Metz, by the Director of the Business Unit Central and Eastern Europe, Mr Peter Schmelter and the Route Manager, Mr Andrej Burnashev. After the presentation of INTERCONTAINER activities in Europe as well as in Central Asia and Caucasus, the principle of the "nodal point" was explained to the participants, as well as the information systems "Euronet" and "Qualitynet", which are used as aids in international traffic operations. Established in Belgium and having its main office in Basel, Switzerland, INTERCONTAINER is owned by 26 railway

<sup>29</sup> There are "land containers", maritime containers and air container. Land containers are designed for an optimal use in rail-road combined transport (standardised according to International Railways Union norms). Maritime Containers are designed to be used in a cellular ship and are conforming to International Standard Organisation (ISO standards).

<sup>30</sup> Used only in rail-road movements.

<sup>31</sup> Any vehicle intended to be coupled to a motor vehicle in such a way that part of it rests on the motor vehicle and a substantial part of its weight of its load is borne by the motor vehicle. These may have to be specially adapted to be used in combined transport.

companies. In 1994, INTERCONTAINER transported 1.3 million TEU. The average transport distance is 1000 kilometres. (Brochures describing the company and its activities were distributed to the participants)

The presentation was followed by a discussion between INTERCONTAINER representatives and the participants on the possible involvement of INTERCONTAINER in Central Asia and Caucasian countries. Mr Schemelter explained that INTERCONTAINER, working in a competitive market, is open to anyone who desires to become a member, under three conditions:

- to have an operating railway network,
- to accept the operating methods and concepts of the company, and,
- to participate in the capital of the group.

Further contacts and discussions were planned. Mr Schmelter was invited to visit the region and discuss the conditions under which INTERCONTAINER could be involved in the development of the combined transport market in the TRACECA region.

#### 4.3.1.3 the « EUROPEAN INTERMODAL ASSOCIATION » (EIA).

The General Secretary of the EIA, Mr Bernard Teillet, presented the EIA : the structure, objectives and activities of the Association. Created two years ago by the railways and road operators, the EIA is composed by 26 active members from the combined transport groups (IURR and INTERCONTAINER), from other partners involved in the multimodal business such as equipment dealers, insurance companies, banks etc. The EIA have been created to promote exchanges between partners, to detect productivity gaps, to optimise transport costs and to constitute a professional entity able to influence the official authorities on the financial contributions required to promote this technique.

The EIA strategy for reducing operating costs is focused on three main components:

- reduce the rail traction cost which represents 30% of the total cost of combined transports by the introduction of « Block Trains » techniques in replacement of traditional A to B traction by individual wagons through successive shunting.
- reduce rail terminal operation cost by compressing the cost of haul operations, representing 35% of a combined transport operation. This can be achieved, explained Mr Teillet, by reducing the number of trucks affected to this mission and by doing trucking operations more flexibly in terms of schedule: the terminal haul operations could be spread over the day instead of concentrated in narrow intervals (from 6h to 8h and from 18h to 20h).
- The third component of the strategy consists of reducing the handling operations costs by increasing the automatisisation of terminals and by reducing personnel costs, rather high in Europe.

Another subject of particular interest for the participants was the Mr Teillet's explanation of the functioning principles of the Association: the EIA has a small permanent structure, essentially composed of himself and of various working groups from the different member companies. To support the cost of the functioning of the EIA, all members provide a fixed amount of about 2000 USD, plus a contribution varying from 400 to 4000 ECU according to the turnover of the company. It was noted that the working groups are not paid by the EIA, but work on the basis of their own company interest. Regular meetings are organised to review the progress of the work performed by these working groups.

Finally, Mr Teillet explained the various financing systems contemplated in Europe through the PACT programme<sup>32</sup>. The programme can finance up to 50% of the cost of project feasibility studies and 30% of the

<sup>32</sup> PACT: Pilot actions in the Field of Combined Transport. Initiative launched by The European Commission to bring about a lasting improvement in the quality of combined transport. Projects financed by the Commission must cover international routes of European interest and may concern any combination of rail-road or inland waterways transport and may include sea crossing where this is unavoidable.

costs of project measures. The programme has been successful and the European Commission is now studying how to transform this pilot programme into a longer term and large scale Community programme, including Eastern countries.

### **4.3.2. Multi-modal National Authorities and Professional Unions.**

- Combined transport Authorities from the FRENCH MINISTRY OF TRANSPORT
- The « GROUPEMENT NATIONAL DE TRANSPORT COMBINE » (GNTC) . One of the largest French Professional Union.

#### **4.3.2.1. Meeting with Representatives of the FRENCH MINISTRY OF TRANSPORT**

The representatives of the French Ministry of Transport offered the opportunity to clarify the role of the authorities on the functioning of the Combined Transport Sector. The Conference was headed by the Director for International Economic Affairs within the Ministry of Transport, Mr Mousnier-Lompré. Jean Michel Etienne, author of various works on the financing of public infrastructures by private funds and Mr Maurice Belmain, responsible for Multimodal transport policy within the Ministry, presented an overview of Combined Transport issues in Europe.

Of particular interest for the participants was the Mr Mousnier-Lompré's presentation on the role and structure of the French Ministry of Transport in the combined transport sector. Some of the delegations, in particular from Azerbaijan, Georgia and Tadjikistan showed a great interest in possible assistance to strengthen their respective Transport Institutions are one the most important weaknesses the development of appropriate transport policies. Mr Sadihov, the Head of the Transport sector in Azerbaijan, noticed that institutional support is a national priority for the country. This matter has been chosen by Azerbaijan to be included in the EU "Indicative Programme" for assistance.

Mr J.M. Etienne presented the French system of financing public transport equipment by private funds. He explained how, by contractual agreements, French private firms participate in the financing of the infrastructure: in return for their investment, the private sector is compensated by keeping under autonomous control the operation and management of infrastructures. A 200-page book, in Russian, specifically dedicated to this matter was provided to the participants. (A copy may be made available by the Team Leader).

Mr M. Belmain presentation was focused on the main reasons of developing the combined transport network in Europe, from the point of view of the authorities. He explained the technical difficulties encountered in the development of combined transport, in particular in the field of technical norms (infrastructure, vehicle fleet and service standard). He said that a large variety of existing standards and parameters for combined transport road-rail in Europe, create obstacles in developing harmonised transport system. A recent ECE<sup>33</sup> study which makes an inventory of the existing standards in Europe, shows, on an internationally comparable basis, the actual situation as compared to the minimum standards and parameters prescribed in the "European AGTC"<sup>34</sup>. This 130-page document was provided to the participants (a copy may be made available by the Team Leader).

#### **4.3.2.2. The "GROUPEMENT NATIONAL DE TRANSPORT COMBINE"(GNTC).**

The General Secretary of the GNTC, Mr Jacques Rossi, presented the GNTC: objectives, structure and activities. Of particular interest for the participants was the role of these types of professional Unions. The GNTC is one of the two representatives of French Professional Unions created by road hauliers to preserve and defend the interests of the members in the combined transport business. The working methods is similar to the one of the EIA.

<sup>33</sup> Economic Commission For Europe of the United Nations.

<sup>34</sup> European Agreement on Important International Combined Transport Lines and Related Installations

Following Mr Rossi's presentation, the Team Leader and actors the Operating Expert summarised the role and positions of the different actors involved in the combined transport business. Two different levels may be distinguished:

- At the "policy level", there are two main actors : the Ministry of Transport, authority in charge of defining the rules of the game and the Professional Unions, such as the "GNTC" , emanating from the profession to defend the interests of any specific sector. To facilitate the discussions which preceded the main decisions to be taken by the authority, individual firms, represented by a valid body, can influence the authorities decision.
- At the "operating level", the actors are individual firms and large groups of economic interest. For instance, economic interest companies such as NOVATRANS, (a IURR's member) are created to meet the need of grouping transport operations and creating infrastructure (this can not be assumed by individual firms). Furthermore, a group of economic interest such as NOVATRANS can offer to individual firms the possibility of being in a stronger position when negotiating with large suppliers such as National Railways Companies: by evaluating the transport needs of individual firms, NOVATRANS is able to buy rail traction on a basis of the wholesale price. By reselling these services to individual firms (on a basis of attractive retail prices) they make a profit. The benefits allow the group NOVATRANS to reinvest the profit and finance the infrastructure. They fulfil their role by being a sort of "freight transport wholesaler".

### 4.3.3. The Maritime Facet of Combined Transport

#### 4.3.3.1. The Port of Hamburg (Germany)

The visit to the Port of Hamburg and the HHLA container terminal at Burchardkai (Hamburger Hafen-und Lagerhaus-Aktiengesellschaft) offered the possibility of understanding the maritime facet of combined transport in EU countries. The extensive tour of the harbour in the "Senatsbarkasse" boat was conducted by the General Manager of the Container Division of HHLA, Mr. Winfred Furnell, and the Executive Manager, Mr. Rainer Bolter. They presented the main infrastructure of the Port as well as the main activity including economic indicators, the status, the organisation and the main actors concerning the port, etc.

Hamburg, the largest industrial city in Germany, is now located at the transport hub of a market with more than 400 millions inhabitants. About 60 % of the traffic is coming from or to going to the city or its hinterland. The port of Hamburg registered a traffic is 65 millions tons per year. While the general cargo traffic is decreasing, the container traffic is rapidly increasing. Since 1985, the container turnover has doubled. In 1995, a total of nearly three millions TEUs puts Hamburg in the seventh spot in the world container port league. Hamburg's port economy expects container turnover to exceed four million TEUs but the year 2000..

The port has an essential role on three types of traffic : between Europe and the Far East where its hub role is increasing (about 45 % of the total container traffic) and to or from the Scandinavian countries (about 15 % of the total traffic). New emerging market from Eastern Europe is a major commercial prospect. Institutionally and legally, the port of Hamburg depends on the Land of Hamburg. Its management is largely performed by Ministry of Commerce of the Land of Hamburg (Wirtschaftsbehörde). Traditionally, the handling is performed by two corporations: BUSS and Carl Tiedeman for cargo handling operations and the operators for the land handling. The development of the container traffic is abating the difference between these two professions.

#### 4.3.3.2. The Container Terminal of Burchardkai (Germany)

After the Port, the delegation visited the Container Terminal of Burchardkai. This terminal managed by the Hamburger Hafen und Lagerhaus (HHLA ), is one of the two HHLA container terminals . With a total traffic of 1.2 million TEUs<sup>35</sup>, HHLA is one of the largest operators of the Port of Hamburg. This is about 60% of the total container traffic of the Port and 54% of the general cargo. The terminal operated by HHLA is equipped

<sup>35</sup> TEU: Twenty-foot Equivalent Unit (6.10m). A standard unit for counting containers of various lengths and for describing the capacities of container ships or terminals. One standard 40' ISO Series 1 container equals 2 TEUs

with container berths totalling 2,570m length, depths 9.8m-15m served by 16 container gantry cranes (35t-70t), one quarter ramp and one stern-ramp RO/RO facilities. It comprises: 16ha (container parking 79ha); storage facilities 14,600 TEUs. Rail facilities : terminal of 5.4 ha with six tracks totalling 2,400 m served by three rail-mounted Peiner (38t) and two Aumund (35t) road/rail transfer gantries. The freight handled represents 84% of the total traffic.

#### **4.3.3.3. The German-Poland joint venture « POLZUG ».**

In a second part of the visit to HHLA, a main firm involved in the rail container business was presented: The company POLZUG, a joint venture created by the Polish Railways (40%); the HHLA (40%) and EgonWenkInternational forwarders as well as KOMBIVERKEHR ( 20%). The « POLZUG » activities were described by the management of the company: Mr Walter Schulze and Mr Manfred Schmidt.

Of particular interest was the presentation of the new Block train from Slawkov to Kiev (starting in July 1996) supported by the government of Germany. The participants express the desire of connecting Kiev to Odessa (Poti is connected to Odessa by ferry). POLZUG management said they would pay attention to possible developments in this direction. It depends on the traffic.

#### **4.3.4. The European rail « Node » of Metz**

The visit of the "European Nodal Point » managed by INTERCONTAINER was directed by Mr Kieffar, Director of the Centre. The principal of the "Nodal Point » of Metz (France) was explained: at strategically favourable location, wagons from multi-group trains ( trains from various origins, with shipments for two or more destinations) are exchanged and combined to form new, single-destination through trains. The choice of Metz to build a « Node » was explained as a result from its central position in connection with North-South traffic flows: Rotterdam - Italy; Germany-Spain. At this central point, multi-group trains from the North of Europe and going to different regions in Italy are formed to directly reach the specific final Italian point of destination.

The particular train building includes a sorting area composed of 40 rail track sections. Sorting operations for a specific train are performed in 15 minutes. This explains the importance given to the information systems. Some time before the train arrives in Metz, a list of wagons is faxed from the terminal of origin. With this list in hand, the INTERCONTAINER operators instruct the railway company (SNCF) on the required sorting operations to be performed. At the same time, the same information is also transmitted to the Head Office in Basel. The centralisation of all information related to a wagons position allows INTERCONTAINER to keep their customers informed in real time. The information system is called "Euronet".

Particularly interested by this information technique, the participants had a discussion with INTERCONTAINER management on the possibility of using such type of system. Mr Schmelter explained that It is necessary to specifically define the field of intervention of INTERCONTAINER: conditions under which the transport operation is performed, origin and destination points, commercial conditions (FOB or CIF). To clear out these possibilities, representatives from INTERCONTAINER were invited to pay a visit to the region.

#### **4.3.5. Multimodal Regional Platforms and Terminals**

##### **4.3.5.1. The Regional multi-modal terminal of Avignon (France)**

The visit of the regional multi-modal terminal of Avignon, managed by NOVATRANS (member of the IURR), was directed by Mr Claude Arocas, Regional Director. Mr Arocas presented the role, the capital structure, the market and the equipment of NOVATRANS. The group capital structure is dominated at 60% by the profession of road carriers (40% of the capital belong to the National Railways Company). With its own 19 terminals, 15 mobile gantry cranes and 1000 rail-wagons, NOVATRANS is able to link 200 terminals in Europe. Connections are performed by 60 trains per day running at speeds of 120 km/h.

Of particular interest was the presentation of the role and position of NOVATRANS in the combined transport market. In France, like in most European countries, there are two national competing operators: NOVATRANS (dominated by the road profession) and the Company Nouvelle de Conteneurs, the CNC (dominated by the railways sector). These national companies are represented at a European and international level by the IURR (dominated by road companies) and INTERCONTAINER (dominated by national railways companies).

Essentially, the difference between the two kinds of operators resides in the nature of the services offered. NOVATRANS mainly operates in the continental market and does not provide door to door services (the trucking from the terminal to the users premises is performed by road carriers). On the other hand, the group dominated by the railway companies, such as CNC in France, are able to provide door to door services, including the provision of containers, and the terminal haulier by road with its own means. In both cases, their role consists of offering solutions to road carriers (alternatives to "pure road transport" in the long-distance market) and, at the same time, provide freight traffic to railways companies.

During the last 25 years, the traffic handled by road carriers has been increasing dramatically to the detriment of the railways. Today, road infrastructures are congested and air pollution from road transport is high. Furthermore, the consolidation of the European market creates an advantage for trade over longer distances where railways are more cost-efficient. There is a real desire in Europe to find new solutions. The growth rate of 14 % per year of international combined transport traffic can be explained as a result of this particular new context.

#### **4.3.5.2. The Hamburg-Billwerder Combined Transport Terminal of " KOMBIVERKEHR "**

A visit to the Hamburg-Billwerder Combined Transport Terminal of " KOMBIVERKEHR ", member, as NOVATRANS, of the IURR was conducted by the Director for the North region, Mr Reinhard Rühr. He explained the activities of the rail-road Company. Created in 1991, this " KOMBIVERKEHR rail-road terminal is one of the biggest in Germany. The traffic capacity of the terminal is 340,000 TEU per year. At present there are about 1000 trucks passing every day through the terminal.

Of particular interest for the participants were the technology issues and the investment required for such type of installations. The terminal is 3km long and equipped with five electronic mobile cranes (41t). It represents an investment of 6.4 million DM, including the five cranes. In many cases, investment of up to ECU 3 millions are enough to create a rail-road terminal in Europe.

#### **4.3.5.3. The Valenton Combined Transport Terminal of the « Compagnie Nouvelle de Conteneurs »**

The visit to the CNC Terminal, managed by the CNC (Compagnie Nouvelle de Conteneurs) and the French National Railways Company (SNCF) was conducted by Mr Jean Clapies, General Secretary, and by the Regional Director of CNC, Mr Jean Paul Cordier. The CNC, is, as most of the INTERCONTAINER members, an "integrated operator". They are able to offer « door-to-door » services. With its own means (8000 containers, 5000 wagons, 220 partners), the CNC could cover all the required services at each link of the single multimodal chain: rail traction, provision of containers and the end haulier.

The CNC operates in the "continental market" as well as in the maritime market. In the maritime market, they mainly work on behalf of international forwarders and ship-owners. Annual traffic is 2.3 millions tons.

Of particular interest for the participants was the question related to the unitisation of loads<sup>36</sup>. By using pallets, the consolidation into a container of loads from different customers dispatching their goods to the same destination is alleviated. Up to 1948, the railways services were only provided to large customers able to dispatch 10t of freight daily. The CNC was created to allow the SNCF customers to dispatch 2 tons of loads every day instead of waiting 5 days before having access to operators provision.

<sup>36</sup> Unit load: pallets and prepacked unit to be put into a container to facilitate the loading and unloading operations.



The pallet is to a container, what a container is to a train or to a vessel. It allows to increase the productivity of the logistic chain by simplifying the handling operations. In Europe, close to 90% of solid freight flows is palletised. On the other hand, Mr Clapies explained the particular problems posed by the "normal container" of 2.32m wide, which is not compatible with the pallets<sup>37</sup> used by the distribution sector. The introduction of ISO "pallets" made obsolete the use of 2.32m wide container: swap bodies can be loaded with 33 pallets while the capacity of the 2.32m wide container is only 24.

### 4.3.6. The Road Facet of Combined Transport

The Study Tour included meetings to two contrasted but complementary road transport companies involved in the combined transport market: The TAB : a medium-sized road company and The CALBERSON-GE: the largest International forwarding company in France

#### 4.3.6.1. The National Road Company: TAB

The "T.A.B" is a medium-sized French transport company, specialised in Rail-Road Transport by swap bodies on the European market. Combined traffic represents 90% of the « T.A.B. total traffic. The company owns 100 trucks and 350 swap bodies. Every day, the company hands 100 swap bodies over to the railways. This represents 90% of the total traffic.

Concrete examples were used to illustrate the company' s working methods and organisation. The international activities of such a company are performed thanks to the European network of correspondents. The company passed various mutual agreements with fellow members to ensure the delivery of swap bodies to the final consignees. Such an organisation allows TAB to work in the international market with a reduced fleet truck, only involved in short distance operations. As a result, the company is in good financial health: low driver costs, good quality service (deliveries to final customers are performed without delay); optimised routes etc.

Of particular interest was the discussion on the nature of the commercial relationships between the different partners involved and the type of transport contracts that come within the scope of sales operations:

- the contract between TAB and the customer to be invoiced (the seller or the buyer depending on the commercial sales conditions negotiated by the traders).
- the contract between TAB and its rail-road container-transport supplier (NOVATRANS)
- the contract between NOVATRANS and the Railways (invisible for TAB)
- the conditions under which the delivery and the payment for transport services are performed by the TAB's correspondents.
- the contents of the agreement between TAB and its correspondents

Examples clarified these important aspects of the combined transport business. After visiting the company installations, the delegation was invited to assist to a rail-road terminal, to follow one specific TAB swap-body operation.

#### 4.3.6.2. The International Forwarder " CALBERSON - G.E"

The visit started with a conference performed by Ms Victoria Chkoulanova, a Russian native responsible for marketing development department for the CIS Republics within CALBERSON. After presenting the company. Mrs Chkoulanova described the transformation and present organisation of the European transport market, where large forwarding companies co-exist with small and medium-sized road operators.

This co-existence has been made possible thanks to particular relationships between the operators. Large international operators, such as CALBERSON, are characterised, among other things, by a capability to provide an extended transport and logistic support to the industrial firms working throughout extended

<sup>37</sup> Pallets are of standards dimensions - 1000mm x 1200mm (ISO) and 800mm x 1200mm (CEN) or " Europallet ".

geographical areas. The activities covered are from the order preparation to final delivery through storage management, packaging, transportation, customs warehousing, etc. This gives to large operators a strong commercial position: they « have the freight », but only few trucks.

Contrary to large groups, small and medium-sized road companies have a reduced range of services to offer and are often, from the commercial point of view, in a less good position. Furthermore, they often have cash flow problems. By working under contract with large forwarders, small companies do not need to worry about finding freight traffic or taking on complex transport administrative procedures. They are sure of being paid in time: they « have the truck » but almost no freight.

Small companies compete for sub-contracting agreements with the larger operators. Large operators compete for having freight transport contracts with the final customers.

The Georgian delegation was particularly interested by the documentation issues (commercial, legal and transport contracts). They asked the Team Leader to elaborate a proposal on practical training courses within transport companies and organisations, such as those visited during the study tour. The proposed idea would consist in sending one person from each TRACECA Republic to be trained on the successive links of the combined transport chain for a duration of at least 5 days.

## 4.4. Evaluation of the Study Tour

On June 27 and 28, 1996, the Consultant organised a special meeting with all the participants to evaluate the effectiveness of the study tour as compared with the initial objectives. To this end a specific questionnaire was used. It contained 10 questions. The result of the evaluation, (the answers of participants are produced in full in Annex 7), can be summarised as follows:

### 1. Do you think the objectives of the study visit matched with Traceca countries multi-modal needs? Why?

In the opinion of all the participants, the answer to this question is yes.

### 2. What relevant information and what training needs have you identified?

All the participants said to be satisfied with the information received. However, the Uzbek delegation found that not enough practical documents were distributed. As for the training needs, the participants, especially from Georgia, pointed out the need for a specific practical training within companies such as CALBERSON. The Georgians intend to create a Multi-modal forwarding company with the participation of the Georgian Railways. The managers from Calberson replied they have the required experience to perform such training courses. They are at present providing on-the-job training to Russian managers within the frame of the TACIS programme « Productivity Initiative Programme » (transfer of management know-how needed to operate in an open market economy and develop business relations).

### 3. What permanent links did you create with representatives of West European multi-modal?

Three of the country delegation said they did not have the real possibility of creating such links. The rest of the participants considered they have had the opportunity to create good contacts (specially with INTERCONTAINER and NOVATRANS) and are ready to develop them. For instance, the delegation from Tadjikistan said they concluded a contract with transport group (KOMBIVERKHER) and have invited INTERCONTAINER representatives to visit the country.

### 4. What do you think about multi-modal European systems you have seen? In Germany? In France?

All the participants have a positive opinion of all visited sites and the high professionalism of the people met in Germany as well as in France.

5. Do you think the implementation of a multi-modal chain between Traceca and EU countries is feasible? Why? What are the corresponding barriers? How to overcome them?

Almost all the participants said that such a multi-modal chain is not only feasible but essential. However, they are aware of the difficulties in overcoming the existing barriers such as the lack of harmonised customs procedures and political problems.

6. What other multi-modal sites would you like to visit in the future? Why?

Italy was been named as desirable place to visit in the near future because of the relevance of the multi-modal transport in that country. For opposite reasons, Spain and Greece have also been named: the problems of developing combined transport could be closer or similar to their concern. In the opinion of the Georgians and Tadjiks the multi-modal sites in the CIS countries or Central Europe are the best suited to TRACECA countries.

7. What did you enjoy the best during this study tour? Why?

Unanimously, what the participants appreciated the most was the organisational aspects related to Multi-modal transport system.

8. What did you not enjoy during this study tour? Why?

Some of the participants said they would have liked to have had access to detailed working procedures at the different points of the multi-modal chain. The language and interpretation were found sometimes deficient.

9. If such kind of study tour would have to be done again during the next months, what would be necessary to modify (objectives, content, countries, sites, tour organisation, etc.)?

In the opinion of various participants, the content of the study tour could have been more detailed.

10. If the previous questions did not allow you to express your opinion on this study tour, you can do it hereafter:

Apart from the Azerbaijan delegation, no answers were given to this question. The Azeri delegation prepared and provided the Team Leader with a two-page report on suggestions for the organisation of the multi-modal transport within the frame of the TRACECA programme. The question of assisting local governments in the creation or reinforcement of the transport structures at the government level (creation of a Ministry of Transport) was particularly clearly expressed.

## 5. PHASE III: PROPOSALS FOR IMPROVEMENTS

This section summarises the solutions proposed to develop freight movement by containers along the TRACECA corridor. It includes a series of proposals for improvements of the multimodal transport system, as well as an investment complementary programme and finally a series of case studies.

As earlier noticed, the proposals integrate all the recommendations and investment projects. They are organised around two different but complementary action programmes (Technical assistance and Investment), presented under the form of « Bankable Reports.

The structure of this section is as follows:

### TECHNICAL ASSISTANCE PROGRAMME

⇒ *Section 5.1: Proposal to create the basic conditions for the development of the multimodal transport system:* This comprises two steps

- \* Creation of a favourable ground to multimodal transport (Step 1) and
- \* Creation of a multimodal operators network (Step 2).

### INVESTMENT PROGRAMME

⇒ *Section 5.2: Investment projects to re-adapt port container facilities*

⇒ *Section 5.3: Investment project to up-grade rail terminal equipment*

⇒ *Section 5.4: Investment to develop a terminal network in Kazakhstan*

### CASE STUDIES AND TRAINING

⇒ *Section 5.5: Case studies and training directed at promoting and develop intermodal services.* The « Case studies » presented during a practical training workshop held in Tashkent complement the previous proposals:

- \* Multimodal Transport: a logical choice,
- \* Potential for Intermodal Transport: « Traffic Forecast »,
- \* Setting up a Multimodal organisation,
- \* Organisation of the Multimodal chain: Cotton movement,
- \* Presentation of the « Trans-Caucasian Container Pilot Train »,
- \* Setting up special container train ( schedule and frequency of services) and Advice on terminal infrastructure and handling equipment,
- \* Reorganisation of the container tariff policy,
- \* The integration of maritime ports,

## 5.1. Proposal to create basic conditions for the development of the multimodal system

### 5.1.1. Introduction and Background

The main theoretical requirements for the development of multi-modal traffic flows on the TRACECA routes are mainly satisfied:

- General goods traffic is expanding
- Distances are generally well above 1000km
- The railway network includes considerable spare capacity
- A network of transshipment terminals already exists

Theoretically, given the nature of exchanged goods and their origin-destination, the potential for container traffic that could use the TRACECA itinerary is about 80600 TEU per year (1550 TEU per week). However, only a small part of this potential traffic is registered. If Cross Caspian traffic is still low, it has been expanding fast since 1993: 30% per year in the Baku-Turkmenbashi direction and of 20% in the opposite direction. If this current trend continues, and if the present conventional system is not modified, saturation could appear in 2001, in five years time.

Almost all cross Caspian current traffic is transported on conventional rail wagons and on lorries although the nature of traffic is moving towards an easier containerisation. Given the composition of that traffic, the potential of containerisation can be estimated at 13000 TEU (20 foot equivalent units) per year. Nevertheless, the actual amount of traffic containerised, as a percentage of the total volume registered in 1995 over the Caspian Sea was only 1% . That is to say 400 TEU per year.

As far as the supply is concerned, there are two series of reasons for these trends. On one hand, there are technological constraints<sup>36</sup>, specially related to the handling systems. On the other hand, there are deficiencies related to:

- ⇒ the organisation: the lack of entity capable of grouping and co-ordinating all transport operations required to ship containers on the TRACECA itinerary does not encourage traders to use multi-modal techniques.
- ⇒ The operation techniques: container transport, mainly subjected to classical railway running regulations, is carried out through the simple addition of separated "mono-modal" services, almost without any intermodal coordination.
- ⇒ The commercial approach: current uni-modal operators have a poor perception of marketing techniques. They do not have any elaborate marketing strategy. Customers often have to rely on their own to transport their freight to the destination point using their own trucks or a trucking company they selected and paid. The tariffs applied to container traffic are still based on the general railways regulations used in the past. As a result, container transport tariffs are particularly high. The addition of rates from the various mono-modal services makes a "door-to-door" overall operation rather prohibitive.

The necessary redefinition of the multi-modal transport system requires not only investment to readapt the existing installations, but also - and of particular importance - modifications to the whole structure. This

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<sup>36</sup> These are related to the limited capacities of the port of Poti, estimated at a maximum of 10000-12000 TEU per year (6000 m<sup>2</sup> of storage area but also the limits imposed by the system of ferry-wagons used on the Caspian Sea: the three usable ferries could carry a volume of containers of up to a maximum of 10000 TEU per year, in each direction of traffic flow.

includes changes to the management methods, of multi-modal traffic from both a technical and commercial point of view.

This process of redefinition can only be carried out efficiently through a strategic approach whereby all the different elements are considered within the context of the system as a whole. It would be a mistake to invest large sums of money in multi-modal transport, without ensuring the creation of the necessary conditions for its successful development. It is therefore essential to install an adequate structure for the management of multi-modal traffic as well as carrying out the required infrastructure investments.

It is proposed to implement a strategy of simultaneous actions in two related programmes:

1. A programme of technical assistance: Proposal to create the basic conditions for the development of the multimodal transport system.
2. A programme of investments for the modernisation of the multi-modal transport system:
  - \* Investment projects to re-adapt port container facilities
  - \* Investment project to up-grade rail terminal equipment

The present technical assistance concentrates on the technical assistance actions. The investment programme is presented in a further section.

### 5.1.2. Objectives of the technical assistance

The objective of the technical assistance programme proposed in the following paragraphs is to create the basic conditions for the development of multimodal transport, without which any infrastructure investment programme would fail.

The proposed actions seek to overcome the organisational, commercial and operational weaknesses on the supply side. The existence of an appropriated framework will facilitate the management of investments for improving the existing system.

### 5.1.3. Description of the work

The technical assistance programme consists of two steps:

- Step 1: creation of a favourable ground to give rise to a minimum container traffic,
- Step 2: creation of multi-modal transport companies network in the region.

#### 5.1.3.1. Step 1: Creation of a favourable grounds for multimodal transport

The Technical Assistance Programme incorporates the four following tasks:

- ⇒ Task 1: To define the minimum level of traffic available to amortise the operating costs.
- ⇒ Task 2: To identify and bring together all the partners involved in multi-modal transport.
- ⇒ Task 3: To produce an "Operational Plan" for Transport, which specifies the role of each participant and defines working procedures.
- ⇒ Task 4: To implement the "Operational Plan" and carry out regular monitoring of progress.

#### **Step 1 / Task 1: To define the minimum level of traffic available to amortise the operating costs.**

A market study in each country will be carried out to fix the objective of the minimum traffic level. This will include specifying the types of products and initial volumes which could be shipped by containers in the TRACECA corridor. Targeted products and volumes such as cotton, tobacco, fertilisers in bags, metal in

ingots, etc. must be examined from the demand point of view to evaluate and fix an initial containerisation traffic objective.

At this stage, support from the responsible public authorities is essential as the activation of the TRACECA corridor (a corridor of common collective interest) can only be successful if a minimum level of traffic necessary to amortise operating costs is reached : a volume of 1000 TEU/country/year<sup>39</sup> would be enough to conceive multi-group container trains from Almaty to Poti. This traffic corresponds to a 20 wagon container train, three times a week (that is 120 to 150 containers per week). It corresponds to a global volume of 50 000 tons (5 000 TEU/year) and should allow to make full use of a container ship such a BUNIAT SARDAROV which should be brought back to the Caspian Sea. With a capacity of 75 containers, this vessel is able to cope with the projected traffic without major problems. It must be noted that the political need only be temporary. After initial revitalisation, the multimodal chain must develop on its own and to compete with other routes according to free market principles, based on the shipper's free transport modal choice.

### **Step 1 / Task 2: To identify and bring together all the partners involved in multi-modal transport.**

At present, each partner involved in international freight traffic has a mono-modal approach which excludes any type of collaboration and does not encourage customers and forwarders to use containers on the TRACECA corridor.

To overcome the present restrictive approach and organise the first container shipments through the use of multimodal techniques (combining the various partners' skills and tools), it is essential to create a "High Level Working Party" in each of the interested countries, consisting of representatives of the different groups involved in multi-modal transport (Ministry of Transport, railways, road companies, forwarders, shippers and TRACECA experts). The aim of this working party would be to identify the conditions necessary to reach container traffic volumes of the order of 1000 TEU per year and to specify the role of each participating partner.

The TRACECA experts should assist local partners in defining and launching the proposed working group and to define their respective role and future agreements.

### **Step 1 / Task 3: To produce an "Operational Plan" for Transport, which specifies the role of each participant and defines working procedures.**

A group of TRACECA experts (both local and foreign) working on behalf of the "High Level Working Party" should prepare a "Transport Plan". This plan must specify in detail the method of operation to be applied in order to reach the threshold level of container traffic along the whole TRACECA multi-modal traffic chain. Preparation of this plan will comprise two tasks:

- \* Sub-task A: A market appraisal
- \* Sub-task B: A description of the operating methods (Operational Plan)

### **Step 1 / Task 3 / Sub-task A: Market Appraisal**

Complementary to the study of the market carried out in TRACECA countries (Task 1), it is also necessary to survey the opinions of European buyers in order to better understand the commercial constraints and to adjust the operating methods in order to satisfy the stated desires of the two parties involved. It is a matter of knowing the position of seller and buyer to introduce sale terms such as « Ex-works » or « Free delivered » to allow « door-to-door » shipment by container. This should facilitate the creation of pendular traffics and the approximation of sales procedures. In principle, this should be beneficial for all the other exporting sectors of the economy.

<sup>39</sup> This is equal to 50,000 tonnes/year for the five Central Asian countries (or 5,000 TEU/year) corresponding to 30% of the present system capacity (and 6% of the whole potential traffic).

Conducted under the guidance of the "High Level Working Party", a TACIS marketing expert in Europe and a local expert in each TRACECA country should produce within one month a report on the traders' position in this respect.

### **Step 1 / Task 3 / Sub-task B: Definition of an Operational Plan**

The local and TACIS European experts should prepare, within three months after the market survey, an "Operational Plan" that clearly specifies how the first container shipment should take place. This plan will include the following items:

- ◆ organisation of the shipment from and to terminals,
- ◆ definition of the conditions under which the railways make the transport rolling available
- ◆ organise the administrative aspects and transport documents
  - \* international transport contracts specific to multi-modal operations
  - \* possibility of editing documents such as TBL-FIATA to facilitate international payments
- ◆ negotiate the tariff with the Shipping Companies and international railways (tariff, availability of transport means, choice of routes, documentation..)
- ◆ negotiate the conditions under which the empty containers generated by imports flows can be used by TRACECA States exporters. This requires to:
  - \* inventory the fleet of empty containers,
  - \* find an agreement with selected large shippers and other main container users
  - \* inventory the fleet of empty containers (type, number, location, etc.)
  - \* find a suitable financial agreement with the other TRACECA countries to make use of empty containers, where needed.
- ◆ establish co-operation agreements with the owners of containers,
- ◆ establish an « specification book » for the loading of containers and the certification of goods
- ◆ organise the transfer of responsibility along the entire single combined transport chain
- ◆ assign a representative from the « High Level Working Group » for:
  - \* negotiations with the European railways administrations
  - \* organisation of the operations in all the transit and destination countries
  - \* locating transport correspondents
- ◆ establish commercial agreements with European shippers exporting to Central Asia and Caucasus in order to encourage them to accept the return of this container to Europe loaded with « targeted » products.

In the report to be produced, the official members of the « High Level Working Group » should clearly indicate the local container operator who will be in charge of setting up the traffic.

### **Step 1 / Task 4: To implement the "Operational Plan" and carry out regular monitoring of progress.**

Once the "Operational Plan" has been designed and approved by the national working groups, a multi-lateral meeting should be organised in one of the countries of the region in order to establish a regional accord relating to three issues:

1. shipment using a specialised multi-modal train via the essential "key" terminals with a fixed train schedule coordinated with the "Trans-Caucasian-Container Train", and further with the Pan-European network. A case study presented in a further section (see Section 5.5: Case Studies and training) describes the main characteristics of the proposed through train.



2. the tariff policy to be applied to multi-modal transport must be redefined. Guidelines for such a redefinition of the container tariff policy » are provided in a further section (see Section 5.5: Case Studies and training).
3. A simplification of the paperwork and procedures is required. It should be based on the « Document Package » proposed by the project « Trade facilitation and Customs procedures ».

The first shipments should then be initiated and monitored by the same team of specialists. The problems encountered should be reported to the "High Level Working Party". They must decide, during a second multilateral meeting (if required) how to resolve them.

### **5.1.3.2. Step 2: Creation of a network of multimodal transport companies in the regions**

Once the technical and operational conditions are in place, it will be necessary to encourage the signature of partnership agreements between the various participants in order to create within each country truly independent multi-modal transport companies.

A programme of technical assistance will include the two following tasks:

- ⇒ Task 1: The creation of multi-modal transport enterprises at the national level
- ⇒ Task 2: The creation of a regional multi-modal transport network connected to the Pan-European network.

#### **Step 2 / Task 1: The creation of multi-modal transport companiesx at the national level**

Particular technical assistance is required to create the multi-modal transport companies (statute, organisation, financial management, definition of activities etc.) in order to assist the search for potential Western European partners who may be willing to invest in the capital of these enterprises.

The independent Multimodal Companies should be created for the sake of all current participants in container transportation. The general interest of the project and resulting productivity increases (reduced costs) should be highlighted at the initial stage for the sake of the Railways, forwarding agents, major importers/exporters, potential customers, customs (and Ministries), road forums, etc.

In general, the role of the proposed company is similar to the European combined transport operators: a sort of "freight transport wholesaler" and combined transport organiser. A detailed description of the proposed multimodal organisation is proposed within the frame of the Section 5.4. Case Studies and Training.

In general, the companies' activities can be summarised as follows:

- to evaluate the transport needs of individual firms,
- to buy rail traction at interesting conditions,
- organise initial and terminal road services (by sub-contracting, for instance),
- to resell multi-modal services to individual firms on a basis of attractive retail prices.
- to have control over the efficiency of terminal services, through setting up actual multi-modal transportation operators in charge of co-ordinating the logistics involved in finding, loading, handling, and distributing available containers,
- to regulate arrivals and departures of containers loaded on the main terminals.

The benefits from its activity must allow the Company to reinvest and finance the supplementary infrastructure required: new terminals, handling equipment, nodal points management, etc.

However, initial investments must inevitably come from external sources of financial aid because the initial returns will inevitably be modest. The newly-created multi-modal transport enterprises will be unable to provide sufficient levels of investment to finance these improvements during the initial years of operation (see Section 5.3: Investment Projects). However, in the medium to long term, as their activities increase, these enterprises will increasingly be capable of reinvesting the profits from their activities and should create, on

their own, the required supplementary container infrastructure: new terminals, handling equipment, nodal points, etc.

### **Step 2 / Task 2: The creation of a regional multi-modal transport network connected to the Pan-European network.**

It is envisaged that a true TRACECA Multi-modal Transportation Union should be set up, which is able to integrate the inter-modal activities in an international community of interests at the TRACECA corridor level.

#### **5.1.4. Composition of the team and assistance effort**

The proposed programme required :

##### Step 1: creation of favourable grounds for the development of Multimodal Transport:

- Task 1: Fixing an initial container traffic objective: 1 man-month of a TACIS marketing expert and 3 months of local experts per country,
- Task 2: Identification of multimodal partner and creation of a « High level Working Group »: 1 man-month of a Multimodal organisational expert and 3 man-months of local experts per country.
- Task 3: Elaboration of an « Operational Plan »: 1 man-month of a marketing expert + 8 man-months of an operational expert. Local expertise is estimated at 18 man-month per country,
- Task 4: Implementation and monitoring: 6 man-month of a TACIS operational expert and 18 man-months of local experts per country.

Step 2: creation of multi-modal network of transport companies in the region: These two tasks represent a technical assistance effort of 10 man-months. The team would be composed by a legal experts, a management expert and a tariff specialist.

#### **5.1.5. Expected output**

The project implementation should result in the creation of multimodal management structures which will be capable to manage a regional multimodal network, connected with the Pan-European network, via the main TRACECA corridor.

## 5.2. Investment project to up-grade ports container facilities

### 5.2.1. Introduction

At the level of the Caspian Sea, the existing conventional system designed around rail transportation and horizontal transshipment direct from rail to ferry, results in containers being relatively inefficient both in terms of capacity and in terms of unit costs per ton transported. Within this system, which is currently on the brink of saturation with conventional traffic, containerised transport will have great difficulties in evolving in a satisfactory manner.

There is an urgent need to examine relatively quickly other alternatives in order to give containerised traffic a real chance of developing in the future. This can be achieved by putting into service vessels which are better adapted to container traffic and by modernising the handling equipment and storage areas.

### 5.2.2. Reminder problems and issues at stake.

#### 5.2.2.1. The Caspian Sea Ports.

The traffic analysis shows that the transcaspian traffic is rapidly increasing, but little use is made of containers. On the other hand, this analysis shows that a large amount of the present traffic can easily be containerised:

- \* foodstuff, (including the refrigerated cargo), beverages, textile products: 90 %
- \* equipment (engine, electrical, electronics and mechanical equipment, householding equipment, spare parts): at least 50 %
- \* chemical products: 30 %
- \* raw materials in ingots (copper and aluminium sheets and ingots for example)
- \* fertilisers in bags

These commodities represent, in the Turkmenbashi-Baku section, a traffic of about 90 000 tons. It must be added that about 50 % of the ferry shiploads consist of trucks, some of these carrying containerizable products. As a result, it is estimated that potential multimodal traffic for the general cargo is about 100 000 tons. Besides the general cargo, there is an increasing cotton traffic: 100,000 tons from Uzbekistan. About 20% of this traffic can be immediately containerised. In total the potential containerisable traffic can be estimated at 10,000 TEU/year of general cargo, plus 3,000 TEU/year of cotton. This is for a total of 13,000 TEU/year. Today, only 1% of pure containerised traffic is registered (400 TEU/year).

The port of Turkmenbaschi presents majors drawbacks that largely explain this situation. The general cargo quay is not fitting well with the requirements of the containers traffic. Out of the 70 000 m<sup>2</sup> of the platform, 1320 m<sup>2</sup> are used for covered storage, 20 000 m<sup>2</sup> are occupied by the rail tracks which make the circulation impossible for trucks and mobile handling equipment. Only 20 000 m<sup>2</sup> can be use for storing and operating containers and other general cargo. However, the available area is big enough to operate with 10 000 TEU/year. As for the handling equipment capacity, the lifting capacity is limited to 10 tons, insufficient even for 20 feet containers. Furthermore, the freight rate is rather expensive: the base for calculating the freight rate is the length of the vehicle or tons carried and almost all the containers are carried on rail cars and trucks

As for Baku, the infrastructure presents some inconveniences, but there is no major problem with the handling equipment. The main complex pier (380 meters long and 200 meters wide, comprising 7 berths) presents a layout designed to direct transshipment from the ships to the rail cars. Because the rail tracks are not embedded into the pavement, only 2 hectares, out of the 8 hectares of the mole, are available for open storage and trucks traffic. On the Western side of the mole, there are two cranes of 40 tons capacity which is

suitable for containers. If 1,5 hectare of the platform would be dedicated to the containers, 10 000 TEU/year could be handled easily provided that some rehabilitation is done. Possibilities of extension exist so that the pier could cope with a traffic of 30 000 TEU. The covered storage areas is in bad status.

As the registered traffic on the Caspian Sea is increasing by 15% a year and the ferry fleet capacity limited to 650,000 tons, the conventional system in use would be saturated by the year 2001. It is not then conceivable to renew obsolete ferry-wagons because most of them are greatly damaged. On the contrary, it is reasonable to set up an independent system for containers and trucks and leaves the ferry-wagons in service only for conventional traffic and passengers.

#### 5.2.2.2. The Black Sea ports

The ports of POTI and BATUMI are the points of transfer of the goods imported and exported from/to Southern European countries. They are consequently the outer door of the TRACECA corridor and are submitted to the constraints of the international requirements from the shippers and the ship-owners.

The problem is different as compared to Caspian Sea ports which are only inner ports. They are only submitted to the constraints of the national shippers and ship-owners of Central Asia and Caucasia. (Although there is a possibility to organise shipping lines directly from the Caspian ports to the Mediterranean Sea via the Volga/Don Canal. The problem is that this route is closed during the winter season and the limits of the draught make the freight rates high and the reliability too low.

In POTI, the present container yard has five major drawbacks:

1. The total area is too small to cope with the short term expected container traffic. The total area of the platform is 17 000 m<sup>2</sup> but only 6 000 m<sup>2</sup> are available for the handling and storage of containers. According to ships agencies located in POTI, the traffic for the year 1997 will be 200 containers per week or 10 000 pr year (excluding the cotton traffic which is scheduled for 1997, i.e. 30 000 tons or 2 500 additional TEU). Altogether, in 1997, 12 500 TEU are to be handled in POTI. If the cotton traffic is confirmed, by the year 2000 an additional volume of 8 000 TEU will be handled. It means that to be in the right side, it is reasonable to conceive a container terminal able to cope with a traffic of 30 000 full and empty TEU per year. On the basis of a staying time of one week on the yard, the necessary area for storing and handling the containers is about 15 000 m<sup>2</sup>; if the containers stay two weeks on the pavement, 30 000 m<sup>2</sup> will be necessary.
2. The layout does not fit with the requirements of a container terminal. The area is congested by a network of railways tracks that makes the operations difficult or impossible because the trailers and tractors cannot get across from one end to the other one of the yard. Moreover, the rail tracks are not embedded into the pavement, which makes it impossible the circulation of trucks. Normally, the railways network must be located in the back part of the terminal so that the operations are not hindered by the trains, and the tracks of the cranes are embed, which allows the circulation of the handling equipment.
3. The handling methods are not convenient for containers. The direct delivery from the ships to the rail cars is a very long operation which reduces considerably the productivity rate to 4 or 6 containers per hour or 50 containers a day. Normally, 30 metres from the apron of the quay must be free of any superstructure except the quay cranes : this space is used for block storage and for the circulation of tractors and trailers which pick the containers up alongside the ship and bring them onto the stacking area at the back part of the terminal. It is more practical to separate the handling function of loading / unloading and the functions of storage, delivering and reloading on rail-cars. That allows the ships to operate non-stop, and to consequently reduce the call time.
4. The handling equipment is insufficient: The cranes exist, are working correctly (though in poor condition) and have a sufficient lifting capacity (40 tons and a floating crane of 100 tons capacity); but their status needs the replacement the quay crane as soon as possible.
5. The container terminal is also used by RORO vessels : there is competition on the same space between the container traffic and RORO traffic, which creates traffic jams on the terminal. The two

sort of traffics must be separated, unless if, on the same area, there is sufficient space available to physically separate the two flows.

### 5.2.3. Objectives of the ports investment projects

#### 5.2.3.1. The Caspian Sea ports.

The wider objective is to readapt the port infrastructure to efficiently respond to the specific shipper's requirements: better container shipping conditions and lower transport costs. The specific objective is to separate container and truck traffic from the conventional specific ferry-wagons traffic in order to give container traffic a real chance to develop. The corridor must cope with the container and / or lorry traffic in a way as smoothly and economically as possible. To be economically viable, the corridor, must at least be as expensive as competing routes.

This can be achieved by putting in service a vessel better adapted to container traffic and by modernising the handling equipment and storage areas.

#### 5.2.3.2. The Black Sea Ports.

The wider objective is to adapt this port to the increasing volume of container traffic:

- \* Immediately: to decongest the port of Poti
- \* Short term: to modify the lay out of the terminal to cope with container traffic of 25 000 TEU
- \* Medium term: to increase the capacity to 50 000 TEU and open the possibilities of extension up to 100 000 TEU/year. This is by transferring the Container terminal to the "finger pier".

To achieve this, it is necessary to immediately create a terminal outside the port. A terminal of about 10 000 m<sup>2</sup> must be created outside the port and must be equipped with a reach-stackers (45 tons of lifting capacity). This is to be carried out even if the CAUTREX project of creating a terminal of 300 TEU capacity is confirmed.

For the medium term, before the year 2000, it is necessary to modify the lay out of the existing container yard. In a further step, within 10 years: the container terminal should be transferred to the "finger pier" which is presently used for berthing idle ships. This area must serve as a container terminal while the present container yard is and left to the RORO traffic only. Such changes This changes would allow to have a terminal of 20 000 m<sup>2</sup> with possibilities for further extensions.

### 5.2.4. Description of the port investments.

#### 5.2.4.1. The Caspian Sea ports investments.

The investment required depends on the transport technique to be used. There are two alternatives: use of a RORO vessel or a container ship.

##### Alternative 1: using a RORO Vessel

It consists of using one of the two RORO vessels belonging to the Caspian Shipping Company (capable of transporting 33 trailers and 105 TEU). This solution has the advantage of being able to accommodate, with containers, the growth of truck traffic (which constitute 40-50% of ferry traffic). The existing ferry wagons are also better able to accommodate conventional traffic.

A RORO cargo ship is less expensive to operate than the ferry-wagons because the capacity is higher and the vessel is lighter. A RORO ship can be used not only to serve containers but also the increasing truck traffic. This has the advantage of completing with the shipload by composing with this two different traffics so as to optimise the occupancy rate of the ships. Indeed, a RO/RO ship avoids the waste of space compared with rail cars and there is no need to bring back empty rail cars on the ships and pay useless freight costs.

If adopted, this alternative implies (in addition to various restoration works to ground surfaces in order to allow for the circulation of trucks and fork-lift handling vehicles) the construction of a RORO ramp at the port of Turkmenbashi as well as bring back to the Caspian Sea, a RO/RO cargo vessel type "Kompositor Kara Karaev" of 125 metres long with a capacity of 84 trucks Kamaz or 33 trailers and 66 containers TEU. This ship is able to serve the Turkmenbashi / Baku line once every two days. It will be put on line as soon as the works for dedicating one wharf of the two ferry terminals to RO/RO cargo ships will be completed.

A description of the works needed is as follows:

#### In the Port of Turkmenbaschi

On the general cargo terminal, it is necessary to:

- \* to built a steel ramp-pontoon to berth the RORO ship,
- \* to rebuilt the pavement of the platform,
- \* to fit in the rail tracks of the cranes and those of the railways system,
- \* to dedicate one shed as a CFS for storing/un-storing the containers.
- \* to purchase three reach stackers for loading containers on the rail cars, trucks and trailers as well as for stacking the containers on two levels,
- \* to purchase two tractors for moving roll-trailers.
- \* to locate the railways station at the border of the terminal in order to leave the space between the quay apron and the sheds totally empty in order to facilitate the circulation and the handling operations as well as the storage and stacking of the containers,
- \* to suppress the first range of sheds in order to create space for storing the containers.

On the ferry terminal, it is necessary to:

- \* dedicate one wharf to the traffic of cars, trucks and trailers. For that purpose, it is required to surface the pontoon bridge with steel sheets or at least take out the rail tracks of the railways so that the loading operations can be eased (this solution can only be temporary),
- \* to prepare an area for turning the trucks and trailers, just beside the access to the pontoon.
- \* to create space for parking the trucks waiting for the embankment and set up services (toilets, food market for the drivers, etc.).

#### In the Port of Baku

On the main complex, it is necessary to:

- \* to reorganise the layout by keeping two berths (350 meters) on the western side of the mole, where there are the two cranes of 40 tons.
- \* to get rid of the three cranes located on the second range of cranes on the side of the shed C5.
- \* to clear the front part of the mole where there is the RO/RO ramp so that the circulation gets easier between the container and the RO/RO terminals. These two parts of the main complex will constitute the multimodal terminal of at least 2 hectares. The railways tracks will be fitted in the ground for allowing the circulation of the mobile handling equipment.
- \* to use the remaining space of the western side as a parking area for trucks waiting for their loading on the ferry terminal. This solution can only be temporary and should last as long as the container traffic remains low.
- \* to shorten the elevated quay up to the C5 shed in order to facilitate the operation of the RO/RO vessels.
- \* to create a link road between the main complex terminal and the ferry terminal so that the multimodal terminal is easily connected with railways, roads, RO/RO cargo ships and ferry boats.

On the ferry terminal, it is necessary to dedicate one wharf to the traffic of cars, trucks, trailers and containers on roll-trainers. If containers and trucks/trailers are carried on RO/RO cargo vessels, their handling will take place in the RO/RO terminal of the main complex, that is to say directly on the proposed multimodal terminal. If the traffic of general cargo increases on the main complex and there is a need for open storage space, the western side of the mole will not receive any longer the rail cars, trucks and trailers queuing for embankment. In this case, it would be necessary to find a place for the vehicles outside the port borders.

Summary of the required investments.

NATURE OF INVESTMENT	PORT	AMOUNT in dollars
Infrastructure	Turkmenbashi	4 500 000
	Baku	4 500 000
Handling equipment (RORO ramp)	Turkmenbashi	1 000 000
Total		10 000 000
Warehouses if necessary	Turkmenbashi /Baku	9 000 000

### Alternative 2: using a container ship.

The RORO alternative appears to be an interesting short-term solution because present container traffic is quite low and truck traffic is increasing. However, if the intention is to develop an efficient multi-modal transport system in the longer term, the use of a container-ship is certainly a much better solution. A container-ship is especially designed for containers and its operating cost is lower enough (compared with a RORO vessel) to compensate the doubled handling expenses at the inner ports.

It is perfectly conceivable to bring back to the Caspian Sea a cargo vessel type BUNIAT SARDAROV belonging to the Caspian Shipping Co. This ship has a capacity of 75 containers TEU and the speed is 10,5 knots could operate three times a week between Baku and Turkmenbashi. On this basis, it should provide a capacity of 11 250 containers westbound and 11 250 eastbound.

If this alternative is adopted, the investment required to facilitate the vertical transshipment of containers as well as the following works must be contemplated:

#### *In the Port of Turkmenbaschi*

The general cargo berth has been built at an elevation of about 2,60 meters above the current water level so as the berth can be operated with no special difficulty in spite of the general sea level. Investments in infrastructures and equipment's for about 10 millions dollars are required:

- \* to modify the platform by embedding rail tracks onto the floor, clear the buildings and locate the railways in the back side of the platform. The cost of this works amount to approximately 4,5 millions dollars.,
- \* to purchase new handling equipment:
  - Two quay cranes of 40 tons capacity: 4 millions \$
  - Two reach stackers of 40 tons capacity: 1,2 million \$
  - Other handling equipment: 0,2 million \$

Additionally, If the Uzbek cotton is containerised in Turkmenbashi, it will be necessary to build a warehouse of 6 000 m<sup>2</sup> for an investment of 8,5 millions dollars.

Port infrastructure in Baku:

Works for an amount of 4,5 millions \$ are required:

- \* to redesign the lay out by keeping two berths (350 meters long) on the western side of the mole where there are the two 40 tons cranes.
- \* hectares will so be created and dedicated to the containers.
- \* to clear all the other superstructures and equipment.
- \* the railways tracks will be embedded so that the circulation is made easy.
- \* the railway tracks located alongside the warehouses will be kept and embedded
- \* the pavement will be reconstruct.

At least, it will be necessary to purchase two reach stackers and tractors/trailers. The cost of this handling equipment amounts to: 1,4 million \$. Additionally, if cotton is containerised in Baku, it would be necessary to build a 6000 m<sup>2</sup> storehouse. The cost of such a storehouse is 4,5 millions \$.

Summary of the required investments.

NATURE OF INVESTMENT	PORT	AMOUNT in dollars
Infrastructure	Turkmenbashi	4 500 000
	Baku	4 500 000
Handling equipment	Turkmenbashi	4 400 000
	Baku	1 400 000
Total		14 800 000
Warehouses if necessary	Turkmenbashi /Baku	19 000 000

**5.2.4.2. The Black Sea Ports Investments.**

Three investment categories are required: immediate, short term and medium term.

**Immediate Investments to decongest Black Sea Ports**

Two investment measures must be envisaged to:

1. create a terminal outside the port in order to avoid the congestion of the terminal by the storage of the boxes. CAUTREX has already taken such an initiative by creating a terminal of 300 TEU capacity; it is to be encouraged. But, another terminal of about 10 000 m<sup>2</sup> must be created outside the port and it must be equipped with a reach stacker of 45 tons of lifting capacity. The average cost of such an outside terminal is about 650 000 \$. Additionally, 600 000 \$ are required to buy a reach stacker.
2. on the container yard, inside the port, it is necessary to:
  - ◇ replace two quays cranes with a lifting capacity of 40 tons at 15 meters. The cost is about 4 000 000 \$.
  - ◇ purchase 2 reach-stackers for the port container terminal of POTI in order to accelerate the handling operations. The cost of such an equipment is about 1 200 000 \$
  - ◇ purchase 3 tractors and trailers for shifting the containers from the quay side to the storage area, and stacking them. The cost of this handling equipment is estimated to 200 000 \$.



### Short term Investments on Black Sea Ports

Before the year 2000, two investment measures must be envisaged to:

1. modify the lay out of the container terminal:
  - ◊ To keep only two quay cranes along the apron of the quay,
  - ◊ To embed the rail tracks into the pavement,
  - ◊ To clear all the superstructure on the 17 000 m<sup>2</sup> platform and build, in the backside of the terminal, two railways tracks to serve the domestic network.
  - ◊ To save this area.
2. In addition to the previous works and equipment purchased on the very short term, the cost of the rehabilitation of the terminal is about 2 millions \$ (infrastructure).

The handling equipment previously purchased will then operate in this new terminal (two reach stackers and 3 tractors + trailers). The capacity of such a modified terminal could be about 25 000 boxes. The problem is that there is no possibility of extension. So, this solution can only be temporary and the terminal, as now, used for containers as well as for RORO Traffic. It must be noticed that this terminal has nor available area for a CFS neither for a cotton storehouse.

### Medium term Investments on Black Sea Ports

Within 10 years, two additional, but « step-by step », investment measures must be envisaged to:

1. at a first stage, investment will allow to transfer the Container terminal to the "finger pier" and leave the present container yard to the RORO traffic only. This project is promoted by ship-owners. It consists in using the finger pier named "passenger terminal" which is presently used only for berthing idle ships. The projected new terminal of 20 000 m<sup>2</sup> will have the possibilities of further extension. Moreover, by using transtainer for the handling on the stacking area, the capacity of the terminal could attain about 50 000 TEU. Another advantage of the location of the container terminal on the finger pier is the possibility to build warehouses for the cotton and one CFS close to the terminal on the Southern mole. For example, a warehouse of 6 000 m<sup>2</sup> will permit to stock 10 000 tons of cotton.
2. secondly, if the traffic increases to 100 000 TEU, the terminal capacity must be doubled by widening the finger pier on the southern part.

The cost of the first step (to move the container terminal to the finger pier) is as follows:

- \* clearing of the superstructure and new infrastructure including roads and embed rails tracks for cranes and rail cars: 2 000 000 \$.
- \* equipment : 3 cranes + 5 reach stackers + tractors/trailers as well as small equipment's and spare parts: 10 000 000 \$. It must be noted that costs may be reduced by 4 millions dollars by transferring the two cranes from the present container yard to the new one.
- \* 000 m<sup>2</sup> for a warehouse: 8 500 000 \$

After this construction, the present container yard will be used by RORO vessels without any additional investment. It must be noted that the alternative of shifting to the finger pier could be implemented earlier, by the year 2000, if the RORO traffic increases. Otherwise, it could be impossible to manage the handling operations of RORO vessels and container-ships at the same time, in the same area.

The second step is too far from now to estimate the required investment.

Summary of the required investments.

Investments	Period	Cost in dollars
outside terminal	immediately	650 000
1 reach stacker	immediately	600 000
2 quay cranes	immediately	4 000 000
2 reach stackers	immediately	1 200 000
other	immediately	200 000
SUB TOTAL		6 650 000
rehabilitation of the platform	year 2000	2 000 000
shifting of the finger pier	up to 2005	2 000 000
handling equipment	up to 2005	6 000 000
warehouse	up to 2005	8 500 000
SUB TOTAL		16 500 000

## 5.2.5. Expected benefits

### 5.2.5.1. Expected benefits on the Caspian Sea Ports.

The benefits from using a container-ship essentially result from a lower cost per unit. Indeed, the basis for calculating the freight rate will be different.

At present, this calculation is based on the length of the vehicle. The rate for a rail car is 564 dollars. Considering that there are 2 TEU on one car, the cost for one container of 20' is 282 dollars, which is very high. It results from the fact that the capacity of the ship is relatively low because 35 % of the shipload is represented by the empty weight of rail cars (Tare). A ferry-wagon can only carry 56 containers (no stacking possibilities). According to the management of the Caspian Shipping Co., the operating cost of such a ferry is about 8 000 dollars/day (including variable and fixed cost).

A dry cargo ship type BUNIAT SARDAROV could carry more containers at a faster speed. (capacity is 75 containers TEU and the speed is 10,5 knots). This could operate three times a week between Baku and Turkmenbashi. On this basis, the maximum capacity of transport is 11 250 containers westbound and 11 250 eastbound. Taking account of the average shipload which could be of 30 % (this is because the unbalance character of the traffic flow), the annual shipload is estimated at 6 750 TEU.

The daily cost of this container-ship is, according to the time charter rate presently in force, is 2000 dollars a day. For one year, the annual cost is 730 000 dollars. The bunker expenses, will be 750 \$ per round-trip or 112 500 \$ per year.

Globally, the annual cost of the operations of the ship amounts to about 850 000 \$; or a cost per container of: 126 dollars/TEU. This amount is half the present freight rate on the ferries. It must be added the handling cost of the containers at the two ports. The rate is 18 dollars. Supposing that they are handled twice in each port, this gives a total 72 dollars. The total cost per unit is then 200 dollars. It means 30 % less than the present system.

Moreover, if traffic increases, the occupancy ratio of the ship will increase. If it increases from 30 % to 50 %, the sea transport cost could then fall to 150 dollars.

On the other hand, the problem of transport of empty rail cars is solved and the space of the ferries is better employed. There is now an increasing traffic of trucks which cross the Caspian Sea. If the container traffic is waving all along the year, there is possibility to carry also trailers and trucks aboard the present ferries in order to complete the shipload and so increase the filling rate of the ships. The operations of the rail cars and the trucks are improved because it will be easier to control the traffic on a shorter distance.

On the basis of 10 000 TEU annual traffic, which is the immediate potential traffic, without considering the cotton (or 13% of the overall potential traffic of the TRACECA corridor: 80,000 TEU/year), the annual saving is equal to:  $100 \$ \times 10\,000 \text{ TEU} = 1\,000\,000$  dollars. This represents savings of 100 US/TEU. In this case the investment is reimbursed in 15 years.

If the traffic is only 7 500 TEU, the advantage is only 62 dollars per container or globally 465 000 dollars a year; The investment is reimbursed in this case in 33 years.

If the cotton is containerised in Poti and 30 000 TEU are carried, the annual benefit could be  $100 \$ \times 30\,000 = 3$  millions dollars. The infrastructure investments should include a supplement of 6 millions dollars to purchase additional handling equipment. The total investment would be 20 millions dollars and it will be reimbursed in 7 years of operations at the full capacity.

If cotton is containerised in the inner ports, either in Turkmenbashi, either in Baku, the sheds will be built and the investment will attain 17 millions dollars. The advantages of the investments are the employment generated by the stuffing of the containers. At this stage, it is difficult to quantify it.

#### 5.2.5.2. Expected benefits on the Black Sea Ports

The benefits essentially result from the reduction of the ship calls time by at least 50 %. This has at least three advantages:

1. time savings for containers: in average 20 \$ per container (based on a containers-ship capacity),
2. the reduction of waiting time of the ships. Indeed, the improvement of the handling operations reduces the berthing time of the ships and consequently the occupancy ratio of the berth. It avoids the ships queueing up ( when there is only one berth, it is demonstrated that the queueing time is 10 % of the call time as soon as the berth occupancy ratio aims at 44 %). If there was no improvement of the productivity, it would be then necessary to build an additional berth for coping with the traffic in 2000 or 2 005 when the traffic will attain at 30 000 boxes. Such a berth would cost at least 5 000 000 \$ without the equipment. On the base of a 25 years life time of the berth, the annual saving is 200 000 dollars.
3. The operations of the RORO vessels will be improved and the productivity will at least be doubled. For the time being, there is 50 RORO vessels a year. Only for this traffic, the saving would be 4 000 \$ per ship call, i.e. 200 000 \$ per year.

Summary of the expected benefits (in the case of the finger pier is equipped by the year 2 000)

Advantages in 1000 \$.

YEARS	1997	1998	1999	2000	2005
<b>TRAFFIC</b>					
- TEU	10 000	12 500	15000	18000	30 000
- ROROSHIPS	50	60	80	100	120
Containers time savings (20 \$/TEU)	200	250	300	360	600
Ship time savings				200	200
RORO productivity gains				400	480
<b>TOTAL</b>	200	250	300	960	1 080

The return on investments for a total of amount of a little more than 25 millions dollars is estimated to be 25 years.

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## 5.2.6. Conclusions

With respect to the existing high potential traffic, these investments can be considered as relatively small. If the management and organisational aspects are efficiently improved in the same time, there are no serious reasons to doubt the productivity gains generated by an increasing container traffic. For a relatively low traffic of 7000 TEU/year the economy of scale realised on the ship will be sufficient for compensating the investments in infrastructures and equipment.

However, the present rough analysis on the feasibility of an independent sea transport system for containers does not take account of the overall regional benefits from the already contemplated port rehabilitation. A detailed cost benefit analysis is necessary in order to verify the economic viability (for containerised traffic) of moving from the existing conventional system to a proper multi-modal system.

Intensive discussions with the all the Port authorities and Ministries of Transport were carried out to define the present project investment. The general conclusion is supported by the local counterparts.

## 5.3. Investment project to up-grade rail terminals

### 5.3.1. Introduction and background

The FSU railways operated about 240 container terminals. About 50 of them (excluding terminals for medium sized containers) are located in the TRACECA region (20 %). About 20 rail terminals are directly located on the main TRACECA corridor.

Most of the railway terminals in the region are concentrated in Kazakhstan (about 40 %) and in Uzbekistan (about 25 %). Smaller countries such as Azerbaidjan, Georgia, Kyrgyzstan and Tadjikistan, have two container terminals.

Existing terminals are located nearby all capitals of the TRACECA countries and the most important industrial regions and large cities in Central Asia. The area of influence of the average « key » terminal<sup>40</sup>, has an average radius of 250 km which is quite convenient.

The identified « key » terminals are coherent enough in terms of East-West connections. Therefore, there is no need for new terminals to cover the demand. However, technical standards of almost all these terminals are inappropriated. The main technical problems can be reminder as follows:

#### Terminal Layout:

- There is a restricted possibility for a full direct train (normally composed by 20 flat wagons), to enter into the terminals: most of terminals have an insufficient length of tracks under the crane, limited to 10-12 flat wagons. Therefore, This restriction makes it necessary to shunt part of the train from/to the neighbouring station, or to use shunting locomotives to shunt part of the train to the closer yard.
- There are only one or two tracks and only one loading lane for lorries under the under the crane/cantilever. This restricts the possibilities for future extension (e.g. Tbilissi Tov. Bukhara 2, Almaty 2, etc.).
- The available storage areas under the crane are not paved and those existing outside the crane area have the pavement in poor condition. Damaged pavement obstructs the use of mobile reach stackers,
- The roads connecting the terminal are in poor condition, even in the well-equipped terminal of Shumilovo.

#### Terminal handling equipment:

- Small terminals such as Gyandzha or Samtredia (Georgia) are equipped with only two cranes with a limited lifting capacity (10 tons). At present about 40 or 50 % of terminal cranes are out of operation. To lift together a 20 feet container, the two cranes have to be used synchronously.
- Bigger container terminals require to use 2 cranes to handle 40 feet's containers. The terminal Shumilovo (Shoshtrans), the only terminal equipped with modern reach stackers and spreaders, is able to lift 20' and 40' containers and stacking them on 5 levels.
- To handle 40 feet containers, an automatic fixing of 40' containers is impossible: there are problems of adjusting the spreaders. Telescopic spreaders with folding grapple arms or simply gears for lifting 40 feet containers are cruelly lacking.

If the question is to conceive and attractive and competitive multimodal network based on the notion of « specialised multi-modal train » with a fixed train schedule and coordination with the "Trans-Caucasian-Container Train", there is need for up-grading some of them, specially those located on the main TRACECA corridor.

<sup>40</sup> This is the area within which road transport should operate to concentrate container traffic flows around its related « key » terminal.

According to their geographical position and their conditions, the « Key » terminals for upgrading must be classified by order of priority (High priority, Priority and Low Priority) as follows:

Poti Port

Priority from point of view of serving domestic traffic. The development of the port container facilities as proposed within the present Project must be enough to serve domestic traffic by road as well as transit traffic.

Samtredia

Low priority. Domestic container traffic can easily be concentrated by road using the Poti container terminal directly.

Tbilissi

Priority. It should serve the separation of traffic to/from Armenia, (integration as stopover in the Transcaucasian Logistic-express train).

Gyandzha

Low priority.

Baku

The proposed container sea terminal re-adaptation has to be considered with high priority as it is a destination point for the Transcaucasian Logistic-express as well as a transfer to/from the ferry link. (transit traffic). As for the pure domestic traffic, the alternative of using the port terminal is rejected by the authorities for environmental reasons (the port is too close to the city centre). The Consultant considers that the Kyrdhalan terminal, heavy damaged, is not well located. A new terminal must be reconstructed in another more convenient location, no far from the Port (Priority).

Turkmenbashi

Low priority from point of view of serving domestic traffic. However, the proposed container sea terminal re-adaptation has to be considered with High priority as it is a transfer point to/from the ferry link. It should also serve domestic traffic.

Nebit-Dag

Low priority (traffic can be organised via Turkmenbashi)

Obezberdy Kuliev

Priority. However, it should be included in future developments as it is the most important freight generator centre in Turkmenistan ((Ashgabat)

Mary/Tchardzhev

Priority. However, one of the two must be selected as a separation point of traffic flows to/from Tashauz/Nukus and/or Serakhs/Meshed

Bukhara/Navoi

Priority. However, the level of priority could be higher if the cotton is concentrated in Bukhara (as projected) and carried by containers. In such case a new container terminal will be required in Bukhara (High priority)

Samarkand

Priority. However, the alternative of using it as a separation point for container traffics to/from Southern Tadjikistan could be considered instead of Tashkent. In that case: high priority.

Dzhizak

Low priority. Traffic can be concentrated in Shumilova (Tashkent).

Tashkent (Shumilova)

High priority. It is, in the opinion of the Consultant, the best possible separation point for traffic flows to/from the Fergana valley. However, Samarkand could be an alternative option for this separation.

Tchimkent/Dzhambul

Priority. Efforts must be concentrated in one of the two terminals. The Kazak MOT prefers Tchimkent, which is the more important economic centre.

Tchu

Low priority from point of view of local freight generation. However, the priority could be higher if it is used as separation point for traffic flows to/from Northern Kyrgyzstan and for some central regions of Kazakstan (Akmola). The terminal could be an interesting alternate point of freight concentration to/from the regions of Dzhambul/Tchimkent and Kyrgyzstan. However, it implies very long road transport distances.

Almaty

High priority.

Druzhba

Priority as it is a point of origin and destination for traffic flows through the main corridor and trade exchanges with Chinese. No priority from point of view of local freight (regional) traffic.

*Neighbouring regions to be connected to the main TRACECA route.*

Armenia

via Tbilissi

Tashauz/Nukus

via Mary/Tchardzhev

Southern Tadjikistan

via Samarkand

Fergana valley

via Tashkent or Samarkand

Northern Kyrgyzstan

via Tchimkent/Dzhambul, Tchu (Lugovaya) or Almaty

Akmola/Karaganda

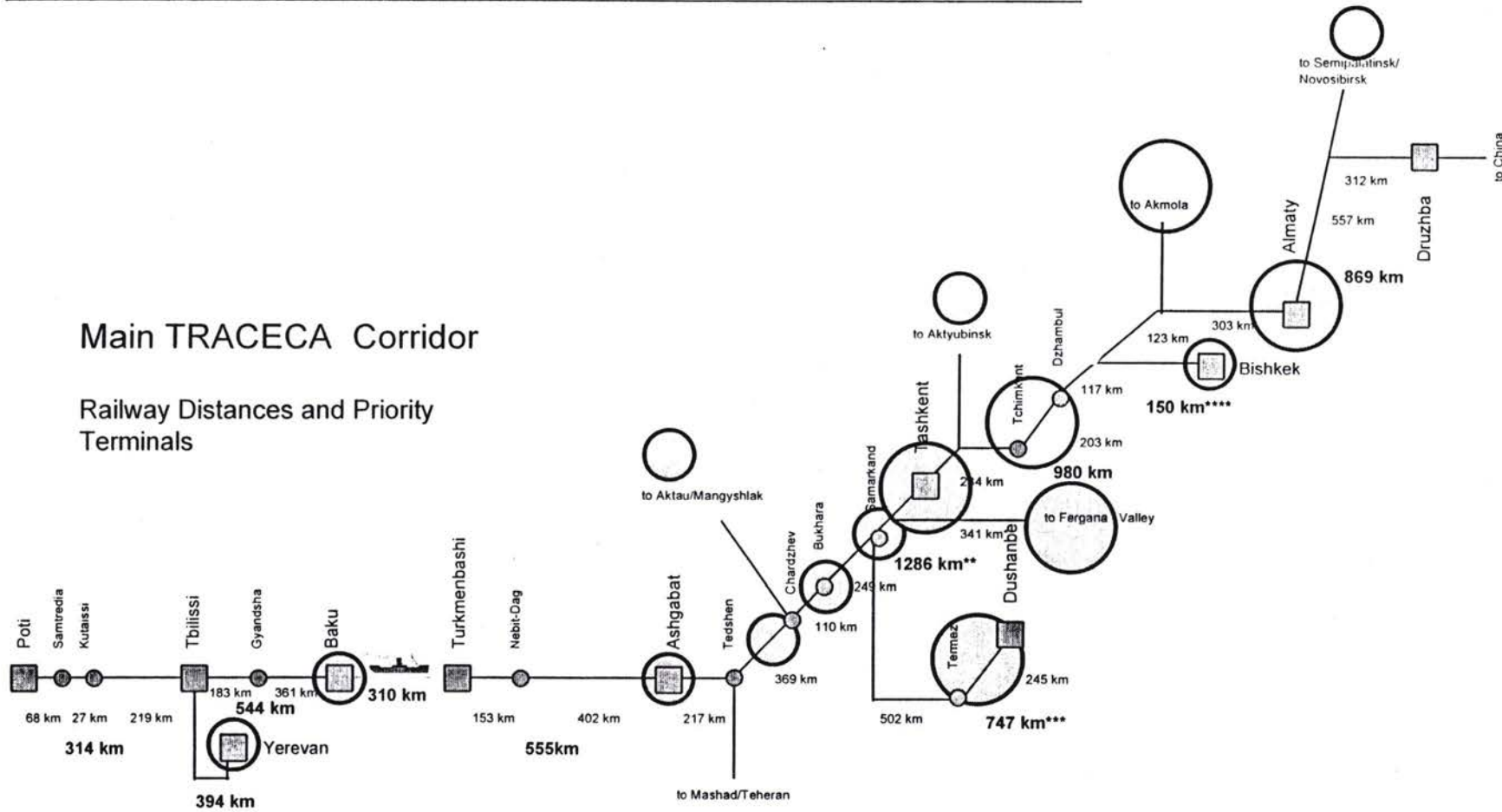
via Tchimkent/Dzhambul, Tchu (Lugovaya) or Almaty

As it has been underlined, the final decision on terminal to be up-graded require supplementary intensive discussions with the administration responsible for transport policy and infrastructure development, but just as important, with the clients/forwarders. This is particularly true in Baku where there are several alternatives (reconstruction of the Khyrdalan terminal or construct a new terminal in another site closer to the city, or even using the installations of the port). At a lesser extent, the suggested idea of concentrating container traffic in Tchu is to be discussed taking account of the alternate terminals: Bishkek, Tchimkent or Dzhambul. The consultant believes that, taking into consideration the comparatively long road distances between Tchu and the potential clients in Kazakstan and Kyrgyzstan, the concentration in Tchu does not seem to be the best choice.

The following chart summarises the « Key » terminal network to be upgraded, classified according to the level of priority.

### Main TRACECA Corridor

Railway Distances and Priority Terminals

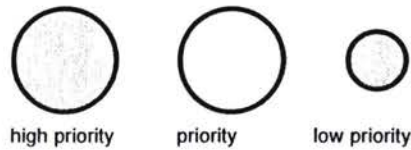


\* via Dzhizak - Dustlik - Dzhetyysaj - Syrdarya  
(the distance via Dzhizak - Khavast - Yangier - Gulistan - Syrdarya is 376 km)

\*\* via Dzhizak - Dustlik - Dzhetyysaj - Syrdarya  
(the distance via Dzhizak - Khavast - Yangier - Gulistan - Syrdarya is 1321 km)

\*\*\* from Samarkand

\*\*\*\* from station Lugovaya





### 5.3.2. Objectives of the container terminal investment project

The wider objective of this project investment is to improve and increase the capacity of transshipment of large containers at a target number of terminals located on the main branches of the TRACECA corridor.

These investments must be seen as part of a global multimodal transport approach whereby all the different multimodal elements are considered within the context of the system as a whole. It would be a mistake to invest large sums of money in multi-modal transport, without ensuring the creation of the necessary conditions for its successful development. It is therefore essential to install an adequate structure for the management of multi-modal traffic as well as carrying out the required infrastructure investments.

The specific objectives are as follows:

#### In the short Term:

- to enable the railways to meet the requirements of the clients and forwarders for handling of multimodal transport units,
- to strengthen the position of the railways in the competition with the direct road traffic,
- to re-establish necessary facilities damaged in the last years.

#### In the short/medium term:

- to modernise part of the terminal network by re-building or constructing new terminals according to western standards.

### 5.3.4. Description of the projected investments

In the short term, the project will involve investment in:

1. reach stackers with spreaders for 40 foot containers (one per terminal), short term
2. repair of one crane per terminal and equip them with spreaders to lift 20 foot containers (as a reserve for the case of damage of mobile equipment),
3. paved surfacing of the storage areas,
4. Other works (repair of fences, illumination, communication, etc.).

#### Parameters and costs of reach stackers:

- \* stacking capabilities: 4 containers,
- \* lifting capability: up to 40 t (first level), 27 to 31 t (second level),
- \* Investment: approximately 0.45 - 0.5 million \$ (incl. Spreader)

Parameters and costs of modern spreaders

- \* automatic fixing,
- \* movable for handling of 20' and 40' containers (telescopic motion about 30 sec),
- \* able to handle trailers and swap bodies (incorporated folding grapple arms or with /easily/ detachable bottom lift arms),
- \* up to 35-40 t lifting capacity,
- \* Investment:
  - i) standard version approximately 50,000 \$;
  - ii) detachable bottom lift arms approximately 30,000 \$;
  - iii) more heavy versions approximately 85,000 \$; iv) high level spreaders with incorporated folding grapple approximately 175,000 \$

The total cost is about 600,000 US dollars per terminal.

To be considered on the medium term, construction of a new large terminal of 700 m length and with 4 tracks includes:

- \* preparation of terrain,
- \* connection with railway and road network,
- \* parking areas,
- \* auxiliary buildings and administrative buildings,
- \* installation of cranes,
- \* entry and exit ways for tracks, etc.

Technical standards must be considered according to the level of traffic as follows:

units per day	up to 60	up to 125	up to 185	up to 250
units per year, optimum	13,000	26,000	39,000	52,000
number of loading tracks	1	2	3	2
length of loading tracks, m	350	350	350	700
width of the module, m	19	22-25	29-30	22-25
terminal layout (scheme)	S/D/L/R	S/R1/L1/D/L2/ R2 or S/L/D/R1/ R2	S/R1/R2/L1/D/ L2/R3	S/R1/L1/D/L2/ R2 or S/L/D/R1/R2
handling equipment	mobile equipment (reach stacker)	1 crane	1 crane	2 cranes

S - storage lane  
D - driving lane

L - loading lane  
R - railway track

Additional requirements for new terminals are:

- \* cranes should be able to handle 30 units/peak hour,
- \* for large terminals 700m track length under crane should be guaranteed (placing of a full train),
- \* tracks should be installed in the straight line (no curves),
- \* additional storage areas outside the crane track area,
- \* possibility of direct entrance and exit of trains from/into the long haul railway network (without involvement of shunting locomotives).

**Investments:**

The calculation of the investment volume per terminal is based on average condition of visited terminals (detailed on-site investigation on a case-by-case basis is required).

The average costs for terminal upgraded is as follows

Measure	Sum, <sup>41</sup> Thousand USD		Remarks
	from	to	
Improvement of the storage area and the driving lanes (pavement)	21	40	
Improvement of the access road	27	44	on terminal territory only
Reconstruction of the administrative building	31	78	
Reconstruction of the gate house	1	1	
Repair of illumination	5	6	
Laying of cables	55	109	
Upgrading of railway racks	16	25	on terminal territory only
Replacement of switches	0	5	on terminal territory only
Repair of fences	19	33	
Repair of crane and procurement of spare parts	50	175	very broad estimation
Procurement of spreaders	50	100	without folding grapple or bottom lift arms
Computer equipment and auxiliary equipment	13	19	incl. fax and modem
<i>Subtotal</i>	287	635	
Others	70	147	10 %
Planning costs	54	113	7 %
<i>Total</i>	412	895	
Mobile equipment (reach stacker)	438	875	1 or 2
<i>Total</i>	849	1770	

The investment volume might be lower for terminals in relatively good condition (e.g. Shumilova) but higher for terminals heavy damaged (e.g. Baku-Khyrdalan)

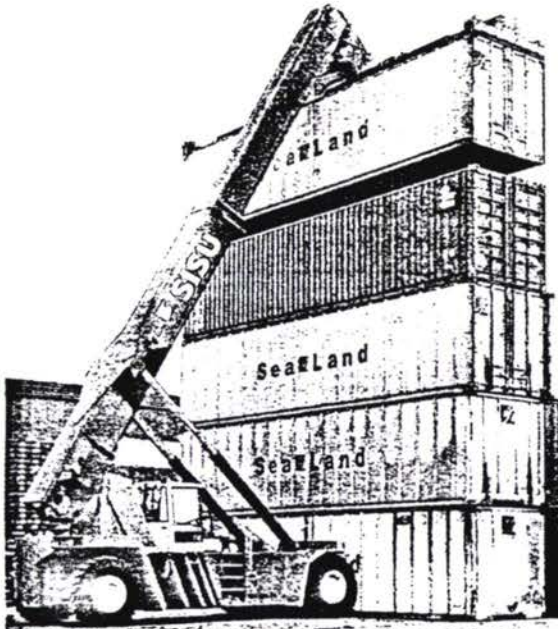
The average cost of a terminal reconstruction vary from 0.4 and 0.9 million \$ per terminal (without reach stackers). For comparison, the Azerbaijan railways carried out a study concluding that the reconstruction of the strongly damaged terminal in Khyrdalan is approximately 1.0 million \$.

### 5.3.5. Expected benefits

The benefit from the project implementation essentially results from a lower maintenance cost of the reachstackers, and from the reduction of handling time operation and consequently, the reduction on staff and rolling stock downtime. The return on investments depends on the activity of the considered terminal. With respect to the existing high potential traffic, these investments can be considered as relatively small. If the management, the operation and organisational aspects are efficiently improved in the same time, there are no serious reasons to doubt about increases on the traffic level and consequently on the the productivity gains generated by the project.

<sup>41</sup> Calculation based on prices in DM

### Mobile equipment (Reach Stacker) - a real alternative



European suppliers (selected, arranged in alphabetical order)

<input checked="" type="checkbox"/>	Belotti	Italy	types	B 91, B93
<input checked="" type="checkbox"/>	Boss	UK	types	G36, G38
<input checked="" type="checkbox"/>	SISU Terminal Systems	Finland	types	RSD 4118-4TL RSD 4120-5TL RSD 4518-4TL RSD 4520-5TL
<input checked="" type="checkbox"/>	Linde AG	FRG	types	C 4130 TL/4 C 4130 TL/5 C 4026 CH/4

parameters: stacking up to 4 high (for railway terminals up to 5 is not necessary)  
lifting capability up to 40 t (first level), 27 to 31 t (second level)

price: approximately about 680,000 - 800,000 DM (0.45 - 0.5 million \$ ) for stacking up to 4 high (incl. Spreader)

### Modern spreaders

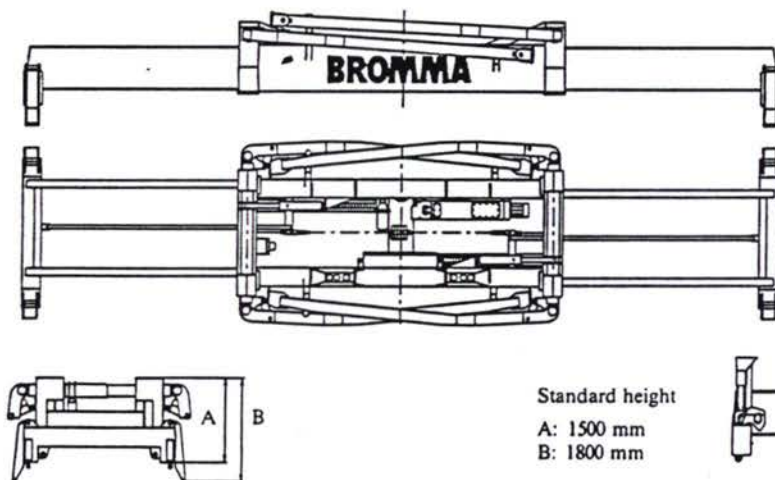
requirements:

- automatic fixing
- moveable for handling of 20' and 40' containers (telescopic spreader) telescopic motion about 30 sec
- able to handle trailers and swap bodies (incorporated folding grapple arms or with /easily/ detachable bottom lift arms)
- up to 35 t lifting capacity
- for railway terminals normal class spreaders are sufficient (monobeam), no necessity in using heavy frame spreaders

prices:

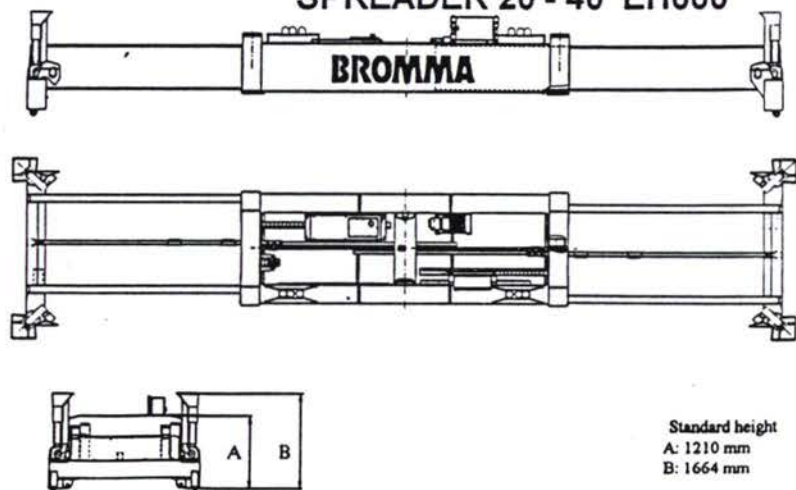
standard version	approximately 50,000 \$
detachable bottom lift arms	approximately 30,000 \$
more heavy versions	approximately 85,000 \$
high level spreaders with incorporated folding grapple	approximately 175,000 \$

#### TELESCOPIC SPREADER 20' - 40' EH 160



Standard height  
 A: 1500 mm  
 B: 1800 mm

#### SPREADER 20'- 40' EH600



Standard height  
 A: 1210 mm  
 B: 1664 mm

## 5.4. Development of Terminal Network in Kazakhstan

### 5.4.1. Introduction and Background

Kazakhstan is the largest country of the TRACECA region and the bigger exporter in volume. The existing container terminal network in Kazakhstan consists of 21 terminals, representing 40% of the available TRACECA region terminals. Kazak terminals cover the main industrial and population areas including the present capital Almaty and the future capital (Akmola). Other important centres are also served by the network: Aktyubinsk, Atyrau, Dzhambul, Dzhezkazgan, Karaganda/Temirtau, Kzyl-Orda, Koktchetav, Kustanaj, Pavlodar/Ekibastus, Petropavlovsk, Semipalatinsk/Ust-Kamennogorsk, Taldy-Kurgan, Uralsk, Tchimkent. Four of the terminals (Almaty 2, Druzhba, Dzhambul, Tchimkent) are located on the main TRACECA corridor. The main problem is that any of them has specialised equipment for handling large containers. This restricts the expansion of trade and its integration with the rest of the world.

The essential multimodal network covers 16 regions. « Key » terminals have been determined as follows:

Area	Terminals <sup>42</sup>	Number of containers in 1995 (TEU) (incl. medium-sized containers)			
		per year	per month	per week	per working day
Akmola/ Karaganda	Akmola, Karaganda, <i>Agadyr, Zhana-Arka, Osakarovka, Temirtau, Aksu, Atbasar, Yermentau, Maj-Kuduk</i>	3000-5000	200-300	50-100	10-20
Aktau/Mangyshlak	Mangyshlak	1000-1500	100-150	20-30	5-10
Aktyubinsk	Aktyubinsk	2000-3000	200-300	30-50	5-10
Almaty	Almaty 2, Taldy-Kurgan, <i>Almaty 1, Sary-Ozek, Ush-Tobe, Otar, Tekely</i>	> 5000	< 500	< 100	
Arkalyk	Arkalyk, <i>Derzhavinskaya, Dzhaksy, Yesil</i>	300-500	< 50	< 10	< 5
Atyrau	Atyrau	500-1000	50-100	10-20	< 5
Druzhba	Druzhba (no data for local shipment)	500-1000	< 50	10-20	< 5
Dzhezkazgan	Dzhezkazgan, <i>Karazhal</i>	300-500	< 50	< 10	<5
Koktchetav	Koktchetav, <i>Novoishimskaya, Volodarskoye, Suly, Tajntcha, Makinka, Kzyl-Tu</i>	500-1000	50-100	10-20	< 5
Kustanaj	Kustanaj, <i>Amankaragaj, Dzhetygara, Mailin</i>	1500-2000	100-150	30-50	5-10
Kzyl-Orda	Kzyl-Orda, Tyuratam	500-1000	50-100	10-20	< 5
Pavlodar/ Ekibastus	Pavlodar Yuzhn., Ekibastus, <i>Pavlodar, Yermak, Yermak Gruz., Shtcherbakty</i>	1000-1500	100-150	20-30	5-10

<sup>42</sup> Medium-sized container terminals are printed in italics

Semipalatinsk/ Ust-Kamennogorsk	Semipalatinsk, Zashchita, Ayaguz, Konetchnaya, Korshunovo, Neverovskaya (Russia), Shemonaikha, Leninogorsk, Serebryanka, Zyryanovsk	2000-3000	150-200	30-50	5-10
Tchimkent/ Dzhambul	Tchimkent, Dzhambul, Arys, Turkestan, Zhanatas, Karatau	3000-5000	200-300	50-100	10-20
Tchu	Tatty, Lugovaya, Kuragaty, Tchu, Sary-Shagan	300-500	< 50	< 10	< 5
Uralsk	Zhilayevo	500-1000	50-100	10-20	< 5

### 5.4.2. Objectives of the terminal investment project

The wider objective of this project investment is to improve and increase the capacity of transshipment of large containers at a target number of terminals covering the essential industrial areas of the country.

These investments must be seen as part of a global multimodal transport approach whereby all the different multimodal elements are considered within the context of the system as a whole. It would be a mistake to invest large sums of money in multi-modal transport, without ensuring the creation of the necessary conditions for its successful development. It is therefore essential to install an adequate structure for the management of multi-modal traffic as well as carrying out the required infrastructure investments.

The specific objectives are as follows:

#### In the short Term:

- to enable the railways to meet the requirements of the clients and forwarders for handling of multimodal transport units,
- to strengthen the position of the railways in the competition with the direct road traffic,
- to re-establish necessary facilities damaged in the last years.

#### In the short/medium term:

- to modernise part of the terminal network by re-building or constructing new terminals according to western standards.

### 5.4.3. Description of the work

Taking into consideration the economic situation of Kazakhstan, it is necessary to concentrate investment efforts in short- and medium-term development of the selected priority key terminals. These are focused handling equipment for 40' containers (procurement of equipment).

On the basis of the previous table, the level of priority per terminal to up-grade is given as follows:

## Selection of essential key terminals in TRACECA region

Level of priority	Key terminals	TEU per day	relation with the main TRACECA corridor	Remarks
<b>High priority</b>				
Almaty	Almaty 2	> 20	on the corridor	
<b>Priority</b>				
Akmola/ Karaganda	Akmola	10 - 20	little relation	strong increase will be expected (capital)
Tchimkent/ Dzhambul	Tchimkent or Dzhambul	10 - 20	on the corridor	necessary con-concentration of effort on one terminal only, the Kazak MOT prefers Tchimkent, which is the more important economic centre
<b>Low priority</b>				
Aktau/Mangyshlak	Mangyshlak or port Aktau	5 - 10	little relation	
Aktyubinsk	Aktyubinsk	5 - 10	little relation	
Kustanaj	Kustanaj	5 - 10	little relation	
Pavlodar/ Ekibastus	Pavlodar Yuzhn.	5 - 10	little relation	
Semipalatinsk/ Ust-Kamennogorsk	Semipalatinsk or Semipalatinsk and Zashchita	5 - 10	little relation	
<b>no priority</b>				
Atyrau		< 5	no relation	
Arkalyk		< 5	no relation	
Dzhezkazgan		< 5	little relation	
Koktchetav		< 5	no relation	
Kzyl-Orda		< 5	little relation	
Tchu		< 5	on the corridor	as a terminal site interesting only in case of concentration of freight into/ from the regions Dzhambul/Tchimkent and Kyrgyzstan (but very long road transport distance from the origins and destinations to the terminal site)
Uralsk		< 5	no relation	
<b>Particular case</b>				
Druzhba				importance as point of origin and destination of traffic flows through the corridor (exchange with the Chinese Railways), no importance from point of view of local freight (regional) traffic

Intensive discussions with the Kazak Ministry of Transport and Communication were carried out to define the priority of each of the involved terminals. The general conclusion is supported by the Kazak MOT (Administration responsible for transport policy and infrastructure development).



However, detailed additional investigations on some of the terminals is required. This concerns in particular the following aspects:

- definition of the most advantageous terminal site in the Tchimkent/Dzhambul region. Tchimkent is the more developed economic region, but is too close to the neighbouring key terminal (Tashkent-Shumilova).
- the definition of the terminal strategy for the Akmola/Karaganda region. The existing terminal (Akmola) strongly damaged, is not able to meet the future requirements resulting from the development of the new capital of the country.
- for the long term the possibilities of development of Almaty 2 terminal has to be assessed. Kazak authorities believe it is convenient to built a new terminal in a new better located area, connected with the road network and providing future extension possibilities.

It would be necessary to analyse the terminal sites (especially in the Almaty, Akmola/ Karaganda and Tchimkent/Dzhambul areas) and conduct a pre-feasibility study to confirm the final terminal development strategy. The study should include:

- traffic forecast,
- analysis of existing terminal sites (availability of space, extension, location related to the transport infrastructure /rail and road/ and the transport demand /clients/),
- study on alternatives sites,
- definition of basic parameters for further terminal development,
- economic and financial assessment of the different options,
- proposals for terminal development,
- preparation of the decision making process.

#### 5.3.4. Required input

The proposed feasibility study must be conducted in narrow coordination with the general TRACECA strategy for up-grading rail terminals, as proposed in the previous section (5.4. Investment for upgrading rail terminals in the TRACECA region). A specific study which should follow emphasises on the particular problem and new priorities of Kazakhstan.

The expected output is: terminal development programme for priority regions,  
technical assistance and support in decision making

Potential donor: TACIS (Kazakstan) in co-ordination with EBRD (or other financial institutes)

## 5.5. Case studies and training

This section presents a set of Inter-modal case studies prepared to provide short-term solutions to facilitate container traffic, to train staff in appropriate technology and medium-term solutions for advanced systems.

The workshop was also to allow transport organisations from different countries and from different transport modes to be brought together around the same table to discuss the Multimodal Transport Strategy proposed by the European team of experts. The audience includes 30 participants (the programme of the workshop as well as the list of participants is attached in Annexe 8), from Decision makers from Ministries of Transport (or equivalent where there is not such a Ministry), to executive from providers of International transport services (railways, road hauliers, freight forwarders, shipping lines) from the eight TRACECA countries.

Initially planned to be held at two different places, Tashkent and Tbilissi, at the end of November, the Workshop was finally postponed of one accord with the TRACECA management in Brussels and concentrated in one consistent Workshop. Indeed, this allows to improve the final programme and the participation of experts from other related projects, in particular, the experts from the Project «Container Pilot Train » and « Uzbek Cotton Transport ».

The different topics were finally addressed during a practical three-day seminar held in Tashkent on the 15, 16 and 17 January 1997. It mainly covered the following topics:

- Multimodal Transport: a logical choice: J; CACERES
- Potential for Intermodal Transport: « Traffic Forecast »: P. PEZANT
- Setting up a Multimodal organisation: C. DURAND
- Organisation of the Multimodal chain through a case study (cotton movement): Mr M. LANDRIN and Mr L. CHEESMAN
- Presentation of the « Trans-Caucasian Container Pilot Train »: W. KRANZ
- Setting up special container train ( schedule and frequency of services) and Advice on terminal infrastructure and handling equipment: F. PRESCHA
- Reorganisation of the container tariff policy: C. DURAND
- The integration of maritime ports: B. FRANCOU

All the case studies are here presented in the above order.

## 5.5.1. Multimodal Transport: a logical choice

### Introduction

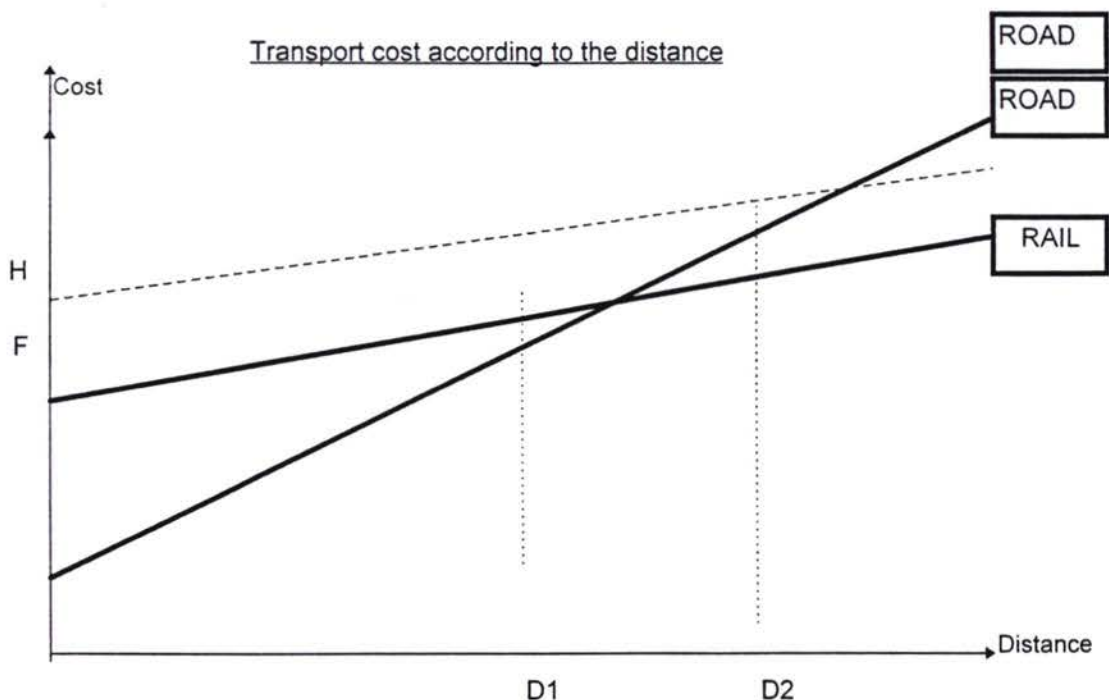
Transportation techniques have evolve as a consequence of production and commercial strategies. In the past, it was a matter of producing to sell. Today, the question is more and more to sell in order to produce. The question of selling means for the producers to be as efficient as their competitors. To face world competition and be efficient, producers must increase their competitiveness:

- Decrease transport cost: improve the packaging, storage policy, insurance, etc. This means, in terms of logistic: quickness and reliability between the central storage and the customer's warehouse.
- Improve their commercialisation: this means selling beyond the borders of the local market without and excessive increase of transport costs. To keep cost under control, producer must tend to sell « Free-delivered » instead of « FOB » or Ex-Works.
- Reduce the stock: to avoid costly stock producers tend to produce « just-in-time ». In this production process, the volumes of consignments tend to be smaller but the frequency increases. This implies again quick and reliable transports. In parallel, pallets and containers, standardised transport units, are used to make the keep flowing freely and sure.

CHART 1, presented at the end of this section summarise this principle.

Are these constraints applicable to TRACECA countries?. Certainly yes. Given the landlocked position and the long distances to reach the main trade markets, the transport costs tend to be high. Keeping these costs as lower as possible is the key of the competitiveness.

In such a context, multi-modal transport appears to be a more cost-effective choice, as compared with the dominant mono-modal current practices. The economical advantage results from the modal complementary, as it shows the following chart.



The importance of fixed cost (OH) makes container transport more expensive by rail than by road for short distances since the transport costs by road are largely variable (fuel, tyres, maintenance, driver cost, etc., represents about 70% of the total cost). On the contrary, the variable cost by rail increases slower than road costs.

As a result, up to a certain distance (D1), road transport is more economical. For longer distances (distance > D1) rail transport has a clear economical advantage. However, multimodal transport requires to invest in handling equipment. When taking account of handling costs (FH), this « break-even distance » is longer (D2, approximately equal to 1000 km).

To combine within a single chain the advantages from all transport modes, the conditions required are:

- The concentration of container traffic flows by road at selected reduced number of rail-road terminals,
- A rail traction from terminal to terminal by specialised container freight train (Block trains),
- A maritime transports from/to ports equipped with container facilities (a CFS container freight service, handling equipment),
- The grouping and co-ordination of intermodal transport operations (a Management organisation working for the benefit of all the partners involved).

Such a system (see CHART 2) helps operators to increase their profit margins (by reducing operating costs) while providing cheaper and better services to their customers.

- The shipper's will benefit from cheaper, faster and better quality transports.
- road carriers can find a solution for the long-distance transports: reduced need for investment in truck fleet, lower driver cost, better quality service,
- The railways and shipping companies benefits from additional freight traffic while optimising the use of the existing infrastructure and fleet (rolling stock and vessels).

The formation of an intermodal system covering the TRACECA corridor appears a the most economical and logical choice. The European Union, through the TRACECA technical assistance programme defined the present project objectives and components as presented in the Section 1: Synopsis.

To fully answer to fixed objectives, an inventory of the multimodal elements was carried out (CHART 3) to provide a comprehensive view of the nature of multimodal sector problems and design appropriate strategies and investment projects to develop freight movements by container.

The main problems can be reminder as follows

### **PLANNING ASPECTS**

#### **PRINCIPLE:**

*A cost-efficient multimodal system requires a minimum container traffic in both sense of the flows.*

#### **OBSERVED SITUATION:**

- Unbalanced traffic flow,
- Low level of containerisation of existing traffics,

## ORGANISATIONAL ASPECTS

### PRINCIPLE:

*A cost-efficient multimodal system requires:*

- *To group the numerous operations involved in multimodal transports*
- *Create the infrastructure: terminals, nodal points, etc.*
- *Management of the system (by an specialised Multimodal Organisation)*

### OBSERVED SITUATION:

- There is no independent MULTIMODAL Organisation.
- The shipper (or its forwarder agent) must separately deal with the several partners involved. Each of them has a « mono-modal » approach of container transport.

## TECHNOLOGICAL ASPECTS

### PRINCIPLE:

*A cost-efficient multimodal system requires to use appropriated technologies.*

### OBSERVED SITUATION:

- AT THE SHIPPERS PREMISES
  - ◊ Lack of adaptation to containers at the factory premises
  - ◊ Poor development of the palletisation (a module fraction of a container)
- THE ROAD LINK OF THE CHAIN

Poor provision of specialised fleet (road chassis and trucks)
- TERMINALS:
  - ◊ Technical standards are poor adequate to the handling of large containers, particularly for 40" containers.
  - ◊ Poor condition of the terminals, container fleet and rail wagons.
- PORT LINK OF THE CHAIN
  - ◊ Port design: built for direct delivery from ships to rail wagons there is no CFS (restrict storage, difficult circulation of trucks)
  - ◊ Restricted handling facilities, specially at Turmenbaschi

## OPERATIONAL ASPECTS

### PRINCIPLE:

*A cost-efficient multimodal system requires to integrate and accomplish specific co-ordinated operational activities:*

- *final collect and delivery by truck,*
- *rail traction by special through trains,*
- *provision of containers, rail wagons*
- *follow up on operations along the entire chain*

**OBSERVED SITUATION:**

- **ROAD LINK:** The road link is disconnected with the rail link. Operators are not able to operate at the « other end »
- **HANDLING AT TERMINALS AND RAIL TRACTION** is subjected to the general freight rules: there is no specialised container train.
- **MARITIME LINK:** port operations at maritime ports are not adapted to container traffic (no CFS)

**MANAGEMENT AND MARKETING ASPECTS****PRINCIPLE:**

- *To be attractive, a multimodal service must be cheaper than the mono-modal alternatives.*
- *Individual firms can not get interesting freight rates from rail and shipping lines.*
- *Only multimodal firms are able to propose attractive container transport tariff and services.*

**OBSERVED SITUATION:**

- **TARIFF:** the tariff applied to container traffic is still based on the general railways regulations and rules (poor attractive)
- **QUALITY SERVICE:** Current operators have a poor perception of marketing techniques. They do not have elaborated « integrated offer » consisting of:
  - ◊ evaluating the shipper's need,
  - ◊ proposing interesting freight conditions
  - ◊ offering possibilities regular transport (based on constant timetable)
  - ◊ offering the short possible travel time,
  - ◊ assuming full responsibility in case of damage,
  - ◊ periodic information on the operations.

**OTHER RELATED ASPECTS**

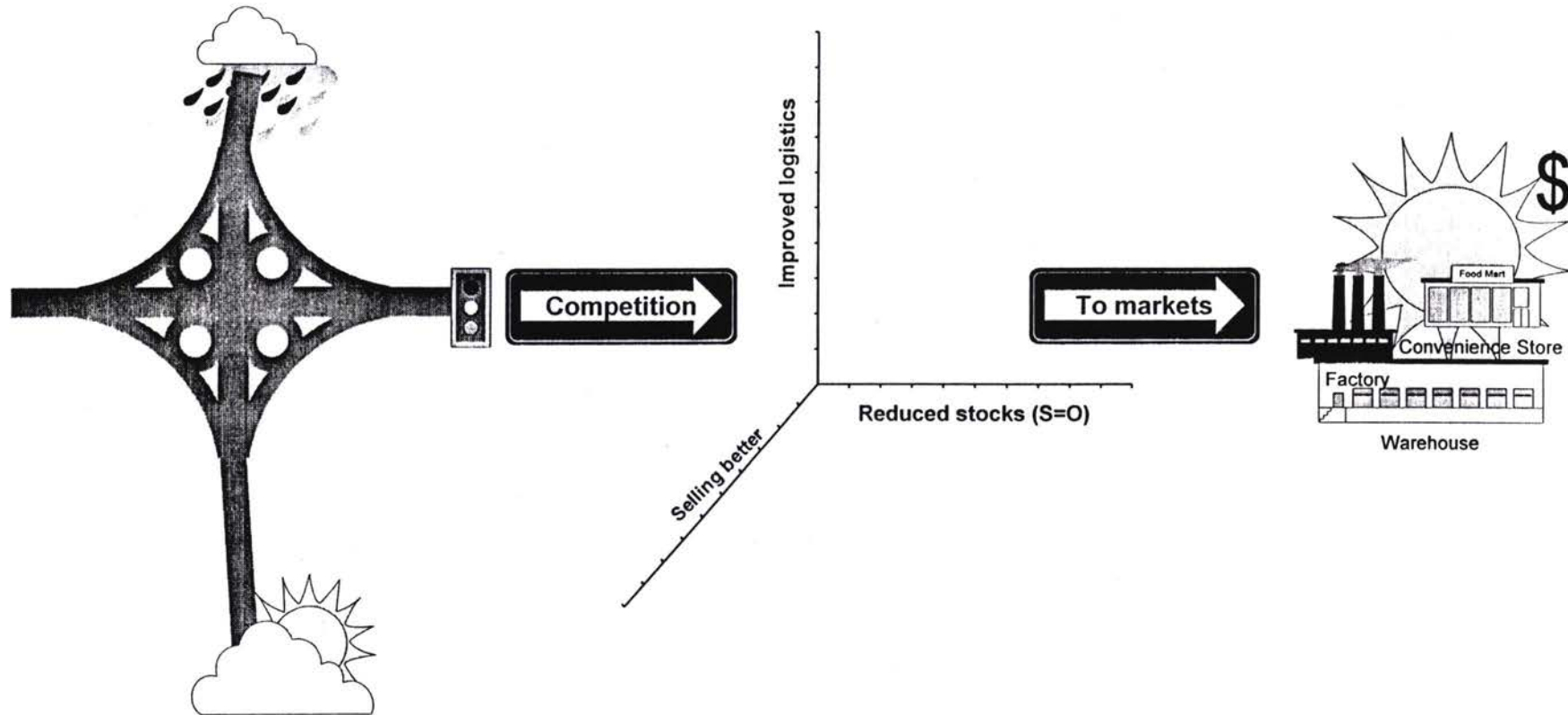
- **Transit and Customs procedures:** border customs offices are set up with no uniform customs procedures and standards formalities.
- **Documentation** : apart from the SMGS rail waybill or the CMR international consignment, the documentation procedures are not well known by the senders and operators.
- **Legal framework aspects:** lack of harmonisation of national transport legislation and regulations related to the containers itself (ISO/CEN norms, transit regimes, mass and dimensions) and regulations linked to the trade exchanges (international tariff framework, customs regulations).

**PROPOSAL FOR IMPROVEMENT OF SYSTEMS**

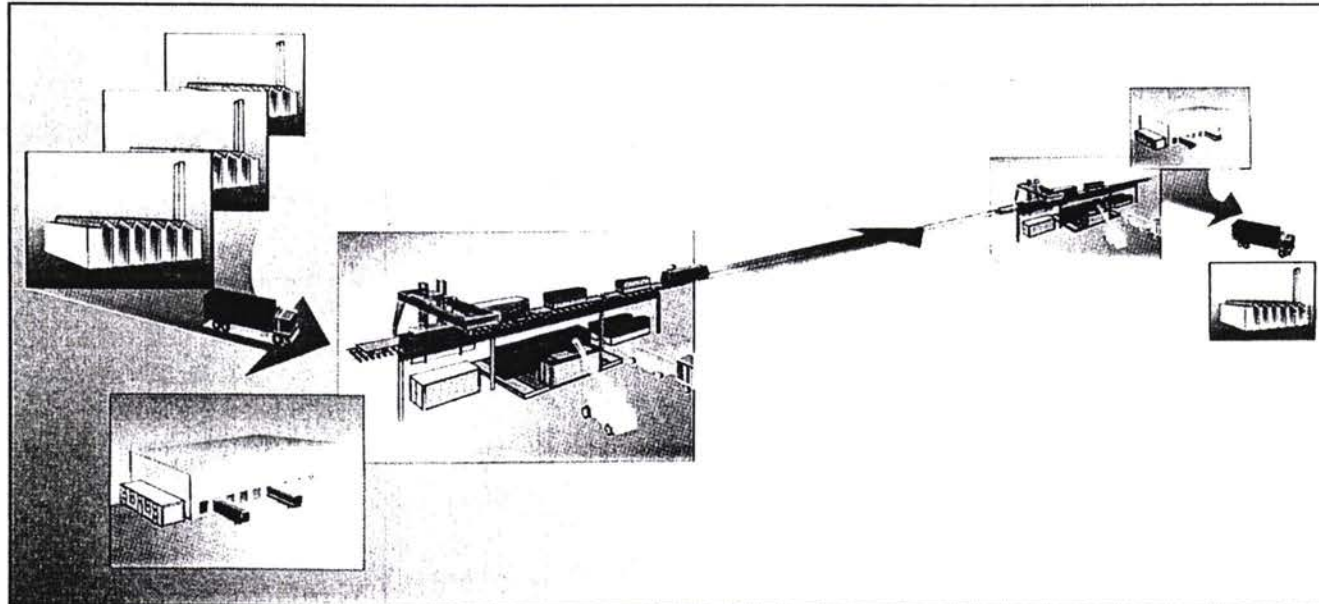
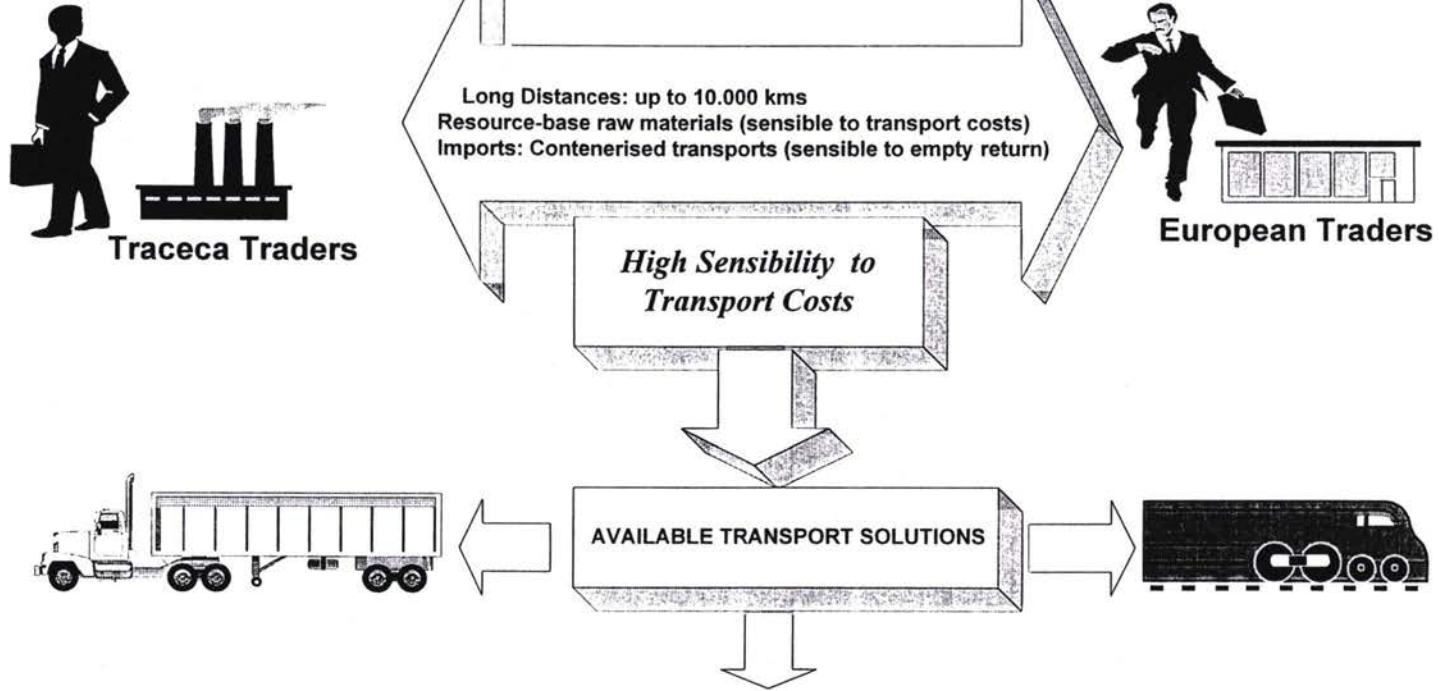
The following two charts (CHART 4 and 5) summarise the proposed strategy for the development of Multimodal Transport and the future situation.

# TRACECA - EUROPE TRADE AND TRANSPORT INTEGRATION

Chart 1)

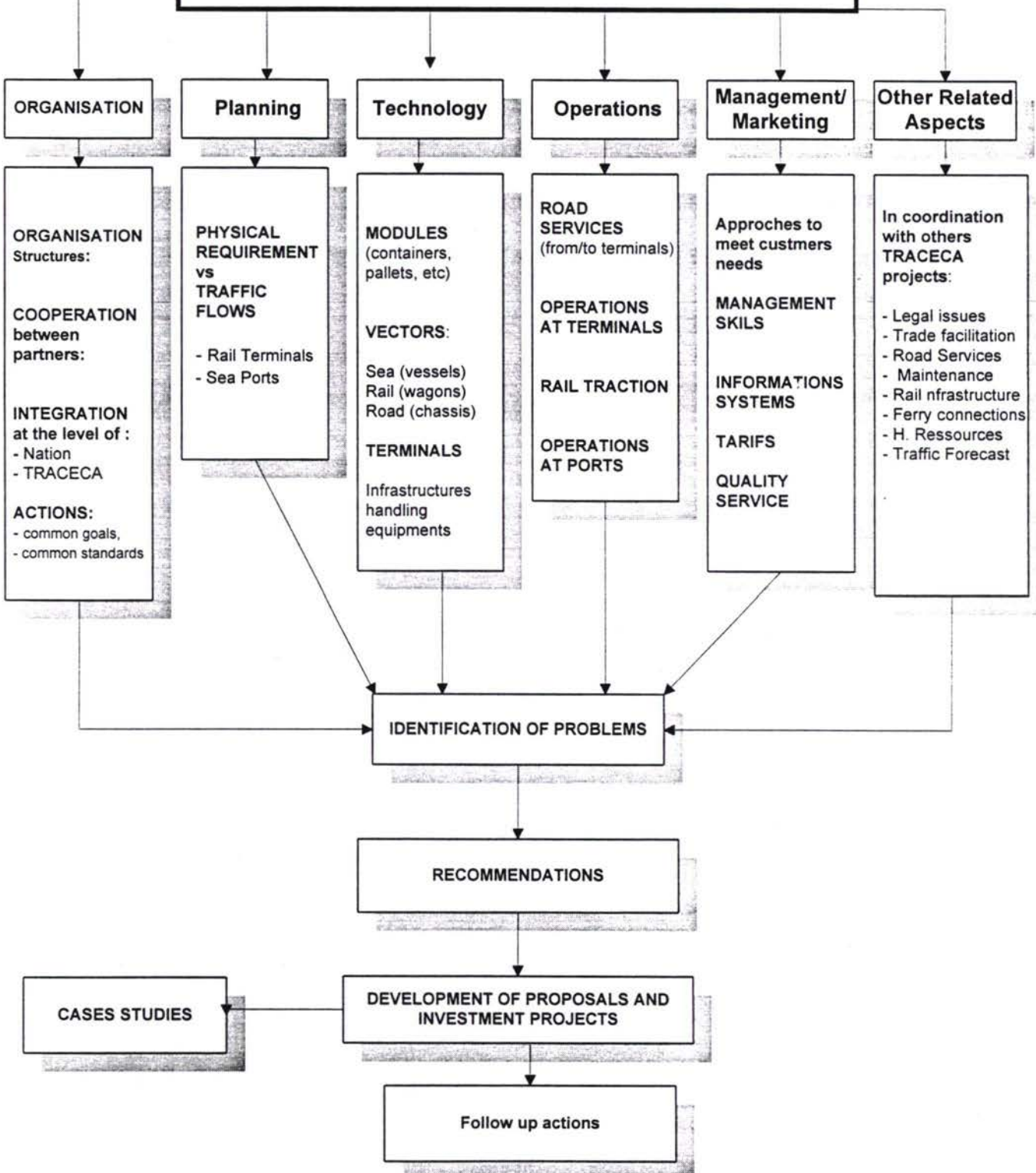


# GENERAL CONTEXT





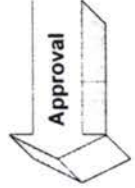
# INVENTORY OF MULTI-MODAL ELEMENTS ON THE TRACECA CORRIDOR



Decision to promote new transport alternatives: a volume of 1000 TEU/year is to be sent through the TRACECA corridor



A National Multi-modal Transport Working Committee is created to implement the political decision



**COMBINED TRANSPORT PLAN**  
-----  
Conditions under which a 20 wagons container special train can be send to Europe through Poti, twice a week.

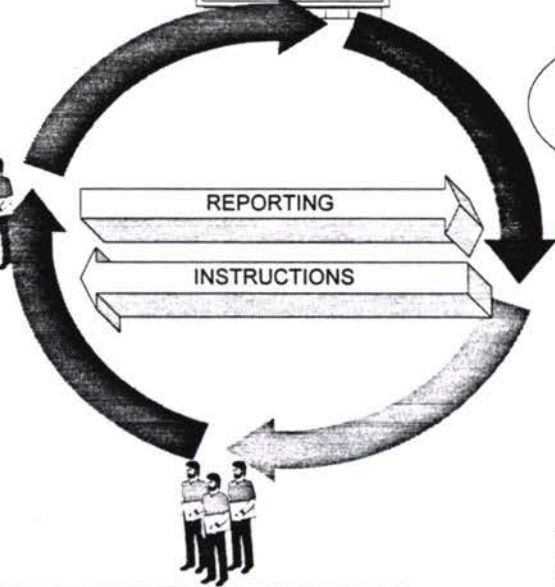
On behalf of the official members of the NMTC, a team of specialists define a "Combined Transport Plan" (within 2 months)

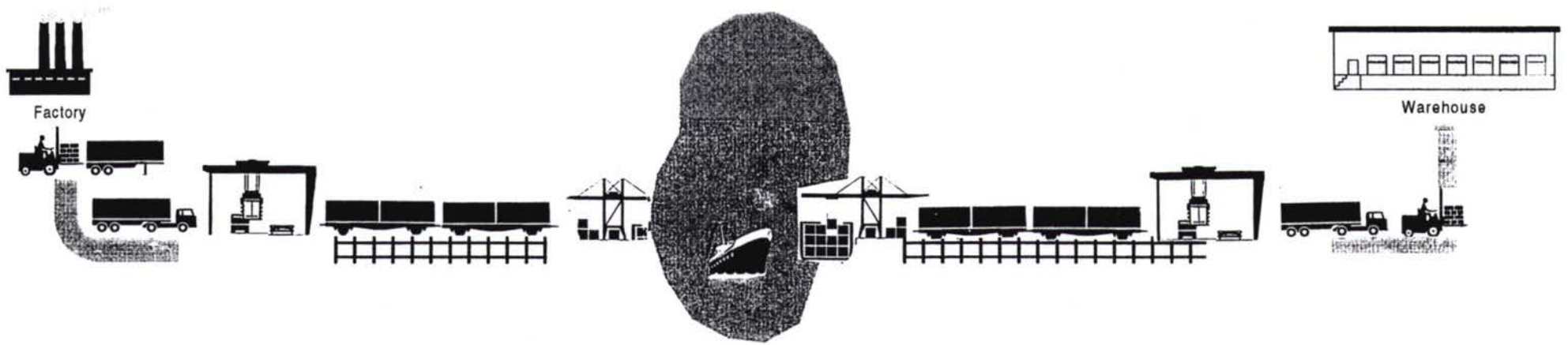
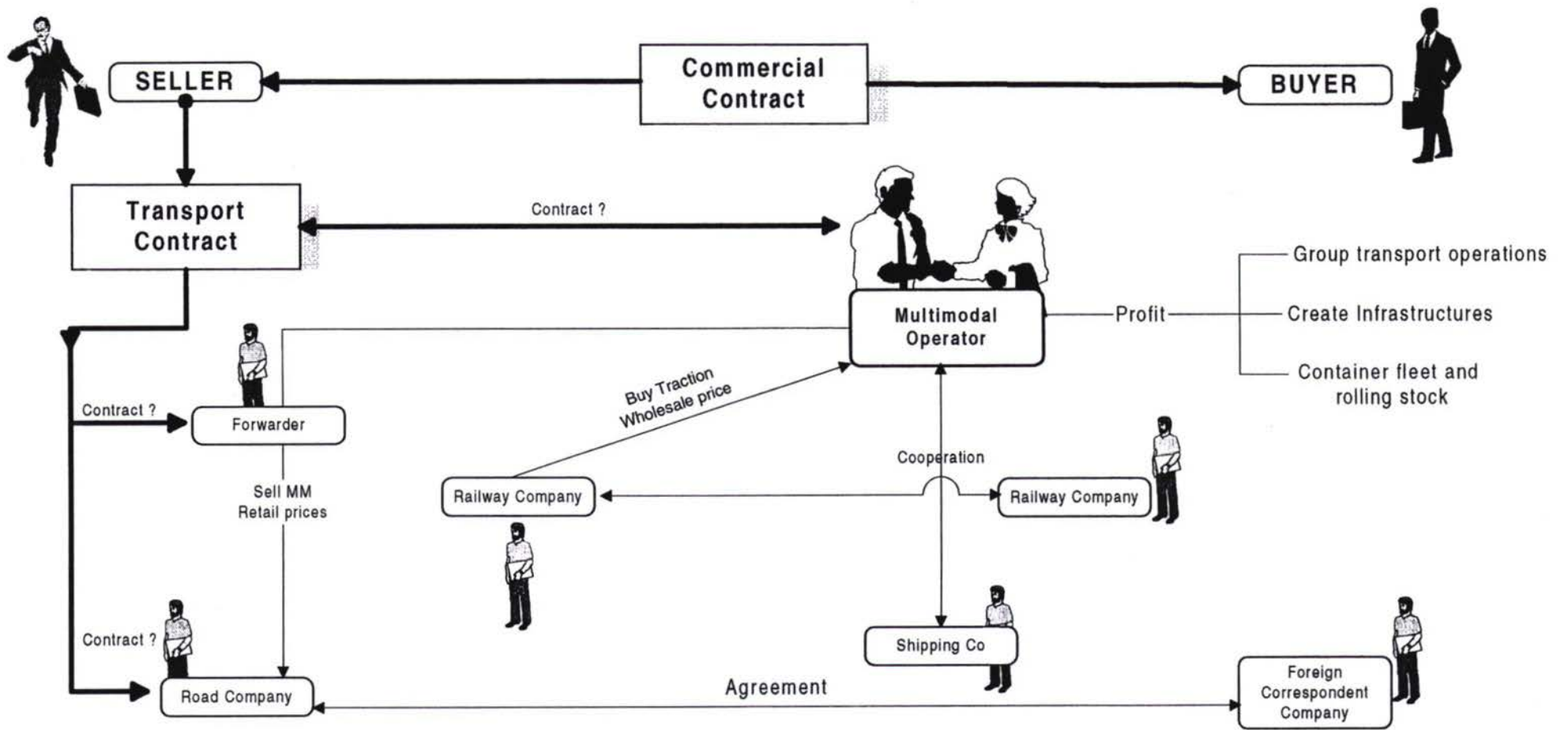
**CREATION OF NATIONAL MULTIMODAL TRANSPORT COMPANIES**



**CREATION OF TRACECA MULTIMODAL TRANSPORT UNION**

**IMPLEMENTATION and MONITORING of the COMBINED TRANSPORT PLAN**





## 5.5.2. Potential for Intermodal Transport

It is very important for railway companies as well as for road carriers to forecast container movements so that they can plan investment and adapt their capacity to demand. On the other hand, it is very difficult to make such forecast with accuracy because container use much depends on tariffs and quality of service offered to transport users.

In TRACECA countries, the proportion of goods transported by container is presently very low. Unexpectedly, it seems to have decreased sharply in recent years. Moreover only a small proportion of the containers used are of ISO standards. These facts mean that container movements could experience a fast growth in the coming years.

A good indicator of the potential for growth is the number of containers which would be utilised if containerisation rates were coming close to those observed in international trade between industrialised countries.

Such an indicator of potential for container movements was calculated using available figures for year 1995. The result of the calculation is interesting as it shows that present container traffic represent only a small proportion of the potential traffic. In other words, even if interzonal or international trade would not grow, transport by container could still develop considerably.

### APPROACH TO DETERMINATION OF CONTAINER POTENTIAL

Since the TRACECA Multimodal Transport Project is essentially concerned by international traffic, the calculation of container potential was based on foreign trade statistics in volume as collected under the TRACECA Regional Traffic Forecasting Model Project. The calculation was done in six steps as indicated below.

TRACECA countries were divided into three groups:

- i. "Caucasian Region" including Armenia, Azerbaijan and Georgia;
- ii. "Mid-Asian Region" including Kyrgyzstan, Tadjikistan, Turkmenistan and Uzbekistan; and
- iii. Kazakstan considered separately as transport route in the north of the country can be substantially different from routes for other Central Asian countries.

In the first five steps, calculation was done separately for the three groups.

*Step 1 - Group countries and commodities according to the probability of using containers in transport of those commodities to/from those countries.*

The result was six commodity groups and fourteen country groups including the three groups of TRACECA countries. Commodity groups are shown in Chart A and country groups in Chart B.

*Step 2 - For each element of commodity / country matrices, calculate export and import volumes.*

This was done by aggregation of the 21 commodity groups / 27 country group matrices obtained from the Regional Traffic Forecasting Model Project. The figures are for year 1996 for Georgia and Uzbekistan and for 1995 for all other TRACECA countries. Aggregated matrices  $M_1$  are given as Tables 1a, 1b and 1c for each of the three TRACECA groups Caucasian Region, Mid-Asian Region and Kazakstan (see below).

It is worth noting that for the Mid-Asian Region some 80% of the export in Commodity Group 6 represent cotton or wool.

*Step 3 - For each element of the commodity / country matrix, determine the proportion of goods which may be transported by container.*

Estimated matrices  $M_2$  are given as tables 2a, 2b and 2c for each TRACECA group. It was assumed that for goods which are prone to be carried in containers such as those of Group 2 (foodstuff) or Group 6 (textile-manufactured products), containerisation rate for transport on very long distance (America, Japan) would be similar to those observed in high-income countries, i.e. of up to 90%. In trade with Europe the rate would be somewhat lower since door to door trucking is feasible. As for exchange between neighbouring countries such as between Central Asia and Caucasian countries, it was assumed that the potential rates were rather low.

*Step 4 - Multiply each element of matrices  $M_1$  by respective element of matrices  $M_2$ .*

This gives the number of tons transported by container by commodity group and by origin (import) or destination (export). Dividing by the assumed container weight for each commodity group and summing all commodity groups lead to matrices  $M_3$  which gives the number of containers imported or exported by country group.

Assumed container weights for 20 ft container were from 11 tons for textiles to 16 tons for metal.

*Step 5 - For each country group, determine which percentage of the containers will take a specific corridor.*

The resulting matrices  $P_1$  are given in Table 3 for each of the three TRACECA regions.

The corridors correspond approximately to the following routes:

- North-Western Corridor: from Central Asia to Moscow and then to Finland and other Scandinavian countries or to Poland and Baltic Sea through Brest.
- Central-Western Corridor: from TRACECA countries to Central and Western Europe through European Russia or Ukraine.
- Southern Corridor: to Persian Gulf through Iran or to Indian Sub-continent and Indian Ocean through Kashgar or possibly Afghanistan.
- Eastern Corridor: from Central Asia to East Asia through Sino-Kazak border crossings, particularly Druzhba station, or through Siberia and Far-East ports.
- TRACECA corridor considered at two locations: Caspian Sea crossing and Georgian ports on the Black Sea (Poti and Batumi).

*Step 6 - Multiply each element of matrix  $M_3$  by the corresponding element of matrix  $P_1$ .*

The result represent potential container traffic on each corridor

## RESULTS OF CALCULATION

Potential container traffics are given in Table 4 by corridor and by direction expressed in both TEU/year and TEU/week. They are represented in graphic form on the diagrams shown below for the Mid-Asian region, for Kazakhstan and for all TRACECA countries.

The potential for development of transport by container seems very high since present volumes represent less than 10% of the computed potential volumes.

The diagrams show that traffic will be unbalanced. If containerisation develops as could be expected, particularly for the transport of textile fibres, potentially more containers could be used for export than for import.

Charts

**CHART A**  
**COMMODITY GROUPS**

Group No	Commodities
1	Cattle and products of animal origin; products of vegetal origin
2	Finished food-stuffs; fat and oil of animal or vegetable origin
3	Mineral products; products of chemical industry or related industries; wares from stone, gypsum, cement
4	Non-precious metal
5	Machinery, equipment; road, air and water transport equipment
6	Plastics, rubber and rubber wares; leather, fur and their wares; wood, paper, textile, shoes; appliances, arms and ammunition; various manufactured goods; art products

**CHART B**  
**COUNTRY GROUPS**

No	Name	Countries
1	Caucasian Region	Armenia, Azerbaijan, Georgia
2	Mid-Asian Region	Kyrgyzstan, Tadjikistan, Turkmenistan, Uzbekistan
3	Kazakstan	Kazakstan
4	Other CIS	Russian Federation, Ukraine, Belorussia, Moldova
5	Northern Europe	Baltic states, Finland, Sweden, Poland, Czechia
6	Central + Western Europe	Romania, Hungary, Austria, Slovakia, Switzerland, France, Germany, Benelux, Denmark, UK, Ireland
7	Southern Europe	Italy, Greece, Spain, Portugal, Former Yugoslavia, Bulgaria, Albania, Cyprus
8	East Mediterranean, Africa	Israel, Egypt, Irak, Syria, Lebanon, Jordan, African countries
9	Turkey, Iran Persian Gulf	Turkey, Iran, UAE, Oman, Kuwait, Saudi Arabia, Qatar
10	South Asia	Afghanistan, India, Pakistan, Sri Lanka, Bangladesh, ASEAN countries, Myanmar, Cambodia, PNG
11	China	China, Laos, Mongolia
12	Far-East Asia	Japan, Taiwan, South Korea, North Korea
13	America - West	West USA, Australia, Colombia, Peru, Chile, Ecuador
14	America - East	East USA, Caribbean states, Mexico, Venezuela, Brazil, Uruguay, Argentina, Paraguay, Bolivia

CAUCASIAN REGION

Export

Country group	Group of commodities						Total
	1	2	3	4	5	6	
1	2 978	11 352	565 514	16 312	1 501	4 273	601 930
2	12 552	1 884	57 118	1 221	4 779	5 030	82 584
3	1 244	1 826	40 237	994	2 738	940	47 980
4	22 832	82 204	329 952	53 168	26 789	19 808	534 753
5	1 038	2 294	63 565	44	14	1 758	68 713
6	1 394	5 729	186 539	9 122	532	71 014	274 330
7	463	547	481 594	2 394	740	354	486 093
8	78	336	57	485	82	254	1 293
9	5 345	12 450	1 127 964	168 020	42 196	59 295	1 415 270
10	92	3	0	2	208	11 959	12 265
11	1 079	0	0	0	0	1 210	2 288
12	1 000	41	0	0	0	563	1 604
13	0	0	0	0	233	0	233
14	27	59	21	187	1	9 773	10 069
Total	50 122	118 729	2 852 565	251 955	79 818	186 237	3 539 426

Caucasian Region  
 Mid-Asian Region  
 Kazakhstan  
 Other CIS  
 Northern Europe  
 Central - West Europe  
 South Europe  
 East Mediter.-Africa  
 Turkey-Iran-Persian G.  
 South Asia  
 China  
 Far-East Asia  
 America - West  
 America - East

Table 1a

Import

Country group	Group of commodities						Total
	1	2	3	4	5	6	
1	16 542	3 475	716 200	33 662	952	11 276	782 107
2	1 402	301	214 172	202	1 109	4 167	221 354
3	45 482	18	72 326	12 099	414	741	131 080
4	125 922	73 081	215 357	114 661	16 351	39 824	585 196
5	12 212	3 823	2 433	553	646	660	20 328
6	445 062	60 655	215 160	7 636	2 896	8 251	739 661
7	202 091	24 875	221 133	2 278	435	1 685	452 496
8	3 406	1 970	40 167	293	176	481	46 491
9	349 336	306 833	155 732	5 725	8 037	35 615	861 278
10	41 634	111	7 657	185	4	1 246	50 838
11	35	135	83	399	292	565	1 508
12	0	17	5 842	526	245	149	6 779
13	67	0	2	0	108	13	191
14	203 606	12 727	14 367	8 562	480	1 319	241 061
Total	1 446 799	488 022	1 880 633	186 786	32 151	105 999	4 140 391

Caucasian Region  
 Mid-Asian Region  
 Kazakhstan  
 Other CIS  
 Northern Europe  
 Central - West Europe  
 South Europe  
 East Mediter.-Africa  
 Turkey-Iran-Persian G.  
 South Asia  
 China  
 Far-East Asia  
 America - West  
 America - East

Agri Prod    Foodstuff    Mineral pr.    Metal    Equipme Textile-Ma-  
 Livestock                    Chemicals                    Vehicles nuf.goods



MID-ASIAN REGION

Export

Country group	Group of commodities						Total
	1	2	3	4	5	6	
1	1 207	683	330 493	1 077	199	2 188	335 846
2	41 472	16 223	1 789 187	40 983	24 418	20 909	1 933 193
3	57 272	33 851	693 414	15 353	9 260	9 456	818 607
4	694 114	147 963	525 252	77 616	64 790	215 220	1 724 955
5	1 700	28 305	85 013	28 139	379	61 883	205 419
6	1 377	12 216	887 966	235 267	188	594 431	1 731 446
7	20	18	336 962	49 368	205	60 916	447 489
8	62	0	16 690	471	563	601	18 388
9	1 278	280	420 331	81 737	2 642	139 815	646 083
10	1 121	1 162	158 075	34 706	237	76 517	271 818
11	5 659	591	377 453	56 763	12 026	69 982	522 474
12	365	25	9	8 572	5	157 872	166 849
13	26	0	0	0	0	115	142
14	3 179	0	60 221	331	7	193 979	257 717
Total	808 853	241 321	5 681 069	630 387	114 925	1 603 891	9 080 447

Caucasian Region  
 Mid-Asian Region  
 Kazakhstan  
 Other CIS  
 Northern Europe  
 Central - West Europe  
 South Europe  
 East Mediter.-Africa  
 Turkey-Iran-Persian G.  
 South Asia  
 China  
 Far-East Asia  
 America - West  
 America - East

Import

Country group	Group of commodities						Total
	1	2	3	4	5	6	
1	4 981	121 386	210 475	3 418	8 010	12 930	361 201
2	56 229	73 197	2 434 920	39 433	8 331	20 042	2 632 151
3	1 048 846	25 248	2 371 704	91 335	17 483	46 584	3 601 200
4	502 123	260 507	974 810	637 530	97 172	713 994	3 186 136
5	329 761	150 940	42 480	9 404	6 118	43 806	582 508
6	1 240 355	174 206	66 074	14 746	12 810	29 504	1 537 696
7	31 304	11 791	37 121	12 290	2 016	6 163	100 685
8	12 922	3 993	4 010	1 693	47	6 178	28 843
9	86 466	200 266	91 974	10 490	15 631	78 257	483 085
10	11 473	18 838	12 772	1 752	1 245	8 234	54 314
11	9 241	4 518	39 402	1 374	4 170	8 174	66 879
12	18	2 718	1 707	22 447	19 389	8 823	55 103
13	233	187	0	0	0	1	420
14	148 420	110 087	54 307	3 249	3 119	10 587	329 769
Total	3 482 374	1 157 884	6 341 760	849 165	195 546	993 282	13 020 012

Caucasian Region  
 Mid-Asian Region  
 Kazakhstan  
 Other CIS  
 Northern Europe  
 Central - West Europe  
 South Europe  
 East Mediter.-Africa  
 Turkey-Iran-Persian G.  
 South Asia  
 China  
 Far-East Asia  
 America - West  
 America - East

Agri Prod    Foodstuff    Mineral pr.    Metal    Equipme    Textile-Ma-  
 Livestock                    Chemicals                    Vehicles nuf.goods

# KAZAKHSTAN

## Export

Table 1c

Country group	Group of commodities							Total	
	1	2	3	4	5	6			
1	60 347	34	44 102	37 114	314	502	142 413	Caucasian Region	
2	862 535	19 339	2 381 443	102 647	20 017	19 089	3 405 070	Mid-Asian Region	
3	0	0	0	0	0	0	0	Kazakhstan	
4	2 515 847	168 094	19 996 346	4 114 957	229 386	82 878	27 107 507	Other CIS	
5	179 161	2 259	140 684	428 580	1 820	3 088	755 592	Northern Europe	
6	16 624	2 516	1 688 383	482 629	606	10 068	2 200 826	Central - West Europe	
7	615	47	54 564	88 417	531	5 192	149 365	South Europe	
8	949	0	2 476	16 882	8	84	20 400	East Mediter.-Africa	
9	4 292	157	60 662	240 081	178	18 636	324 004	Turkey-Iran-Persian G.	
10	18 155	244	21 899	288 020	24	2 536	330 878	South Asia	
11	62 828	538	356 391	436 676	53 178	97 842	1 007 452	China	
12	348	0	38 720	166 636	8	1 336	207 047	Far-East Asia	
13	69	0	0	2 497	0	15	2 580	America - West	
14	927	333	43 113	143 532	225	1 612	189 743	America - East	
Total	3 722 697	193 563	24 828 785	6 548 671	306 300	242 883	35 842 899		

## Import

Country group	Group of commodities							Total	
	1	2	3	4	5	6			
1	1 604	1 238	58 570	1 702	3 017	66 197	132 328	Caucasian Region	
2	52 917	15 406	836 520	16 134	7 094	928 094	1 856 164	Mid-Asian Region	
3	0	0	0	0	0	15	15	Kazakhstan	
4	28 945	371 353	4 777 771	1 207 762	201 836	6 587 720	13 175 388	Other CIS	
5	5 016	18 154	61 855	3 496	6 342	94 937	189 800	Northern Europe	
6	9 428	113 209	98 558	3 537	28 996	253 837	507 566	Central - West Europe	
7	1 300	8 678	6 387	463	1 525	18 388	36 741	South Europe	
8	1 675	3 651	1 010	23	154	6 636	13 148	East Mediter.-Africa	
9	11 402	32 343	19 861	2 822	6 171	72 664	145 263	Turkey-Iran-Persian G.	
10	5 146	1 179	1 333	1 070	667	9 469	18 864	South Asia	
11	1 470	17 332	128 074	2 669	2 734	152 308	304 587	China	
12	35	533	224	243	4 552	5 630	11 217	Far-East Asia	
13	5	18	37 258	2 400	217	39 944	79 841	America - West	
14	2 204	5 647	2 089	260	1 229	11 475	22 904	America - East	
Total	121 147	588 743	6 029 510	1 242 586	264 540	8 247 320	16 493 846		

Agri Prod    Foodstuff    Mineral pr.    Metal    Equipme    Textile-Ma-  
 Livestock                    Chemicals                    Vehicles nuf.goods







CONTAINER DISTRIBUTION BY CORRIDOR

Table 3

Caucasian Region

Group of countries	Corridor						
	CIS	North-West	Central-West	TRACECA (Caspian)	TRACECA (Black-Sea)	Southern	Eastern
1	0%	0%	0%	0%	0%	0%	0%
2	0%	0%	0%	100%	0%	0%	0%
3	0%	0%	30%	70%	0%	0%	0%
4	100%	0%	0%	0%	0%	0%	0%
5	100%	0%	0%	0%	0%	0%	0%
6	0%	0%	20%	0%	80%	0%	0%
7	0%	0%	0%	0%	100%	0%	0%
8	0%	0%	0%	0%	100%	0%	0%
9	0%	0%	0%	20%	0%	80%	0%
10	0%	0%	0%	0%	0%	100%	0%
11	0%	0%	0%	40%	0%	60%	40%
12	0%	0%	0%	20%	0%	80%	20%
13	0%	0%	0%	0%	20%	80%	0%
14	0%	0%	0%	0%	80%	20%	0%

Mid-Asian Region

Group of countries	Corridor						
	CIS	North-West	Central-West	TRACECA (Caspian)	TRACECA (Black-Sea)	Southern	Eastern
1	0%	0%	0%	100%	0%	0%	0%
2	0%	0%	0%	0%	0%	0%	0%
3	0%	0%	0%	0%	0%	0%	0%
4	100%	0%	0%	0%	0%	0%	0%
5	0%	100%	0%	0%	0%	0%	0%
6	0%	0%	50%	50%	50%	0%	0%
7	0%	0%	10%	90%	90%	0%	0%
8	0%	0%	0%	80%	80%	20%	0%
9	0%	0%	0%	0%	0%	40%	0%
10	0%	0%	0%	0%	0%	80%	20%
11	0%	0%	0%	0%	0%	40%	60%
12	0%	0%	0%	0%	0%	40%	60%
13	0%	0%	0%	0%	0%	80%	20%
14	0%	0%	10%	70%	70%	20%	0%

Kazakhstan

Group of countries	Corridor						
	CIS	North-West	Central-West	TRACECA (Caspian)	TRACECA (Black-Sea)	Southern	Eastern
1	30%	0%	0%	70%	0%	0%	0%
2	0%	0%	0%	0%	0%	0%	0%
3	0%	0%	0%	0%	0%	0%	0%
4	100%	0%	0%	0%	0%	0%	0%
5	0%	100%	0%	0%	0%	0%	0%
6	0%	0%	70%	30%	30%	0%	0%
7	0%	0%	30%	70%	70%	0%	0%
8	0%	0%	10%	60%	60%	30%	0%
9	0%	0%	0%	80%	20%	80%	0%
10	0%	0%	0%	0%	0%	100%	0%
11	0%	0%	0%	0%	0%	10%	90%
12	0%	0%	0%	0%	0%	20%	80%
13	0%	0%	0%	0%	0%	20%	80%
14	0%	40%	10%	20%	20%	20%	10%

Table 4

**CONTAINER MOVEMENT POTENTIAL**

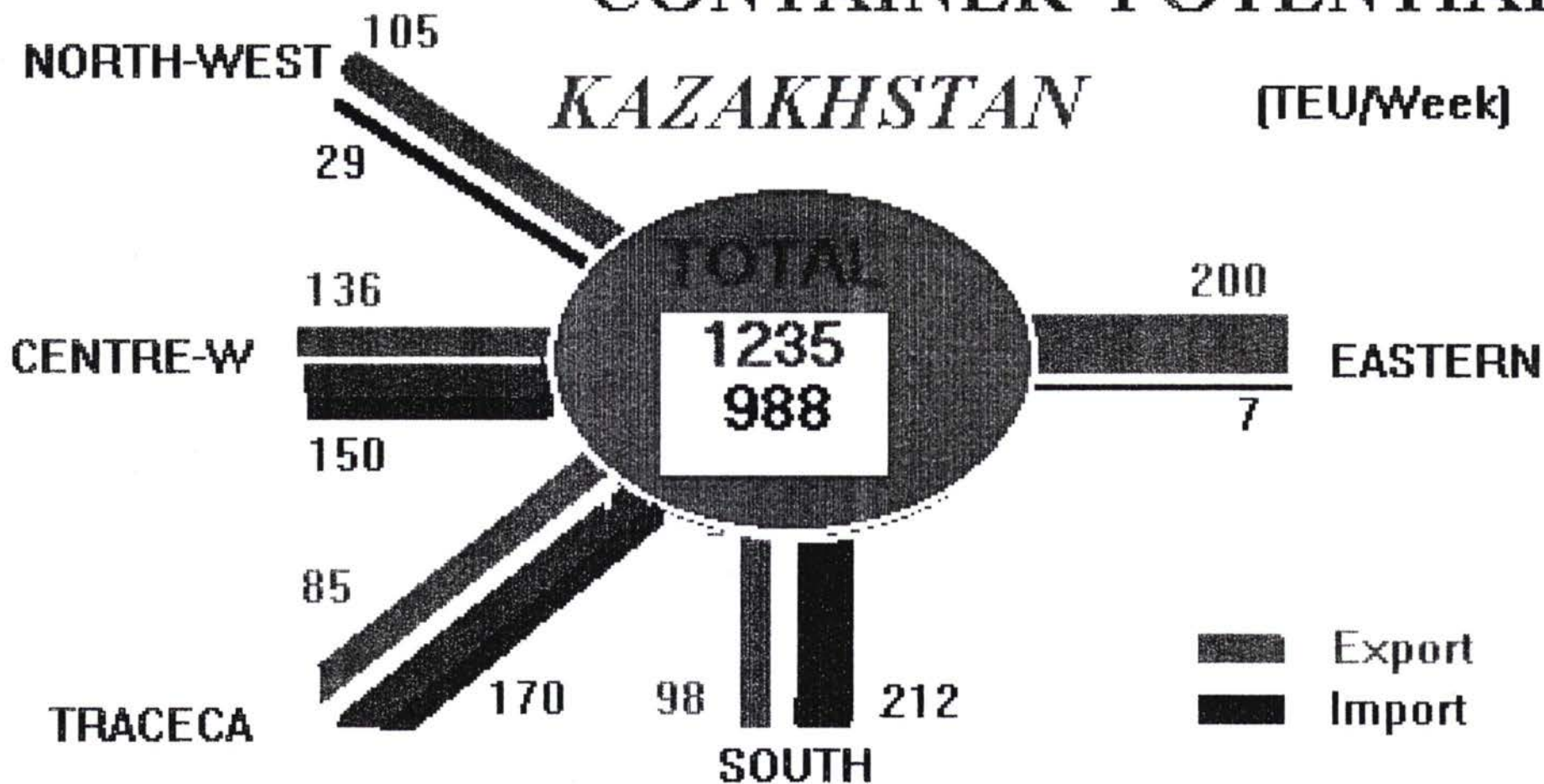
<b>Container movement potential (TEU / year)</b>			
Corridor	-----> (export)	<----- (import)	TOTAL
North - Western	11 581	1 958	13 539
Central Western	31 367	14 731	46 097
TRACECA (Caspian Sea level)	42 662	29 265	71 927
TRACECA (Black Sea level)	47 673	33 053	80 726
South	26 180	28 022	54 203
Eastern	21 960	527	22 487
CIS	48 796	17 017	65 813
<b>TOTAL (not incl.TRACECA Caspian Sea)</b>	<b>187 557</b>	<b>95 308</b>	<b>282 865</b>

<b>Container movement potential (TEU / week)</b>			
Corridor	-----> (export)	<----- (import)	TOTAL
North - Western	223	38	260
Central Western	603	283	886
TRACECA (Caspian Sea level)	820	563	1 383
TRACECA (Black Sea level)	917	636	1 552
South	503	539	1 042
Eastern	422	10	432
CIS	938	327	1 266
<b>TOTAL (not incl.TRACECA Caspian Sea)</b>	<b>3 607</b>	<b>1 833</b>	<b>5 440</b>

# CONTAINER POTENTIAL

## KAZAKHSTAN

(TEU/Week)

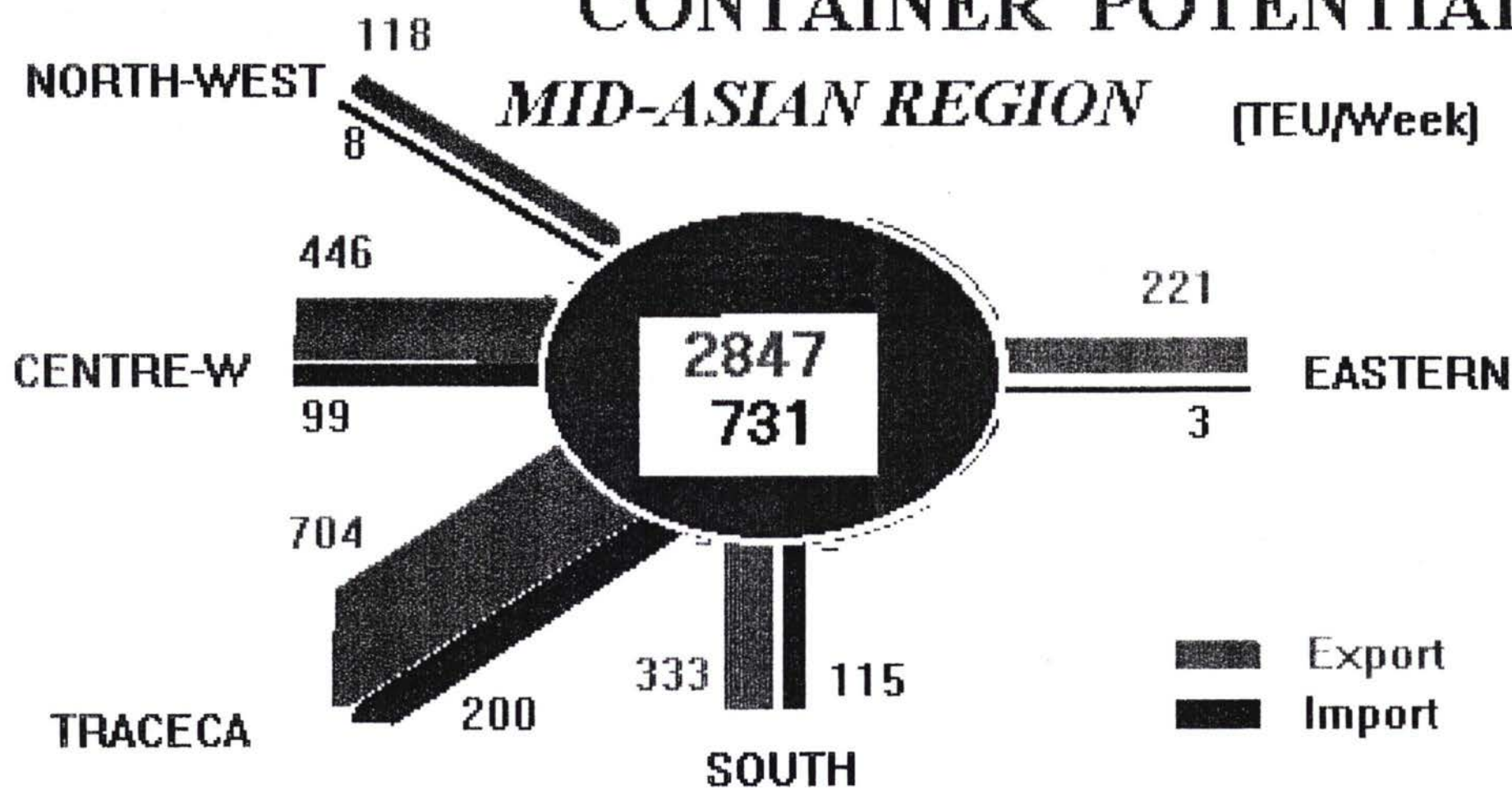




# CONTAINER POTENTIAL

## MID-ASIAN REGION

(TEU/Week)



# CONTAINER POTENTIAL

## TRACECA REGION

(TEU/Week)

NORTH-WEST

223

38

603

CENTRE-W

283

917

TRACECA

636

503

539

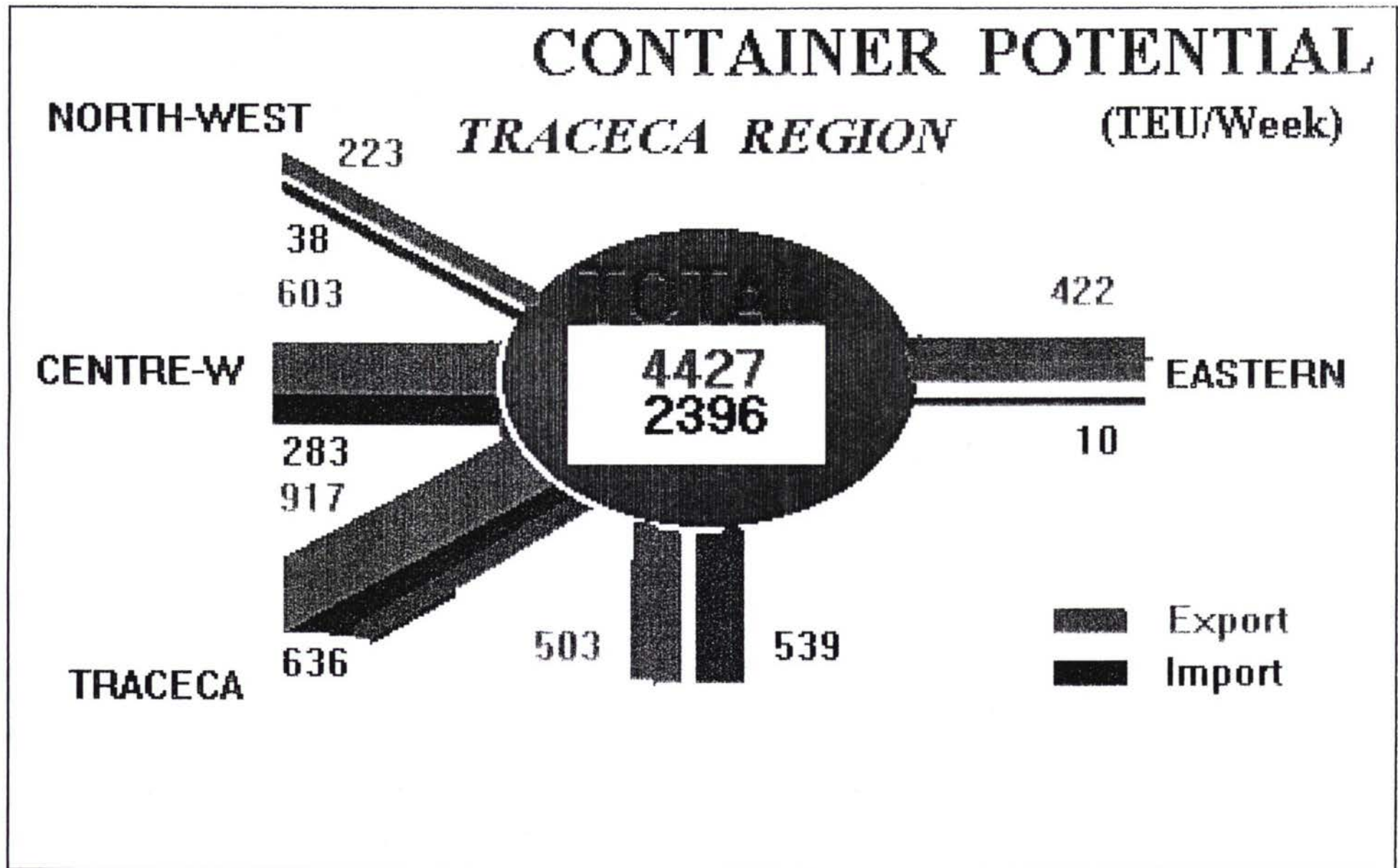
422

EASTERN

10

4427  
2396

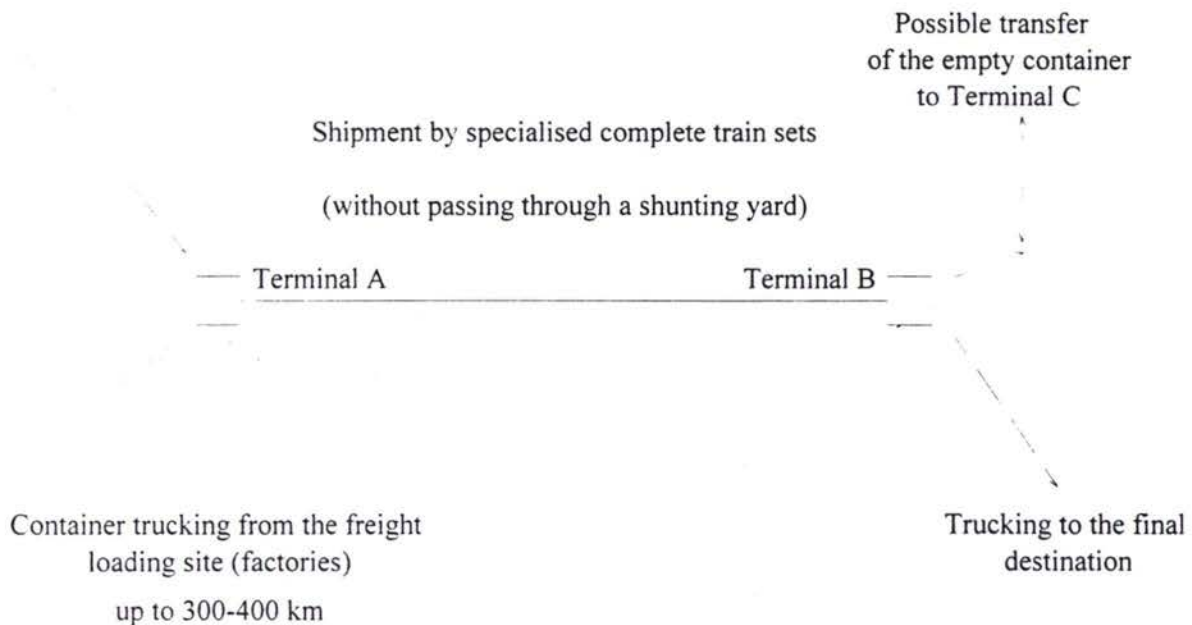
Export  
Import



### 5.5.3. Setting up a Multimodal organisation

#### Reminder of the concept :

Multimodal transportation units (containers or mobile units) are grouped into freight loads on a handling terminal, loaded on to a special train wagon and shipped to another terminal where they are unloaded and reloaded on to delivery trucks.



#### What is a multimodal operator ?

It not only refers to the users of various transportation modes, multimodal operators are also in charge of combining the different transportation modes. In Europe the term "Combined Transportation" is used.

#### Who is in charge of what in the field of multimodal transportation?

Based on the Western European system, the tasks and roles of each participants are distributed as in the table in appendix.

The main role is that of the operator who is responsible for :

- organising and supervising door to door container traffic,
- sub-contracting certain tasks against payment,
- selling package door to door transportation deals to individual customers (carriers - forwarding agent - exporters and importers).

## WHO DOES WHAT ?

	<b>Who organises ?</b>	<b>Who performs ?</b>	<b>Who sells to whom ?</b>
<b>Container rental</b>	Customer rental or operator	Customer or operator	Rentals to customers Operator in the overall price
<b>Set up container at loading site</b>	Customer rental or operator	Trucking company	individual bills or operator in the overall price
<b>Trucking</b>	Operator	Trucking company	operator in the overall price
<b>Handling (departure)</b>	Operator	Operator if terminal manager	Operator in the overall price
<b>Railway transportation by wagon Information</b>	Operator Operator	Railway operator operator (or customer himself)	Railway to operator included in the overall price
<b>Handling (arrival)</b>	Operator	Operator if terminal manager	Operator in the overall price
<b>Trucking</b>	Operator	Trucking company	Operator in the overall price
<b>Container delivery and relocation</b>	Operator Customer or rental	Trucking company	Operator in the overall price or individual bills

### Why are there single Multimodal operators?

- 1) Public authorities benefit from a close collaboration between railway and highway operators. Governments are willing to only deal with a single operator which represents all of the actual participants.
- 2) Need to associate and combine all the transportation and logistical services as part of an overall service supplied to customers :
  - railway networks (major role),
  - terminal managers (existing or future terminals) in charge of handling, monitoring, storage and container data.
  - truck drivers in charge of delivering, carrying and loading the goods.
3. Supervision and information regarding the ITU load route at critical points of the journey: TRACECA corridor, Poti Port, wagon loading, Baku, loading containers on ships crossing the Caspian Sea, wagon transfer (Turkmenbachi), Tchaigeon and destination terminals - final delivery by truck.

The tasks described below are those undertaken in Europe by Specialised Multimodal Transportation Operators.

Public operators, i.e. subsidiaries of the railway networks or trucking operator associations opened to all customers.

Example: CNC (New Container Company) in France.

- KOMBI VERHER in Germany
- INTERCONTAINER
- private operators, i.e. participants in a specific field with a single purpose: increasing company profit margins.
- RAILTRANS in Belgium
- AMBROGIO in Italy.

All of the above are joint-stock companies which are liable to their clients and to private contractors. They perform the above-described tasks or use the services of sub-contractors.

Their corporate status allows them to freely set tariffs according to the market while covering their overall expenses. Their corporate status also allows them to comply with and to apply international conventions which rule multimodal transportation (Operators participate in the CIM, the TIR, FIATA...). Their corporate status allows them to sign sales contracts with foreign firms and grants them total autonomy from governments, railway networks or national organisations, and they can therefore act freely in major competing markets, or compete with other foreign operators.

TRACECA seems to currently be in a similar situation as Western European railway networks were in the 1970s. When containers shipped to a European destination were loaded on to trains in the ports of Rotterdam, Hamburg, Le Havre, Antwerp, at the time, the railways had set up a single, independent operator to develop this new type of container traffic. This turned out to be a major success and today, INTERCONTAINER deals with over 1, 500.000 TEU.

We can only wish similar success to the TRACECA single multimodal operator in the future.

## ADVANTAGES OF INTEGRATING VARIOUS MULTIMODAL TASKS

### 1. Monitoring a container from the departure to the destination terminal.

The success of multimodal transportation is not based on performance results during a single stage of the journey (e.g. quality and cost of handling). It is based on a thorough analysis of performance results at all stages of the journey.

Therefore, the operator will have to monitor containers from the moment they are loaded at the client's site to the end of the trip when containers are freed once unloaded.

Only an honest operator can show interest in gathering data regarding the unfolding of the different phases of the trip as part of an ACTIVE TRANSPORTATION MONITORING policy. Such an operator will also be motivated to look for freight loads at the destination terminal to re-load the empty containers. This is actually a priority concern for operators, given the cost of transporting empty containers.

### 2. Purchasing multimodal service package deals

- For instance: purchasing railway transportation on complete train sets or based on yearly quantities. 25 to 30% rebates are usually granted in such cases.
- Optimising handling costs by concentrating container traffic in terminals selected as a function of their geographical location...with capital investment depreciation (purchase of state-of-the-art cranes) when container traffic is heavy.
- Reduced trucking costs when distribution logistics are optimised. Up to 100 km, trucking costs are almost fixed costs (due to depreciation, maintenance and driving costs). It is therefore easier for a specialised operator to organise 5 to 6 daily transportation services whereas a single customer has to sustain all the above listed fixed costs.

### 3. Similarly, the accumulation of container traffic allows the operator to organise its own hub to exchange container loads. Thereby, he has more direct control than if he had to use a railway hub, and is able to provide higher service quality.

Intercontainer's experience in Metz shows that transportation between BENELUX countries and ITALY were 12 to 24 hours faster since a hub was set up. However, no single customer can fully handle the container traffic that was not carried on a complete train set.

The flexibility of the resources implemented (cranes, wagons, trailers, etc.) can ensure higher capital investment productivity rates and is better suited to meet seasonal needs, etc.

### 4. Promoting multimodal container traffic

Honest operators are those who truly promote multimodal container traffic. Their entire business is based on this product. Therefore, they are usually those who market this type of traffic by using incentives to encourage freight load owners (private companies). They use more aggressive and efficient methods than transportation brokers who have a tendency to promote single mode container transportation prior to multimodal container transportation.

Therefore, we can consider that specialised operators have a 20 to 30% higher market penetration than simple single mode transportation brokers.

## CONCLUSION

If you are as convinced (addressing the audience) as myself that all the participants in multimodal transportation should be gathered into a single activity, despite the fact that they sometimes have diverging interests, we have to choose between:

- simply coordinating existing activities
- creating a new entity

This choice is based on:

- Potential container traffic increases. We previously saw that this is possible and that we should make an effort to increase traffic on the TRACECA railway corridor.
- The quality of the service provided. Mainly based on reliability of the transportation against the resources implemented.
- The level of cost against transportation costs of competitors or of single mode transportation organisations.
- The cost level will be determined according to how much customers are ready to pay to send their freight loads on the TRACECA corridor (with or without governmental incentive subsidies).

The above issues have to be dealt with in the Business Plan in order to assess whether we should immediately set up a new independent contracting firm or whether we should previously coordinate existing activities.

## BUSINESS PLAN

With local partners who agree to participate in the project

### 1) EVALUATE EXISTING TRAFFIC

### 2) ASSESS RESOURCES TO BE IMPLEMENTED

- Directly
- Subcontracted

(including the resources required to manage multimodal traffic: data, scheduling transportation, billing, etc.).

### 3) EVALUATE THE COSTS OF THESE RESOURCES

How can the start up period be financed?

### 4) PLAN EXPECTED REVENUE (and form of payment)

### 5) EVALUATE FOR THE AMOUNT OF MONEY TO BE GAMBLER

Lump sum for each participant

### 6) PROJECT SCHEDULE

### 5.5.4. Container movement from Uzbekistan: the case of the cotton

The present case study has been prepared by Mr Landrin, expert of the Multimodal Transport Project. Mr Cheesman, expert of the « Trade Facilitation » project completed the presentation by presenting the preliminary results as presented in the Progress Report of December 1997.

#### Start situation

Uzbek authorities, together with the authorities of the other countries of Central Asia, have decided to forward cotton: by container through TRACECA corridor

TRACECA authorities asked project managers to assist Uzbek's authorities to concretise this objective.

The consultant suggested the following method:

- i. describe the market profile,
- ii. identify the actors of the market
- iii. describe the current sales procedures and logistics as well as the seller's position and possibilities by conducting a market survey in Uzbekistan.
- iv. Sound out the buyer's position (through a market survey in Europe) on possibilities to shift to multimodal techniques and use the TRACECA corridor,
- v. Study the constraints linked with the use of a new technology,
- vi. propose a method to reach the initial objective.

#### The Market Profile

About 1 million ton of cotton is exported from the 12 regions of Uzbekistan every year. Uzbekistan is the second largest exporter of cotton after the USA. Following harvesting, the cotton is processed at the ginneries and dispatched against purchasing orders. The cotton is normally sold on a FOB basis or Franco Border, and it is therefore the responsibility of the Uzbekistan seller to transport the cotton to the border or to the port of shipment. This operation is normally undertaken by dispatching the cotton through rail wagon to the special storage facilities located at Chop or at the Baltic and Russian Black Sea port : mainly Riga, San Petersburg and Ilyeschovsk.

#### The Traders

##### Sellers:

The sale of cotton is undertaken on behalf of the government by the Ministry of Foreign and Economic Relations (MFER). Within the MFER, the cotton buyers are required to negotiate with 3 separate organisations :

Innovatsia  
UZ Prom Mosh Imp Ex  
UZ Markaz Imp Ex

Uzhlopkopromsbyt (UZH) is a state agency under the Ministry of Industry. The movement from the ginnery to a port of sale or to a frontier station of sale is part of his responsibility.

##### Purchasers :

There are seven major purchasers of cotton traders active in cotton market.



## The Sales Procedures and logistics

The normal method of purchase consists for the cotton traders to negotiate with the Ministry of Foreign and Economic Relations. A letter of credit is raised and issued with payment to be made FOB the selected seaport or frontier station. The sale is initiated on the basis of the certificate of quality issued at each ginnery. However this system is not considered to be sufficiently reliable and a recognised classification company is usually required to make independent checks prior to confirmation of sale. This independent check is normally undertaken at the seaport or frontier station. The 'drawdown' of the letter of credit is not effected until the classification has been agreed between the parties.

The responsibility for the movement from the ginneries to the seaport or frontier station lies with the seller. This is undertaken on behalf of MFER by Uzhloprombyt. All local transport costs are paid in local currency sum. The cotton is normally loaded in covered rail wagons. Due to the poor condition of the wagon and the dangers of spontaneous combustion, it is necessary to line wagons with kraft paper and seal the openings.

The Uzbek seller is responsible for the packing, delivery to seaport or frontier point and any charges for loading on ship (at Riga or Illyechorsk) or on wagon (at Cop) plus export customs clearance and documentation charges. These costs are dealt with through Uzvneshtrans. U2W are also responsible for any damage in transit. From these ports or frontier station, cotton can be finally graded to ensure conformity. It is then purchased FOB by the buyer who despatches the cotton by ship, rail or truck.

### The trader's point of view

The transport criteria on behalf of the merchant are the following :

Terms of sale, price :

The merchant sells 'franco domicile' or free delivered customer warehouse. He is responsible for arranging and paying for the transportation from FOB at the port or frontier point through to the spinning mill. The merchant attempt to maximise his profit on the sale which is the price of selling to final client, minus his expenses all along the transport chain.

Port facilities

Cotton merchants require certain facilities at the port :

- modern warehouse with sortation facilities and fire prevention systems
- shipping companies able to provide regular services with vessels equipped to receive containers
- container handling facilities
- suitable accommodation in vicinity of the port

### Implications linked with the new multimodal method

#### Re-routing changes

Current routes are:

- i. Rail: the current method is to use the rail system from the ginnery to the FOB port or FOB frontier station.
- ii. Trans Caspian: Water transportation from the port of Turkmenbashi to Baku
- iii. Road haulage: By truck from the ginnery/warehouse to the main railway station.
- iv. Handling system: Unloading-reloading : loading equipment are available at ginnery and railway station

### The proposed TRACECA route

The TRACECA route to Poti is substantially shorter than Riga, Illyechovsk and Cop. But, there is a need for promotion and create conditions to obtain a service as good as current routes:

- i. develop the rail infrastructure
- ii. improve rolling stock maintenance
- iii. introduce a modern rail wagon tracking system
- iv. fit out the ferry terminals at Turkmenbashi and Baku
- v. develop the port of Poti

### Logistics changes

Multi-modal transport with containers means the cotton has to be loaded on plants or in storage warehouses from which it is directly delivered on manufacturing sites (spinning mill). It means:

- i. good warehousing for containers and bulk in Uzbekistan,
- ii. regular shipping lines from Poti
- iii. good local facilities for staff in Poti.

A door to door container shipment direct from Uzbekistan, either from the ginnery or a consolidation warehouse direct to the end-user will reduce the amount of damage to the cargo which generally occurs through multiple handling of loose goods and gives lower unit transport costs because of this reduced handling.

The new technology requires improvements in classification at the point of origin as compared to the current situation. Merchants or buyers are concerned about the reliability of the quality control aspects.

### Changes on the terms of sale and on the transfer of responsibility along the chain

The use of door to door containers implies only two terms of sale can be applied :

- i. Ex works
- ii. Free delivered

The terms of sales will have to be changed from FOB (« Free-on Board ») to these two terms which means:

« Ex-works » : the buyer is responsible for the total transportation, from warehouse or factory to the final user.

« Free delivered » : the seller is responsible for the total transportation, from ginnery or consolidation warehouse direct to the end-user, e.i., the seller is responsible for the delivery at the spinning mill and pays all the FOB costs, seafreight and terminal charges.

In case of « ex-works » basis sales, it is necessary to clarify the relationships between the Uzbek sellers and the merchants. This requires the Uzbek sellers to accept the real meaning of ex-works contracts which implies that the trader has total freedom regarding shipment of the cotton and choice of the mode and conditions of transport. This is not the case now as Uzvneshtans has the monopoly of these operations and is able to dictate its own conditions.

It is essential to allow other companies to take part into the activity of cotton transportation. These new companies which will work in close relationships with European partners will promote the TRACECA line when dealing with their clients.

In case of « Free delivered » sales basis, the Uzbek transport companies will also have to take agreements with European companies particularly when organising end-haulage transports.

### **Conclusions and recommendations**

Uzbek sellers should theoretically benefit from the use of the TRACECA corridor which appears to offer the best link in relation to the main markets are Italy, Portugal, Spain and Turkey.

The initial emphasis should be on enhancing conventional logistic system prior to introducing the multimodal concept.

Despite some difficulties an opportunity may exist as long as part of the shipments could be containerised at source. Once the development of a more reliable classification system and availability of containers is performed, it may be possible to dispatch such traffics on a door to door basis.

---

It is proposed to improve the system by involving all the concerned partners, assisted by TRACECA experts, in a Series of activities

- Organisation of the shipments from and to Terminals (haulage),
- Review of the administrative aspects and of the required transport documents.
- Briefing on international transport contracts, specific to multimodal operations
- Writing documents to facilitate international payments (i.e. TBL).
- Aggregation of tariff with :
  - Railways
  - Handling companies
  - Shipping companies
- Establishment of co-operation agreement with the owners of containers.
- Organisation of the transfer of responsibility along the entire logistic chain.
- Establishment of commercial agreement with European forwarders in order to promote the traffic.

## 5.5.5. The Trans-Caucasian Logistic - Express

### Introduction

The new logistic service has been developed within the TACIS/TRACECA programme. The system characteristics and an information system for the Logistic Express has been developed by TEWET in close cooperation with the Azerbaijan State Railways and the Georgian Railways during 1996. The system has been harmonised and finally agreed upon during several joint meetings of the expert team and the railways in Tbilisi, Baku and Berlin.

Within this TRACECA project also a traffic volume forecast has been carried out by TEWET. Future traffic flows were determined on the base of an analysis of development of main macro-economic factors, such as Gross Domestic Product, industrial output, foreign trade volumes, for the countries concerned.

The forecast was carried out for the whole railways' networks as well as for the transport corridor Baku-Batumi/Poti. As an example, the outlook for 2015 (optimistic scenario) is shown in figures 1, 2 and 3 (presented at the end of this section). Based on this general traffic forecast the freight potentials for container traffic in this corridor had been determined. The results are shown in the following table:

**Components of the Trans-Caucasian-Logistic-Express' goods potential in the relations Poti - Baku and Baku - Poti<sup>1)</sup> expressed in TEU/month**

State of destination/ state of sender	Real volume for the first 6 months 1996	Substitution Potential (Road transport)	Growth Potential (01.07.1996 - 31.12.1997)	Total Potential (31.12.1997)
1	2	3	4	5
Georgia	14	45 <sup>(2)</sup>	16	75
Azerbaijan	28	34 <sup>(2)</sup>	15	77
Russia	6	7 <sup>(2)</sup>	3	16
Central Asia	2	2 <sup>(2)</sup>	1	5
Armenia	42	32 <sup>(3)</sup>	14	88
<b>total</b>	<b>92</b>	<b>120</b>	<b>49</b>	<b>261</b>

<sup>1)</sup> The numbers show the potential in one direction. They are provided by the both railways on the basis of the number of transported containers and sent containers in the port of Poti. For the Baku-Poti-direction was taken the same potential of empty containers.

<sup>2)</sup> The assumption is that road traffic will rise by 15% and the substitution share will increase to 65%.

<sup>3)</sup> The assumption is a 15% growth

In the framework of the TRACECA Project « Joint Venture(s) » for the Caucasian Railways (07/96 - 06/97) a proposal and a Business Plan for an "Operations Company - Logistic Service Centre, have to be carried out. This service centre may include AGZD and GRZD as well as other organisations.

## **Main Requirements**

The Trans-Caucasian Logistic Express is a new kind of transport technology that was unknown in the former Soviet Union. The main requirements are as follows:

- Fast and reliable transport link between Europe and Asia,
- Reliable departure once a week in each direction by strict timetable,
- Transport time less than 30 hours in each direction from Poti to Baku and v.v.,
- The Railway transport charge amounts 50% of the present charge in general,
- Logistic information system for customers,
- Guaranteed safety by transport attendants.

## **Results of the first three-month experience**

The first train left Baku on 11.11.96, and Poti on 14.11.96. During November 1996 up to February 1997, 15 trains were running in each direction and transported 136 TEU and 75 empty containers. Both Railways selected platforms and containers for the train and had them repaired. The team has started a Marketing Campaign in TV, newspapers and journals in Europe and the TRACECA region. The maximum capacity of the train is 30 wagons and 90 TEU. For the marketing and commercial questions Aszheldorexpedicia and Zheldorexpedicia of GRZD are responsible. Fig.3 gives an overview of the operation of the Logistic Express and the information system. For the information system the application programmes have been prepared and the necessary hardware has been ordered.

## **Results and recommendations for the future**

On the basis of the marketing campaign the Project Team and the forwarders received 46 inquiries from Western Europe for the Logistic Express, 25 of them concern certain transportation. The results of the marketing in Azerbaijan, Georgia and Central Asia are still unsatisfactory and collaboration between the Georgian and Azerbaijan Railway Forwarders is to be improved. In the future a joint Operation Company can give better results and better meet the demands of the customers, i.e., to have only one responsible organisation for transportation from door-to-door by rail, road and sea.

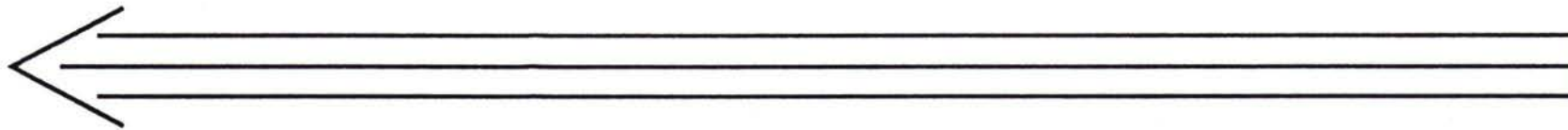
To secure further transport flows between Europe, the Caucasus and Central Asia to this corridor, transport and service conditions have to be guaranteed at West European standards. A closer cooperation with the Uzbekistan and Turkmenistan Railways will contribute to increase of transport flows.

# LOGISTIC - EXPRESS BAKU - POTI

Wednesdays at 2.20 AM

Logistic-Express 30 hours 20 minutes

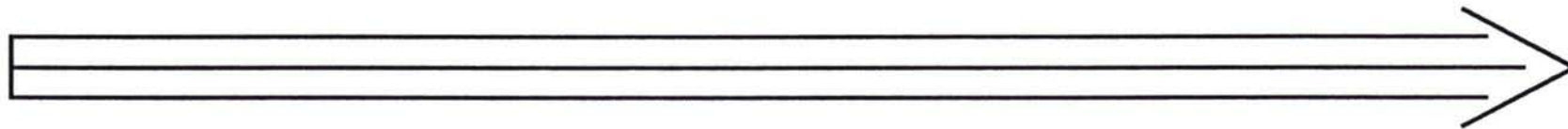
Mondays at 8.00 PM



Tbilisi	
Tbilisi tovarnaja	GRZD



BAKU	
Kischly	AGZD

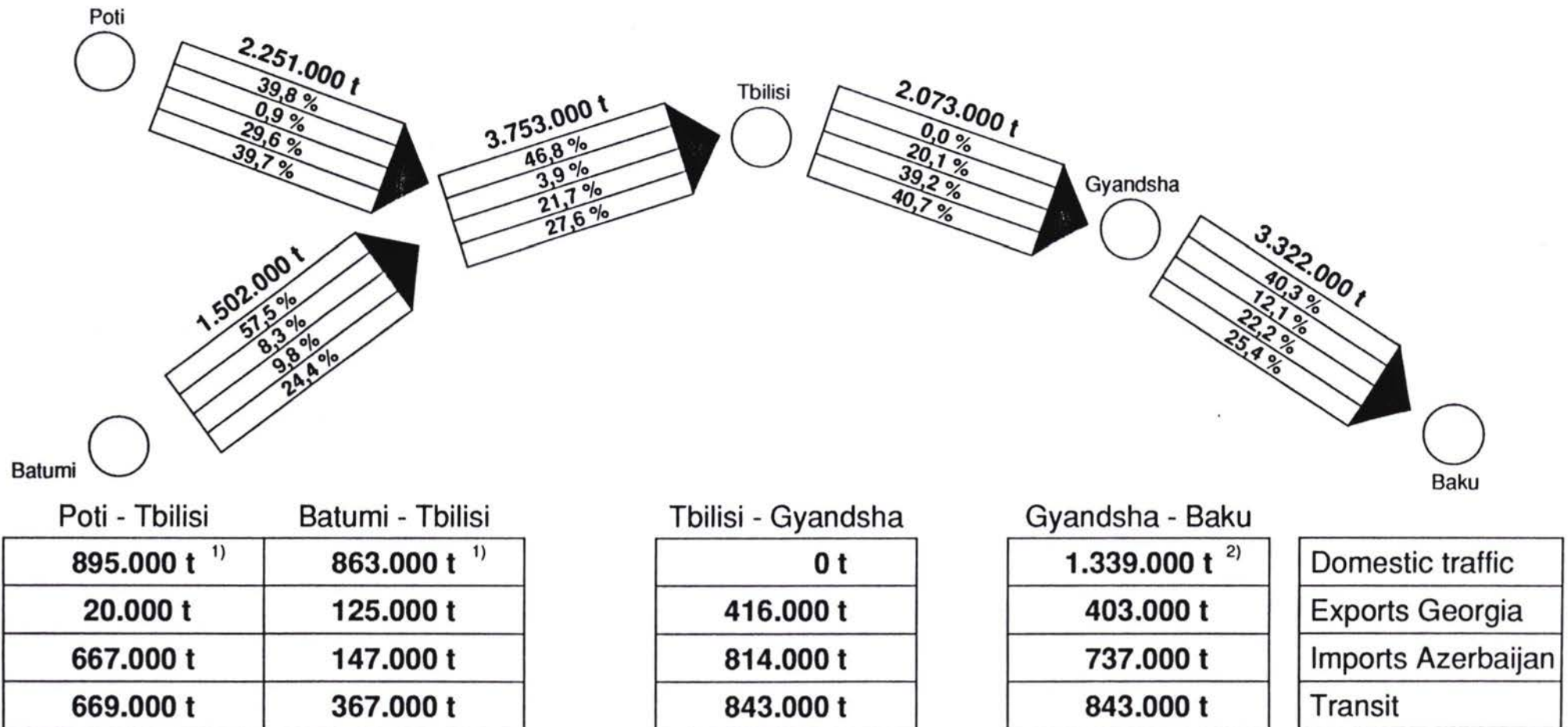


Thursdays at 8.00 PM

Logistic-Express 30 hours 50 minutes

Saturdays at 0.50 AM

**FIG. 2. TRAFFIC FORECAST IN WEST-EAST DIRECTION FOR 2015 (OPTIMISTIC VARIANT)**

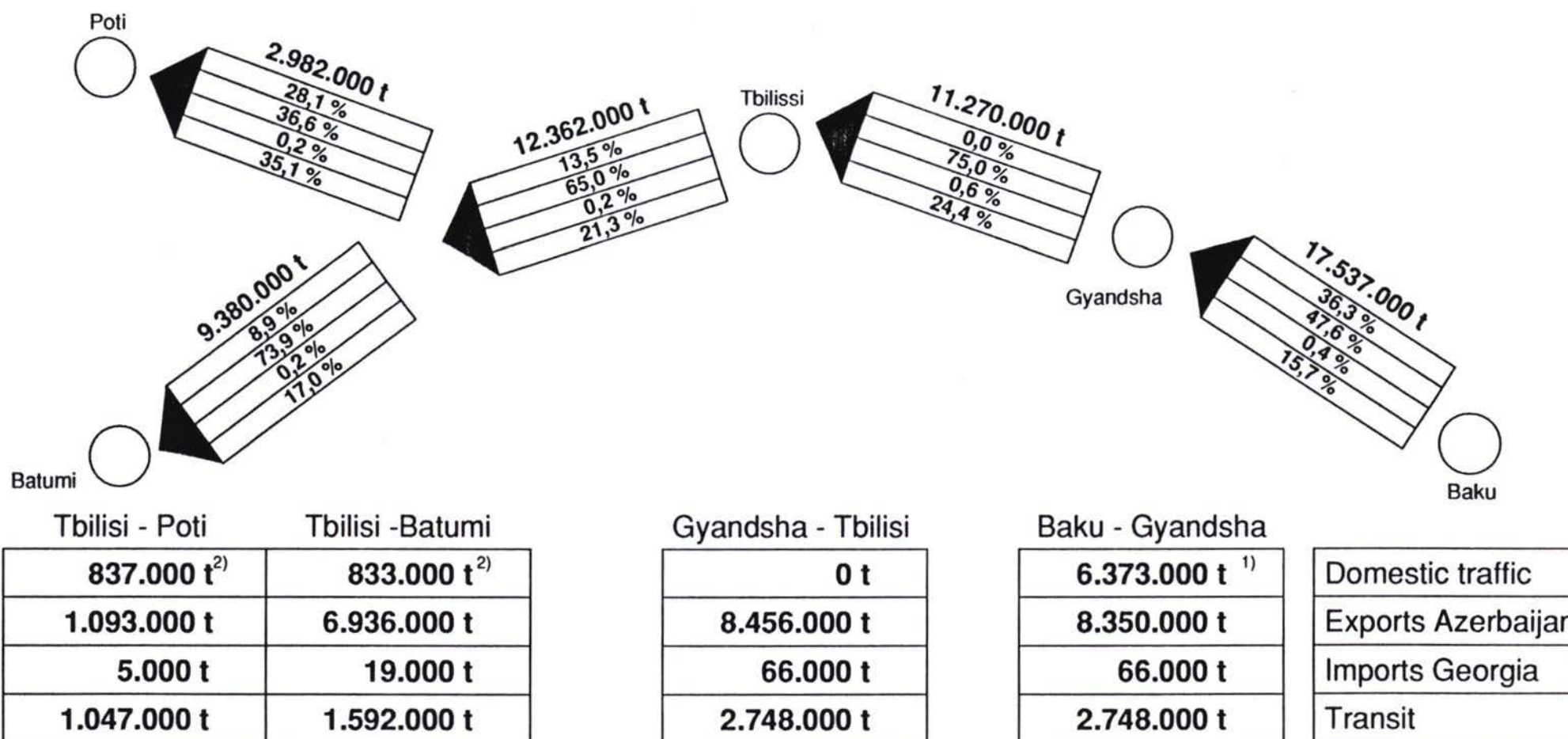


<sup>1)</sup>including Georgian imports

<sup>2)</sup>including Azeri exports



FIG. 1. TRAFFIC FORECAST IN EAST - WEST DIRECTION FOR 2015 (OPTIMISTIC VARIANT)



<sup>1)</sup>including Azeri imports

<sup>2)</sup>including Georgian exports

## 5.5.6. Setting up specialised «Container through train in Central Asia »

### Reminder of the current problem

Container train formation and operation is subjected to the same general rules, based on « operational target »: no transportation masterplan. The train path of the schedule is only used if the number of wagons matches the pre-defined gross weight or length of trains. Otherwise the train path is not respected. Thus, all the train paths are in principle only optional trains (they only run if the number of wagons is found sufficient). As there is no real constant timetable for goods trains, clients cannot rely on the railway operational system: no guarantee of a regular or just-in-time train service.

The carriage of single wagons and groups of wagons is realised by a hierarchical system of marshalling and shunting yards:

- The first level: The marshalling stations as well as the border stations are connected by inter-marshalling yard trains.
- The second level: small shunting yards are subordinated to the marshalling stations. They have to form/split up primarily local freight trains to/from neighbouring marshalling yards.
- The third level: stations (including the private sidings connected with them) are subordinated to the stations with shunting yards. Between the stations and the shunting yards transfer trains are running.

This results in irregular freight forwarding, a much lower level of traffic on the main line, excessive wagon downtime on singular points along the route: borders, etc. This is a major drawback as compared to the average freight forwarding time required for exchanges between TRACECA countries and Western Europe through competing routes (via Chop and Brest). What's more, no complete train set, shuttle train or trains can cross the boarder without being further re-assembled. Besides, as the trucking activity is disconnected with the rail activity, the concentration of freight loads at main terminals is made too slowly.

### Suggested re-organisation of the train formation and traction of container trains

It is proposed to organise a "specialised freight container through train » from Almaty to Turkmenbaschi. This train operating organisation is based in the suppression of costly shunting operations and stops. They provided reduction in rail traction cost, they help to increase the quickness, reliability and security of transport operations. By suppressing shunting operations, railway companies do not need to deal with the collecting and delivery operations. This results in a lower immobilisation of the rolling stock at the users' premises is suppressed and the turnover is therefore improved. Furthermore, working procedures are simplified and the need for infrastructure is reduced to a lowest possible level.

The train must comply with the clients' requirements:

- \* stable (offered during a long period)
- \* regular (it means traffic by fixed schedule)
- \* reliable and safe (absolute observance of the schedule, guarantee of safety on the way)
- \* fast
- \* not expensive
- \* with necessary service level, information retrieval - *Tracking and Tracing*)

**Implications linked with the new train formation and traction method**

A "specialised freight container through train" needs regular traffic. The minimum freight container traffic required to organise a "specialised freight container through train" is:

- \* about 2500 TEUs/week, if there is one scheduled train per week and per direction (this is about 25,000 tons)
- \* about 5000 TEUs/week, if there are two scheduled trains per week and per direction (this is about 50,000 tons). The conditions necessary to achieve container traffic objective is of the order of 1000 TEU per year and per country (in average)

An specific information system is also required (see explanations at the end of the chapter)

To reach this objective, strong initial support is, as noticed in the « Technical Assistance Programme », absolutely required at the initial stage. The specialised multi-modal train should run on the essential "key" terminals and with a fixed train schedule coordinated with the "Trans-Caucasian-Container Train", and further with the Pan-European network,

**Proposed Itinerary and operating conditions**

It is recommended to start with a train Turkmenbaschi - Tashkent with stop over in:

- ⇒ Ashgabat (service of the terminal Obezberdy Kuliev),
- ⇒ Mary/Chardzhev (with integration of traffic from/to Iran border via Tedzhen -Serakhs),
- ⇒ Bukhara,
- ⇒ Samarkand,
- ⇒ Tashkent-Shumilova.

This train must run with a fixed train schedule, coordinated to have good connections with group of wagons from Arys, from Tchu and from Almaty.

In a second step, an extension of the train must be envisaged to Almaty and Druzhba with stop-over in

- ⇒ Tchimkent/Djambul,
- ⇒ Tchu/Lugovaya,
- ⇒ Almaty (with integration of traffic from China and Kazakhstan),

According to the traffic increases generated by the improved transport conditions (including attractive freight rates), the following principles must be observed during the trial period:

- \* if insufficient container traffic is registered, typical rail-wagons will be included to reach the optimal train length,
- \* As direct entry into terminal of a full 25 wagon trains is not possible (insufficient length of tracks under the crane restrict the capacity to a maximum of 12 wagons), it would be necessary to form trains in the neighbouring marshalling stations and transfer the group of wagons in/out of the terminal by using shunting locomotives.

- \* No train formation should take place on the main line, but the train must run without splitting-up on the way. Coupling or detaching group of wagons must only take place on pre-defined intermediate points (Ashgabat, Mary/Chardzhev/Tedzhen, Bukhara and Samarkand).
- \* The train must not be stopped at the borders (border controls must be improved)
- \* as traffic is expected to be sufficient, side streams (e.g.; to Southern Tadjikistan, Fergana Valley and, in case of extension to Almaty, to Northern Kyrgyzstan) should be operated with fixed and coordinated time-paths in the schedule between feeding trains and connecting points (such as Tashkent or Samarkand),

### **Expected time savings**

If there is a sufficient traffic level and consequently no need of intermediate splitting up, the transportation time, without any increase of the current speed, could be:

Turkmenbaschi - Tashkent: 2.5 days instead of 4.5 days now

Turkmenbaschi - Almaty: 4.75 days instead of 8.25 days now

Turkmenbaschi - Druzhba: 6.5 days instead of 10.5 days now

The following two tables give details on the expected time savings if the proposed « Special Container Train » is adopted.

**Running time under the existing train operation system as well as in case of a special combined traffic train**

Time element/section	Distance, km	Existing operation system		Special combined traffic train		Remarks
		Duration, hours	Total time, hours	Duration, hours	Total time, hours	
Transfer from Kishly station to the ferry port station		1	1	1	1	
Receive of wagons in the port, preparation of the placing of the wagons on the ferry		3	4	3	4	estimated only, at present may be higher
Placing on the ferry and border operations		5	9	3	7	decrease
Ferry		12	21	12	19	
Roll out of wagons from the ferry, border operations		5	26	3	22	decrease
Preparation for departure		3	30	3	26	estimated only, at present may be higher

Time element/section	Distance, km	Existing operation system		Special combined traffic train		Remarks
		Duration, hours	Total time, hours	Duration, hours	Total time, hours	
Turkmenbashi - Nebit-Dag	153	4	4	4	4	
Nebit-Dag, change of locomotive		0,5	4,5			be cancelled
Nebit-Dag - Bami	233	6	10,5	6	10	
Bami, change of locomotive		0,5	11	0,5	10,5	
Bami - Ashgabat	169	4,5	15,5	4,5	15	
Ashgabat, splitting-up and formation of train		20	35,5	2	17	coupling or detaching only
Ashgabat - Dushak	171	4,5	40	4,5	21,5	
Dushak, change of locomotive		0,5	40,5			be cancelled
Dushak - Mary	172	5	45,5	5	26,5	
Mary, change of locomotive		0,5	46	0,5	27	
Mary - Chardzhev	243	6,5	52,5	6,5	33,5	
Chardzhev, splitting-up and formation of train		14	66,5	2	35,5	coupling or detaching only
Chardzhev - Khodzhadavlet	30	1	67,5	1	36,5	
Khodzhadavlet, border control		4	71,5	2	38,5	decrease

Khodzhadavlet - Bukhara	69	1,5	73	1,5	40	
Bukhara, splitting-up and formation of train		14	87	2	42	coupling or detaching only
Bukhara - Samarkand	249	6	93	6	48	
Samarkand, splitting-up and formation of train		10	103	2	50	coupling or detaching only
Samarkand - Dzhizak	113	2,5	105,5	2,5	51,5	
Dzhizak, change of locomotive		0,5	106	0,5	52	
Dzhizak - Shumilova	273	5,5	111,5	5,5	57,5	
Shumilova, splitting-up and formation of train		20	131,5	12	69,5	decrease
Shumilova - Tchengeldy	74	2	133,5	2	71,5	
Tchengeldy, border control		3	136,5	2	73,5	decrease
Tchengeldy - Arys	77	2,5	139	2,5	76	
Arys, splitting-up and formation of train		14	153	4	80	coupling/detaching, change of groups
Arys - Tchimkent	79	2,5	155,5	2,5	82,5	
Tchimkent, change of locomotive or coupling/detaching		2	157,5	2	84,5	coupling or detaching only
Tchimkent - Dzhambul	218	6,5	164	6,5	91	
Dzhambul, change of locomotive or coupling/detaching		2	166	2	93	coupling or detaching only
Dzhambul - Lugovaya	117	3,5	169,5	3,5	96,5	
Lugovaya, change of locomotive or coupling/detaching		2	171,5	2	98,5	coupling or detaching only
Lugovaya - Tchu	115	3,5	175	3,5	102	
Tchu, splitting-up and formation of train		14	189	2	104	coupling or detaching only
Tchu - Otar	155	4,5	193,5	4,5	108,5	
Otar, change of locomotive		0,5	194	0,5	109	
Otar - Almaty	156	4,5	198,5	4,5	113,5	
Almaty, splitting-up and formation of train		14	212,5	10	123,5	decrease
Almaty - Sary-Ozek	192	6	218,5	6	129,5	
Sary-Ozek, change of locomotive		0,5	219			be cancelled
Sary-Ozek - Ush-Tobe	111	3,5	222,5	3,5	133	
Ush-Tobe, change of locomotive		0,5	223	0,5	133,5	
Ush-Tobe - Aktogay	254	8	231	8	141,5	
Aktogay, splitting-up and formation of train		12	243	2	143,5	decrease
Aktogay - Druzhba	304	9	252	9	152,5	
			= 10 days and 12 hours		= 6 days and 8,5 hours	

**Number of wagons required for a container special train Turkmenbaschi - Tashkent**

According to the number of scheduled train/week, the number of wagons required is as follows:

If there is one train/week, a round trip would last one week:

train turn-round:	2.5	days on the Central Asian side of Caspian Sea
	1.25	days on the Caucasian side of Caspian Sea
	1.0	day for ferry (12 hours for ferry link, per 3-4 hours for ferry treatment, including time reserve)
total:		approximately 5 days

Two train units will be required (maximal 28 platforms corresponding to the maximal capacity of the ferry-wagons). The integration of side streams would require additional wagons equivalent to one train unit. The following table summarises the wagons requirements:

	Turkmenbaschi - Tashkent	
	one departure/week	two departure/week
Platforms (in train units)	2 train units (75 -85 wagons)	4 train units (150 - 165)
Platforms (in stations, terminals)	100	100
Stock in operation	175 - 185	250 - 265
Reserve of 20% (maintenance)	about 35	about 50
<b>Total Platforms required</b>	<b>210 - 220</b>	<b>300 - 315</b>

In case of operation between Turkmenbashi and Druzhba:

train turn-round:	7	days on the Central Asian side of Caspian Sea
	1.25	days on the Caucasian side of Caspian Sea
	1.0	day for ferry (12 hours for ferry link, per 3-4 hours for ferry treatment, including time reserve)
total:		approximately 10 days: approximately 2 weeks taking into consideration reserve and time in the port of Poti and in the Druzhba unloading facilities

Between Turkmenbashi and Druzhba, in case of one departure per week, 4 train units will be required (maximal 28 platforms per ferry). Depending on integration of side streams it would be necessary to add additional wagons with a total number of train units (estimated only)

In case of two departures: 8 train units + 4 train units for side streams

**Calculation of demand of platform wagons**

	Turkmenbashi-Tashkent		Turkmenbashi-Druzhba	
	one departure weekly	two departures weekly	one departure weekly	two departures weekly
platforms in train units	75 - 85	150 - 165	150 - 165	300 - 330
platforms in stations, terminals	100	100	150	150
stock in operation	175 - 185	250 - 265	300 - 315	450 - 480
reserve under repair (20 %)	about 35	about 50	about 60	about 90
total platforms	210 - 220	300 - 315	360 - 375	540 - 570

in accordance with the results of discussions with the railways there should not be problems with wagon provision for these services as a big large proportion of container traffic is already organised on these

platform wagons as single wagon transport. However, it could be some problems to meet the requirements of two departures Turkmenbashi-Druzhba. The train should be accompanied by safety guard for guarantee a convenient safety level.

### **Information and Communication system required**

In the Central Asian railways a computer tracing system for wagons is still existing (it is the general system ASOUP of all CIS railways under technical control and lead of the Ministry of Railway Transport /MPS/ of the Russian Federation). It is possible to find the location of every wagon in the railway network. The marshalling and transition (border) stations are integrated. Tracing inside of the own railway network and the networks of the neighbouring railways is possible without participation of the Main Computer Centre of MPS. Tracing is currently performed on commercial basis on client's (freight owner or forwarder) request

However, the existing tracing system is adapted to wagons tracing, not to container tracing. Thus, it is necessary to know on which platform wagon the container has been loaded (in the port, in the terminal or in the border station: Brest, Druzhba, Seraks, etc). The adoption of a new system is planned in the framework of the Community of the CIS railways (term of realisation ? funds ?). Today, most of the terminals are not integrated in the wagon tracing system. The terminals are very poorly equipped with computer technique. For instance, the Caucasian railways is not integrated in the existing tracing system

To be attractive, a container train requires:

- \* To provide the information needed by the client!
- \* To help the railways benefit operational costs

Which information is required?

- \* Present location of the container: in train N°....., at station ....., on the terminal .....
- \* State of the container: loaded on wagon, on storage area, at the client, empty, loaded
- \* Advice of the arrival : in time and before arrival, so that the client or his forwarder are able to organise the following logistic procedures)

When this information will be required?

- \* arrival of the container in the service region: Poti, Druzhba, Seraks, may be border stations on the border to the RZD,
- \* departure of the container from the a.m. point or from the departure terminal
- \* arrival in the destination station/terminal or in the exit point of the service region
- \* in case of any disturbances: damage, loss, unloading on an other wagon, etc.
- \* advice for arrival : at the moment not so important, but the importance will increase in the future.

The required creation of an information system, includes:

- \* the ports (Poti, Baku, Turkmenbashi)
- \* the terminals (included in the transport system offer)
- \* marshalling stations (or other stations) where the coupling or detaching of wagon groups takes place
- \* border stations (Beyuk Kyasik, Farap/Khodzhadavlet, Tchengeldy)

Necessary equipment:

- \* personal computers with printer
- \* modem
- \* fax
- \* Use of telephone network for data communication (as far as possible)

Price : 6,000 - 10,000 US Dollars



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**Technical Assistance required**

The experience from the TRANS-CAUCASIAN TRACECA container train shows that it is necessary to assist railways companies to adequately implement this new operating method. Main items are as follows:

- \* intensive discussion to decide the definitive location of the « Key » terminals,
- \* assimilate the experience from the TRANS-CAUCASIAN TRACECA container train,
- \* coordinate the efforts from the different railways from Central Asian countries,
- \* coordination with the port links and with the TRANS-CAUCASIAN TRACECA container train,
- \* preparation of train-path and agreements on trains schedule
- \* elaboration of a simple and understandable tariff system and agreements on this issue,
- \* marketing technical assistance

## 5.5.7. Reorganisation of the container tariff policy

### Introduction

Multimodal transportation combines transportation services ( transportation of containers or intermodal transportation units (ITU) loaded on wagons, trucks or ships) and logistical services (handling freight from one transportation mode to the next, data regarding the location of the ITU).

Currently, TRACECA compounds:

- an international railway tariff used on other routes than TRACECA,
- domestic railway tariffs applied for domestic runs following the last border point prior to the final destination
- handling tariffs of each terminal,
- ferry-related costs (Caspian sea) deducted according to wagon-related costs
- trucking tariffs more or less negotiated with the trucking company in charge of transporting containers to the destination terminal,
- possibly container supply costs in the terminal where the freight will be loaded.

If such a situation can ensure that individual interests will be protected, it is non-transparent for customers who are not able to itemise each transportation costs. Such opaqueness impacts negatively the development of multimodal transportation.

### Tariff Container Transport Proposal

Multimodal transportation services should be sold as a package deal priced as follows:

- simple tariffs,
- easily applicable and understandable tariffs
- competitive tariffs in comparison with those applied other single mode transportation organisations or competitive routes.

We suggest a similar set up with specific TRACECA tariffs which would be applied as follows:

#### TARIFF PER INTERMODAL TRANSPORT UNIT

- 20' or 40'
- According to the weight
- for the 20' container: over 15 tons, between 15 tons and 5 tons, under 5 tons or empty

#### TARIFF FROM DEPARTURE TO ARRIVAL TERMINAL

- Terminal/terminal: from or to a port terminal selected (POTI towards the Central Asian terminal network selected) to concentrate shipments while integrating the Caspian route.
- Selection of terminals by experts or local authorities

TRUCKING TARIFF: Lump sum based on trip distance break down (50, 100, 200, 300 km).

For containers delivered or picked up from residences, trucking tariffs varying according to the distances travelled on highways (from 50 to 400 km). This possible option requires an in-depth study of each country at stake with identical trucking tariffs for each terminal distribution areas.

## IN SINGLE CURRENCY

the tariff expressed in a single currency (US dollars for instance)

## WITH INCENTIVES according to:

- quantity
- regularity
- balance

The selection of a national currency can be studied for the trucking. It would however be possible that trucking would be paid for in the reference currency of the single tariff. Encouragement clauses to improve transportation productivity should be introduced through possible rebates according to:

- the quantity shipped,
- the regularity of shipments,
- the weight of shipments in both directions "complete train sets" tariffs should be set as well as tariffs per container lots (e.g. 10' X 20').

If all the participants in multimodal transportation (railway, truck operators, terminal operators, international transport carriers, exporters and importers), agree to apply these principles, a major tariff policy should be set based on the above listed principles.

Three major chapters of this specific tariff policy have been left out. Active debates with logistics managers should help to clarify and to draw up these three chapters. However as experts in this field we should be able to describe the goals to be reached:

### 1) TARIFF LEVELS

They should be similar to competitive carriers for freight that can be transported by containers using the TRACECA corridor.

The following tables show the current tariff applied on the major routes that are competing with TRACECA towards Western Europe.

Table 1: Break down of tariffs for each segment

Table 2: Comparison of transportation tariffs for a 20' container of approximately 10 tons shipped from the Tashkent region to Paris (Valenton terminal) or Milan (Rogaredo terminal).

The above are not negotiated tariffs, they are approximate prices based on data from various sources from Uzbekistan, Georgia, Italy, Basel and France. It is obvious that the market reality is different, however these tariffs are indications of the tariff policy implemented on the different routes or by the different transportation organisations.

## COMPONENT OF TRANSPORTATION TARIFFS

Tashkent/Western Europe

Estimate in US Dollars

	20' (10 T)	40' (25T)	Wagon 50T
Tashkent trucking 100 km	150	150	
handling	200	200	
/Railway BREST (4236 km)	2000	3500	3500
/Railway COP (4764 km)	2200	3900	4000
/Railway RIGA (4286 km)	2000	3400	3800
Transit costs: Brest-Malazwice	60	80	?
Transit costs: COP ZAHONY	65	65	?
Transit costs: Riga (port)	150	150	?
Transit costs: POTI	180	180	?
Tashkent/Railway POTI (3100 km approximately)	2100	3150	3150
TASHKENT/Truck BANDAR ABBAS	2300 (1)		
Railway trip ZAHONY/MILAN	425	950	
Railway trip MALAZWICE/PARIS	760	1690	
Maritime trip RIGA/ROTTERDAM	850	1450	
Maritime BANDAR ABBAS/ITALIAN PORTS	1800	3100	
Maritime POTI/ITALIAN PORTS	2650	3500	
ROTTERDAM TRANSIT	160	160	
- ITALIAN PORTS	150	175	
Railway trip between ROTTERDAM / PARIS			
ROTTERDAM / MILAN	410	770	
PARIS/ITALIAN PORTS	725		
MILAN/ITALIAN PORTS	160	300	

1° Probably reduced to \$200 taking into account the price of fuel sold by Italian carriers in Uzbekistan.

**COMPARATIVE ANALYSIS OF TRANSPORTATION TARIFFS**

For a 20' container weighing 10 tons between TASHKENT and Western Europe (US Dollars).

**TASHKENT Milan**

VIA	COP	3040	approximate to	3000
	Riga	3920	approximate to	4000
	Bandar Abbas	4410	approximate to	4000
	TRACECA	5590	approximate to	5500

**TASHKENT PARIS**

VIA	BREST	3170	approximate to	3100
	RIGA	3860	approximate to	3800
	BANDAR ABBAS via Mediterranean ports	4975	approximate to(1)	4500
	TRACECA	6150	approximate to	6000

(1) With incidence on the price of fuel sold by Italian carriers in Uzbekistan

By comparing various competitive routes, we realise that TRACECA is not currently competitive in view of the high volume of sea freight shipped towards POTI. Alternative options should therefore be studied, via ODESSA for example, etc.

We should also reduce container transportation tariffs on the route between Tashkent and Poti. This tariff should be compatible with the cost of each transportation or logistical service included in multimodal transportation. It is therefore necessary that itemised costs be reviewed (I say costs and not hoped remuneration or current tariffs). After having added the cost of each service, it is still difficult to compare although we should be able to verify that we are still under the market price or "sales tariff". In order to reach that level, a standard decrease in tariffs should be accepted by all.

## 2) METHODS OF PAYMENT

### *2.1. Is money cashed by a single entity?*

It would be simpler for customers however, it would require that revenue be distributed between the different participants. Therefore there should be an agreement from all the multimodal traffic participants as well as an organisation responsible for distributing the money paid by customers.

### *2.2. Forms of payment*

Who should cash? Using which rules? When? Which terms of payment? Which sanctions should be applied if customers do not pay?

### *2.3. Verification*

The methods of payment should also be verified as well as the revenue distribution. They should comply with legal regulations set by the local authorities of each state. (In depth review to be carried out along with local experts).

## 3) REVENUE DISTRIBUTION

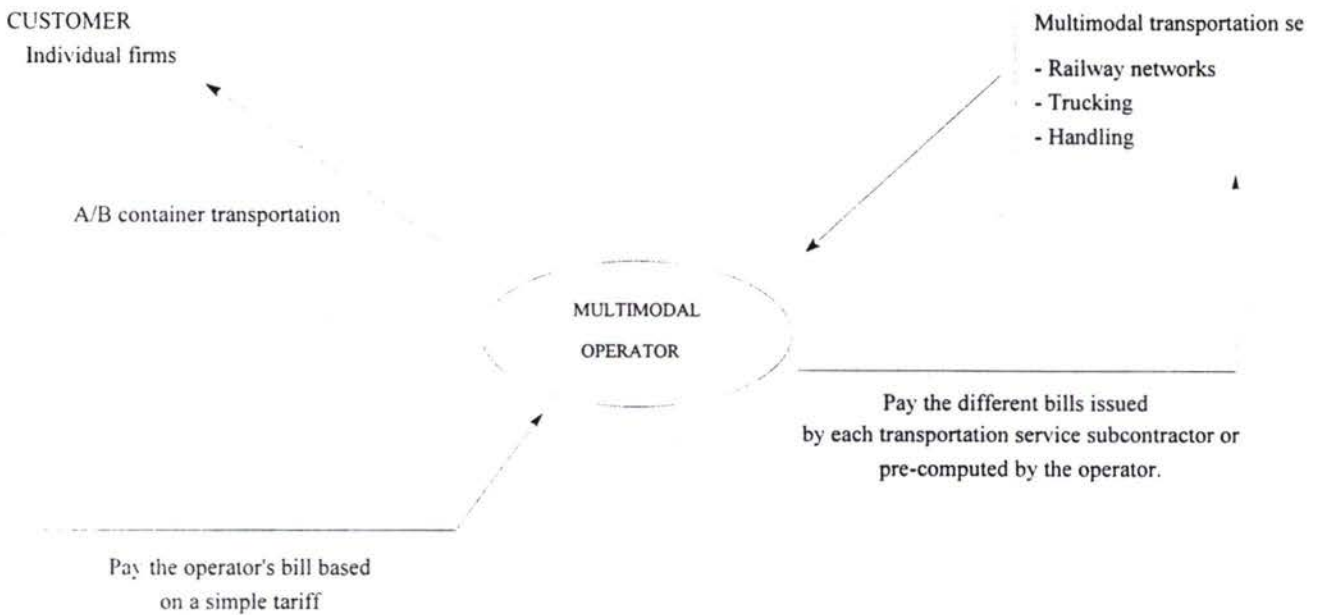
If there is no centralised revenue system in charge of covering the bills incurred by each participant, such a distribution can become a major hassle which can be compared to the very complicated computing system used by the Railways.

The over multimodal transportation economic analysis is uncertain for it is broken down into various motivations and balances of each participants who are all looking to obtain a positive profit margin in the end.

We recommend that a single revenue be cashed by a single multimodal operator who would centralise and pay the bills incurred by each participant on the basis of effective services performed.

The following chart summarises the proposed financial flows scheme

### FINANCIAL FLOWS



### ACTION PLAN PROPOSED AS A CONCLUSION

- 1) Obtain the opinion and agreement of local experts regarding the above proposals
- 2) Organise a meeting of a sub-unit in charge of setting up a tariff policy "construction of a multimodal TRACECA tariff" in order to set up a single and compulsory tariff.
- 3) Approval of the tariff project + Printing and Distribution
- 4) Set up a "TRACECA MULTIMODAL UNIT" and prepare operating regulations along with the different participants.
- 5) Promote the product and TRACECA multimodal traffic:
  - in Central Asia
  - in Caucasia
  - in Europe
- 6) Set a deadline
- 7) Evaluate required funds profitability:
  - Difficulty to evaluate. Preliminary conditions required upon start up

### **5.5.8. The integration of maritime ports**

The integration of maritime ports was presented by M. Francou based on the text proposed in the section 5.2. Investment project to up-grade ports container facilities.



## 6. Lessons learnt and recommendations

The project inputs have been fully delivered according to the terms of reference and the project synopsis presented in the section 1. The planning of the project activities has been carried out and realised without major problems. However, the implementation of the third phase have incurred a delay of two months. As noticed, the workshop has been postponed of one accord with the TRACECA partners and management to ensure the better possible coherence and consistency. Start at the end of January 1996, the project has finished in February 1997.

A first visit to all the eight TRACECA countries conducted by the Team leader during the period 29 January 1996 to 15 March 1996 allows to explain and agree with representatives of Partners Organisations on the objectives, the organisation of the work, the structure of the work programme and the specialist input (local and expatriate) as well as their timing.

On the basis of discussions and agreements, the Consultant prepared and sent to the main recipient institutions a document summarising the project objectives and the structure of the work programme, as well as the profile and expected input from the « local group of experts ». The local group of experts was asked to be composed by three specialists representatives from the various transport modes: rail, road, and maritime and waterways. Setting up a multimodal local group of experts was posing particular problems as the current institutional organisation is strongly compartmentalised by transport mode with a predominance of railways structures. Besides, the staff from these organisations did not use to work together in the past.

After solving initial difficulties with getting representatives from different modes of transport at one table and to decide the definite local organisation and experts assigned to in the Study, the Team Leader prepared and sent to local experts a two-hundred question questionnaire to gather intermodal transport supply and demand data. As concepts used in the questionnaire were based on western systems, the support was found rather difficult to complete by local teams. It was necessary to proceed by using the questionnaire as a support to establish a ground for discussions and dialogue between the foreign and local experts and complete it during the different visits to all the TRACECA countries.

Three series of visits were organised : first in February 1996 with two members of the team who had visited all the TRACECA members States. A second visit in May: all the team members travelling together, often by land, from Almaty to Poti through Tchinkent -Tashkent - Bukhara - Tchardjou - Ashgabat -Turkmenbaschi - Baku - Tbilissi. A final series of individual visits was carried out during July and August 1996 through all the TRACECA States, including the visit to the Georgian ports of Poti and Batumi. The survey on intermodal elements was finally carried out with any major difficulty. It allows to identify the existing problems and develop a set of complementary proposals for the development of the multimodal transport system in the region.

On the other hand, during this initial period, the Multi-modal Project Team conducted an additional specific survey of the cotton market in Uzbekistan as requested by the TRACECA management. This allows to examine the potential for using multi-modal techniques in the export of cotton from Uzbekistan. It also enabled the project to examine the buyers' attitudes towards the use of multi-modal transport technology. As a result, a technical assistance proposal was presented and accepted by the TRACECA management for implementation (see Annex 9). The on-going project is conducted under the leadership of the « Trade facilitation » project.

Regarding the activities related to the second Phase (Study Tour in the E.U. countries), the Consultant defined the profile of the expected participants (one high ranking decision-maker and one high level specialist per country) and asked the main Recipient Organisations to select the persons composing the Country delegation. In the opinion of all the participants the objectives of the Study visit matched with TRACECA Countries multi-modal needs. All the participants stated their satisfaction with the information received, and the opportunity they have had to create good contacts (specially with INTERCONTAINER and NOVATRANS, a IURR's member) and are ready to develop them. Unanimously, what the participants appreciated most was the organisational aspects related to the multi-modal transport system in Europe. They concluded that such a multi-modal chain is not only feasible but essential.

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A third and final phase included the elaboration of case studies and proposals directed at promoting and develop commercially attractive and competitive intermodal services. Initially planned to be held at two different places, Tashkent and Tbilissi, at the end of November, the Workshop was finally postponed of one accord with the TRACECA management in Brussels and concentrated in one Workshop in Tashkent on the 15, 16 and 17 January 1997. During a round table, the participants concluded that the seminar's case studies and investment projects, and the presentations of results from other related projects were prepared and conducted at the right level.

Unanimously, as for the Study Tour, the possibility to meet each other at the same table was found to be one of the most important aspects of the seminar. Clearly, regular regional working meetings of this nature are excellent tools of work and communication between the different partners including foreign partners and experts. Regional working meetings of this nature should be more frequently organised as it facilitates to approach the regional issues before considering the legitimate integration of national expectations.

## 7. Tables project report

In the following pages the project planning tables are presented :

- FORM 3.2: PROJECT COMPLETION REPORT
- FORM 3.3: OUTPUT PERFORMANCE SUMMARY

## FORM 3.2 : PROJECT COMPLETION REPORT

Project title : Forwarding Multimodal Transport Systems		Project nr : TELREGG9201	Country : Southern Republics of the CIS and Georgia-TRACECA	Page : 1
Reporting period : from February 1996 to February 1997		Prepared on : February 1997	EC Consultant : BCEOM in association with SYSTRA and DE-CONSULT	
REPORTING PERIOD	MAIN ACTIVITIES UNDERTAKEN	EC CONSULTANT	INPUTS UTILISED	
			MATERIALS AND EQUIPMENT	OTHER
1/96 - 4/96	1. Discussions with local counterparts	1 work months		1 flights, 30 days per diem
	2. Setting up a local organisation	1 work months		
5/96 - 9/96	3. Assessment of the existing Multimodal services	10.25 work months		8 flights, 400 days per diem
	4. Setting up an intermodal freight transport group	1 work months		
	5. Execution of a E.U. Study Tour	2 work months		
10/96 - 2/97	6. Elaboration of cases studies and investment projects	4.25 work months		
	7. Execution of a training workshop	1.5 work months	Training aids	6 flights, 30 days per diem
	<b>TOTAL</b>	21 work months		15 flights, 460 days of per diem

## FORM 3.3. OUTPUT PERFORMANCE SUMMARY

Project title : Forwarding Multimodal Transports Systems	Project nr : TELREGG9201	Country : Southern Republics of the CIS and Georgia-TRACECA	Page : 1
Prepared on: February 1997		EC Consultant : BCEOM in association with SYSTRA and DE-CONSULT	
Output results	Deviation original plan + or - %	Reason for deviation	Comment on constrains & assumptions
Inception Report	2 weeks delay for the Russian version	translations of documents	Contract signed on December 13. The project effective started on 27 January.
Study Tour in E.U countries (Phase 2)	Realised as planned in the Inception Report.		
Progress Report	English version produced at the end of September 1996. Originally, the submission was foreseen at the end of July. Russian version required one month more. It has been produced at the end of October.	The completion of the Preliminary Assessment Task 4 and the Recommendation and Analysis task N° 6, to be executed during month 2 and 3, has been postponed to integrate comments and suggestions from the TRACECA countries participants to the Study Tour in E.U countries. These activities has been carried out during the period from May to August	
Draft Final Report	English version produced at the end of February 1997. Originally, the submission was foreseen at the end of December 1996. Russian version will required at least one month more. It will be produced by the end of March 1997.	Initially contemplated to be held at the end of November, the Workshop and training activities were carried out in January 1997. The initial programme of the Study Tour as well as the initial list of the participants required, as the request of the TRACECA management, to be strengthen and confirmed by the local counterparts.	
			The month of December is not favourable for the implementation of such sort of activities. The Project Manager agreed with the TRACECA management to postpone the Workshop, finally held in January 1997.

## **Annexes**

## 8. Annexes

*Annexe 1: multimodal data collection support*

*Annexe 2: List of Relevant Contacts Made During the Mission*

*Annexe 3: Container Movement in Railway Terminals*

*Annexe 4: Summary of Rail and Road Infrastructures*

*Annexe 5: Detailed description of TRACECA Rail Container Terminals*

*Annexe 6: Study Tour Programme and list of Participants*

*Annexe 7: Study Tour Evaluation Results*

*Annexe 8: Programme of the Tashkent Workshop and List of Participants.*

*Annexe 9: Uzbek Cotton Movement*

# **MULTIMODAL TRANSPORT SYSTEM ON TRACECA ROUTE**

**(DATA COLLECTION GUIDE SUPPORT)<sup>1</sup>**

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<sup>1</sup> The following document is to be used by local experts as a non restrictive or exhaustive guide for the basic data collection. Some adaptations to local circumstances could be necessary.



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**1. ROAD TRANSPORT**

**1.1. Technological aspects (Infrastructure and Vehicle Fleet)**

Data on the road transport is going to be collected by other various Consultants Teams in charge of others TRACECA projects, namely: « Trade Facilitation, Customs procedures and Freight Forwarding »; « Improvement of Roadside Services, Spare Parts Procurement »; « Road Transport Services in the Caucasus Region »; « Road Transport Services in Central Asia ». And « Implementation of Pavement Management Systems ». Through an internal TACIS-TRACECA co-ordination system, we will recover the general information needed for the « Multi-modal Transport systems ». Nevertheless, some specific data for this study is required:

- ⇒ Is there any important road section inappropriate for 40" containers traffic because of weight bridges constraints? \_\_\_\_\_ Which is the current maximum load per axle permitted? \_\_\_\_\_
- ⇒ Which is the cruising speed permitted by the state of the main road: \_\_\_\_\_
- ⇒ Which is the estimated road fleet able to operate with :
  - \* 20" containers (single truck: \_\_\_\_\_ and single truck + trailer: \_\_\_\_\_)
  - \* 40" containers (articulated trucks: \_\_\_\_\_; \_\_\_\_\_)
  - \* N° of semi-trailers: \_\_\_\_\_ and chassis: \_\_\_\_\_
- ⇒ Is there any problem of compatibility between the road fleet (C.I.S types and ISO containers)? \_\_\_\_ If yes, Which kind of problem? \_\_\_\_\_

**1.2. Operational Aspects**

**1.2.1. Multi-modal systems**

- Is there any special road platforms or terminal for road carriers? \_\_\_\_\_
- Which are the main functions of such platforms?. For instance:
  - ⇒ Parking for heavy trucks? \_\_\_\_\_ Container unloading facilities? \_\_\_\_\_ TIR center? \_\_\_\_\_
  - Warehouses? \_\_\_\_\_ Others? \_\_\_\_\_

**1.2.2. Operating Techniques and organisation.**

Data related to the main road companies operating on international multi-modal market?

International Services provided

name	Location	N° of Heavy Trucks	Main International Destination	To clear Through Customs	Packagin	Stock Management	Real-time information on operations

- For international container « purely » road traffic, which are the main operating problems on international traffics?. For instance:
  - ⇒ Which is the Average rate of loading? \_\_\_\_\_ Which is the average back-haul rate (return empty)? \_\_\_\_\_ Which is the cruising speeds? \_\_\_\_\_ What 's about the transit times: \_\_\_\_\_ In which cases, a rail-road container forwarding is preferred to a « purely » road transport: \_\_\_\_\_
  - \_\_\_\_\_ What's about the provision of containers? \_\_\_\_\_
  - ⇒ Give some examples of current « door-to-door » time from one location in your country to and an specified destination: \_\_\_\_\_

### 1.3. Management and Organisational aspects

⇒ How are the cost prices of combined transports elaborated ? « Slumps sums »?: \_\_\_\_\_ Estimated prices? \_\_\_\_\_ Other systems? \_\_\_\_\_ Which one, could you briefly explain it: \_\_\_\_\_

⇒ Which is the tariff structure of your prices for combined transports: Could you briefly explain the structure of your tariff

⇒ Which are the commercial and administrative documents required for the execution of an international transport by container? \_\_\_\_\_

⇒ Is there any institution or firm providing assistance on multi-modal transport? \_\_\_\_\_

What kind of assistance do they provide? ( technical assistance, administrative, customs procedures...): \_\_\_\_\_

## 2. RAIL TRANSPORT

### 2.1. Technological aspects:

#### 2.1.1. Railways Infrastructure and Rolling Stock

Data on the railways infrastructure and rolling stock is going to be collected by other various Consultants Teams in charge of others TRACECA projects, namely: « Infrastructure Maintenance Railways in Central Asia »; « Infrastructure Maintenance Railways in the Caucasus Region » and « Rolling stock Railways Maintenance ». Through an internal TACIS-TRACECA co-ordination system, we will recover the general information needed for the « Multi-modal Transport systems ». Nevertheless, some specific data for this study is required:

- Railways structure gauge constraints related to Multi-modal transports:

⇒ Is rail track gauge the same on all the lines? \_\_\_\_\_ Which is the current track gauge on typical sections? \_\_\_\_\_

⇒ Which are the external dimensions permitted for crossing tunnels? \_\_\_\_\_

⇒ Where are located the sections, eventually posing problems of crossing when carrying container-wagons? \_\_\_\_\_

⇒ Is there any important section suffering from weight bridges constraints? \_\_\_\_\_ Which is the maximum load per axle permitted for 2 axle wagon: \_\_\_\_\_ and for 3 axles: \_\_\_\_\_

⇒ Which is the cruising speed permitted by the state of the rail lines: \_\_\_\_\_

⇒ Which is the availability of wagons able to carry containers? \_\_\_\_\_. Which types of wagons are used for carrying containers? \_\_\_\_\_

⇒ Is there any problem of compatibility between wagon and ISO containers? \_\_\_\_\_ Which kind of problem? \_\_\_\_\_

### 2.1.2. Intermodal Transport Units

Type	N° of units	Maker	Owner	Dimensions	Local Production
40" ISO				not applicable	
20" ISO				not applicable	
Special container					
Medium size					
Small container					
Land containers					
Semi-trailers	not applicable				

Concerning packaging techniques, specially the « palletisation », which are the main problems? For instance:  
 Availability: \_\_\_\_\_ Are the dimensions innapropiates? \_\_\_\_\_  
 Which are the typical dimensions of the most current pallet? \_\_\_\_\_

### 2.1.3. Terminal or transfer points

- Main terminal (main terminals and satellite terminals) involved with multi-modal traffic flows?

Terminal name	Location	Surface	Container capacity	N° of travelling gantries	Gantries pulling capacity	N° of lift trucks	Pulling capacity

⇒ Are these means appropriate to transshipment and storage operations? \_\_\_\_\_

## 2.2. Operational Aspects

### 2.2.1. Multi-modal systems

- Which are the existing systems for multi-modal transport purposes?. For instance:
  - ⇒ Wagons systems transporting only the goods containers and requiring vertical handling? \_\_\_\_\_
  - ⇒ Systems transporting complete vehicles (traction and semi-trailers) on a wagon (vertical or horizontal handling)? \_\_\_\_\_
  - ⇒ Other systems? \_\_\_\_\_

### 2.2.2. Operating Techniques

- Which are the current services programming practices for containers traffics. For instance:
  - ⇒ *Carriage by direct train from point to point* : (train formation between major centres without shunting, running on special programme at high speeds with a reduced number of stops). Give some locations; speeds; frequencies: \_\_\_\_\_
  - ⇒ *Carriage by individual wagons* (traction of wagons by successive shunting operations from terminals or private siding to the final destination). Give some locations; speeds; frequencies: \_\_\_\_\_
  - ⇒ *Carriage in a block train*: consolidation of containers from roads carriers or satellite terminals and formation of block trains between two main terminals? Give some locations; speeds; frequencies: \_\_\_\_\_
  - ⇒ *Others?* Brief description: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- Which is the dominant technique? \_\_\_\_\_
- Which is the main advantages of such technique? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- For international container traffic, is there any co-ordinated time schedule? \_\_\_\_\_
- If yes, are the schedules co-ordinated satisfactorily? \_\_\_\_\_
- Which are the main operating problems on international traffics?. For instance:
  - ⇒ Which is the Average rate of loading? \_\_\_\_\_
  - ⇒ Which is the average back-haul rate (return empty)? \_\_\_\_\_
  - ⇒ Which is the cruising speeds? \_\_\_\_\_
  - ⇒ What 's about the transit times: \_\_\_\_\_
  - ⇒ For a twenty foot container, which is the average handling time on main terminal? \_\_\_\_\_
  - ⇒ Are the delivery operations organised satisfactorily? \_\_\_\_\_
  - ⇒ Which is the rule concerning the organisation of the container deliveries by road? \_\_\_\_\_  
 \_\_\_\_\_
- ⇒ Give some examples of current « door-to-door » time from one location in your country to an specified Europe destination: \_\_\_\_\_  
 \_\_\_\_\_
- ⇒ Which are the documents required for a container transport? \_\_\_\_\_  
 At border crossings, are documents and procedures standardised? \_\_\_\_\_
- ⇒ In transfer terminals, which is the rule for accompanying transport documents/ customs papers / way-bills?  
 \_\_\_\_\_

### 2.3. Management and Organisational aspects

- Is there any particular firm for the organisation of combined transport. For instance:
  - \* *Piggy-back companies* (specific companies dedicated to road carriers and providing them rail transport of containers from terminal to terminal). If yes, name: \_\_\_\_\_ Location: \_\_\_\_\_
  - \* *Container shipment companies* : (operator able to provide « door-to-door » services including the provision of containers) If yes, name: \_\_\_\_\_ Location: \_\_\_\_\_
- If yes, are these companies a subsidiary of railways or independent?: \_\_\_\_\_ Which is the structure of such firms (department of tariff? \_\_\_\_\_ Department for the provision of containers? \_\_\_\_\_ Department following up of transport operations: \_\_\_\_\_ After sales department?( transmission of information to customers...): \_\_\_\_\_  
 Others departments? \_\_\_\_\_

- Following the given example, please fill up the following table:

Services offered	Provided by	Sold to	Cost price per unit
1) <u>Rail traction</u> * From terminal to terminal (terminal location examples)	Railways	-Piggy-back firm. -Container firm? -others?	\$/km-wagon \$/km-wagon \$/container
* From/to private siding ( examples)	Railways	??	example: \$/unit??
2) <u>Provision of wagons</u> (for container of swap- body (allocation and management)	-Piggy-back firm. -Container firm -others??	-Road carriers? -Others??	examples: \$/unit?
3) <u>Handling at transfer points</u>	- Piggy-back firm? - Container firm? - Railways	- Road carriers? - Shipper?	examples: \$: unit
	- Ports - Private centres?	-Trans. Operators - Forwarders? - Road carriers?	examples: \$/unit
4) <u>Provision of Containers</u>	- Road carriers? - Piggy-back firm? - Container firm? - Railways? - Maritime firms?	- Shipper?	examples: \$/unit
5) <u>Initial and Terminal haul</u> road services	- Road carrier? - Container firm? - Shipper?	- Shipper	examples: \$/unit

- Combined transport tariff system:.

⇒ How are the cost prices of combined transports elaborated ? « Slumps sums »?: \_\_\_\_\_ « Estimated prices »?: \_\_\_\_\_ Other system? \_\_\_\_\_ Which one, could you briefly explain it:

\_\_\_\_\_

⇒ Which is the tariff structure for combined transports: « link by link prices »? \_\_\_\_\_ « average prices »? \_\_\_\_\_ Other? \_\_\_\_\_ Could you briefly explain the structure of the current tariffs?

⇒ How are the revenues collected between various national railway \_\_\_\_\_

⇒ Which are the methods in use for pricing services and make each company paid: \_\_\_\_\_

⇒ What's about transit prices? How do proceed in this cases? \_\_\_\_\_

\_\_\_\_\_

- **Marketing Aspects**

- Marketing operations and relations at national level:

⇒ Is there any specific organisational link between the main actors of the multi-modal transport system (authorities, railways, operators..); \_\_\_\_\_ Could you describe the agreement between the railways companies, the operators and public authorities to improve multi-modal transport efficiency? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

⇒ Which kind of co-operation does exist now? For instance:

- \* *Technical side:* solution of key terminals choice ? \_\_\_\_\_ rationalisation of handling facilities? \_\_\_\_\_ increases in frequencies? \_\_\_\_\_ Concentration of traffic flows on corridors carrying heavy flows traffic? \_\_\_\_\_ creation of a container pool? \_\_\_\_\_
- \* *Commercial side:* improving the co-ordination of schedules? \_\_\_\_\_ appropriate organisation at both ends of the routes? \_\_\_\_\_ making the fares system more flexible? \_\_\_\_\_ transport quality (time, frequency; pick up and delivery times): \_\_\_\_\_

- Which are the means adopted to realise this objectives?

- \* Is there any co-operation agreements signed or in progress between road and rail sector to work together on a basis of mutual benefits and setting common goals: \_\_\_\_\_
- \* provision of skills and training? \_\_\_\_\_
- \* gathering intermodal data and information? \_\_\_\_\_
- \* Is there any defined infrastructure planned efforts: \_\_\_\_\_
- \* If yes, which is the geographical field concerned? \_\_\_\_\_ Is there any investments opportunity already contemplated? \_\_\_\_\_

- Marketing relations and co-operation at international level:

⇒ Is there any agreement between the main actors of the multi-modal transport system at international level (TRACECA countries authorities, railways, operators, accession to the international convention on containers...): \_\_\_\_\_

Which are the aims of the actors to improve multi-modal transport efficiency: \_\_\_\_\_

- How this co-operation have been translated their aims into specific measures?

- \* *Technical side:* choice of key terminals? \_\_\_\_\_ harmonisation of technical standards and administrative procedures: \_\_\_\_\_ rationalisation of handling facilities? \_\_\_\_\_ increases in frequencies? \_\_\_\_\_ Concentration of traffic flows on corridors carrying heavy flows traffic? \_\_\_\_\_ creation of a container pool? \_\_\_\_\_
- \* *Commercial side:* improving the co-ordination of schedules? \_\_\_\_\_ appropriate organisation at both ends of the routes? \_\_\_\_\_ making the fares system more flexible? \_\_\_\_\_ transport quality (time, frequency; pick up and delivery times): \_\_\_\_\_ use of documentary credit terms compatible with multi-modal transports: \_\_\_\_\_

- Which are the means adopted to realise this objectives?
  - \* Is there any co-operation agreements signed or in progress between road and rail international companies related to multi-modal transport: \_\_\_\_\_
  - \* Implementation of INCOTERMS best suited to support multi-modal transports: \_\_\_\_\_
  - \* provision of skills and training? \_\_\_\_\_
  - \* gathering intermodal data and information? \_\_\_\_\_
  - \* Is there any defined infrastructure planned efforts: \_\_\_\_\_
  - \* If yes, which is the geographical field concerned? \_\_\_\_\_
  - \* Is there any investments opportunity already contemplated? \_\_\_\_\_
  - Others? \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

**2.5. Combined traffic Flows**

- « Containerised » traffic for the following types of goods (in tons or 20" equivalent for 1995/ source of information to be precise)

Types of Goods	Maritime(1)	Continental		Transit
		Domestic	Regional(2)	
Agricultural products and livestock				
Textile				
Foodstuff				
Refined oil products				
Minerals				
Metallurgy				
Building materials				
Chemicals products				
Mechanical engineering				
Others				

(1) Maritime market: land transport of containers going out or coming in from maritime ports.

(2) International traffic with neighbouring countries from road platforms or rail Terminals

- Which are the main origin-destination for the most important products? \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- Are this traffic balanced? (difference between cargo going out and coming in on the same considered axis)? \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- Freight « containerised » traffic Trends: Which are rate of growth of the multi-modal traffic, globally and for specific products? \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



In your opinion, which are the prospects for combined transport in the short term/middle term?

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### 3. MARITIME TRANSPORT

Data on the maritime transport is going to be collected by other various Consultants Teams in charge of others TRACECA projects, namely: « Port Network Plan and Improvement Programme »; « Improvement of Human Resources »; « Bake and ABTA Port ferry terminals », but also through already completed projects, namely: « Rising level Caspian Sea ». Through a specific TACIS-TRACECA co-ordination system, we will recover the general information needed for the « Multi-modal Transport systems ». Nevertheless, some specific data for this study is required:

- ⇒ Which is the number of 20 foot container handled by year? \_\_\_\_\_
- ⇒ Is there any specific area for consolidation of containers? \_\_\_\_\_ Which is the area available for such function? \_\_\_\_\_ Are this traffic flows coming from roads or rail transports? \_\_\_\_\_
- ⇒ Which is the dominant mode of transport from and to Ports? \_\_\_\_\_
- ⇒ How many containers are handled per month? \_\_\_\_\_
- ⇒ Which is the number of 20 foot container equivalent handled by month: \_\_\_\_\_
- ⇒ In average, how long is a container staying at the port? \_\_\_\_\_
- ⇒ Which are the average cost prices for a 20" handling operation ? \_\_\_\_\_
- ⇒ How are the freight prices calculated ? For instance. Using a standard list of items and then applying it a factor per unit (ton, cubic meters, « slump sum » by container, ...etc.)

### 4. INLAND NAVIGATION

- Could you briefly describe the inland navigation infrastructure: length; location of key terminals, etc: \_\_\_\_\_

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Which are the main fleet characteristics? type of vessels? \_\_\_\_\_ number of units:

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- Which are the main transshipment techniques: \_\_\_\_\_

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**ANNEXE 2:**  
**LIST OF RELEVANT CONTACTS MADE DURING THE MISSION**

Country	G	Person	Organisation	Position
ARMENIA	Mr	SUMBATYAN Sergey	ARMEN-TRANSFORWARDER	Deputy Chairman
ARMENIA	Mr	AKOPIAN Levon	Armenian Railways	First Deputy Manager
ARMENIA	Mr	AMBARTSOUMIAN G.	Ministry of Transport and Communication	Head of the Foreign Relations Department
ARMENIA	Mr	SHAHNAZARYAN. Ashot	Ministry of Transport and Communication	First Vice Minister of Transport
ARMENIA	Mr	SUMBATYAN. M.	Armen-transforwarder	Chairman
ARMENIA	Mr	BALYAN Souren	ARMEN-TRANSFORWARDER	President
ARMENIA	Mr	YESSAYAN. A.	World Food Programme	Head of Logistic Department
AZERBAIDJAN	Mr	GASSUMOV. C.	GTC Global Transport	Local Director (German Company)
AZERBAIDJAN	Mr	AIVOZOV	Ministry of Economy	Deputy Head of the Transport Department
AZERBAIDJAN	Mr	NADIRLY. V.	Azerbaijan Railways	Director of Railways
AZERBAIDJAN	Mr	MAMEDOV. A.	BAKU International Trade Port	Director of the Trade Activities of the Port
AZERBAIDJAN	Mr	TEIMUROV. T.	Caspian Shipping Co (Baku)	Deputy Manager
AZERBAIDJAN	Mr	MAMEDOV	"Azerail" Stock Company	Head Export-Import Department
AZERBAIDJAN	Mr	AZKEROV	"Azerail" Stock Company	Deputy General Director
AZERBAIDJAN	Mr	IZMAILOV	Azerbaijan Railways	Deputy Head of the Freight Department
AZERBAIDJAN	Mr	SADIKHOV. Iqram	Ministry of Economy	Head of the Transport Department
AZERBAIDJAN	Mr	DSHAFAROV. N.	Azintrans (International Road Company)	Adviser of the President
AZERBAIDJAN	Mr	NAMEDOV	Port of Baku	Deputy Manager of the Port
AZERBAIDJAN	Mr	SAMEDOV	Azerbaijan Railways	Head of Freight Department
AZERBAIDJAN	Mr	PONOMARTCHUK	Azerbaijan Railways	Head of the Technical Department
AZERBAIDJAN	Mr	KIAZIMOV. Sultan	Port of Baku	Deputy Manager
BELGIUM	Mr	TEILLET Bernard	European Intermodal Association	General Secretaire
BELGIUM	Mrs	KUSCHEL Susanne	International Combined Transport Union, UIRR.	Marketing and European Affairs
FRANCE	Mr	ETIENNE Jean	French Ministry of Transport	Head of Public Works Department
FRANCE	Mr	CORDIER. J.P	Compagnie Nouvelle de Conteneur. CNC	Regional Director
FRANCE	Mrs	CHKOULANOVA. V.	Calberson G.E.	Chief for CIS Transport Operations
FRANCE	Mr	RIVET Christian	French Railways - SNCF	Head of Combined Transport Division
FRANCE	Mr	ROSSI. Jacques	French National Union for Combined Transport	General Secretaire
FRANCE	Mr	KIEFFEAR	SNCF-Metz	Manager of the Metz "node" Station
FRANCE	Mr	CLAPIES. J.	Compagnie Nouvelle de Conteneur. CNC	General Secretaire
FRANCE	Mr	JORAJURIA.R.	Novatrans	Head of Valenton Terminal
FRANCE	Mr	MOUSNIER-LOMPRE	Ministère des Transports et de l'Équipement	Head of Foreign Relations Division
FRANCE	Mr	AROCAS. Claude	Novatrans	Regional Director
GEORGIA	Mr	DOLBAYA	National Transport Council	Deputy Director
GEORGIA	Mr	MITAISHVILI. R.	Ministry of Economy	Deputy Minister/ Head of Transport Department
GEORGIA	Mr	TSOMAIA. George.	CAUTREX (Cau-trans-Forwarder)	Head of the Company

Country	G	Person	Organisation	Position
GEORGIA	Mr	CHUBINISHVILI. T.	Georgian Institut for Scientific and Tech Informat.	Deputy Manager
GEORGIA	Mr	JOBAVA. M.	BCC GEORGIA	Local Business Developer
GEORGIA	Mr	TODUA	Georgian Railways	Deputy Head Traffic Department
GEORGIA	Mr	VASHAKIDZE. R.	Georgian Railways	President of the Georgian Railways
GEORGIA	Mr	KUKUJIDZE Jemal	Port of Batumi	Port Director
GEORGIA	Mr	NAKAIDZE Guram	Centre for TRACECA problems	Chairman of the Centre
GEORGIA	Mr	CHKHEIDZE. Alexander	International Road Carriers Association	President of the Association
GEORGIA	Mr	KERVALISHVILI. T.	Gruzzheldorepeditsiya (Freight Forwarder)	Deputy Head
GEORGIA	Mr	ZIBZIDADZE Alex	Georgian Railways	Chief Engineer
GEORGIA	Mr	GORSHKOV Teimuraz	National Transport Council	Head of Transport Studies Department
GEORGIA	Mr	AKAKI. Chaidze	National Transport Council	Chairman of the Council
GEORGIA	Mr	TKEBUTCHAVA. V.	International Road Carriers Association	Head of the Association
GEORGIA	Mr	LOMADZE	National Transport Council	Vice Chairmain of the Council
GEORGIA	Mr	GELIADZE. V.	Port of Poti	Head of the Port
GERMANY	Mr	SCHULZE-FREYBERG. W.	Polen-Hamburg Transport GmbH	Deputy Manager
GERMANY	Mr	RUHR Reinhard	Kombiverkehr (Combined Transport Company)	Manager
GERMANY	Mr	BOLLER. R.	Hamburger Hafen-und Lagerhaus	Executive Manager
GERMANY	Mr	FURNELL. W.	Hamburger Hafen-und Lagerhaus	Head of the Marketing / Container Division
KAZAKHSTAN	Mr	URAZBEKOV	Ministry of Transport and Communication	Head of Railways Transport Division
KAZAKHSTAN	Mr	FLUGGE Mario	M&M Kazakhstan	Managing Director
KAZAKHSTAN	Mr	ATIMANOV. S.	International Transport Services	Deputy Manager
KAZAKHSTAN	Mr	KAPLAN. Eduard	Research Inst. of Road Transport (NIAT)	Deputy Director
KAZAKHSTAN	Mr	UTEKBEKOV. Vladimir	ISKOMTRANS	General Director
KAZAKHSTAN	Mrs	SAGIMBAYEVA. S.	ISKOMTRANS	Chief Manager
KAZAKHSTAN	Mr	TARANENKO. Arkadi	Ministry of Transport and Communication	Head of the Transport Department for Science and Techni
KAZAKHSTAN	Mr	MUKHAMEDJANOV Kanat	Ministry of Transport and Communication	Deputy Minister
KAZAKHSTAN	Mrs	SABETOVA. R.	KAZINTERFREIGHT, Forwarder	Deputy General Director
KAZAKHSTAN	Mr	PARFYONOV D.	BUTYA (Private trader company)	Deputy General Director
KAZAKHSTAN	Mr	SEGAL Ilya	Railways Department	Manager Department
KAZAKHSTAN	Mr	IRGIBAYEV. S.A.	International Road Carriers Association	Head of the Association
KAZAKHSTAN	Mr	ALIGHUZINOV Serik	Ministry of Transport and Communication	First Vice Minister of Transport
KAZAKHSTAN	Mr	MUKHAMEDJANOV. N.	Ministry of Transport and Communication	Deputy Minister
KAZAKHSTAN	Mr	TEMIRBAYEV	Ministry of Transport and Communication	First Deputy of Railways Transport Department
KAZAKHSTAN	Mr	ZAVIALOV Anatoly	Kazavtotrans Road Company	General Director
KAZAKHSTAN	Mr	KOKREVJBAYEV	State Company Almatyzheldorepeditsiya	General Director
KAZAKHSTAN	Mr	SDERZHNIKOV. V.	Maritime and Inland Waterways	Maritime Transport Economist

Country	G	Person	Organisation	Position
KAZAKHSTAN	Mr	ATYMANOV	Almaty Railways	Head of the International Transport Department
KYRGYZSTAN	Mr	AL TREGASHVILI. L.	State Institute of Road Design	Director of the Institute
KYRGYZSTAN	Mr	IRSAIEV. Almazbek	Ministry of Transport and Communication	Head of Economic and Foreign Relations
KYRGYZSTAN	Mr	MATYUSENKO.	State Institute of Road Design	Road Engineer
KYRGYZSTAN	Mr	SATYBALDIEV. Jeantoro	Ministry of Transport and Communication	First Vice-Minister
KYRGYZSTAN	Mr	ALIBEGASHVILI. L.	State Institute of Road Design	Director of the Institute
KYRGYZSTAN	Mr	ALEXEYEV	Kyrgyzheldorexpediciya	Deputy Manager
KYRGYZSTAN	Mr	ISMANKULOV. K.	Militzer & Munch Forwarder	Local Manager
KYRGYZSTAN	Mr	RACHMATULIN. R.	Ministry of Transport and Communication	Head of Roads Division
KYRGYZSTAN	Mr	SMATOV Nurdin	Ministry of Transport and Communication	Head of the Automobile Division
KYRGYZSTAN	Mr	KOULIEV Takhar	"DOSTUK" Transport Company	General Director
KYRGYZSTAN	Mr	ZAKIROV Adam	Ministry of Transport and Communication	First Deputy Minister of Transport
KYRGYZSTAN	Mr	ZAKIROV Zuleyman	Government of Kyrgyzstan	Head for the Department of Transport and Communication
KYRGYZSTAN	Mr	TALASBAYEV	Kyrgyz Railways	Chief Engineer
KYRGYZSTAN	Mr	TAKYRBASHESHEV	Kyrgyz Railways	First Deputy of the General Director
KYRGYZSTAN	Mr	ZAKIROV Adam.	Ministry of Transport and Communication	Deputy Minister
SWITZERLAND	Mr	BURNASHEV. A.	INTERCONTAINER	Route Manager
SWITZERLAND	Mr	SCHMELTER Pierre	INTERCONTAINER-Bale	Directeur for Central Europe
TADJIKISTAN	Mr	BOLTOV. Victor	Ministry of Economy	Vice Minister of Economy
TADJIKISTAN	Mr	MIRZOEV. Timur	State Design Research Institute	Director
TADJIKISTAN	Mr	CHODIEV Bakhrom	Tadjik Railways	Chief Engineer
TURKMENISTAN	Mr	YAZBERDIEV. M.	Ministry of Transport and Communication	Head of the Transport Department within the Cabinet of
TURKMENISTAN	Mr	KHALYKOV. H.	Turkmenistan Railways	Head of the Turkmenian Railways
TURKMENISTAN	Mr	SEIDOV	Turkmenian Railways	Head of the Station Obesberdyev-Kuliyevo
TURKMENISTAN	Mr	DURAIEV	Port of Turkmenbaschi	Head of the Port
TURKMENISTAN	Mr	ALLAKULIEV. Oraz.	"Turmenvneshtrans" (Internat. Road Company)	General Manager
TURKMENISTAN	Mr	TOURAYEV. Rasheed	Ministry of Automobile Transport	Deputy Minister
TURKMENISTAN	Mr	KAZANOV	Turkmenian Railways	Deputy Head of the Railway District Chardzhev
TURKMENISTAN	Mr	IVANOV	Turkmenian Railways	Deputy Head. Forwarding Department
TURKMENISTAN	Mr	BAKHALOV	Turkmenian Railways	Head of the Department for Operation and Commercial Pe
TURKMENISTAN	Mrs	BIASHIMOVA	Turkmenian Railways	Head of the Department for International Economic Relatio
TURKMENISTAN	Mr	ALTINAZAROV. A.	Customs Authorities	Chief of Statistical Department
TURKMENISTAN	Mr	VERHEIJEN Peter	M&M Turkmenistan	Local Manager
TURKMENISTAN	Mr	RECHOV A.	BOUYGUES-Turkmenistan	Local Director
TURKMENISTAN	Mr	ELANTSEV. V.	Ministry of Transport and Communication	Adviser
TURKMENISTAN	Mr	DURDIEV. H.	Turkmen Sea Transports Department	Chairman

Country	G	Person	Organisation	Position
TURKMENISTAN	Mr	ALLAKULLIEV. O.	"Turkmenvneshtans"	General Manager
TURKMENISTAN	Mr	DJEPAROV. Siedar	Ministry of Automobile Transport	Chief of Economic and Foreign Relations
TURKMENISTAN	Mr	MAMEDOV Mered	State Railways of Turkmenistan	Deputy Manager
UZBEKISTAN	Mr	SERGELI	Autochservis	Operational Manager
UZBEKISTAN	Mr	HO-KYON SHIN	WOO JIN (DAEWOO's container supplier)	Director
UZBEKISTAN	Mr	CHADMANOV. A.	Shosh-Trans	General Director
UZBEKISTAN	Mr	GANIEV. E.	Ministry of International Trade	First Vice-Minister
UZBEKISTAN	Mr	ZUFAROV. S.	Autochservis	President
UZBEKISTAN	Mr	KURBANOV. B.	SEA LAND	Sales Manager for Central Asia
UZBEKISTAN	Mr	GUBAREV	Uzbek Railways	Head of the Wagon Service Department
UZBEKISTAN	Mr	DYATCHKOV. V.	OUZKHLOKOPROMSBYT (Cotton distribution)	Vice-President
UZBEKISTAN	Mr	KODYROV. S.	Tashkent Institute of road Engineers	Director
UZBEKISTAN	Mr	KAN. K.	GIPROTRANS (Design Research TransP Inst.	Director
UZBEKISTAN	Mr	NURITDINOVICH. G.	UZAVTOTRANS	Deputy Manager
UZBEKISTAN	Mr	PHAROUKH. A.	OUZKHLOKOPROMSBYT (Cotton distribution)	Director for International Logistics
UZBEKISTAN	Mr	ISMAILOV. V.	UZAVTOTRANS State Joint Stock	Deputy of the Board Chairman
UZBEKISTAN	Mr	DAVIDOVITCH	Uzbek Railways	Head of Department of International Relations
UZBEKISTAN	Mr	BAKHOLDIN	Uzbek Railways	Head of Operational Department
UZBEKISTAN	Mr	BABADZHNOVA	Uzbek Railways	Head of the Computer-based Management Systems
UZBEKISTAN	Mr	IBRAGIMKHODAJAEV. S.	UZAVSTOTEKNICA	Deputy Manager
UZBEKISTAN	Mr	KHALISSOV. Murat	Shosh-Trans (Forwarder Uzbek)	Deputy Manager
UZBEKISTAN	Mr	ERKINOV. Navruz	Uzkek Railways	Head of Economic and Foreign Relations
UZBEKISTAN	Mr	KASYMOV. B.	Road Carriers Association and "Uzintrans"	General Manager
UZBEKISTAN	Mr	DUBINCHIK. George	Shosh-Trans (Forwarder)	Deputy Director
UZBEKISTAN	Mr	ONKIS. V.	Ministry of Foreign Trade	Head of the Railways Department
UZBEKISTAN	Mr	ALIEV Mansur	UZAVTOTRANS State Joint Stock	Deputy of the Board Chairman
UZBEKISTAN	Mr	NADJIMITDINOV. K.	UZAVTOTRANS State Joint Stock	Chief adviser for foreign economic activities
UZBEKISTAN	Mr	GUBATCHEV	Uzbek Railways	Deputy Head of Department of International Relations
UZBEKIZTAN	Mr	KASYMOV. B.	International Road Carriers Association	Head of the Association

**ANNEXE 3:**  
**CONTAINER MOVEMENT IN RAILWAY TERMINALS**

# Container Movement in Railway Terminals -

Year 1995

COUNTRY	TERMINAL	LOADED			UNLOADED		
		Large size (ISO 20-40")	Medium size	Total	Large size (ISO 20-40")	Medium size	Total
ARMENIA	Karmir/Blur	158	0	158	426	6	432
	Total (country)						
AZERBAIJAN	* Baku	0	400	400	0	166	166
	Total (country)						
GEORGIA	* Poti						
	* Batumi tov.		5	5			
	* Kutaisi 2		3	3			
	* Zestafoni						
	* Samtredia 1						
	* Tbilisi tov. Telavi	74	725	799	50	20	70
	* Khashuri		4	4	8		
	* Kaspi						
	* Gori gruz.		2	2			
	* Rustavi gruz.		18	18			
	Total (country)	74	757	831	58	20	78
KAZAKHSTAN	Almatinskaya Railways						
	* Arys	4	295	299	5	33	38
	Turkestan	10	776	786	157	974	1 131
	* Chimkent	737	3 586	4 323	22	48	70
	Kurgasyn						
	* Tulkubas						
	* Tatty		47	47			
	* Lugovaya		330	330		10	10
	* Kuragaty		9	9			
	* Shu	2	578	580			
	Sary-Shagan		796	796	26	413	439
	* Zhambyl	558	2 485	3 043	34	899	933
	Karatau	1	583	584		94	94
	Zhanatas	20	93	113		10	10
	Chaldala					168	168
	* Almaty I	1	19	20			
	* Almaty II	2 206	12 414	14 620	864	4 186	5 050
	* Sary-Ozek	9	420	429			
	Taldy-Kurgan	543	2 967	3 510		10	10
	* Ush-Tobe		459	459		75	75
	Tekeli	15	14	29			
	* Druzhba						
	Ayaguz	3	466	469			
	Semipalatinsk	253	2 745	2 998		10	10
	Konechnaya	1	34	35			
	Korshunovo	1	34	35	8	11	19
	Neverovskaya		90	90	4	249	253
	Shemonaikha	1	240	241			
	Zaschita	231	3 095	3 326	224	1 983	2 207
	Leninogorsk		394	394		110	110
	Serebryanka		380	380		22	22
	Zyryanovsk	1	739	740		12	12
	Ustkamenogorsk						
Otar		10	10				
Sub-Total		4 597	34 098	38 695	1 344	9 317	10 661



Tselinaya Railways		railway				
Amankaragai		242	242			
Dzhetygara	692	319	1 011	18	54	72
Zhelezorudnaya						
Kushmurun				2		2
Komsomolets		75	75			
Kustanai	189	1 799	1 988		1 219	1 219
Mailina		254	254	14	96	110
Agadyr		123	123		7	7
Balkhash	11	1 156	1 167	10	139	149
Dzhezkazgan	132	1 044	1 176	179	63	242
Zhana-Arka	1	131	132	18	58	76
Novo-Dubovsk				6		6
Zhana-Aul				6		6
Karaganda-Pas.	297	4 014	4 311	495	863	1 358
Karaganda-Ugoln.						
Karaganda-Nov.						
Karazhal		230	230		87	87
Osakarovka		177	177		9	9
Temir-Tau	9	1 024	1 033	4	113	117
B. Metalurgicheskaya						
Murza						
Nurinskaya						
Ar-Kul		93	93		25	25
Volodarskoe		228	228			
Kokchetau	170	1 461	1 631	759	558	1 317
Borovoe		637	637		600	600
Makinka		233	233		10	10
Novo-Ishimskaya	1	110	111			
Suly	1	116	117			
Taincha		200	200		39	39
Aksu	767	1 230	1 997	14		14
Arkalyk	45	909	954	64	11	75
Atbasar		402	402	5	22	27
Derzhavinskaya	5	615	620	4	219	223
Dzhaksy		112	112			
Ermentau		202	202		11	11
Esil	1	466	467	19	7	26
Tselinograd	169	2 366	2 535	390	554	944
Shortandy						
Boschakul						
Ermak	1	407	408		212	212
Ermak-Gruzovoi	106	19	125	28	38	66
Pavlodar		4	4	5		5
Pavlodar-Port				30		30
Pavlodar-Severnyi						
Pavlodar-Yuzhnyi	231	2 267	2 498	387	53	440
Ushkulyn						
Scherbakty	1	30	31		66	66
Ekibastuz	30	1 423	1 453	164	11	175
Kzyl-Tu		45	45			
Sorokovaya						
Maikuduk		8	8			
Post 120						
B. Mikhailovka						
Karagaily						
Smirnov				27		27
B.P.7					12	12
Chaglinka					7	7
Sub-Total	2 859	24 171	27 030	2 648	5 163	7 811
Zapadno-Kazakhstanskaya Railways						
Kzyl-Orda	74	1 385	1 459			
Tura-Tam	110	2 078	2 188			
Aktubinsk	1 644	3 101	4 745			
Zhilaevo	365	2 200	2 565			
Atyrau	256	1 724	1 980			
Mangyshlak	474	3 202	3 676			
Sub-Total	2 923	13 690	16 613	NA	NA	NA
Total (country)	10 379	71 959	82 338	NA	NA	NA

		railway				
KYRGYZSTAN						
	Bishkek - I		4 963	4 963	833	833
	Rybachye		584	584	108	108
	Karabalta	25	590	615	5	5
	Alamedin	860		860	506	1 012
	Dzhalal-Abad	99	599	698	125	125
	Osh	292	991	1 283	1 005	1 340
	Kyzyl-Kiya	24	168	192	1	2
	Total (country)	1 300	7 895	9 195	2 583	3 425
TADJIKISTAN						
	Dushanbe-2	7 400	11 638	19 038	403	1 098
	Kurgan-Tube	10	374	384		236
	Khudzhant	947	3 944	4 891	4	13
	Kanibadam	64	551	615		0
	Total (country)	8 421	16 507	24 928	407	1 347
TURKMENISTAN						
	* Krasnovodsk		1 439	1 439		
	* Nebit-Dag		763	763		
	* Gyzyrlybat		365	365		
	* Ovezberdy-Kulievo	548	3 714	4 262		
	* Kaahka		365	365		
	* Tedzhen		365	365		
	Maiskaya	365	880	1 245		
	* Bairam-Ali		365	365		
	Gushgy		365	365		
	* Chardzhou-2		1 524	1 524		
	Gazodzhak		365	365		
	Zerger	541		541		
	Seidi		365	365		
	Dashkhous	335	365	700		
	Amudarya		365	365		
	Total (country)	1 789	11 605	13 394	NA	NA
UZBEKISTAN						
	Total (country)	6 983	31 640	38 623	NA	NA

\* means: terminal located on main TRACECA CORRIDOR

NOTE: Statistics for unloaded containers are generally either incomplete or non-existing

**ANNEXE 4:**  
**SUMMARY OF RAIL ROAD INFRASTRUCTURES**

## SUMMARY OF RAIL AND ROADS INFRASTRUCTURES

From Kazakhstan to Georgia, the transport network involved by the TRACECA corridor is summarised as follows:

### *Kazakshtan*

Kazakhstan railways system comprise around 12,600 kilometres. It is operated by three regional networks: the Almaty network serving around 4,000 kilometres around Almaty, the Tselinaya north-eastern network serving around 4,900 kilometres and the country and the western and north-western network serving around 3,700 kilometres. From Almaty rail lines goes in three main directions: to Russian Federation borders in the north; to Uzbekistan border and to the shores of the Caspian sea. The main links involved by the TRACECA corridor, the line which connect Almaty to the Port of Aktau and the to Tchengeldy in the direction to Tashkent, are summarised as follows:

- **Almaty - Aktau:** This line connect Almaty with the port of Aktau, through Kandagach (2,192 km from Almaty); over a distance of 3,289 kilometres. The route is single track over the 311 kilometres from Almaty to Shu, double track over the 1,881 kilometres from Shu to Kandagach and from there single track again over the 1,097 kilometres to Aktau. The line is electrified from Almaty to Shu and over the 2,429-km section from Arys to Aktau..
- **Almaty - Tchengeldy:** This line links Almaty and Tchengeldy at the border with Uzbekistan. The lines goes through the Uzbekistan and Turkmenistan and would serve cargo from Kazakhstan to port of Turkmenbashi on the Caspian sea. The route, long of 930 kilometres, goes around the border between Kazakhstan and Uzbekistan through Shu, Jambyl, Shimkent and Arys. The entire route is electrified.

As for the road network, it comprises 87,800 kilometres of public roads divided in national roads (around 17,400 km) and local roads (around 70,400 km). Nearly the entire road network is made up of at least two lanes. In general, roads are in a relatively good state. This partly explain that long distances road operations are developing.

### *Kyrgyzstan*

Kyrgyzstan occupies the Tien Shan mountain range which stretches for hundreds of kilometres across the north-eastern part of Central Asia. Over 94 % of the country has altitudes of more than 1000 meters above sea level, and about 40 % is more than 3000 meters. (average elevation is 2,750 meters). The country commands a well developed network, adjusted to geographical characteristics. The roads constitute the basis of the network; Over 50 % of the 20.000 km of roads are paved and in sufficiently good condition. However, one of the main roads connecting Bishkek to Osh, the two major industrial centres, are degenerating. Automotive transport, with about 72% of the freight traffic, is by far the most important transport mode of Kyrgystan.

As for rail network, it consists of small line 340 km long, which goes through the Chu Valley (the most developed industrial region of the country) in the north and links up with a Kazakhstani railways network. The line is one of the Kyrgyzstan possibilities to integrate a multimodal YTRACECA corridor. A small line in the south, connects the country to with Uzbekistan. It travels from Kok-langak (50 km north of Osh) to Andijan (Uzbekistan) and Bekabad (Tadjikistan). From there, railways shipment to Tashkent in the North or Samarkand in the south rail links exits.

### *Uzbekistan*

Reflecting the distribution of the main economical and industrial centres, the infrastructure is well developed in the south and south-eastern parts of the country and much less in the central and western parts, (mainly made up of deserts). During Soviet times, Tashkent was the headquarters of the Central Asian network covering all railway lines in four of the five Central Asian republics (with the exception of Kazakhstan). At present, the rail network of around 3,380 kilometres (with a track gauge of 1,520 mm) comprises three main links:

1. **Tashkent - Tchengeldy** in Kazakhtan: 79 km, the route connects Eastwards with Almaty and westward with the section Tashkent-Khochadavlet. The line is double track and entirely electrified.
2. **Tashkent - Khodchadavlet** (at the border between Uzbekistan and Turkmenistan: 685 km, it goes through the cities of Dzhizak (203 km), Samarkand (131 km), Navoi (138 km) and Bukhara (93 km) and Khodchadavlet 120 km further west. The line is partly double tracked between Bukhara and Khodchadavlet (over around 60 km) and completely double track between Dzhizak and Samarkand (131 km). It is mostly single tracked between Tashkent and Dzhizak, and completely single tracked between Samarkand and Bukhara. Then, the line continues to the port of Turkmenbaschy on the Caspian sea. The entire link is diesel operated.
3. **Tashkent - Karakalpakia** (at the border between Uzbekistan and Kazakhstan): 1,850 kilometres. it travels to Chardjev (around 20 km), Gasodjak (322 km), Shabat (112 km), Takhyatach (72 km), Kungrad (101 km). The line straddles the border between Uzbekistan and Turkmenistan. The two countries are experiencing some difficulties in defining inter-operability regulations. This situation is such that the Uzbeks are now planning the construction of a 342-km new line, single track and non-electrified, which would link Uchkuduk with Nukuss and by-pass Turkmenistan. The Uzbeks railways are also planning the reconstruction of the existing Navoi and Uchkuduk (290 km) line.

As for the road network of Uzbekistan, it comprises around 43,250 kilometres divided in international roads (around 3,250 km), state roads (around 18,600 km) and local roads (around 21,400 km). There are two main links: a north-east↔south-west link connecting Tashkent to Karakul in Turkmenistan, (through Bukhara, Navoi and Samarkand), and a south-west↔north-west link between Termez and Nukuss via Bukhara. 42% of the road from Tashkent to Karakul (677 kilometres) is estimated to be in a state of good repair while 58% are deemed in fair conditions.

### ***Tadjikistan***

Tadjikistan (143 000km<sup>2</sup>) is one of the most land-locked countries of Central Asia. The north of the country is almost separated from the rest of the territory by the Alai mountains located in Kyrgyzstan. The existing rail lines in the north, travels between western and eastern Tadjikistan from Kanibadam (at the border with Kyrgyzstan) Sovetabad (near Khodjent) and Bekabad. From there, two existing branches connects the system with Samarkand and Tashkent (Uzbekistan). In parallel to the rail line, there is a road connection between western and eastern which is in poor condition.

The south-western Tadjikistan is depending on the rail corridor from Termez, in Uzbekistan. Commodities are forwarded from Termez, to Jougan-Tube where two branches connects Dushanbe and Kouliab respectively.

### ***Turkmenistan***

The transport infrastructure, not so extensively developed as in other republics, reflects the distribution of population, rather sparse, (4.3 million inhabitants with 500,000 in Ashgabat) this large country (480,000 sq.-km) is mainly made up of deserts (around 90% of the territory). Its geographical position makes the country a typical transit country and the development of transport infrastructure could provide currency revenues in transit rights.

The railways of Turkmenistan comprise around 2,200 kilometres. Its entirely operated with diesel traction and out of 40 kilometres of double tracks around Ashgabat, the network is single tracked. The main line connects Ashgabat with Tashkent and with the port of Turkmenbashi (over a distance of 557 kilometres). From Turkmenbaschi, a ferry link travels across the Caspian sea to Baku (Azerbaijan). The line section connecting Ashgabat to Tashkent goes through Mari (343 km) and Chardjev (243 km). From Chardjev the line continues to Gasodjak (319 km) and then enters in Uzbekistan (for 112 kilometres) before entering again in Turkmenistan (for 71 kilometres).

As for the road network of Turkmenistan, it comprises around 13,600 kilometres of public roads divided in state roads (1,700 km), republic roads (around 4,800 km) and local roads (around 7,100 km). Around 81% of

the road network is made up of road of category IV and V with only around 7% of road of category I and II. The road from Turkmenbaschi to Chardjiev is in good condition.

### ***Azerbaijan***

The Azerbaijan railway system comprises 1,700 kilometres distributed in a north-western and western direction. The main line linking Baku to Tbilissi, is of particular interest for freight movements between Central Asia and Europe. The line starts at the Caspian sea port of Baku where traffic coming from other Caspian sea ports via ferry services, mainly Turkmenbaschy (Turkmenistan) is picked up. To a lesser extent, Aktau (Kazakhstan) also provides traffic Baku. From Baku, the rail line goes to Beyuk Kyacik (the border between Azerbaijan and Georgia) over a distance of 484 km through Alyat (69 km), Eblach (210 km) and Akstafa (162 km). It continues to Tbilissi and further on to the Black sea ports of Poti and Batumi. The entire link is double track and electrified.

As for the road network, there is connection between Baku and Georgia. From Black sea ports to Baku, according to cost studies made by the logistics Advisory Unit from the World Food Programme, shipments by rail is the most effective option.

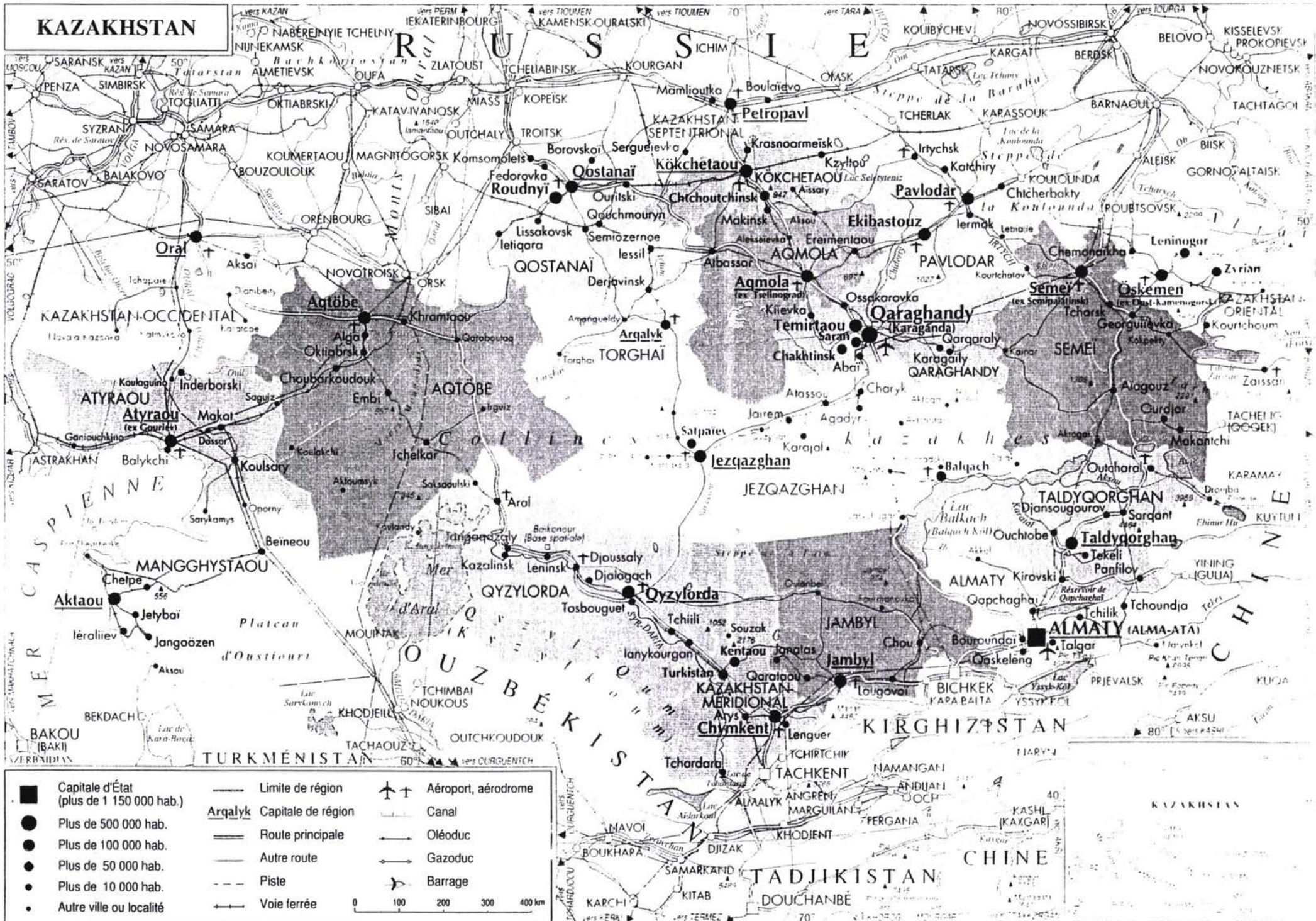
### ***Georgia***

The railways comprises 1,500 kilometres. The line connecting the Azeri network to the Georgian port of Baku is of major interest to freight movements between Central Asia and Europe. The line goes from Gardabani (the border between Georgia and Azerbaijan) to Samtredia (250 km) through Tbilissi. At Samtredia, two branches connects respectively Batumi and Poti. The distances are 401 km between Gardabani and Batumi and 363 km between Gardabani and Poti. Both links are double track from Gardabani to Samtredia (295 km) and from there single track to Batumi (106 km) and to Poti (68 km).

The principal road in Georgia, the « Magisterial », runs from the Azeri border through Tbilissi, to the Black sea (Sukhumi); There is trifurcating system at Samtredia, close to the black sea, where two roads provide access to Poti and Batumi. The roads runs along the Valley between the two ranges of the Caucasus. The pavement is acceptable. The secondary roads appears to be in poor condition. Container transit traffic by this road transport, very little at present, may be developed.

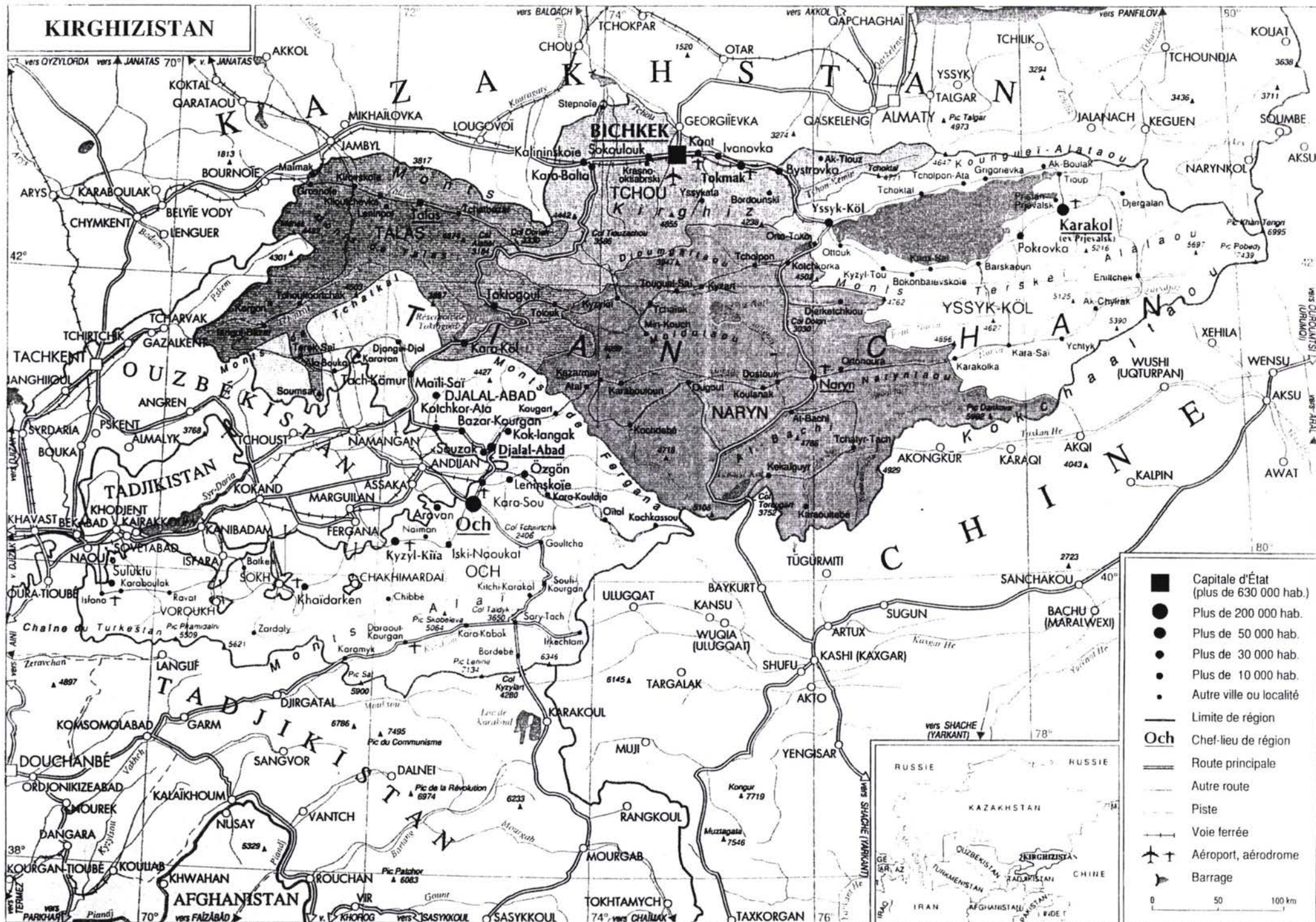
### ***Armenia***

The railways of Armenia is made up of around 800 route-kilometres. Rail lines links Erevan to Baku and Tbilissi. The connection with Tbilissi goes through Akhurian and Giumry and touch the Georgian territory at Bagratashen. The entire link is single track. Small section between Giumry and Akhurian is diesel operated. From to Bagratashen (157 Km) the line is single track and electrified. Due to political disagreements with neighbouring countries (Turkey and Azerbaijan), this is the only railways in operation to the port of Poti and Batumi (Yerevan-Giumri--Airum-Bagratashen-Georgia). From Poti and Batumi to Armenia, shipments are forwarded both road and rail.



# KAZAKHSTAN

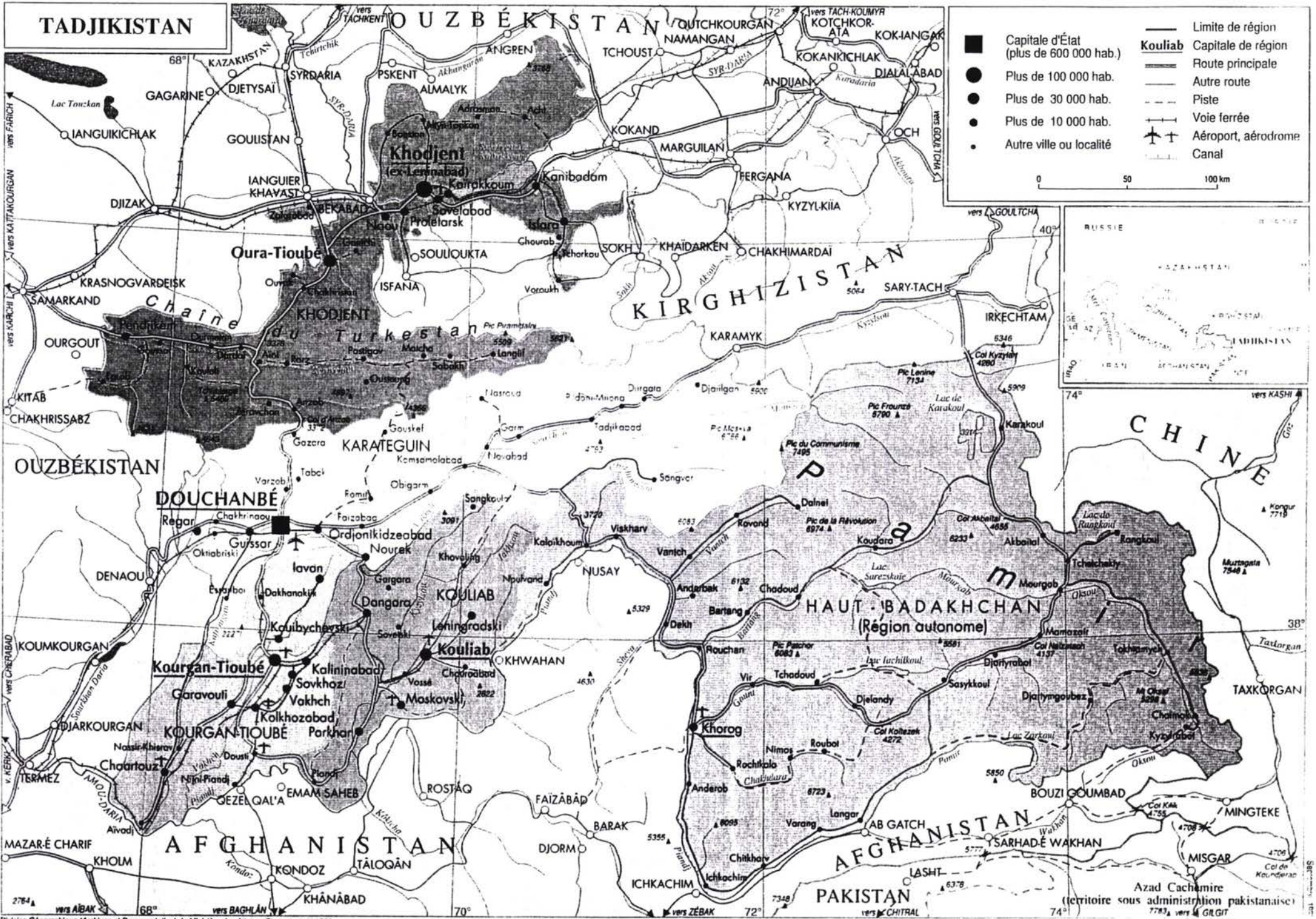
- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>■ Capitale d'État (plus de 1 150 000 hab.)</li> <li>● Plus de 500 000 hab.</li> <li>● Plus de 100 000 hab.</li> <li>● Plus de 50 000 hab.</li> <li>● Plus de 10 000 hab.</li> <li>● Autre ville ou localité</li> </ul> | <ul style="list-style-type: none"> <li>— Limite de région</li> <li>Arqalyk Capitale de région</li> <li>== Route principale</li> <li>— Autre route</li> <li>- - - Piste</li> <li>— Voie ferrée</li> </ul> | <ul style="list-style-type: none"> <li>✈ Aéroport, aérodrome</li> <li>— Canal</li> <li>— Oléoduc</li> <li>— Gazoduc</li> <li>— Barrage</li> </ul> |
|---|--|---|
- 0 100 200 300 400 km





# OUZBÉKISTAN





**TADJIKISTAN**

**OUZBÉKISTAN**

**KIRGHIZISTAN**

**CHINE**

**DOUCHANBÉ**

**HAUT-BADAKHCHAN (Région autonome)**

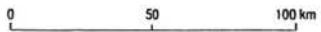
**AFGHANISTAN**

**AFGHANISTAN**

**PAKISTAN**

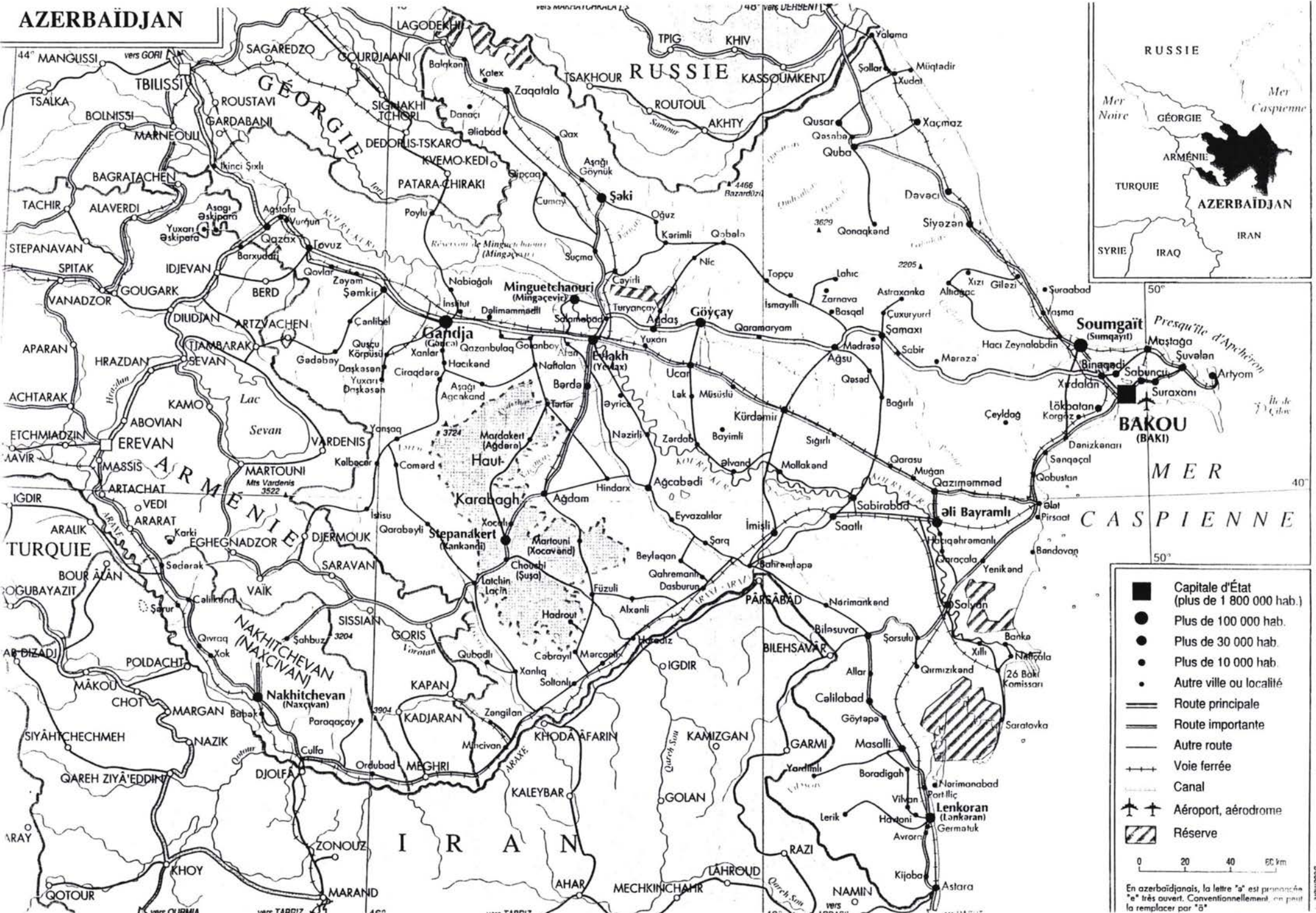


- Capitale d'État (plus de 600 000 hab.)
- Plus de 100 000 hab.
- Plus de 30 000 hab.
- Plus de 10 000 hab.
- Autre ville ou localité
- Limite de région
- Kouliab** Capitale de région
- Route principale
- Autre route
- - - Piste
- Voie ferrée
- ✈️ Aéroport, aérodrome
- Canal





# AZERBAÏDJAN



- Capitale d'État (plus de 1 800 000 hab.)
- Plus de 100 000 hab.
- Plus de 30 000 hab.
- Plus de 10 000 hab.
- Autre ville ou localité
- == Route principale
- == Route importante
- Autre route
- + + + Voie ferrée
- Canal
- ✈️ Aéroport, aérodrome
- ▨ Réserve



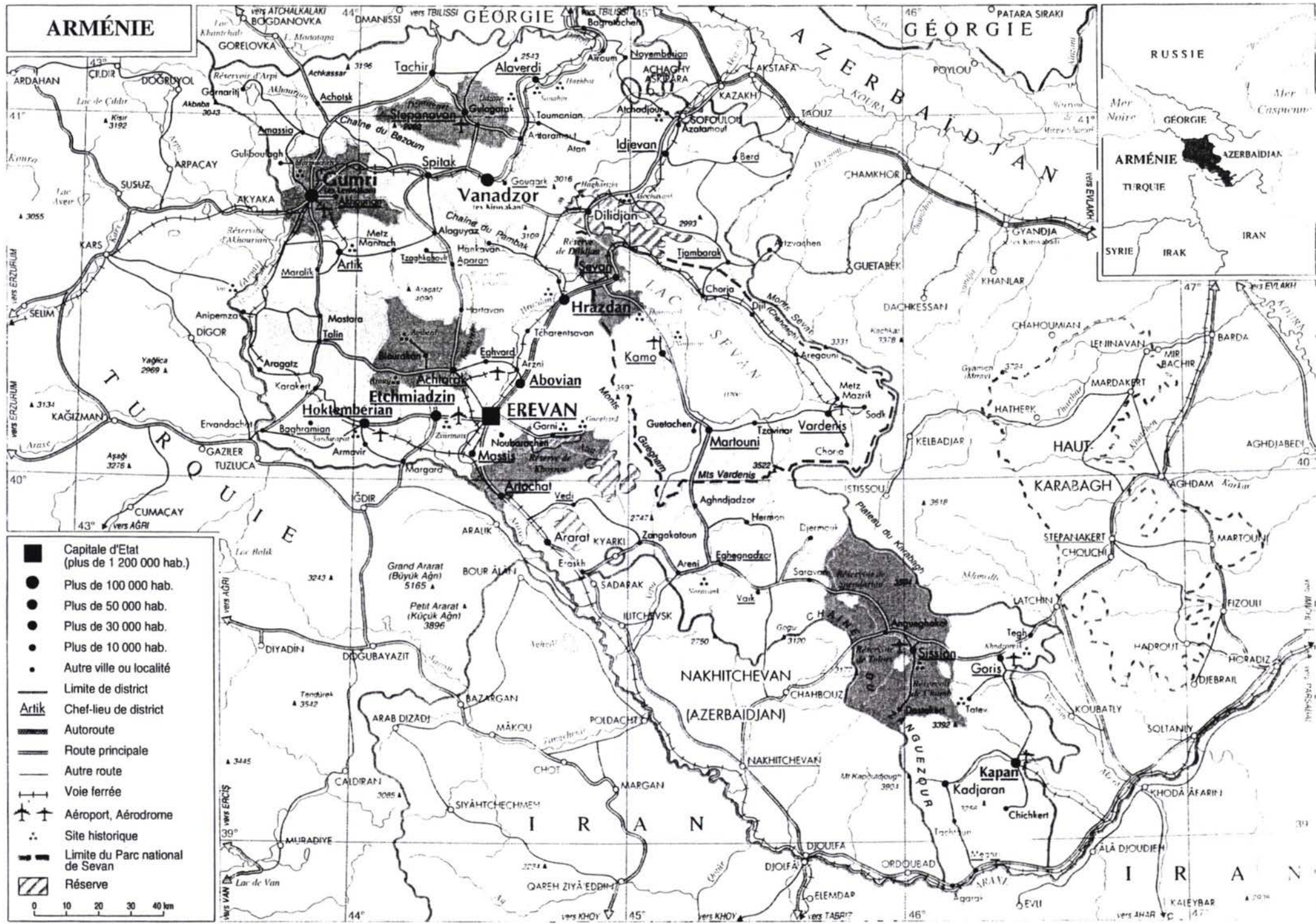
En azéri, la lettre "a" est prononcée "e" très ouvert. Conventionnellement, on peut la remplacer par "ö".



**GÉORGIE**

- Capitale d'État (plus de 1 000 000 hab.)
- Plus de 100 000 hab.
- Plus de 30 000 hab.
- Plus de 10 000 hab.
- Autre ville ou localité
- Limite de région
- Batoumi** Capitale de région
- == Route principale
- == Route importante
- Autre route
- Voie ferrée
- ✈️ Aéroport, aérodrome
- ▨ Parc national

0 50 km



**ARMÉNIE**

- Capitale d'Etat (plus de 1 200 000 hab.)
- Plus de 100 000 hab.
- Plus de 50 000 hab.
- Plus de 30 000 hab.
- Plus de 10 000 hab.
- Autre ville ou localité
- Limite de district
- Artik Chef-lieu de district
- Autoroute
- Route principale
- Autre route
- Voie ferrée
- ✈ Aéroport, Aérodrome
- ⋯ Site historique
- Limite du Parc national de Sevan
- ▨ Réserve

**ANNEXE 5:**  
**DETAILED DESCRIPTION OF RAIL CONTAINER TERMINALS**

## Railway Container Terminals in TRACECA-Region

Country	Railway Administration	Terminal	Location/Railway Junction	Location Related to the Traffic flow	Remarks
Armenia	Armenian Railway	Vanadzor (former Kirovakan)	Vanadzor	Tbilissi - Gyumri - Yerevan line	lifting capacity of cranes 20 t
Armenia	Armenian Railway	Abovyan	Yerevan	Idzhevan - Yerevan - Masis line	lifting capacity of cranes 20 t
Armenia	Armenian Railway	Gyumri (former Leninakan)	Gyumri	Tbilissi - Gyumri - Yerevan line	lifting capacity of cranes 20 t
Armenia	Armenian Railway	Karmir Blur	Yerevan	Idzhevan - Yerevan - Masis line	lifting capacity of cranes 20 t
Armenia	Armenian Railway	Sevan 2	Razdan/Sevan	Idzhevan - Yerevan - Masis line	lifting capacity of cranes 24 t
Azerbaijan	Azerbaijan Railway	Gyandsha	Gyandsha	main TRACECA-Corridor	lifting capacity of cranes 10 t, 2 cranes available (handling together 20' containers !!!)
Azerbaijan	Azerbaijan Railway	Khyrdalan	Baku	main TRACECA-Corridor	terminal out of operation for more than 1 year, in very bad condition, 2 older "Valmet" container lift trucks (16 t lifting capacity, 1 damaged, 1 out of operation), 3 cranes for 20 t lifting capacity (2 of them damaged), visited during field mission
Georgia	Georgian Railway	Samtredia 2	Samtredia	main TRACECA-Corridor	lifting capacity of cranes 10 t, 2 cranes available (handling together 20' containers !!!), at present out of operation
Georgia	Georgian Railway	Tbilissi-Tov.	Tbilissi	main TRACECA-Corridor	lifting capacity of cranes 20 t, 2 cranes available, visited during field mission
Kazakhstan	Alma-Atinskaya Railway	Alma-Ata 2	Almaty	main TRACECA-Corridor	4 cranes for 20 t, visited during field mission
Kazakhstan	Alma-Atinskaya Railway	Druzhba	Druzhba/border station with China	main TRACECA-Corridor	only unloading terminal on the interface between Russian broad gauge and European standard gauge used in China; 2 cranes with 30.5 t lifting capacity, covered terminal ! (location often exposed to stormy winds)



Kazakhstan	Alma-Atinskaya Railway	Dzhambul	Dzhambul	main TRACECA-Corridor	lifting capacity of cranes 20 t
Kazakhstan	Alma-Atinskaya Railway	Semipalatinsk	Semipalatinsk	Kazakh - Siberian route	lifting capacity of cranes 20 t
Kazakhstan	Alma-Atinskaya Railway	Taldy-Kurgan	Taldy-Kurgan	branch-terminal line, about 50 km distance to TRACECA-corridor in the Almaty - Aktogay section	lifting capacity of cranes 24 t
Kazakhstan	Alma-Atinskaya Railway	Tchimkent	Tchimkent	main TRACECA-Corridor	lifting capacity of cranes 20 t
Kazakhstan	Alma-Atinskaya Railway	Zashita	near Ust-Kamenogorsk	branch-terminal line to the Kazakh - Siberian route	lifting capacity of cranes 20 t
Kazakhstan	Southern Ural Railway (Russia)	Petropavlovsk	Petropavlovsk	Petropavlovsk corridor the southern way of the Russian Transsiberian route (the terminal as well as the whole corridor is leased to the Russian railways)	
Kazakhstan	Tselinnaya Railway	Akmola (former Tselinograd)	Akmola	Petropavlovsk - Akmola - Karaganda - Tchu line (part of a Northern Transasia corridor)	lifting capacity of cranes 20 t
Kazakhstan	Tselinnaya Railway	Arkalyk	Arkalyk	branch-terminal line to the Akmola - Southern Ural (Russia) line	lifting capacity of cranes 20 t
Kazakhstan	Tselinnaya Railway	Dzhezkazgan	Dzhezkazgan	branch-terminal line to the Petropavlovsk - Akmola - Karaganda - Tchu line	lifting capacity of cranes 20 t
Kazakhstan	Tselinnaya Railway	Ekibastus	Ekibastus	Akmola - Pavlodar line in the North-east part of Kazakhstan	lifting capacity of cranes 20 t

Kazakhstan	Tselinnaya Railway	Karaganda	Karaganda	Petropavlovsk - Akmola - Karaganda - Tchu line (part of a Northern Transasia corridor)	lifting capacity of cranes 24 t
Kazakhstan	Tselinnaya Railway	Koktchetav	Koktchetav	Petropavlovsk - Akmola - Karaganda - Tchu line (part of a Northern Transasia corridor connecting Siberia to Kazakhstan and China)	lifting capacity of cranes 20 t
Kazakhstan	Tselinnaya Railway	Kustanaj	Kustanaj	Koktchetav - Southern Ural line to Russia	lifting capacity of cranes 20 t
Kazakhstan	Tselinnaya Railway	Pavlodar Yuzhn.	Pavlodar	Koktchetav/Akmola - Siberian route to Russia	lifting capacity of cranes 20 t
Kazakhstan	Western-Kazakh Railway	Aktyubinsk	Aktyubinsk	Southern Transasia Route (China/Kazakhstan-Russia)	lifting capacity of cranes 20 t
Kazakhstan	Western-Kazakh Railway	Atyrau (Guryev 2)	Atyrau (former Guryev)	Connecting route between Russian and Western Kazakhstan	lifting capacity of cranes 20 t
Kazakhstan	Western-Kazakh Railway	Kzyl-Orda	Kzyl-Orda	Southern Transasia Route (China/Kazakhstan-Russia)	lifting capacity of cranes 20 t
Kazakhstan	Western-Kazakh Railway	Mangyshlak (Aktau)	Aktau	branch-terminal line to the port of Aktau (included in TRACECA-programme, but not on main corridor)	lifting capacity of cranes 20 t
Kazakhstan	Western-Kazakh Railway	Tyuratam	Tyuratam	Transasia Route (China/Kazakhstan-Russia)	lifting capacity of cranes 20 t
Kazakhstan	Western-Kazakh Railway	Zhilaevo	Uralsk	Uralsk-corridor in the outermost Northwest part of Kazakhstan (part of the Southern Transasia Route)	lifting capacity of cranes 20 t
Kyrgyzstan	Kyrgyzskaya Railway	Alamedin	Bishkek	main Kyrgyz railway corridor connecting Bishkek with the main TRACECA-corridor (at Lugovaya station in Kazakhstan)	lifting capacity of cranes 20 t, two cranes available, visited during field mission
Kyrgyzstan	Kyrgyzskaya Railway	Osh	Osh	branch terminal line to Uzbek Fergana valley line	lifting capacity of cranes 20 t, two cranes available
Tadjikistan	Tadjikistan Railway	Dushanbe 2	Dushanbe	branch terminal line Termez - Dushanbe	lifting capacity of cranes 24 t

Tadjikistan	Tadjikistan Railway	Gafurov (former Leninabad)	Gafurov	Fergana valley line	lifting capacity of cranes 20 t
Turkmenistan	State Railway of Turkmenistan	Gazatchak	Gazatchak (near Uzbek border)	Chardzhev - Bejneu line, connecting Central Asia with Western Kazakhstan and Russia	lifting capacity of cranes 20 t
Turkmenistan	State Railway of Turkmenistan	Mayskaya	Mary	main TRACECA-Corridor	lifting capacity of cranes 20 t
Turkmenistan	State Railway of Turkmenistan	Nebit-Dag	Nebit-Dag	main TRACECA-Corridor	lifting capacity of cranes 20 t
Turkmenistan	State Railway of Turkmenistan	Obesberdyev-Kuliyev	Ashgabat	main TRACECA-Corridor	lifting capacity of cranes 20 t, visited during field mission
Turkmenistan	State Railway of Turkmenistan	Serger	Chardzhev	main TRACECA-Corridor	lifting capacity of cranes 25 t, 2 cranes available, visited during field mission
Turkmenistan	State Railway of Turkmenistan	Tashaus	Tashaus	Chardzhev - Bejneu line, connecting Central Asia with Western Kazakhstan and Russia	lifting capacity of cranes 20 t
Turkmenistan	State Railway of Turkmenistan	Turkmenbashi (former Krasnovodsk)	Turkmenbashi	main TRACECA-Corridor	lifting capacity of cranes 20 t
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Andizhan Sev.	Andizhan	Fergana valley line (southern section)	lifting capacity of cranes 20 t
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Assake	Andizhan	Fergana valley line (southern section)	lifting capacity 40 t, private terminal (Daewoo)
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Bukhara 2	Bukhara	main TRACECA-Corridor	lifting capacity of the crane 20 t , only 1 crane available, visited during field mission
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Dzhizak	Dzhizak	main TRACECA-Corridor	lifting capacity of cranes 20 t
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Kakir	Kokand	Fergana valley line (southern section)	lifting capacity of cranes 20 t

Uzbekistan	State joint-stock railway company "Uzbek Railways"	Karshi	Karshi	Samarkand/Bukhara - Termez line to the outermost East of Turkmenistan and to southern Uzbekistan and Tadjhikistan	lifting capacity of cranes 20 t
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Margilan	Fergana	Fergana valley line (southern section)	lifting capacity of cranes 20 t
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Nukus	Nukus	branch terminal line to the Chardzhev - Bejneu line, connecting Central Asia with Western Kazakhstan and Russia	lifting capacity of cranes 20 t
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Raustan	Namangan	Fergana valley line (northern section)	lifting capacity of cranes 20 t
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Shumilovo (old)	Tashkent	main TRACECA-Corridor	lifting capacity of cranes 20 t, two cranes available, railway-owned terminal for 20'-containers
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Shumilovo (Shoshtrans)	Tashkent	main TRACECA-Corridor	2 "Boss" Reach stacker for 40'-containers, additionally 2 older cranes for handling of empty containers, most modern terminal in TRACECA region, owned by the Shoshtrans Company, a Russian-Uzbek-Swiss company (with participation of the Uzbek Railways") visited during field mission
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Tintchlik	Bukhara	branch terminal line to the main TRACECA-Corridor near Navoi (distance to the TRACECA-Corridor about 20 km)	lifting capacity of cranes 20 t
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Ulugbek	Samarkand	main TRACECA-Corridor	lifting capacity of cranes 20 t
Uzbekistan	State joint-stock railway company "Uzbek Railways"	Urgentch	Urgentch	Chardzhev - Bejneu line, connecting Central Asia with Western Kazakhstan and Russia	lifting capacity of cranes 20 t

**ANNEXE 6**  
**PROGRAMME OF THE E.U STUDY TOUR**  
**AND**  
**LIST OF PARTICIPANTS**

**TACIS- TRACECA PROGRAMME/ FORWARDING MULTIMODAL TRANSPORT  
EUROPEAN STUDY TOUR PROGRAMME (15 - 29 JUNE 1996)**

<i>Date</i>	<i>Time</i>	<i>Event</i>	<i>Organisation / Contact</i>	<i>Remarks</i>
<b>SATURDAY 15</b>	From 10 a.m. to 11 p.m	Arrival of Participants	Hotel « OPER »: Str, Prehbahn 15, Tel : 40 35 60 10/ Fax: 40 35 60 1 31 Hamburg	All the participants are invited to get the HOTEL OPER by Taxi. The Hotel is close to the Pammtour rail station (15 min from the airport/ about 30 DM by taxi).
	19H00 p.m.	Welcome meeting with José CACERES. Project Manager.		
<b>SUNDAY 16</b>		Free	Free day in Hambourg	Hotel « OPER » Hamburg.
<b>MONDAY 17</b>	9H30 a.m.	Pick up of the group at the St Pauli-Landungsbrucken (Bruke 5) for an extensive tour of the harbour in the « Senatsbarkasse » (boat owned by the government of Hamburg).	The Hamburger Hafen und Lagerhaus Mr. Gerhard ANGERER Tel: 49 40 30 88 35 21 Fax: 49 40 30 88 33 55 and	Interpret: Dorte PUTTFARKEN. Tel: (49 40) 47 83 01 Fax:(49 40) 48 16 35
	11H00 a.m.		The International Union of Rail-Road Companies Mrs Susanne KUSCHEL Tel: 32 2 425 47 93 Fax: 32 2 425 38 27	Transport: a bus is picking us up to the Hambourg Hafen und Lagerhaus.
	12H30 p.m.	<ul style="list-style-type: none"> <li>• Visit of the HHLA container Terminal at Burchardkai:</li> <li>• Meeting with the HHLA management</li> <li>• Guided tour</li> </ul>	Port of Hamburg: Terminal Hamburger Hafen und Lagerhaus (HHLA)	Transport: the « Senatsbarkasse », boat owned by the government of Hamburg
	14H00 p.m.	Lunch		Lunch: in the HHLA Restaurant at Burchardkai
		Return to the City of Hamburg		

<b>Date</b>	<b>Time</b>	<b>Event</b>	<b>Organisation / Contact</b>	<b>Remarks</b>
<b>TUESDAY 18</b>	11H00 a.m.	Visit of the Hamburg-Billwerder Combined Transport Terminal	Terminal Hamburg-Billwerder Mr Rurh Kombiverkehr, Gebietsleiter Norddeutschlan. Tel: 49 40 78 91 206 Fax: 49 40 78 13 47	Interpret: : Dorte PUTTFARKEN
	17H30 p.m.	Flight from Hamburg to Paris		Flights Tickets: José CACERES
	19H30 p.m.	Arrival in Paris	Hotel « IBIS »	Transport: Bus FLAB Hotel « IBIS », la Bastille.
<b>WEDNESDAY 19</b>	10H30 a.m.	Guided Visit of the LOUVRE	Musée du Louvre, Paris Béatrice DUBOST Tel: 40 20 51 66 Fax: 40 20 58 24	Interpret: Aurelie GAUSSELIN.  Transport: Paris Metro
	14H00 p.m.	Free		Lunch:
<b>THURSDAY 20</b>	9H30 a.m.	Meeting with the authorities from the French Ministry of Transport and Communications.  Subject: The Financing of Transports Infrastructure.	FRENCH MINISTRY OF TRANSPORT AND COMMUNICATIONS Mr MOUSNIER-LOMPRES.  Tel: 40 81 28 05 Fax 40 81 27 70	Interpret: Mme TOMASHEVSKI Transport: RER
	18H00 - 22H00 p.m.	Visit of the Valenton Combined	SNCF and CNC (Compagnie Nouvelle de Conteneurs) Mr. Georges VIALLA Tel: 40 16 64 29 Fax: 40 16 64 56	

<i>Date</i>	<i>Time</i>	<i>Event</i>	<i>Organisation / Contact</i>	<i>Remarks</i>
<b>FRIDAY 21</b>	8H30 a.m.	Visit of one of the most important Combined Transport Paris Terminal (Creteil)	NOVATRANS (Rail-Road Transport Company)	Interpret: Mme TOMASHEVSKI  Transport: FLAB Bus
	11H00 p.m.	<ul style="list-style-type: none"> <li>Meeting with the Management: the « Groupement National du transport Combiné », GNTC.</li> <li>Film related to « combined transport techniques)</li> </ul>	The GNTC is a French Combined Transport Group of Companies. Mr BRUNIER	
	11H45 a.m.	<ul style="list-style-type: none"> <li>Meeting with the management of T.A.V.</li> </ul>	The T.A.V; is a French multimodal operators, specialised in Rail-Road Transport by swap bodies.	
	12H30 p.m.	Lunch		
	15H00 p.m.	<ul style="list-style-type: none"> <li>Presentation of a Forwarding Company intermodal activities</li> </ul>	Calberson International. Mr. Marc Landrin. Road Expert for the Project. Tel: 40 64 73 72 Fax 43 27 23 96	
<b>SATURDAY 22</b>	Paris	Free		
<b>SUNDAY 23</b>	Paris	Free		
<b>MONDAY 24</b>	6H56 a.m.	Travel Paris-Metz	INTERCONTAINER. Mr. Pierre Schmelter. President of Intercontainer.	Interpret:: Mme TOMASHEVSKI
	10H00 a.m.	<ul style="list-style-type: none"> <li>Presentation of Intercontainer</li> <li>Examine of possible links with TRACECA countries</li> </ul>	Mr. Kieffer. Director of Intercontainer. Tel: 41 61 278 23 16 (Bale) Fax: 41 61 278 23 12 (Bale) Lunch:	Transport Hotel - Gare de l'EST: Metro  Transport Paris- Metz: TGV
	13H00 p.m.	Lunch		Transport Gare- Terminal: Mr KIEFFAR
	15H00 p.m.	Visit of the Metz International « Nodal Point »		Lunch
	9H00 p.m.	Travel from Metz to Paris		Transport: TGV





<i>Date</i>	<i>Time</i>	<i>Event</i>	<i>Organisation / Contact</i>	<i>Remarks</i>
<b>FRIDAY 28</b>	9H30 a.m.	<p>Meeting with the Management of BCEOM and special lunch</p> <p>Evaluation of the Study Tour:</p> <ul style="list-style-type: none"> <li>• Information and training needs</li> <li>• Possible Investment Projects</li> <li>• shipments along the TRACECA corridor.</li> </ul>	<p>BCEOM Jean KOCH, General Manager Paul Marie RINGWALD. Division Manager José CACERES. Project Manager. Paul PEZANT, Planner Economist.</p> <p>Paul Marie RINGWALD. Division Manager José CACERES. Project Manager. Paul PEZANT, Planner Economist.</p>	<p>Interpret: Mme TOMASHEVSKI</p> <p>Lunch: BCEOM</p>
<b>SATURDAY 29 SUNDAY 30 MONDAY 31</b>		Departure of the participants to their respective countries.		

## **STUDY VISIT IN E.U COUNTRIES**

### **Multimodal Transport Delegation from Central Asian and Caucasian countries**

#### ***ARMENIA :***

M. Gerbert AMBARTSOUMIAN, Chief of Foreign Relations Department within the Ministry of Transport and Communications of the Republic of Armenia.  
M. Levon AKOPIAN, First Deputy Manager of the Armenian Railways

#### ***KAZAKHSTAN***

Mr Serik ALIGUZHINOV, First Vice Minister of Transports and Communications  
Mr. Anatoliy ZAVYALOV, General Manager of « KAZAVTOTRANS »  
Mr. Vladimir UTEBEKOV, General Manager of ISKOMTRANS (Research Institute for Transport Sector Complex Problems).

#### ***AZERBAIDJAN***

M Ikram SADIKHOV, Head of the Transport Department within the Ministry of Economics.  
M Musa MAMEDOV, Deputy Manager of the Port of Baku.

#### ***UZBEKISTAN***

M. Murat Khalisov ADILOVICH. Deputy Manager of « Shosh-Trans », Multimodal Operator and Chief of the Tashkent Container Terminal.  
M. Gulyamov NURITDINOVICH. Deputy Manager of « UZAVTOTRANS Corporation».

#### ***TADJIKISTAN***

M. Timur MIRZOEV, General Director of the Institut for Studies and Projects of Tadjikistan  
M. Bakhrom CHODIEV, Chief Engineer of Tadjik Railways.

#### ***GEORGIE***

M. Teimuraz GORSHKOV, Chief of Transport Studies within the « National Transport Council of Georgia».  
M. Alexander ZIBZIDADZE, Chief Engineer of Georgian Railways.

#### ***KYRGHYSTAN***

M. Tahkhar KOULIEV. General Director of the Transport Company « DOSTUK »  
M. Nurdin SMATOV. Chief of the Automobile Division within the Ministry of Transports.

**ANNEXE 7:**  
**STUDY TOUR EVALUATION RESULTS**

# STUDY TOUR EVALUATION

## KAZAKHSTAN

Dear Mr. Jose Caceres,

Let us thank you once again for the warm reception during our staying in France and Germany. We hope that all we have seen and heard will help us to find adequate ways of organisation of multi-modal transport in Kazakhstan.

Please, find herein our answers to the questions on study tour evaluation ( mission ) which are as follows:

1. Yes it is, because, in our opinion, the multi-modal transportation is the present and the future of the transport complex as a whole and it will be able to provide the clients with the most profitable and reliable transport services in the field of an international trade.
2. During the period of the present study tour we have received a complete and relevant information on multi-modal transportation in the West Europe. We hope to receive as an additional information, the drafts of all the accompanying documents which are required to be used in the process of the multi-modal transportation (with customs procedures and without them).
3. Though the visits and contacts with all the companies were of some interest, we would like to point out our particular interest in further development to be forseen with NOVOTRANS. To our mind, an organisational structure and the methods of work of NOVOTRANS can be taken as a basis for the organisation of multi-modal transport companies in Kazakhstan.
4. In Germany: we were impressed by the port of Hamburg. In France: practically everything we have seen is impressive. We have received a lot of information which is being worked at and analysed and we hope to use it in a very effective and reasonable way while organising multi-modal transport system in Kazakhstan.
5. Yes, it is. It is necessary to create ( to change the structure of the already existed ) multimodal transport companies taking as a basis all the best which we have seen in Germany and France but with our changes in order to make it appropriate to our conditions and possibilities.
6. We would like to get acquainted with the working process particularly in the field of border customs stations with the different track lines, the procedure of customs formalities and customs clearance, passage of wagons and the other operations. We are interested also in automobile borders customs procedures especially on the borders.
7. The programme of the tour was organised at a high level, but sometimes there were some drawbacks in its execution ( ex. transport service, interpretation).
8. The interpreter had to be more professional with the knowledge of specific transport terminology. Sometimes it was rather difficult to understand the meaning.
9. See point N°6.
10. Though it was a great interest in the role of the Ministry of Transport, we did not receive enough information about the concrete activity of the Ministry. It was not clear either what was the role of the government in the matters of the organisation of multi-modal transport and which structures of the Ministry took part in a state regulation of the multi-modal transport system.

Best regards,

The First Deputy Minister: S. Aliguzhinov

Members of the delegation: A. Zavyalov; V. Ytebekov

## **TADJIKISTAN**

1. Yes, I do. There is a real demand for such kind of organisation in our Republic where 92% of cargo traffic is carried out by automobile transport.
2. We were interested in the subjects related to the structure of the organisations visited and the working procedures, in particular in the field of multipurpose terminals (terminals in Hamburg and the terminal of TAB co.). We like you to consider the necessity of giving more details on this matter. On the other hand, the development of the engineering is of particular interest for us. This knowledge can be used by the specialists of our Republic.
3. We have concluded a contract (subcontract) with a transport group (KOMBIVERHKER) for the development of a multimodal transport organisation in our country. We have also invited the representatives from INTERCONTAINER, met in Metz, to visit our Republic.
4. In Germany: The most appropriate experience is that of the company-of multi-modal transport in Hamburg (Kombiverhker). In France: the experience of the small company such as TAB and the visit to INTERCONTAINER turned out to be interesting.
5. The implementation of a multi-modal chain between the countries of TRACECA and EU is an essential need. It is necessary to organise: the base for the development of a network terminals in Tadjikistan; to prepare the legislative base, to simplify at a maximum customs procedures and to join all the technical standards and terms of transportation.
6. We really think that the visit of multi-modal sites in former social countries (Bulgaria, Chekoslovakia etc.) as their are close to our present structure, must be visited.
7. The organisation of terminals and the communication system (possibility to install the equipment of a new generation) needed for the transportation of cargo to the consignee without any delay.
8. The structure and content of working procedures in the terminals have been not presented in a wide and comprehensive way.
9. The content is to be modified: It is necessary to diversify visits to the sites and to present the work of the terminals in a wider way ( ex. the existing problems of the terminals, different ways of their solution, etc. ). Countries: Bulgaria and Chekoslovakia.
10. After detailed and careful consideration of all the received material, the delegation of the Republic of Tadjikistan will send the additional suggestions to the address of the organisers of the multi-modal transport study tour.

29.06 .96            T.D. Mirzoev

## **UZBEKISTAN**

1. Yes, I do.
2. The exchange of the experience between the TRACECA and the European Union and the visits to German and French terminals gave us the necessary information. However, we did not receive enough practical information. For instance, the visits to terminal were often limited to demonstrations of the loading-unloading mechanisms.
3. In Germany I made contacts with the representatives from HHLA. In France: with representatives from INTERCONTAINER
4. In this respect and in general I would like to mention lack of customs problems between the countries of the European Union . Will the customs barriers be eliminated between the countries of TRACECA and the European Union?. In Germany, while visiting the container terminals, I liked the organisation of the working system itself and the availability of wagons for transportation of semi-trailers. In the port of HHL I was interested by the loading - unloading mobil carriers. Regarding France, I think that the organisation of the working process in CNC and NOVOTRANS and the SNCF cargo schedule are particularly interesting.

5. Yes, I do. The implementation of multi-modal chain between Traceca and EU is possible. The only obstacle that may be overcome is the customs barrier. In order to overcome this obstacle it is necessary to create the Customs Union of TRACECA countries.
6. I would want to have a detailed information on the organisation of multi-modal carriage in Switzerland and Germany.
7. The organisation of works in Metz carried out by INTERCONTAINER.
8. It would have been better to include also excursions to the historical places of interest in Germany and France.
9. A practical demonstration of the working process of the terminals, beginning with the issuance and completion of shipping documents (documents of carriage) up to the moment of cargo delivery to the consignee.

No answer

Signed Mr. Khalisov, Deputy Manager from SHOSH-TRANS

**UZBEKISTAN** (M. Kh. Goulamov).

1. Yes, because it helps us to get acquainted with the existing difficulties in a transport system of our region.
2. Yes. But I have to say that it is necessary to cover the role of the road transport in a multi-modal transport operations in a wider way and, at the same time, to show and define all the existing types of transport documents with the corresponding examples.
3. During this particular tour study it was not my aim.
4. In GERMANY: the working procedures in the field of multimodal transport is being fulfilled at a high professional level. In FRANCE: The achievements of scientific and technical progress are widely used (computerisation).
5. I think it is possible. But some difficulties in crossing the borders (periods and delays while making borders customs formalities) must be overcome.
6. I would be interesting to visit the multi-modal sites in Italy and England.
7. What I liked the best was the possibility to communicate with the participants from other Traceca countries. Furthermore, the study visit gave us the possibility to be informed about the latest achievements of the developed companies in the sphere of multi-modal sites.
8. Existing language barrier.
9. In order to achieve the final aim in EU countries, it is necessary to study in details the gains, the drawbacks and the existing difficulties.
10. No answer.

Mr. Kh. Goulamov, UZAVTOTRANS Corporation

**AZERBAIDJAN**

1. On the whole, yes. The visits to the enterprises (companies), discussions with their staff, getting the answers to the questions which we were interested in, all these gave us the positive results.
2. What I have identified is the following: the existing interdepartmental barriers within transport institutions; the concentration of common matters within one single body, the quality of connections between the different companies, agents (on a contract basis) to perform door-to-door transportation operations and finally, the equipment of the terminals.
3. I hope to concrete the established contacts with the port of Hamburg and with INTERCONTAINER.
4. On the whole, the opinion is positive, but at the same time, we have noticed that the terminals are not fully loaded.

5. In order to make it possible it is inevitable to solve a number of political and economical problems.
6. It would be useful to visit not only the already well developed sites, but also the sites which are being built and face some particular difficulties on the initial stage of their organisation. We could take their experience into our consideration while organising multi-modal transport system in our Republic.
7. The organisation of multi-modal traffic without interference from any other parties. Conditions and terms of transportation between the countries.
8. The visits were very much pleasant. Everything we saw was positive.
9. In order to amplify the knowledge about multi-modal sites and to study the matters of an economic character, it would be interesting to visit countries such as Spain and Greece, closer to us.
10. Three pages of suggestions have been given to M. Caceres..

Mr I. SADIKHOV, Head of the Transport Department within the Ministry of Economy of Azerbaidjan.



**GEORGIA ( Mr.A.Zibzibadze)**

1. Yes, I do. At present the transportation of cargo by railway is one of few export possibilities of Georgia, and multi-modal transport meet the requirements of Georgia.
2. There is an interest to get to know in details the experience of French Railways. It would have been better to visit SNCF in order to be acquainted with the work of this field.
3. At present stage, the established contacts are not of the business character. In order to establish permanent business contacts in future, it is necessary to identify the needs and demands of Georgia on the basis of examination of the concrete offers of some companies. During the visit to CALBERSON, the discussion dealt with the possibility of the establishment real contacts.
4. Everything was done at the highest level.
5. Yes, it is possible. However, border crossing problems and legal issues should be solved.
6. The sites of the CEI, because they are equipped in the same way as the terminals in Georgia and function under the same conditions of developing market economy.
7. Most of all I liked the visit to CALBERSON, because during that visit the discussion dealt with the possibility of the establishment of real contacts.
8. The negative sides of multimodal systems, if there are any, were not shown.
9. It is necessary to widen the study of the experience of the concrete companies and organise the training of the Georgian specialists.
10. No answer

**GEORGIA ( Mr. T.Gorshkov)**

1. Yes but it is necessary to define the aims and range them in accordance with the objectives in question .
2. The technical process and working procedures have been detected as an essential question. The Georgian delegation request training assistance through on-the-job training courses in the field of legal aspects; transport documentation procedures and working procedures in order to create a company in Georgia.
3. The programme did not give the possibilities to establish the concrete, business contacts, though they were desirable.
4. In germany: Satisfactory. In France: Satisfactory
5. Feasible and indispensable.
6. Can not answer this question because first of all it is necessary to determine the needs of our own country as well as the ways of solution of multi-modal transport problems
7. The organisation and the level of the meetings.
8. Important matters have been treated superficially.
9. To study the companies' activities from the lowest up to the highest level.
10. No answer

Mr. Gorshkov, National Transport Council

## **ARMENIA**

1. Yes, I do. For the development of our economy, it is necessary to have an advanced system of freight traffic.
2. During our tour study we have received relevant information.
3. We have managed to develop direct contacts with the management of leading European companies such as INTERCONTAINER and NOVOTRANS.
4. In Germany: Positive opinion. In France: Positive opinion
5. The implementation of a multi-modal chain is not only possible, it is absolutely essential. Certain political problems can arise and some obstacles must be overcome by joining forces.
6. (6) There are a lot of multi-modal systems in Italy which worth to be studied.
7. The organisation of a working process in NOVOTRANS.
8. I am not satisfied with the social and cultural programme of the group. It would have been better to organise the cultural programme during the weekends.
9. It is better to reduce the number of participants in order to organise the programme in a more compact way.
10. It is necessary to co-ordinate the time schedule of the programme, the arrival and the departure time with the participants beforehand. Furthermore, it is not correct to change the programme of the tour study during its preparation period.

**ANNEXE 8:**  
**PROGRAMME OF THE WORKSHOP**  
**AND**  
**LIST OF PARTICIPANTS**

# EUROPEAN UNION

## TACIS-TRACECA Programme



*WORKSHOP ON*

### *Multimodal Transports : The logical choice for Central Asia and Caucasia*

*Tashkent 15-17 January 1996*

Workshop organized by the Consortium



# MULTIMODAL TRANSPORT: The logical Choice for Central Asia and Caucasias

## 1. The Context of the Workshop

The expansion of trade between Europe and Central Asia and Caucasias is seriously being affected by the low cost-effectiveness of existing transport systems. Given the land-locked position of several TRACECA countries and their remoteness from European markets, current mono-modal approaches fail to meet important customer's needs: low cost, high quality (quickness, short delays, etc.).

The dominant alternative, "pure" rail transport, is not qualified to provide good quality "home to home" transport services (short delivery time, reliability, safety, etc.). "Pure" road transports over distances up to 10.000 kilometres are not economically justified. As for the use of the existing TRACECA corridor, the shortest link to Europe, this alternative is seriously handicapped by the partial approach used by the operators involved (rail, road and maritime). The lack of collaboration between the operators does not encourage customers and forwarders to use this corridor. Eventually, there is a clear transport problem that calls for an upgraded transport system.

In this context, the use of containers within a "single multimodal chain" through the TRACECA corridor must be seen as the logical transport choice for Central Asia and Caucasias. Far from being a sum of different transport modes, the combined transport proposed strategy represents a comprehensive solution which must integrate various competitive factors:

- efficient collect and delivery of goods by road transport from rail terminals,
- reliable rail traction from terminal to terminal,
- flexible organisation and high performance of the existing rail terminal networks,
- transport organised throughout the journey, making it possible to offer attractive transport freight rates and simplified transport and transit procedures,

The strategy is based on the notion of "integrated offer" organised under the responsibility of one unique "multimodal organiser" acting as a freight transport "wholesaler" for the benefit of all current participants (railways, road hauliers, forwarding agents, customers, etc.). The system combines the various partners' skills and tools (railways, road hauliers and freight forwarders, large international trading and industrial firms, etc.). The "organiser" company should be set up to create a favourable background for negotiation and a relationship of trust between the various organisations involved in multimodal transport.

From the customers point of view, the proposed multimodal organisation offers "door-to-door" solutions in the most economical form, and represents the appropriate answer to the problem of returning empty containers. From the operators point of view, multimodal transport offers solutions to road carriers (alternatives to 'pure' road transport in the long-distance market), and provides freight traffic to railways' companies. For the country, the use of containers leads to the modernisation of the transport system and will benefit all the other exporting sectors of the economy. It should facilitate the economic integration to the trade world market: the container is a systematic vector for import/exports goods (70% of international trade).

## 2. Objectives of the Workshop

- **Present** the main findings of the "Forwarding - Multimodal Transport" TRACECA project and explain the general strategy proposed by the team of experts.
- **Explain**, through "case studies", practical solutions to the transport problems posed by export/imports operations with containers,
- **Define**, at different levels of responsibility, relevant "combined transport projects" that could be financed by International organisations and follow-up actions

### 3. Participants

The objective of the workshop is to bring together relevant organisations from different countries, from different transport modes at one same table to discuss the Multimodal Transport Strategy proposed by the European team. Participants to the workshop should include:

- Decision makers from Ministries of Transport (or equivalent where there is not such a Ministry),
- Executive from providers of International transport services (railways, road hauliers, freight forwarders, shipping lines) from the eight TRACECA countries,
- Others' professionals concerned with container transport issues such as consultants or combined transport equipment providers (containers, road chassis, handling equipment, etc.).

### 4. Workshop Program

<b>January 15, 1997</b>
-------------------------

**First Session: Suitable Organisation for Multimodal Transport.**

**11:00 Results and strategy from the present Multimodal project in connection with East-West international routes.**

*If the « multimodal chain » is the most suitable and logical transport choice for Central Asian and Caucasian countries, the development of this particular traffic is facing several constraints (organisation, technologies, etc. ;) which should be overcome by implementing appropriated short term and medium term « step by step » multimodal strategies. José Caceres, Team Leader*

**12.00. Intermodal planning taking account of traffic flows**

*The current container traffic on the TRACECA route is still quite low. In spite a high potential for containerisation, recent trends are rather negative. This situation is calling for major reorganisation of logistics schemes, in favour of containerisation, to facilitate the integration of the TRACECA transport systems to the new international trade context and perspectives. Paul Pezant, Planning Expert.*

**14.00. Setting up a TRACECA Multimodal Organisation.**

*If combined transport appear to be an most interesting solution for Central Asia, the combination of various transport modes in a single transport chain requires an appropriated organisational frame of work: combined transport structures are cruelly lacking. They must be created not without a favourable background for negotiation and relationship of trust between the various partners.*

- ⇒ *A suitable organisation for TRACECA countries: the legal structures of the different modes presents fundamental differences and the mono-modal partners have different interest. This is an obstacle to group on a single structure the responsibility of the overall international transport by container, including the customs procedures. A combination of different partners transport skills and tools, through an appropriated organisation, is absolutely required.*
- ⇒ *Basic principle and role of the different partners involved (the State, freight generators, road operators, railways, freight forwarders, etc.).*
- ⇒ *Organisation of the proposed structure: who provides the network, the rolling stock; staff, wagons, containers, road chassis, etc.) and structure: status, capital structure, organisation chart, contracts between partners.*
- ⇒ *Working procedures and activities of the proposed Multimodal organisation:*

**Claude Durand, Management Expert.**

#### **14.00. Container transport movements from Central Asia: The case of Uzbekistan**

Firms established in Uzbekistan are experiencing particular transport problems due to the insufficient adaptation of the Uzbek international transport system to the use of containers. The return of unloaded containers is posing a serious problem to the transport department of these firms and calls for specific answers. The problem of returning empty containers could be solved by implementing an specific strategy:

- ⇒ launching an «Uzbek Container Transport Group of Economic Interest »
- ⇒ conducting market surveys next to potential customers: freight forwarders and shippers in Europe as well as in Uzbekistan
- ⇒ setting up an « Operational Plan »: how a multimodal traffic must be set up

**Marc Landrin, Operation Expert**

#### **16.00. Uzbek Cotton Movement Project: Preliminary results from the project implementation**

Two parallel market research programmes have been designed and implemented to provide a comprehensive picture of the cotton market and the potential to use the corridor. A Transport Commission has been formed in Uzbekistan to facilitate the development of cotton shipment along the TRACECA route. Results from the study.

**Les Cheesman, Field Manager (Scott Wilson Kirkpatrick / BCEOM)**

**January 16, 1997**

**Second Session: Setting up specialised container trains integrated within a single Multimodal chain along the TRACECA corridor**

##### **9.15 The « Trans-Caucasian Container Pilot Train »**

The « TRACECA container Pilot train Poti - Tbilissi - Baku (Ferry Port):» have been recently implemented. Description of the project and presentation of results.

**Wolfgang Kranz. Team leader of the TRACECA project.**

##### **11.15 Setting up « specialised container along the overall TRACECA corridor**

In spite of the poor condition of the terminals, there is no major technical impediment to deal with the traffic of 20' containers. However, In the long run a big proportion of the old cranes should be replaced. These improvements should be concentrated on a very reduced number of terminal locations: Baku, Tashkent<sup>1</sup>, Almaty and may be Tbilissi, Ashgabat, Bukhara or Samarkand as well as the Fergana valley or Akmola/both aside of the main corridor:

- ⇒ Poti Sea Terminal - Tbilissi - Baku (Khyrdalan and/or Baku Sea Port),
- ⇒ Turkmenbashi (Port) - Ashgabat (Obesberdyev-Kulijevo),
- ⇒ Bukhara - Tashkent
- ⇒ Tashkent (Shumilovo) - Almaty - Druzhba
- ⇒ Standards for physical handling and transport., specially in the area of ISO container handling and new transport techniques
- ⇒ Required short term investments to upgrade the existing terminal network and expected benefits according to different traffic scenarios (low, medium, high).

<sup>1</sup> already done taking into consideration the well developed state of the Shoshtrans-Terminal in Tashkent-Shumilovo

*Definition of additional points for side streams:*

- ⇒ Yerevan (separation in Tbilisi)  
one terminal in the Fergana valley (separation in Bukhara, Samarkand or Shumilovo)
- ⇒ Bishkek (separation in Lugovaya)
- ⇒ additional terminal in the Tchu/Dzhambul area
- ⇒ Sarakhs (separation in Ashgabat or Tedzhen/Mary)
- ⇒ Central Kazakhstan (separation in Lugovaya or Berlik)
- ⇒ Required short term investments to upgrade the existing terminal network and expected benefits according to different traffic scenarios (low, medium, high)
- ⇒ Costs and benefits of the proposed strategy ( advantages of the system as compared with the current practices)

**Frank Prescha: Multimodal Rail and Operations Expert**

12.15 Discussion

12.30 Lunch

**Third Session: The maritime facet of the TRACECA corridor**

**14.15 Maritime Containers in Combined traffic along the TRACECA corridor**

*An appropriate combined transport strategy must emphasise the interaction between the various links in the multi-modal chain. In this respect the interaction with the maritime transport is of particular importance:*

- ⇒ Reorganisation of the Port of Poti (organisation, technical actions, strategies to follow according to different traffic scenarios).
- ⇒ Integration of the Port of Turkmenbaschi and Aktau: reorganisation of the general cargo terminal, the ferry terminal
- ⇒ Integration of the Port of Baku (organisation, technical actions, strategies to follow according to different traffic scenarios).
- ⇒ Economic evaluation of the feasibility of the contemplated improvements.

**Bernard Francou: Port and Shipping Multimodal Transport Expert.**

15.30 Discussion

**Fourth Session: Container Tariff System for Container Traffics**

**16.30 The Railway Tariff Policy Related to Container Traffic**

*Reorganisation of the railway tariff policy applied to railway multi-modal transportation:*

- ⇒ differentiation of container railway tariffs from MTT tariffs,
- ⇒ creation of a specific tariff for International Transportation Units (UTI),
- ⇒ design door to door or terminal to terminal tariffs and possible home to home without any additional duty,
- ⇒ expression of all tariffs in a single currency,
- ⇒ introduction of reduced tariffs encouraging productivity gains (quantity, round trip tickets to facility re-loading, possible empty runs, etc.),
- ⇒ plan payment terms and conditions for customers, compatible with national currency exchange legislation,
- ⇒ setting up new tariffs by taking into account transportation network costs and market tariffs (competitors using other modes or other routes competing with TRACECA).

**Claude Durand, Management Expert.**

17.30 Discussion



**January 17, 1997**

**Fifth Session: Round Table: Discussions on Conclusions and follow up actions**

*The development of multimodal transport in TRACECA countries is hampered by several factors: insufficient knowledge of modern multimodal techniques, lack of financial resources and weak links with operators in industrial countries. Ways to remove these constraints should be identified.*

*Outside inputs can take different forms:*

- *technical assistance/training*
- *financing*
- *joint ventures with European operators*

*To be subject for further financing the proposal must comply with specific conditions: clear definition of objectives, identification of partners involved, estimation of required resources, estimation of expected benefits,*

*- Introduction on conditions and mechanisms for project financing. **Mike Sims. TRACECA Management and Co-ordination.***

*- Summary of the Workshop presentations: **José Caceres,, Team Leader,***

*- Evaluation of the seminar presentations and recent experiences : **TRACECA counterparts.***

*Representatives from each country are invited to presents their conclusions on the various projects and case studies presented during and propose follow up actions.*

**13.00 General Conclusions. José Caceres.**

**18. 00 Special dinner**

## **CASE STUDIES AND TRAINING**

### **List of participants to the Tashkent Workshop January 15-17, 1997**

#### ***ARMENIA :***

Henrich OZNECIAN, Head of the Freight Transport and Commercial Department within the Armenian Railways,

Manuk KAZARIAN. Chief Engineer within the Ministry of Transports. ARMENIA.

#### ***KAZAKHSTAN***

Mr Kanat MOUKHAMEDJANOV, Deputy Minister of Transports.

Mr. Anatoliy ZAVYALOV, General Manager of « KAZAVTOTRANS »

Mr Anuarbek SABIETOV, General Manager of « Silk Road Express Limited »,

Mrs Raikhara SABETOVA, Deputy Head of « Kazinterfreight » Transport Forwarders.

Mr. Vladimir UTEBEKOV, General Manager of ISKOMTRANS (Research Institute for Transport Sector Complex Problems),

Mr Jakhoncha AKHMIETOV, Director of « Tursib » International Transports.

Mr Suguirali SARBAIEV, Head of the « Transport and traffic ». Academy of Transport of Kazakhsatan.

#### ***AZERBAIDJAN***

M Sultan KIAZIMOV, Chief Engineer within the of the Port of Baku.

#### ***UZBEKISTAN***

Mr Nemat RADJABOV, Head of the Freight Transport and Commercial Department within the Uzbekistan Railways,

Mr Navruz ERKINOV, Deputy Head of the Railways International Relations Department,

Mr Vladimir ONKIS, Head of the Railways and Sea Transport Department within the Ministry of Foreign Economic Relations of Uzbekistan.

Mr. Murat Khalisov ADILOVICH. Deputy Manager of « Shosh-Trans », Multimodal Operator and Chief of the Tashkent Container Terminal.

Mr. Gulyamov NURITDINOVICH. Deputy Manager of « UZAVTOTRANS Corporation».

Mr Igor MINOCIAN, Deputy Chief of the Tashkent Container Terminal (« Shosh-Trans »),

Mr Ravchan UZMANOV, Deputy head of the of the Transport Department

« UZBEKGELDOR EXPEDITZIA » (Ministry of Foreign Economic Relations)

Mr R; BAIKONOVA, expert from the Uzbek Transport Bureau « KEZ ».

## **TADJIKISTAN**

Mr Khudaieberdieb ABDUPAKHAMONOVICTH, Head of International Transports within the Tadjikistan Railways,

Mr A. AMARBEKOV, Head of International Transports within the Ministry of Road Transport,

Bakhrom CHODIEV, Chief Engineer of Tadjik Railways.

## **GEORGIE**

Mr Alexandre TCHEIDZE, « Director of the National Institute for Transport Problems » and Head of the « Georgian International Carriers Union ».

Tengiz TODUA, Chief Engineer of Operation Department within the Georgian Railways,

Mr Vladimir CHELIA, Head of Intermodal Coordination Department within the Georgian Ministry of Transports.

## **KYRGHYSTAN**

Mr Zubov IVANOVICTH, Head of the Freight Transport and Commercial Department within the Kirghyzs Railways,

Mr Almazbiev IRSALIEV, Head of International Transports within « KHIGHYZINTRANS »

## **TURMENISTAN**

Mr MAMEDOV, First Deputy of the International Transport Services within the Turmenistan Railways,

Mr Badamov KHYDAIBERDIEV, Chief Engineer of Turmenian Shipping Company.

## **TRACECA**

Mr Mike SIMS, TRACECA Regional Coordinator

Mr Akmal KHAMALOV, TRACECA Coordinator for Uzbekistan

Mrs R DABABAIEVA, TACIS,

Mr Jose CACERES, Team Leader of Multimodal Transport TRACECA Project,

Mr Marc LANDRIN, Multimodal Road Transport expert

Mr Claude DURAND, Multimodal Management expert,

Mr Paul PEZANT, Planning and Traffic expert,

Mr Frank PRESCHA, Multimodal Rail and Technologies expert,

Mr Bernard FRANCOU, Multimodal port and Maritime operations expert,

Mr Lee CHEESMAN, Expert within the « Uzbek Cotton Movement » TRACECA Project,

Mr Wolfgang KRANZ, Expert within the TRACECA project « TRANS-CACAUSIAN CONTAINER TRAIN »

**ANNEXE 9:**  
**UZBEK COTTON MOVEMENT INCEPTION STUDY**

# 1. Introduction and Background

Partner States from Central Asia and the Caucasus region have asked the TRACECA programme management to provide specific technical assistance related, among other issues, to the shipment of cotton through the TRACECA corridor.

During a meeting organised in Brussels on 25 March, the management of the TRACECA project asked project managers to incorporate active assistance to the shipment along the TRACECA route of cotton from Uzbekistan. In the case of the Multi-modal Transport project, this is to be examined firstly within the scope of the case studies foreseen within the third phase of the present project.

A decision was taken to set up a Shipment Task Force in charge of dealing with this issue. CVs and firm proposals were requested and asked to be sent to M. Stroobants.

To approach this issue, the team of experts of the Multimodal Transport project conducted a specific survey in Uzbekistan during May and June to analyse the existing problems and prepare a proposal to assist the Uzbeks entities involved in the cotton shipments along the TRACECA route.

This Study Inception Report presents the results of such investigations and proposes concrete solutions to overcome the problems detected, particularly in the field of international transport by container.

## **The Uzbekistan cotton market**

In Uzbekistan, approximately 40 % of the GDP is generated in agriculture, about 50 % in Industry and the rest in mining, construction and services. In agriculture, cotton is the most important crop, accounting for 40 % of gross value of agricultural production. Nearly 40 % of arable land is consecrated to cotton production. With a production of about 3 million tons per year, the country is the third world producer (approximately 20% of the world production). The cotton represents the most important hard currency source (80 % in 1993).

Not having transformation industries, the cotton activity is largely limited to the shelling process. The transformation in cotton linen and cloth material involves only 15 % of cotton.

Traditionally, the cotton has been exported to Russia. In the last few years, the exports, (representing about 50 % of the production) headed primarily for countries outside of the CEI countries. The European Union is by far the most important market for the Uzbek cotton. The export to Europe represents 80 % of total exports. Most important customers are in Germany, Italy and France.

The development of the cotton transport and market business will be affected by two main factors: Firstly, by the stabilisation of arable land dedicated to cotton and the development of other source of production. In particular the cultivation of wheat will be promoted to reach a certain level of self-sufficiency. Secondly, by the desire of the Uzbek authorities to exert control on the commercialisation process. To this end, various measures are contemplated. Firstly, it is contemplated to create a large storage centre for cotton in Buchara with a capacity of 50.000 tons. Secondly, the Uzbek authorities will authenticate the quality of the product by guaranteeing international customers (through registered Uzbeks certification authority) the origin and the quality of the cotton. It is clear that the setting up of such a quality policy should facilitate the international traffic by container.

### **Operating problems related to the transport of cotton.**

During Soviet times, the cotton was generally forwarded to the sorting centre of Ribnoye, near Moscow, and then exported to the Black Sea ports and the Baltic's ports.

At present, most of the cotton is forwarded:

- by train to the Baltic ports warehouses and then commercialised (FOB) from the ports.
- by block-train Tashkent-Europe, via the South of Russia, and with a transshipment in BREST (FOB Russian Border) to Rotterdam. From Rotterdam, the cotton is forwarded to the rest of Europe.

Recent developments make use of the Trans-Caspian corridor, the shortest link to Europe, an interesting alternative for Central Asia. As part of the Regional Agreement on Transport Issues, the Government of Uzbekistan have decided to ship part of the cotton exports to Europe through the TRACECA corridor: 10 000 tons in 1996, 30.000 tons in 1997 and 100.000 by the year 2000.

A recent shipment of cotton from Uzbekistan to Poti through the TRACECA corridor has been carried out by the firm "OUZKHLOPROMSBYT" as part of a 4000 ton cotton shipment from Uzbekistan to Brazil. The operation has been a success and shows that there are no major technological obstacles (infrastructure and vehicle fleet) for the shipment of cotton from Uzbekistan to Poti. Whilst the main railway infrastructure and rolling stock are not always in good state and not always in line with Europeans standards, they are however able to allow transport operations through the corridor.

However, the question of retrieving the wagons to Uzbekistan and the transfer of responsibility for the shipment seems to be unreliable. A monitoring system is required to complement the Regional Transport Agreement.

Operations are also handicapped by the difficulties on obtaining information on tariffs as well as the implementation of international standard procedures: commercial procedures and transport and transit documentation.

### **Technological problems related to the Transport of cotton**

The transport of cotton currently performed largely by open-wagons. It is reported to be difficult to find wagon of good quality. In order to prevent cotton shipments from fire, the wagons must be hermetically closed which requires the doors or any other defective place of the wagon to be covered with kraft paper secured with a special glue. This operation is reported to be expensive, partly because the raw material used for this is imported from Russia.

The handling technologies used at most of the cotton factories have been designed to load the cotton in rail open-wagons. This explains the little use made of containers for the cotton transport operations. But the management of major factories visited during the survey (YANGUI-YOUL, more than 50 % of the cotton exported to Europe; and TCHINAZ, able to use 20" or 40" container), said they are in favour of the use of containers and are prepared to implement the necessary measures to enable it.

Important cotton storage facilities exist in the various districts, some of them with a capacity of 50 000 tons (AV ALTINE: storage of cotton from the factories located in the district of SYR-DARYA). Nevertheless, the storage installations are lacking in some important areas of concentration. A project to create a large storage centre in Buchara with a capacity of 50.000 tons, is already contemplated to deal with this important issue. Such storage installations should allow the modern train formation techniques such as a "Block train" from Buchara to Poti to be put into practice.

In conclusion, it seems that for the present traffic level there is no urgent need for investment either in road and rail infrastructure or in vehicle fleet. However, the handling techniques require some improvements to adapt the cotton traffic to the widespread use of containers. Finally, the adoption of standard commercial and transport procedures as well as the monitoring of wagons through the TRACECA corridor must be improved.

### **Container international transport context.**

Foreign firms established in Uzbekistan are experiencing particular transport problems due to the poor adaptation of the Uzbek transport system to the use of containers and swap bodies that are dominant in the world trade market: 70 % of international trade flows are shipped by containers.

The example of the UZ-DAEWOO AUTO, a car assembling factory, illustrates the situation. The imported car parts from Korea are transported by container. The problem posed to the transport department is the return of unloaded containers. Over a period of 12 months, there is a need for the re-loading and the sending back to Korea of about 8 100 TEU (twenty-foot equivalent units). Up to now, most of the containers are sent back empty.

The Uzbek Government is prepared to allow DAEWOO transport department to carry 100 000 tons of cotton fibre in chaff but Korea imports little volumes of Uzbek cotton. DAEWOO is still looking for a solution to this problem. They are now studying the possibility of commercialising the Uzbek cotton in the south-east Asian market, by shipping the containers thorough China (Droujba). No attempts have been made to sent this cotton to Europe.

Yet, the return of containers loaded with Uzbek cotton to Europe, by the TRACECA corridor, and from Europe to Korea with Europeans products could be conceivable. The Uzbek market for cotton is essentially located in Europe. A market from Europe to Korea exists too. Such a relatively complex transport operation requires the renovation of the Uzbek cotton commercialisation channels.

### **Commercialisation and Transport Organisation.**

About 80% of the cotton from some 350 cotton firms are at present commercialised under the responsibility of the Ministry of International Economic Relations. The operations of transport and transit are entrusted to the state transport company " OUZVESHTRANS ". The firm is in a monopoly position. It operates with traditional methods and does not seem able to offer the most attractive rates and high quality of service adapted to the multi-modal transport of cotton to Europe. As the cotton is sold « ex-works » or in the best cases « FOB », the uzbeks can not, at present, guarantee (at 100%) to the final customer the uzbek origin of the cotton. Furthermore, they can not keep logistics and transport costs under control. This may handicap the competitiveness and the commercialistaion of the product.

The arrival on the market of some new transport firms, created under the form of Joint Venture should allow the opening of the transport market to open competition. One of these new firms is specialised in international transport by container. The limited company, SHOSH-TRANS, is a forwarding company. It has its own container terminal at the Chomilovo-Tachkent, equipped with modern handling systems for 20" and 40" containers and its own road chassis for the transport of containers(about 100 units). Shosh-Trans is studying the possibility of opening a second container terminal at Buchara.

The aim of SHOSH-TRANS is to increase the competitiveness of transport by container. This is to be achieved by designing and implementing new transport and logistics schemes that allow pendular traffic: reduce the rate of shipment with empty container and decrease the immobilisation time.

At present, only 10 % of the containers used for import operations are used for shipment with exported goods. The short term objective of the company is to increase this rate to 50 % by using the cotton to fill the containers exported. To this end, they are carrying out some trials with two cotton firms.

It is thus conceivable that by combining the uzbeks' transport skills, the use of containers could be increased. This calls for mutual agreements between the various parties (containers' main users, cotton firms, transport forwarders, railways' company, etc.). In principle, such agreements would be beneficial for all the partners involved in the international trade. By working together, It should be possible to facilitate the establishment of pendular container traffic.

For the Uzbek economy, the creation of pendular traffics and the possibility of controlling the commercialisation circuit (the cotton could be sold « CIF » instead of « FOB » or « Ex-works ») is perfectly in line with the authorities objectives. The resulting modernisation of the transport system could also help all the other exporting sectors of the economy.

However, the implementation of such an option calls for a renovated transport organisation. The creation of a competent independent body is required. A « National Transport Commission » composed by members from all the partners involved in the international trade) is proposed to help the Uzbeks reach their goals. The TACIS programme should provide the required technical assistance to deal with this issue.

## 2. Objectives of the assistance required

The wider objective is to set up a local organisation able to efficiently respond to the specific shipper's transport demands. It is a question of facilitating the existence of pendular container traffic to keep transport costs at more competitive levels. This calls for a new organisation of combined transport in Uzbekistan. The organisation should be composed by representatives of different sectors involved in the international trade: the State, the Users and the Transport Operators (road, railways and multimodal).

It is proposed to create a "National Transport Commission " (or Shipment Task Force ) composed by one representative from:

- OUZVESHTRANS
- UZBEK Railways
- OUZKHLOKOPROMSBYT
- MINISTRY OF ECONOMIC RELATIONS
- SHOSH-TRANS
- TACIS experts ( two European experts).

The commission should produce within two months (September -October) a report containing the directions and actions to allow the first shipment of cotton to take place during the last month of 1996.

## 3. Description of the work

The work should comprise three steps:

- small market survey in Europe
- operational plan
- monitoring of first results

The work should start by a market study to sound out the opinion of the European customers concerning the modification of the commercialisation methods to a large use of containers through the TRACECA corridor. This one-month study should be carried out in Europe in September.

The second step consists of operational mission in Tashkent by two European experts for two months. They should actively participate in the writing of a business plan that clearly specifies how the Commission should be involved in the following problems:



- organisation of the shipment from and to Terminals (elaboration of a Transport Plan)
- definition of the conditions under which the railways make the transport rolling available
- monitoring of the wagons sent to Poti.
- organise the administrative aspects and transport documents
  - \* International transport contracts specific to multi-modal operations
  - \* possibility of editing documents such as TBL-FIATA to facilitate international payments
- negotiate the tariff with the international railways (tariff, availability of transport means, choice of routes, documentation..).
- negotiate the conditions under which the empty containers generated by imports flows can be used by uzbek exporters. This requires to:
  - \* Inventory the fleet of empty containers in Uzkekistan,
  - \* find an agreement with DAEWOO and other main container users
  - \* inventory the fleet of empty containers in Kirghistan, Kazakhstan and Tadjikistan.
  - \* find a suitable financial agreement with the Kazakhs and Kirghys to make use of empty containers
- establish co-operation agreements with the owners of containers such as SEALAND
- establish an specification book for the loading of containers and the certification of goods
- organise the transfer of responsibility along the entire logistic chain
- Assign a responsible officer for:
  - \* negotiations with the European railways administrations
  - \* organisation of the operations in all the transit and destination countries
  - \* locating Uzbeks transport correspondents
- Establish commercial agreement with European shippers exporting to Uzbekistan in order to encourage them to accept the return of this container to Europe loaded with cotton.

In the report to be produced, the commission should clearly indicate the Uzbek operator who will be in charge of setting up the traffic.

The Multi-modal Transport project Operating expert should have to:

- participate in the launching of the Commission in order to define in detail the goals of the mission
- to validate the decisions stated in the Final Report.

The third and final step would consist in monitoring the first shipments to validate the actions decided in the previous phase.

## 4. Contacts made with Partners and organisations

The activities to be developed involves partners from the State; from the transport sector and from the industrial sector.

Preliminary contacts have been already established with the following persons and organisations:

### **UZBEK Railways:**

#### **Activity:**

Main traction of container and wagons along the TRACECA corridor.

M. DAVIDOVITH,

Responsible for Container Division within the railways.

### **OUZKHLOKOPROMSBYT**

#### **Activity:**

Organism responsible for the Distribution next to the Cotton Industry

DYATCHKOV. V. Vladimirovith. Vice President.

PHAROUKH Arkramov, Director of Logistic International Relations

### **MINISTRY OF ECONOMIC RELATIONS**

#### **OUZVESHTRANS:**

#### **Activity:**

Transport and transit operator for cotton

M. GANIEV Elyor, First Vice Minister

M. GANIEV is directly concerned by the activity of the OUZVESHTRANS

#### **SHOSH-TRANS;**

#### **Activity:**

Forwarder; Carrier specialised in container traffic  
(Limited company: Transrail/ Uzbek Railways/ Transbusiness Express (MPS and Sealand)

M. CHADMANOV Alexandrovitch, General Director

M. KHALISSINOV Murat, Deputy Director

#### **TACIS Programme**

As proposed below.

The official members of the Commission should assign the specialists from each organisation responsible for executing the decisions taken and reporting to Commission on results.

Contacts taken next to the representatives of the users:

- UZ- DAEWOO: M. HO-KYON SHIN, Director and the supplier of containers: WOO JIN (activities in Anvers in Europe)
- SERGELI-Autechservis: M. ZUFAROV Sabir, President.

International Operators with activities in Uzbekistan:

- SEA LAND: M. KURBANOV Baktiyar, Sales Manager - Central Asia.
- INTERCONTAINER

## 5. Composition of the E.U. experts team

The team of experts may be essentially composed by:

One expatriate expert based in Europe to conduct the market survey during September.

Two permanent expatriates experts based in Tashkent for 2 months:

- one operational expert with practical experience in the field of International combined transport
- one expert specialised in the field of container transit and transport documentary procedures

Additional input is also required for the supervision and co-ordination of decisions stated in the Final Report:

- Launching the Transport Commission,
- supervision and validation of decisions stated in the Final Report.

## 6. Expected output

The experts should produce a Draft Final Report within two months, starting from September. The report must describe the directions and actions to be implemented so as to allow the first shipment of cotton to take place during the last month of 1996.