



TRACECA Programme:
Regional traffic database and
forecasting model

Progress Report : Phase 1A

September 1996

**European Union
Tacis Programme**

**TRACECA:
Regional Traffic Database and
Forecasting Model**

(Project No. WW.93.05/05.01/B008)

Progress Report: Phase 1A

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WS Atkins International Limited

Woodcote Grove, Ashley Road, Epsom, Surrey KT18 5BW
Tel: +44 1372 726140 Fax: +44 1372 740055

TACIS REPORT COVER PAGE

Project Title	:	TRACECA: Regional Traffic Database and Forecasting Model
Project Number	:	WW 93.05/05.01/B008
Country	:	All 8 TRACECA States
Local Operator	:	Tacis Co-ordination Units
EC Consultant	:	WS Atkins International Limited Woodcote Grove, Ashley Road, Epsom, Surrey KT18 5BW, UK Tel: +44 1372 726140 Fax: +44 1372 740055
Contact	:	Andy Southern/Hilary Gowen

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Author of Report : WS Atkins International Limited

EC M& E Team	_____	_____	_____
	[name]	[signature]	[date]
EC Delegation	_____	_____	_____
	[name]	[signature]	[date]
TACIS Bureau	_____	_____	_____
[task manager]	[name]	[signature]	[date]

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1. INTRODUCTION AND PROJECT SYNOPSIS

1.1 This Progress Report deals with the Tacis project TRACECA Traffic Forecasting Model, Project No. WW93.05/05.01/B008. This report covers the period from April 1996 to September 1996.

1.2 This Progress Report consists of two main parts:

- the main body of the report, which is an administrative report in a format defined by Tacis for the use of Tacis, Brussels, and the local Co-ordination units;
- Appendices which contain technical material and working papers: these documents will be of more interest to our local partner organisations and other consultants working on parallel projects.

1.3 The Appendices contain information gathered so far in the course of the project. This information is preliminary and subject to revision. The main areas covered are:

- an overview of the region and the TRACECA route;
- a review of maritime transport in the region, including the Black Sea, Caspian and related waterway systems;
- a review of road and rail transport in the region;
- economic profiles of the TRACECA states, including patterns of trade;
- a description of the questionnaire-based data collection campaign;
- a discussion of short term changes to traffic flows;
- notes on a number of technical and other questions: zoning, commodity classifications, etc.

1.4 Table 1.1 shows the 'Project Synopsis'.

Table 1.1 - Project Synopsis

Project Title	:	TRACECA Regional Traffic Database and Forecasting Model
Project Number	:	WW 93.05/05.01/B008
Country	:	All 8 TRACECA States
Wider Objectives: to assist in the prioritising of transport investment options in the region through the introduction of a quantitative planning tool which can simulate the impacts.		
Specific Project Objectives:		
<ul style="list-style-type: none"> • introduction and establishment of computer-based planning tools in the eight TRACECA states including: <ul style="list-style-type: none"> - a common regional database of transport and trade flows and transport infrastructure and transport costs; - a multi-modal model for analysing scenarios and developing forecasts; • application of the tools to: <ul style="list-style-type: none"> - create comprehensive multi-modal synoptics of existing and forecast future flows; - highlight bottlenecks of all types; - identify preferred locations for multi-modal transfer centres; - identify and catalogue specific road/rail/maritime and multimodal projects for detailed feasibility studies; • transfer of know-how in transport database design and modelling. 		
Outputs/Activities:		
<ul style="list-style-type: none"> • an Inception Mission and Inception Report (month 3); • Phase 1A involving data acquisition and storage followed by Progress Report 1 (month 9); • Phase 1B consisting of the development of scenarios and database, followed by Progress Report II (month 13); • Phase 2 including synoptic forecasts and development of investment options, followed by Progress Report III (month 15); • Phase 3 which is the handover of the computer equipment and software and support missions, followed by a draft Final Report (month 18) and Final Report (month 21). 		
Inputs:		
<ul style="list-style-type: none"> • technical assistance; • computers and other office equipment; • database, forecasting and office-oriented computer software. 		
Project Starting Date	:	Mid-January 1996
Project Duration	:	21 Months

2. SUMMARY OF PROJECT PROGRESS

2.1 This section contains a summary of progress since the start of the project.

2.2 Two stages of work have been accomplished so far:

- mobilisation/inception (January to March 1996);
- Phase 1A (April to August 1996).

2.3 Although there was a slight delay in the production of the Inception Report we believe the project is on schedule.

2.4 The major achievements of these two phases of work are:

- a regional office has been set up in Almaty;
- agreements have been made with local operators and technical partners in the 8 TRACECA states;
- a mission to UNESCAP in Bangkok has been carried out;
- a detailed questionnaire-based data collection exercise has been carried out in all 8 states and most of the data collected has been transferred to spreadsheet files;
- an overview of transit routes and problems has been prepared, based on existing and current work;
- a computer-based network model has been developed for road and rail transport (rail and water-based networks will be added shortly);
- preliminary economic data for all countries have been collected, primarily from international sources.

3. SUMMARY OF PROJECT PLANNING

3.1 This section contains a summary of the planning for the remainder of the project.

3.2 The overall programme for the project is shown in Figure 3.1. The remaining stages of work are:

- Phase 1B consisting of the development of scenarios and database, followed by a Progress Report (month 13);
- Phase 2 including synoptic forecasts and development of investment options followed by a Progress Report (month 15);
- Phase 3 which is the handover of the computer equipment and software and support missions followed by a draft Final Report (month 18) and Final Report (month 21).

TRACECA REGIONAL TRAFFIC FORECASTING MODEL
 FIGURE 3.1: PROJECT PROGRAMME

TASK	1996											1997										
	Month:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
MOBILISATION / INCEPTION		■																				
INCEPTION REPORT			X																			
PHASE Ia: DATA ACQUISITION AND STORAGE			■	■	■	■	■	■	■	■												
Equipment procurement			■	■	■	■	■					■	■									
Detailed database/model specification			■	■	■	■	■															
Methodology of data collection			■	■	■	■	■															
Collection of existing data						■	■	■														
Data review missions							■	■	■													
Surveys							■	■	■	■												
Data entry (spreadsheet)								■	■	■	■											
PROGRESS REPORT I										X												
PHASE Ib: SCENARIOS AND DATABASE/MODEL DEVELOPMENT										■	■	■	■	■	■							
Database construction/testing										■	■	■	■	■	■							
Forecasting model development										■	■	■	■	■	■							
Data transfer to database										■	■	■	■	■	■							
Scenario proposals										■	■	■	■	■	■							
PROGRESS REPORT II														X								
PHASE 2: SYNOPTIC FORECASTS														■	■	■	■	■	■	■	■	■
Scenario definition													■	■	■	■	■	■	■	■	■	■
Zonal economic forecasts													■	■	■	■	■	■	■	■	■	■
Model runs (present/future)													■	■	■	■	■	■	■	■	■	■
Synoptic traffic forecasts													■	■	■	■	■	■	■	■	■	■
Investment/redeployment studies													■	■	■	■	■	■	■	■	■	■
PROGRESS REPORT III															X							
PHASE 3: IMPLEMENTATION/ HANDOVER															■	■	■	■	■	■	■	■
Database/model manual preparation															■	■	■	■	■	■	■	■
Handover missions															■	■	■	■	■	■	■	■
Study cases															■	■	■	■	■	■	■	■
Support missions															■	■	■	■	■	■	■	■
DRAFT FINAL REPORT																				X		
TACIS Comments																					■	
FINAL REPORT																						X

4. PROJECT PROGRESS IN REPORTING PERIOD

- 4.1 This section covers the progress made since the Mobilisation/Inception Phase and the issue of the Inception Report in April 1996 and covers Phase 1A: Data Acquisition and Storage. The required project planning tables are given in Appendix K.
- 4.2 The main activities in this stage of work were:
- local organisation of the work, including identification of partners, equipment procurement and preparations for technology transfer;
 - data collection and a questionnaire campaign;
 - some preliminary analysis of the data including a regional transit overview, country economic profiles and identification of short term changes in traffic flows;
 - database and model development.
- 4.3 A key problem in this stage of work has been the identification of technical partners. In some countries this problem is still not resolved : the situation is described below. The difficulty of telecommunications in the region has been a significant problem. One consequence has been some delay in the questionnaire based data collection campaign. Although this exercise is now substantially complete, the processing of the data will inevitably spill over into the next phase of work. To compensate for this delay in incoming data - required for model building - we have brought forward some tasks, including:
- country economic profiles, using international sources;
 - regional transit overview using existing sources of information.
- 4.4 In addition the TRACECA co-ordinator has asked us to develop our ideas on likely short-term changes to the traffic flows (for 1997).

- 4.5 The project can therefore be considered to be successfully launched with an extensive collection of data and a solid understanding of the strategic regional issues to be tackled.

REVISION OF RESOURCE INPUT

- 4.6 Amendments to the contract which we proposed in the Inception Report were accepted. The effect of these changes is primarily to increase the input of local consultants (from 700 to 900 days for Senior Local Experts and from 1000 to 1700 days for Junior Local Expert). The planning tables shown in Appendix K reflect these changes.

LOCAL ORGANISATION OF WORK

Regional Office

- 4.7 Our regional office in Almaty has been established within the Research Institute for Transport and equipped with computers, telephone, fax and e-mail. The office is permanently staffed with a secretary, interpreter/translator and a transport specialist from the Institute.
- 4.8 The equipment of the regional office now includes:
- two desktop computers (486 DX, 8 Mb, colour monitors);
 - three laptop computers (similar specification);
 - an A4 laser printer;
 - photocopiers;
 - fax machine;
 - internet connection;
 - voltage surge protection.
- 4.9 The machines are operated with licensed Russian-version Microsoft Office Software.

Local Partners

- 4.10 Project work in the countries rests on a dual structure:
- a “*local operator*” which is the official counterpart organisation responsible for the project in the country;
 - a “*local technical partner organisation*” which will receive, operate and maintain the database and forecasting model.
- 4.11 The local operator is normally the Ministry of Transport, where such an organisation exists, as was the case from the start of the project in Armenia, Kazakhstan and Kyrgyzstan. It is also now the case in Georgia where the responsibility for co-ordinating transport projects was delegated to the Problem Centre for Eurasian Transport Corridor. In Turkmenistan and Uzbekistan, the responsibility for the project lies with the Cabinet of Ministers. In Azerbaidjan and Tadjikistan with the Ministry of Economy. (The names and duties of involved officials are given in Appendix I).
- 4.12 The technical partners will have a fully active role primarily in the Implementation Phase (Phase 3) which is due to take place only in 1997. For data collection, local operators may actually, in certain countries, be in a better position to carry out the task. This situation has delayed the selection of technical partners in some countries.
- 4.13 After explanation of the subject by the Contractor during several visits, all local operators seem now to have a good understanding of which kind of organisation should be the technical partner. Ideally it should have a strong motivation to acquire the methodology of traffic forecasting and to use it even once the project is completed. It should also have staff with the skills to master the technology and as far as possible with some experience in the field.
- 4.14 Progress on identifying technical partners have varied:
- in Georgia, Kazakhstan, Kyrgyzstan and Tadjikistan agreement on joint work has been signed with a technical partner;

- in Uzbekistan a technical partner has been designated but agreement is still under discussion;
- in Armenia, Azerbaijan and Turkmenistan no final decision has been made yet.

4.15 The situation country-by-country is as follows:

Kazakhstan

4.16 This country was selected as base for the project central team. The partner, The Research Institute for Transport or AO-NIAT, is strongly motivated. Until recently an institute for road transport only, it is developing fast its activities to cover all transport modes. It has close links with the Ministry of Transport and Communications. The central team however comprises members from different organisations, each with experience in a particular mode.

Kyrgyzstan

4.17 Following discussions with the Ministry of Transport, the State Institute of Road Design "Kyrghyzdortransproekt" was selected as technical partner although it had so far little experience in all-mode traffic forecasting. The institute was very successful in winning contracts in international tenders either in joint-venture with foreign firms or on its own. It has already an extensive experience of working with international organisations.

Tadjikistan

4.18 From the very start of the project, the State Project & Research Institute "Tajikgipro-transstroy", which is under the Ministry of Transport and Roads, was designated as a partner. This is the only relatively large transport engineering organisation in the country. It has now plans to develop activities beyond national borders, notably Kazakhstan and is very keen to get experience of international standard.

Georgia

4.19 After repeated attempts to find partners among the transport organisations which could carry out the urgent data collection task, it was decided to entrust

it to the organisation which was intended as the partner for economic forecasts, the Centre for Marketing Research (CMR), founded by economists linked with the University and the Institute of Economy. From the time an agreement with the Contractor was signed, it has been very active in data collection. There is the possibility it could be the final partner receiving technology and equipment, although the matter should be discussed in time with the newly created Ministry of Economy.

Uzbekistan

- 4.20 In Uzbekistan, a partner had to be designated in consultation with the Cabinet of Ministers. Only several months after project start, the Contractor was informed that the technical partner would be "Uzautotranstekhnika", a subsidiary of the State road transport holding "Uzautotrans", organisation which took over from the Ministry of Road Transport. It was immediately involved in data collection. Part of the task, however, was handled directly by the Cabinet of Ministers.

Turkmenistan

- 4.21 The first choice as technical partner was the Turkmen Institute of Transport and Communications. When data collection was launched, however, it was found that this high education institution was not in the best position to handle the task. An alternative now under consideration is the Institute of Economy.

Azerbaijan

- 4.22 After a failed attempt to find a candidate as technical partner, the Division of Transport and Communications of the Ministry of Economy was considering the possibility of installing a project team under the Ministry. Now, it seems that the computer centre of the Azerbaijan Railways has agreed to work with the project.

Armenia

- 4.23 From the beginning, the Ministry of Transport thought of forming a project unit within the Ministry in the same way as there were offices for other TRACECA projects such as the Legal and Regulatory Framework Study. There is now understanding that this may not be the best way and several organisations

have been considered as possible partners. We have had contact with the Graduate School of the State Engineering University of Armenia but found there may not be sufficient long-term motivation to justify a partnership. The Ministry of Transport is currently favours a grouping of organisations in a yet unspecified form.

Preparations For Technology Transfer

- 4.24 A key objective of the project is to facilitate the transfer of technology and know-how in forecasting and data management through the application of database and models. Accordingly, the study programme allows for a significant period of training and implementation of the forecasting tasks in each of the 8 TRACECA states in the latter stages of the study.
- 4.25 Preparatory work for this technology transfer is being undertaken at present and comprises two main areas of activity:
- identification of regional entities to participate in the study and to take responsibility for maintaining and applying the database model beyond the end of the study;
 - preparation of documentation on modelling procedures that provides an introduction to the principles of transport modelling (that is, the concepts of network matrices and assignments) and a technical manual for the use of the TRACECA model.

Permanent Establishment of the Database and Forecasting Modelling System to Regional Entities

- 4.26 One of our concerns from the start of the project has been to prepare the ground for a successful know-how transfer. This requires a technical partner with a sense of purpose and the capacity to maintain and successfully use the database and model after project completion.
- 4.27 Research or project institutes as they were run in soviet times would certainly have been interested in acquiring computer packages of the kind developed by the project and to perfect them. Presently however, the lack of financial resources puts pressure on these organisations to reduce their staff. In some

cases they are not generally in the best position to collect data from government organisations.

- 4.28 Even if those partners display a genuine interest for project work in all countries, it should probably be assumed that not all will be able to keep the database and model fully operational in the long term. An envisaged strategy is to give more means to the most promising teams so that they can constitute a core group able to support the weaker teams after project completion. Clearly, Kazakhstan, where the central project team is working with the backing of a strongly motivated institute, should be part of the core group. So could be any country of Central Asia with motivated experts and management. Moreover it is desirable to have at least one team in Caucasus countries as member of the core group. A logical candidate is Georgia which has easy relations with both neighbours. Armenia and Azerbaidjan however have also organisations in a position to become strong partners.
- 4.29 The database and the model technology will be normally transferred to technical partners in all countries. Training will be given to all of them during the implementation phase (Phase 3), first in the form of workshops, possibly by groups of countries. Technical support to run the applications will be provided. In addition, experts from core teams could be invited to participate in the work of the central project team in Almaty before the start of Phase 3.
- 4.30 The most difficult problem in maintaining the model after project completion will be updating of the database. This cannot be done separately by the various partners in different countries. There may be objection raised by some countries to supplying regularly to other countries information they have been providing within the frame of the TRACECA programme. There is therefore a need to get some kind of commitment from participating countries before the end of the project. A multinational statistical or forecasting group involving local operators could be arranged. During the next phase of work the Consultant will start to consult project recipients on this matter.

Technical Documentation

- 4.31 We have been careful not to simply translate existing technical manuals for the databases and the model software but have instead sought to identify the likely requirements of the technical partners taking into account their relative unfamiliarity with the principles of demand forecasting and modelling.

4.32 We have, therefore, taken into account the opportunity to involve our local partner organisation in Almaty in the initial model development work and to use this as a means of tailoring the technical documentation to the needs of the regional users. The basic principles of the modelling software have been demonstrated to a local expert and detailed descriptions of network building and data analysis tasks have provided sufficient guidelines for the local expert to organise hands-on modelling experience.

4.33 In parallel we are rewriting the SATURN software manual specifically for uses as a strategic freight modelling package with additional introductory information explaining the broader concepts of modelling.

DATA COLLECTION

4.34 We have approached data collection in three main ways:

- review of existing documents and data produced by consultants - including those working on other TRACECA projects - and international agencies, including a visit to UNESCAP in Bangkok;
- a campaign of questionnaires, completed by our local technical partners.

4.35 Data collection has covered two main areas:

- transport information on routes and flows;
- economic information on the evolution of the local economies, trade etc.

Mission to UNESCAP

4.36 Of all the international agencies active in the region it was thought that UNESCAP, based in Bangkok would have the most complete overview of transport links and developments. For this reason a mission to Bangkok was undertaken in late March. Appendix J gives the conclusions of this mission: much work is being carried out and we intend to build on these early contacts.

Questionnaires

- 4.37 Russian-language questionnaires were prepared in Kazakhstan, with the participation of local specialists, using as far as possible the existing structure of data sets. The questionnaires were sent to the various countries in June with explanations of how they should be completed.
- 4.38 Data review missions to all TRACECA countries took place in July and August in order to make sure that the questions were properly understood and the answers accurately formulated. Since most countries are not yet properly equipped with E-mail, data transmission by fax was largely used.
- 4.39 Copies of the questionnaires and a summary of the status of data collection at the time of issuing this report are given in Appendix G.

Additional Surveys

- 4.40 In accordance with the Terms of Reference, data collection is to continue throughout the project duration. Although a large amount of data has already been collected, there is a need to complement this with new data to update, validate and infill gaps.
- 4.41 The project deals with inter-regional flows, which for the smaller TRACECA countries means practically cross-border flows. In countries where Customs have already good computerised information systems such as Kazakhstan and Turkmenistan, detailed origin/destination data on foreign trade flows can be obtained at the oblast level. Railway data are also very detailed.
- 4.42 Similarly we have collected volumetric data (flows) on rail and road links.
- 4.43 Initial appraisal of this data indicates that discrepancies between different data sources exist and, hence, validation of these data will be important to ensuring the reliability of the databases and model.
- 4.44 We had initially considered that validation of origin/destination data would be best undertaken through roadside interview surveys on selected routes.
- 4.45 However, a roadside survey campaign of the size affordable within the budget frame of the project will not enable all movements between different zones to

be surveyed. Moreover, as evidenced by 1995 Kazakh data, the proportion of trade moved by road is small accounting for only 2% of international freight tonnage moving between Kazakhstan and Europe. It should be noted that - according to Eurostat data - Kazakhstan is the leading EU-12 trade partner in the region with 30% of trade (by weight) in 1995.

4.46 Having reviewed the data sets already collated we now conclude that new surveys would be better focused on verifying total volumes of trade and modal routing at the origin/destination point and therefore, we propose to survey main exporters/importers, and customs border stations in key regions. This will provide the basis for verifying and disaggregating our prime source of consistent demand data (i.e. the customs data).

4.47 We propose therefore that additional surveys concentrate on two groups of data which are still needed for model calibration:

- information on freight routing - the questionnaire on the subject was not satisfactorily answered in most countries.
- information on real transport costs: published tariffs are often of little relevance because most rates are negotiated on a case by case basis.

4.48 Collection of that information will be done using a questionnaire approach. The survey format is currently being designed in Kazakhstan. It is planned to collect information from several types of organisations: main exporters, a sample of importers in various regions, freight forwarders, transport companies, customs border stations. After the survey format is tested in Kazakhstan, it will be applied to further countries.

PRELIMINARY ANALYSIS

4.49 In parallel with data collection we have assembled a preliminary analysis, consisting of:

- an overview of road, rail and water transport in the region;
- country economic profiles;
- an estimate of traffic changes in the short term.

Transit Overview

- 4.50 An overview qualitative description of transit conditions in the region has been prepared from a wide variety of sources. It covers the structure of the transport networks, their operating conditions and traffic data, both historical and current. This overview will be the basis for development of the scenarios for modelling the situation in 5, 10 and 15 years. The overview will also provide the basis for the synoptic quantitative description of the transport system.
- 4.51 The overview is regularly updated with the results from the data collection and information from other reports, and consists of two main sections:
- regional overview, setting the geographical and transport context (Appendix A);
 - maritime transit (Appendix B); concerning the ports and maritime transport in the Black Sea and the Caspian Sea as well as the Volga-Don Canal;
 - road and rail transit (Appendix C) covering transport on land.
- 4.52 We hope to develop this overview document to be the descriptive counterpart of the quantitative synoptic description, which will provide information on current flows and costs of transport on the international multi-modal corridors.

Country Economic Profiles

- 4.53 Work on reviewing the economies of the TRACECA states was brought forward in order to support the short term forecasting work.
- 4.54 The approach has been to develop a 'SWOT analysis' for each country, identifying strengths, weaknesses, opportunities and threats. Much of the data for this work has been obtained from the international agencies, particularly IMF, World Bank and EBRD. The economic profiles are given in Appendix D.
- 4.55 A questionnaire approach on more detailed economic data is also currently being prepared.

Traffic Changes In The Short Term

4.56 According to the project Terms of Reference, only by early 1997 will the model developed by the project be ready to be used for the production of traffic forecasts. There is however an immediate demand for such forecasts particularly for the TRACECA corridor and at the request of the TRACECA co-ordinator, we have attempted to set out preliminary ideas on short term changes in traffic flows.

4.57 Inputs to this work are:

- the overview description of transport and trade in the region;
- the review of the economies of the TRACECA states;
- baseline road and rail flows, based on the questionnaire returns;
- preliminary tabulations of customs data on trade tonnage flows by origin/destination, commodity and/or mode of transport.

4.58 The conclusions of this work are presented in Appendix H.

DATABASE AND MODEL DEVELOPMENT

4.59 Appendices A and B of the Inception Report provide specifications for the databases and forecasting model. During the reporting period progress has concentrated on obtaining the data inputs for the databases and modelling process as well as building the base year model networks and flow matrices.

4.60 The following paragraphs describe progress on the zone system and network development and matrix development.

Zone Systems and Network Development

4.61 The geographic coverage and structure of the network and zone system is contained in Figure B1 of the Inception Report. This focuses mainly on the network and zone system internal to the study area. There is, however, a need to define strategic links external to the study area, thereby representing routes to external markets. Accordingly a zoning system has been developed for which a representative strategic network will be developed that accurately represents external flows on routes through the study area.

- 4.62 A hierarchical zoning system has been developed (described in Appendix E) to allow flexibility in the level of geographic detail in model and database operation.
- 4.63 To date, the emphasis of the model development work has been on creating the networks in the 8 TRACECA states determined through consultation with local experts. The road network consists of some 600 sections, 520 nodes and has a total length of about 35,000 km. The rail network consists of some 200 sections and 170 nodes and has a total length of about 20,000 km.
- 4.64 The development of the networks comprises three stages.
- (i) A network inventory of the physical characteristics has been undertaken via questionnaires distributed to the 8 TRACECA states, e.g. section lengths, condition of road sections, single / double track or electrified rail sections, etc.
 - (ii) The data obtained from the questionnaires has been processed through the creation of spreadsheet files. Additional data required by the model such as node numbers for the beginning or end of each section and node co-ordinates is also being incorporated at this stage.
 - (iii) The data is being converted into a form that can be used by the SATURN modelling software and the network external to the 8 TRACECA states is being coded.
- 4.65 The first stage is nearly complete with the majority of questionnaires returned. The local experts in each state have provided a comprehensive set of data for the network inventory.
- 4.66 The second stage now under way, with the processing of data as the completed questionnaires arrive in Almaty. The coding of additional data required for the model, such as node numbers and node co-ordinates has been integrated into this process of data entry.
- 4.67 The third stage is in progress. The SATURN road and rail networks have been created to a level that allows checking of the node connections and section lengths. The full set of network characteristics necessary for representing the generalised cost (time, money and other impedance) on

each section such as speeds, interchanges, custom delays etc are currently being examined.

Matrix Development.

- 4.68 The matrix development is based on the zoning system described in Appendix E.
- 4.69 The development of the matrix being undertaken in three basic stages.
- (i) Matrix data is being collected via the use of questionnaires on the imports and exports for each of the 8 TRACECA states, the source being customs returns. This includes information on the tonnage, commodity transport by mode and country of origin or destination
 - (ii) Processing the data obtained from the questionnaires by the creation of spreadsheet files with the addition of commodity codes and zone numbers.
 - (iii) Analysis of the data and conversion into a matrices that can be used by the SATURN modelling software.
- 4.70 The first stage is substantially complete with six countries having already returned the customs questionnaires.
- 4.71 The second stage has commenced with initial tabulated results of total exports and imports for 4 of the 8 countries (see Appendix H).
- 4.72 The third stage will commence shortly after receiving and processing the final questionnaires and is expected to take approximately one month to complete.

5. PROJECT PLANNING FOR NEXT REPORTING PERIOD

5.1 The next reporting period is Phase 1B, 'Scenarios and database/model development', and consists of:

- database construction and testing;
- development of the forecasting model;
- data transfer to database;
- production of scenario proposals.

5.2 In addition some work continuing from the previous work phases will be carried out:

- procurement of computer equipment for the partner organisations;
- data collection, including the processing the data from the questionnaire returns, collection of further data on modal costs and journey times and collection of more detailed local economic data.

5.3 The Phase 1B Progress Report is to be submitted in February 1997. A detailed work plan is shown in Figure 5.1: the tasks are discussed below.

EQUIPMENT PROCUREMENT

5.4 Equipment procurement of the regional office in Almaty is now complete. We now plan to proceed with the procurement of equipment for the other local technical partners. Procurement will begin with those technical partners that are clearly committed to the future of the project.

- 5.5 The equipment to be supplied is essentially computer equipment for running the forecasting and database software and will consist typically of:
- a desktop computer (at least 486DX with 8Mb of RAM, colour monitor);
 - an A4 laser printer ;
 - hardware (only) for an e-mail connection, or a fax machine, if requested;
 - power safety devices.
- 5.6 The software to be provided will be a licensed copy of the Russian-language version of Windows-based Microsoft Office (including word processing, spreadsheet and database software). Although we will provide the necessary hardware for an e-mail connection, we expect the organisation itself to obtain the necessary contract with an Internet service provider. Where requested we will also supply a fax machine.

DATA COLLECTION/PROCESSING

- 5.7 As indicated in the terms of reference, data collection will continue over the life of the project. Because of the slow response to some of the transport questionnaire data sets we will be continuing the data processing tasks during the next phase of work. Further data collection is planned for data on modal costs and transit times as well as obtaining more detailed local economic data.

DATABASE CONSTRUCTION/TESTING

- 5.8 The database has two complementary functions:
- to provide the source data for the development and operation of the SATURN forecasting software;
 - to act as a structure for making data available to other potential users (such as other TRACECA projects or other studies).

- 5.9 One lesson from the data collection exercise was the need to take full account of the existing format of data collected in the region. We believe this is an important aspect to consider during the construction of the database, as updating information will be much easier if the data sets required are available as directly as possible from the statistics maintained by the various official bodies. In other words the structure of the database should reflect the local conditions, not merely the European CETIR database structure (which we have already commented on in the Inception Report).
- 5.10 In the same way, the forecasting model should be capable of being driven directly from the database, therefore the structure of the database should permit this.
- 5.11 For this reason we wish to advance cautiously on the construction of the database, while the model is being developed. To avoid any delay on developing the forecasting model we propose to concentrate on processing data into a format that is useable by the SATURN software. This will allow the relationship between the data and SATURN to be fully explored, thus allowing the database to be determined with the ultimate end-use fully known.
- 5.12 The questionnaire returns are currently being processed into spreadsheet format, modelled on the questionnaire structure (which is itself modelled on the original format of the statistics). This spreadsheet will have to be manipulated to integrate with SATURN. The process will therefore be essentially as follows:
- the data are processed into EXCEL spreadsheets;
 - data are processed within these spreadsheets into SATURN-useable files;
 - in parallel a database structure is developed, retaining as much of the original format of the data and compatibility with SATURN.
- 5.13 During this process data will be available to other studies in the form of EXCEL spreadsheet files.

FORECASTING MODEL DEVELOPMENT

- 5.14 The development of the model is partially dependent on the availability of suitable data, much of which we are now confident that we have. However there are many tasks that can be carried out in parallel to the matrix development and network costing. In particular in refining the network structure, creation of commodity indices and developing documentation specific to the use of the software for freight modelling.
- 5.15 The external network coding has been delayed until more detailed information was available on international trade flows. Much of this is now available. Gathering modal cost and journey time data on these links is part of the on-going data collection exercise. This information will need to be integrated within the network data in SATURN.
- 5.16 Already some tabulations of aggregate origin/destination flows are possible, although we need to add more details on the commodities and zones. Once all the commodity data is available, commodity matrices will be produced.
- 5.17 As described above the data within the spreadsheets will need to be converted to a form that is usable by SATURN. When sufficient data from the network and matrices sources are available, we will attempt to recreate the observed base year flows via SATURN assignments. This will inevitably mean a significant adjustment of the network parameters and further validation of matrix data.
- 5.18 Prior to using the model to forecast future transport patterns for different scenarios we propose to undertake some test runs of the model in forecasting mode, principally to confirm the modelling procedures.

DATA TRANSFER TO DATABASE

- 5.19 As the work on the forecasting model progresses we will in parallel transfer data to the database. This will require testing the transfer of spreadsheet data into the database structure as well as adjusting the links with the forecasting model so that data can be read as directly as possible from the database.

SCENARIO PROPOSALS

- 5.20 The scenarios will define the key elements that define the pattern and magnitude of freight flows in the region. We have already advanced the work on developing scenario proposals by developing a regional overview description and country economic profiles. In the discussion of short term forecasts in this report we have touched on many of the issues that will be addressed in the scenario definition.
- 5.21 During the next phase of work we will update the overview description with information from the data collection processing as well as from the work of other TRACECA projects (for example, the Border Crossings Study will provide details on the conditions at frontiers in the region).
- 5.22 The economic profiles will be elaborated on with more insights into the important national and regional commodity sectors: cotton, grain, bauxite/alumina/ aluminium, coal, etc.
- 5.23 During the next phase of work we expect to receive comments on the work that is included in this report. This feedback will ensure that the scenarios are well founded and relevant.

APPENDIX A
Regional Overview

A. REGIONAL OVERVIEW

Note: This information will be updated. Please contact the Consultant.

INTRODUCTION

A.1 The states of the TRACECA region include:

- in the Caucasus: Armenia, Azerbaijan and Georgia;
- in Central Asia: Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan and Uzbekistan.

A.2 In total, the states cover over 4 million square kilometres and have a population of nearly 70 million. The basic statistics of the states are shown in the following table.

Table A-1 - Basic Statistics of the TRACECA States

Country	Population (millions, mid-1992)	Surface area (‘000 sq. km)	GNP/capita (PPP basis, US \$)	Freight transport index ⁽¹⁾ (1995,1990 = 100)
Armenia	3.7	30	2500	3
Azerbaijan	7.4	87	2650	19
Georgia	5.5	70	2470	15
Kazakhstan	17	2717	4780	32
Kyrgyzstan	4.5	199	2820	15
Tajikistan	5.6	143	2000	13
Turkmenistan	3.9	488	3950	57
Uzbekistan	21.5	447	2600	72
Total	69.1	4181		

Note: (1) Indicating the general level of freight movements

Source: McDonell (1995), quoting World Bank, PlanEcon etc.

A.3 The largest cities in the region are Tashkent (Uzbekistan) with a population of over 2 million; Baku (1.78 million); Yerevan (1.2 million) and Almaty (1.15 million). Other cities are medium-sized, as shown in the following table.

Table A-2 - Major Urban Areas

Country	Town	Population (thousands, 1990)
Armenia	Yerevan	1202
	Kumayri	123
Azerbaijan	Baku	1780
	Gyandzha	281
	Sumgait	235
Georgia	Tbilisi	1268
	Kutaisi	236
	Rustavi	160
	Batumi	137
	Sukhumi	122
Kazakhstan	Almaty	1147
	Karaganda	613
	Shimkent	401
	Semipalatinsk	339
	Pavlodar	337
	Ust-Kamenogorsk	330
Kyrgyzstan	Bishkek (Frunze)	616
	Osh	218
Tajikistan	Dushanbe	592(1991)
	Khozhent (Leninabad)	163
Turkmenistan	Ashgabat (Ashkhabad)	407
	Chardzhou	164
	Tashauz	114
	Mary	94
Uzbekistan	Tashkent	2094
	Samarkand	370
	Namagan	312
	Andijan	297
	Bukhara	228

Source: Various

Culture

- A.4 In addition to their common Soviet experience, the TRACECA states have cultural links with Turkey and Iran. Central Asia is predominantly Moslem (mainly liberal Sunni), while the Caucasus is a mixture of Moslem and Christian (Armenian and Russian orthodox).
- A.5 Language is an important cultural tie. Turkic languages form two main groups:
- Turkish / Azeri / Turkmen;
 - Uzbek / Karakalpak (an autonomous region of Uzbekistan) / Kazakh / Kyrgyz / Tatar (an autonomous republic of Russia);
- A.6 Tajik is related to Persian: there are Tajik concentrations in Samarkand/Bukhara.
- A.7 There are other ethnic links. Iran has a large (20 million) ethnic Azeri minority, with 9 million alone in the northern province of Iran (also called Azerbaijan). There are substantial Uzbek and Turkmen groups in northern Afghanistan and Tajikistan. There is a large Armenian diaspora.

Political

Independence and the Search for Cultural Identity

- A.8 The borders of many of TRACECA States were drawn in the Stalinist period of the Soviet Union and the borders do not generally reflect geographic or ethnic features. Although the countries have their own cultural identity, they were forced under central planning to tailor their economies and cultures to suit the needs of the Union.
- A.9 This collective was fragile but bound together under a common economic and security structure. However, the fragmentation of the Soviet Union has now exposed the inherent weaknesses. The TRACECA states are now focused on their own resources and problems. The granting of independence to the countries forced changes in political leadership, or changes in leadership ethos. The move towards democracy has not been smooth in all cases and conflicts which were repressed throughout the Soviet period have now

emerged. In some cases this is conflict within a country or the resumption of hostilities between countries.

- A.10 One aspect of the Soviet era was the migration (forced in many cases) of people from different ethnic backgrounds to other parts of the Soviet Union. Each newly independent state has to develop a cultural identity based around the people now living within their countries, without incurring ethnic backlash and conflict based on ethnic origin. There has been significant return migrations since independence, either voluntary (e.g. return of ethnic Russians to Russia or Germans to Germany) or due to conflict (e.g. Azerbaijan, Tajikistan).

Armenia and Azerbaijan

- A.11 The Armenian majority in the Nagorno-Karabakh area of Azerbaijan claimed independence from Azerbaijan and sought political union with Armenia. A full-scale civil conflict followed resulting in annexation by Armenia of the area and a total of 20% of Azerbaijan territory. One million ethnic Azeris were displaced and are now refugees elsewhere in Azerbaijan. The economies of both countries were crippled. After a period of negotiations mediated by both the Organisation for Security and Co-operation in Europe (OSCE) and Russia a ceasefire was established in May 1994. No permanent solution to the conflict has been found.
- A.12 Because of the war between Armenia and Azerbaijan (mainly related to the disputed enclave of Nagorno-Karabakh), Turkey, which supports Azerbaijan, has placed an embargo on trade with Armenia and closed its frontiers. Relations between Turkey and Armenia have been strained since the genocide of Armenians under the Ottoman empire during the First World War.
- A.13 Throughout the conflict, Armenia has maintained a relatively stable government and has retained friendly relations with Georgia and Russia. By contrast, there have been attempted coups in Azerbaijan in the autumn of 1993 and in March 1995.

Georgia

- A.14 In Georgia there are three problem areas: Abkhazia, in the north-west, South Ossetia in the north and Adzharia in the south-west. All these regions have significant Moslem populations.
- A.15 Abkhazia includes the important port of Sukhumi, strategic rail links, food industries and extensive tourist facilities. In 1993 the Abkhazians occupied Sukhumi, expelled many Georgians and set up an independent administration. A ceasefire has been brokered and maintained by Russia. The port of Sukhumi is blockaded, with the exception of food supplies from Turkey.
- A.16 Adzharia in the south-west - with a largely moslem community - has announced its political autonomy as a separate region. Adzharia straddles the main routes to Turkey and contains the important Black Sea port of Batumi.
- A.17 To the north of Georgia there is an on-going war of attrition in the Russian republic of Chechnya and the neighbouring republic of Dagestan is also unstable.

Kazakhstan

- A.18 Since independence Kazakhstan has been politically stable and has adopted an open market-based approach to the economy.

Kyrgyzstan

- A.19 Since independence the Kyrgyz Republic has pursued a liberal approach to the introduction of political and economic institutions.

Tajikistan

- A.20 Tajikistan has experienced open conflict between the communities in the north and south of the country, with at least fifty thousand killed by the end of 1993 and over half a million people made refugees (Pomfret, 1995). A sort of victory for the northern groups was only brought about by large-scale military intervention of the 'Federal' army comprised mainly of Russian troops though supported by Uzbekistan and other CIS forces. Russia in effect control the

country's security, although an agreement with the opposition forces has not yet been reached (McDonnell 1995). Fighting continues to break out in the spring and summer months.

Turkmenistan

- A.21 Turkmenistan has been relatively stable since independence, but has made little progress towards a devolved economic or political system.

Uzbekistan

- A.22 Uzbekistan is uniquely the only land-locked country which is itself surrounded by land-locked countries. The country has taken a gradualist approach to change, which has resulted in less turbulent conditions than elsewhere in the region.

International Co-operation

- A.23 The TRACECA states are involved in a number of international agreements and organisations:
- Commonwealth of Independent States (CIS, 'SNG' in Russian): Russian-led grouping of FSU states. Russia maintains military forces in all the republics with the exception of Turkmenistan. Georgia finally joined the CIS in return for Russian military assistance in the civil war. Uzbekistan has insisted on its right to defend its own borders;
 - Russian Customs Union: Russia, Belarus, Kazakhstan, Kyrgyzstan;
 - Black Sea Economic Co-operation Group (BSIC): Black Sea littoral countries;
 - Caspian Sea Co-operation Group, established in 1992: Iran, Azerbaijan, Russia, Kazakhstan and Turkmenistan;
 - In 1992 Iran, Turkey and Pakistan reactivated the Economic Co-operation Organisation and extended it to include Afghanistan and the six muslim republics (Azerbaijan and the Central Asian republics), bringing together a potential market of 300m people;

- Central Asian Common Market (CACOM): declared in 1994 between Kazakhstan, Kyrgyzstan and Uzbekistan, although there is little tangible result.

Environment

A.24 The TRACECA region is affected by two environmental disasters, (Pomfret, 1995);

- the rising water level of the Caspian Sea probably due to higher rainfall;
- the falling level of the Aral Sea, due to the over-extraction of waters for irrigation from the Amudaria (Oxus) river which feeds the Karakum Canal in southern Turkmenistan, and the Sydarya river in Uzbekistan.

A.25 There is no obvious physical connection between the two, and no casual link has been proved, although it is clearly possible that the two are related through evaporation and consequent rainfall.

A.26 Central Asia is generally arid so the major water use is for irrigation, mainly cotton, which is one of the most water-intensive crops. By 1985 only about one-tenth of the 1960 volume of water from the two rivers was reaching the Aral Sea, which had fallen to less than a third of its 1960 volume and the surface area had declined by 45%. Under present conditions the Aral Sea will disappear entirely within the first two decades of the next century.

A.27 Already the shrinking of the lake has been an environmental disaster. The fishing industry has almost disappeared. Exposure of the former lake bottom, with a concentration of toxic salts in the upper layers has led to increasingly frequent dust storms. These storms are estimated to transport 43 million tonne of salts per year over vast areas.

A.28 Gradual climatic change is taking place in Central Asia, although how much of this is due to the shrinking of the Aral Sea is disputed.

A.29 The rising water level of the Caspian has swallowed about 20,000 square kilometres of available land in Kazakhstan. All the bordering countries are affected with ports and road and rail links being flooded.

THE TRACECA ROUTES

- A.30 The TRACECA road and rail routes run east-west between the Black Sea ports of Georgia, crossing the Caucasus - including Armenia - overland to the port of Baku in Azerbaijan, then crossing the Caspian Sea to the ports of Aktau in Kazakhstan and Turkmenbashi in Turkmenistan and onwards to the other newly-independent republics of Central Asia: Uzbekistan, Kyrgyzstan and Tajikistan.
- A.31 Hardly any transit traffic covers the entire TRACECA route: the objective is more to improve links along the corridor and to provide an alternative corridor to routes through Russia to the north of the Caspian (via Aktyubinsk and Karaganda/Petropavlovsk in Kazakhstan) and through Iran to the south of the Caspian.

Other major international corridors

- A.32 There are alternatives to the TRACECA route. The main options can be summarised as:
- for the Caucasus states:
 - via Russia to the north;
 - via Turkey/Iran to the south;
 - for the Central Asian states:
 - by land to the north of the Caspian, via Russia/Kazakhstan;
 - by land to the south of the Caspian via Iran/Turkey;
 - via the Caspian to Russia through the Volga waterways system;
 - via the Caspian to Iran.
- A.33 In practice the use of the Caspian is restricted by the availability of port facilities (many of which are being flooded) and the restricted water depth in the Volga/Don waterway. None of the Iranian Caspian Sea ports is currently rail-linked.

A.34 Alternative routings via the Caspian include:

- Caspian - Astrakhan -Volga-Don canal - Taganrog (Black Sea) - Bosphorus (about 14 days);
- Caspian - Volga waterway system - Baltic;
- Caspian - Iranian port - landbridge across Iran - Persian Gulf (Bandar Imam, Bandar Khomeini);

A.35 Rail routes include:

- to Russia and the Black Sea (e.g. Novorossysk, Odessa) to Russia and the Baltic Sea (e.g. St. Petersburg, Talinn);
- Turkmenistan - Serakhs (Iranian border) - Mashhad - Teheran - Persian Gulf;
- the existing rail connection between Iran and the Caucasus is south from Julfa in Azeri Nakhichevan enclave to Tabriz. However this link is currently closed because of the Armenian blockade of Nakhichevan.

Comparison of the Different Routes

A.36 Using the TRACECA corridor, the journey Turkmenbashi - Caspian - Caucasus (double-tracked rail line from Baku to Georgia) - Black Sea (Poti, Batumi) - Bosphorus takes about 7 days including 2 days for the rail transit (859 km): crossing the Caspian by ferry takes about 12 hours plus 3 hours loading/unloading at each port.

A.37 The distances by rail from Novorossysk (Black Sea) to Central Asia are shorter than the TRACECA corridor for the northern half of Uzbekistan and most of Kazakhstan. The distance by rail to St Petersburg is the closest for rail transport north of Lake Balkash in Kazakhstan. The cost of shipment by rail from Chardzhou (eastern Turkmenistan) via Poti or Novorossysk is reported to be similar.

Table A-3 - Comparative Distances (km)

From/To	Poti	Novorossysk	Difference Poti-Novoros.	St Petersburg
Novosibirsk	4900	4500	400	4000
Almaty	4340	4680	-340	
Baku	860	1440	-580	
Tashkent	3320	3960	-640	

Source: Rogge Marine 1993

- A.38 The new rail connection at Sarakhs between Turkmenistan and leading to the nearest port, Bandar-e-Khomeyni (at the north of the Persian Gulf) is a distance of 2,300 km compared with a distance of 1,900 km to the port of Poti (Georgia).
- A.39 The existing rail connection between Turkey and the region is with Armenia (Erzerum - Kars - Dogukapi - Armenia) which is now closed. There is also a rail link further to the south from Turkey to Iran (Palu - Tatvan - rail ferry across Lake Van - Van - Kapikoy which joins the line Teheran - Tabriz north to Nakhichevan).

Proposed Network Improvements

- A.40 A number of improvements have been proposed to transport links in the region:
- in Georgia, a 140 km rail connection from Vale (on the border with Turkey) to Kars (Turkey), linking Tbilisi to the Turkish ports on Black Sea and Mediterranean;
 - in Turkey, construction of a 239 km railway around the northern part of the Lake Van in the east of the country. This bottleneck is on the main east-west line between Turkey and Iran (and Nakhichevan). The new railway would provide capacity of 4 million tonnes/yr compared with the rail ferry currently crossing the lake which is a transport bottleneck with a capacity of only 500-600 thousand t/yr. Detailed design is already being undertaken;

- there is an agreement between Turkmenistan and Russia to build a new 420 km rail connection along the eastern shore of the Caspian Sea north from Turkmenbashi port in Turkmenistan to Eralijevo in south-eastern Kazakhstan, passing through Bekdash. Up to 20m tonnes of freight a year is expected to move by rail between Russia and the Persian Gulf, initially via the Tejen - Serakhs - Mashhad link. The proposed route offers an alternative to the Central Asian main line which passes through Uzbekistan;
- in Iran there is a proposal to provide a 150 km rail link between the Azerbaijan border at Astara south to Anzali and Ghazvin, linking up with the east-west line to Tabriz.

Closed Crossings

A.41 The re-opening of existing border crossings and associated road and rail links in the Caucasus would provide a much improved choice of transit routes. Routes which are currently closed include:

- Azerbaijan - Russia: Russia closed the road crossings until 1995: the rail crossings are still closed;
- the rail link between the Azeri Nakhichevan enclave and Iran at Julfa is currently closed;
- Abkhazia (which is seeking autonomy from Georgia): Road and rail links between Georgia and Russia are currently closed;
- Azerbaijan (including the Nakhichevan enclave)/Armenia: road and rail links are closed as a result of the unresolved conflict over Nagorno-Karabakh.

Border Delays

A.42 At some border crossings in the region significant delays are experienced. Examples are the crossings Kazakhstan/China, Kazakhstan/Tashkent (delays of 12-14 hours are reportedly common), Turkey/Georgia (Sarpi). These delays are usually associated with busy crossings where processing capacity is limited by a number of causes:

- restricted working hours by customs officials: for example Chinese and Turkish customs officials do not work at night;
- insufficient staff resources;
- complex customs and other regulations.

A.43 Russia has sought to re-establish control over the borders of the FSU through agreement with the NIS. Some TRACECA states, such as Uzbekistan have not permitted this: some have had little choice, given the need for Russian support to maintain order. Russian troops thus control security at: the Georgian border with Turkey; the border between Armenia and Azerbaijan; the Armenian and Azerbaijan borders with Iran; the Turkmenistan border with Iran and Afghanistan; the Tajikistan border with Afghanistan.

A.44 The Russian Customs Union exists between Russia, Kazakhstan and Kyrgyzstan (and Belarus). This means that the flow of goods between these countries is easier, although Russia has - to some extent - to oversee the customs controls on the external borders of these countries (which are in effect Russia's customs borders).

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APPENDIX B

Maritime Transport

B. MARITIME TRANSPORT

Note: This information will be updated. Please contact the Consultant.

MAIN INTERNATIONAL MARITIME AND WATERWAYS LINKS

B.1 The TRACECA maritime links consist of:

- the Caspian Sea;
- the Black Sea, which is linked to the Mediterranean;
- the Volga river and waterway systems, in particular the Volga-Don Canal, which connects the Caspian with the Black Sea and connection to the Baltic Sea via St. Petersburg.

B.2 Sofremer (1995) identifies the following major international maritime links:

- TRACECA corridor: Turkmenbashi - Caspian - Caucasus (double-tracked rail line from Baku to Georgia) - Black Sea (Poti, Batumi) - Bosphorus: about 7 days including 2 days for the rail transit (859 km): crossing the Caspian by ferry takes about 12 hours plus 3 hours loading/unloading at each port;
- Caspian - Astrakhan - Don-Volga canal - Taganrog (Black Sea) - Bosphorus (about 14 days);
- Caspian - Don-Volga canal - Baltic;
- Caspian - Iranian port - landbridge across Iran - Persian Gulf (Bandar Imam, Bandar Khomeini);
- Rail link to Novorossisk port (Russia/Black Sea);
- Rail link to St. Petersburg port (Russia/Baltic);
- Rail link Turkmenistan - Sakhalys (Iranian border) - Persian Gulf;

- Bandar Amyrabad (Caspian) - Teheran - Persian Gulf.

VOLGA-DON CANAL

- B.3 The Volga is part of an inland waterway connection between the Caspian Sea (the Russian port of Astrakhan) with the Baltic Sea (St Petersburg). The Volga-Don Canal branches southwest from the Volga at Volgograd to Rostov-on-Don/Taganrog on the Azov Sea (north of the Black Sea).
- B.4 The sailing distance from Astrakhan (Russia) to St Petersburg is 3,638 km or 20 days sailing time. The sailing distance from Astrakhan to Rostov/Taganrog (Sea of Azov) is 1,012 km or 7 sailing days. Thus for short-sea shipping to Europe the Volga canal system up to St Petersburg is preferable.
- B.5 The relatively long sailing time to the Sea of Azov is due to the large number of locks (14).
- B.6 The size of ships operating in the Caspian is limited by the access provided by the Don-Volga waterway. One of the locks is particularly restrictive: the second lock chamber of the Kochetovsky Dam urgently requires reconstruction (together with the construction of a new dam) and can only carry a water head of 2.80m, 0.70 less than the guaranteed draught. Vessel draught is therefore restricted to 2.60m and reduces the normal vessel capacity from 3000t to about 2000t. Sedimentation on the river Don, due to insufficient dredging, has also reduced the possible draught. Construction would require 5 years so the bottleneck will exist up to the year 2000. The economic viability of the investment is based partially on the amount of oil that is likely to transit the canal from the Caspian.
- B.7 The Volga-Don system is not passable in the winter, therefore can only be used between March/April and October/November (i.e. at most 8 months a year). During the summer low water levels can reduce the available vessel draught for 1-2 month a year.
- B.8 Transit charges are reported to be rather high.

BLACK SEA

- B.9 Georgia's main ports on the Black Sea are Poti and Batumi (Figure B.1). Batumi is mainly a bulk port, importing grain with oil products imports for Armenia. Poti handles general cargo and containers, cotton, diesel exports from Azerbaijan.
- B.10 Georgia's ports compete with a number of other ports in the eastern Black Sea, in particular, Novorossiysk (Russia) and Odessa/Ilyichevsk (Ukraine) were the main southern outlets for the FSU, and still attract traffic for the Caucasus and Central Asia:
- Novorossiysk (Russia) is the largest Russian port on the Black Sea and can handle part-laden dry cargo vessels up to 100,000 dwt with a maximum draught of 12.5 m and oil vessels up to 250,000 dwt with a draft of 19 m;
 - Mariupol/Zdanov (Ukraine) is the largest port in the Azov Sea situated in the far east of Ukraine, serving the industrial region of Donyetsk: the port is specialised in coal and steel (water depth 8.25 m - 9.25 m);
 - Tuapse (Russia), the next competing port to Poti to the northwest. The majority of cargo is liquid bulk and steam coal. Water depth up to 12 m;
 - Taganrog (Russia), on the Russian/Ukrainian border handles relatively small amounts of cargo;
 - Trabzon (Turkey), the nearest Turkish port to both Georgia and Iran has a relatively low cargo throughput (down from almost half a million tonnes in 1992 to only 20,600t in 1995 - the port has been hurt by Turkey's self-imposed three-year-old trade embargo with Armenia). Main commodities are imports of fertilisers and wheat and exports of tea. Trabzon handled transit traffic - in particular humanitarian aid for Azerbaijan via Georgia by Turkish trucks. There is also a car ferry service to Sochi, plus a number of hydrofoils which serve Russian ports;
 - Hopa (Turkey), near the border with Georgia: small throughput; ro-ro berth.



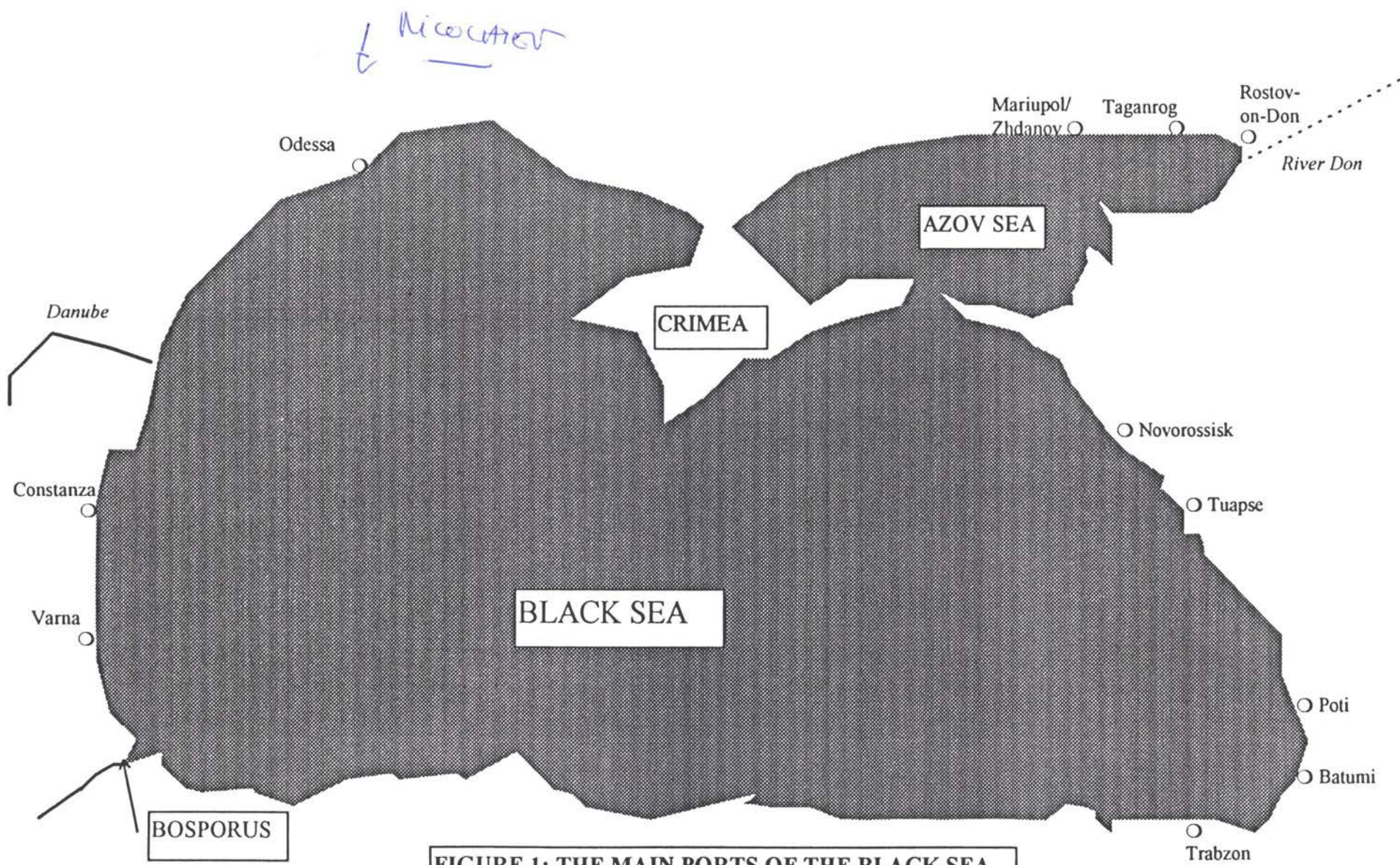


FIGURE 1: THE MAIN PORTS OF THE BLACK SEA

Port of Poti

- B.12 The port of Poti consists of an outer port separated from the open sea by a breakwater wall and an inner port. In the outer port are two bulk berths and an unused grain berth. In the inner port is a berth for handling steel products, four further berths for bulks (coal, ore) and three berths for general cargo and grain; there is also a container berth. The access channel depth (design depth 12.5 m) is reduced to 9 m in places due to heavy sedimentation. Depths in the port range from 8.25 m to 12 m.
- B.13 Cargo handling is mainly direct to/from rail wagons, as the availability of wagons permits. Total tonnages by rail were 3.039 Mt and 0.844 Mt in 1991 and 1992 respectively, with an average loading per rail wagon of 70t and 72t respectively.
- B.14 During the late 1980s the cargo turnover at Poti amounted to 4.0-4.5 Mt of bulk cargoes (mainly coal, ores, grain and bauxite) and about 200,000 t of general cargo. This total declined to 4.2 Mt in 1990 and 2.8 Mt in 1991. The cargo turnover in 1992 was only about one quarter (1.1 Mt) of the 1989 turnover. Apart from metals, all major bulk cargoes suffered a considerable decrease.
- B.15 The volume of containers handled in 1992 was insignificant (only 10 units). For containers, Poti will be a feeder port for the Mediterranean (i.e. with transshipment at one of a number of centres such as Alexandria, Damietta, Athens, Istanbul).

Table B-2 - Cargo Handled at Poti in 1992 ('000t)

Commodity	Import	Export	Total
Ore	295	16	311
Coal	-	235	235
Grain	332	-	332
Total bulks	627	251	878
Metals	-	109	109
Chemicals	-	35	35
Other	57	25	81
Total General Cargo	57	169	225
Grand total	684	420	1,103

Source: Rogge Marine (1993)

Note: there were 159 vessel calls in 1992 (average tonnage per ship 7,006).

Table B-3 - Transit Cargoes Via The Port of Poti ('000t)

Commodity	1989	1990	1991
Grain	74.2	-	-
Metal	52.5	24.2	12.1
Meat	32.5	11.6	-
Paper	29.8	9.1	9.4
Chemicals	9.5	9.0	0.1
Equipment		7.4	
Fertiliser		2.6	
Bricks			1.2
Containers	0.8		
Other	5.2		
Total	204.5	63.9	22.8

Source: Rogge Marine (1993)

Port of Batumi

- B.16 Batumi is some 75 km south of Poti and handles mainly bulk cargoes. Water depth at the berths ranges from 8 to 13 m. Maximum draught for tankers is 9.5 m (40,000 dwt).
- B.17 The recent evolution of traffic at the port is shown in the following tables. Overall volumes have fallen between 1990 and 1994, but recovered somewhat in 1995. The main dry cargo was imports of grain (over half a million tonnes in 1995). Other important flows are flour imports and scrap exports.

Table B-4 - Traffic at the Port of Batumi ('000t)

Commodity	1989	1990	1991	1992 (Jan/Sep)
Grain	1,048	931	674	308
Alumina	442	432	369	151
Metals	27	17	4	13
Rice	22	4	4	-
Sugar	64	56	20	4
Flour	-	-	-	21
Others	6	7	12	8
Total	1,609	1,447	83	505
No. ships	973	858	742	1049
Av. t /ship	1,650	1,690	1,460	480

Source: Rogge Marine (1993)

Table B-5 - Batumi Port: Cargo Handled ('000 t)

Commodity	1993 Total	Import	Export	1994 Total	Import	Export	1995 Total	Import	Export
Grain	799	799	-	499	499	-	525	525	-
Flour	106	106	-	67	67	-	72	72	-
Scrap	18	-	18	27	-	27	46	-	46
Ore	17	17	-	1	-	1	18	-	18
Citrus	-	-	-	16	-	16	17	-	17
Rice	1	1	-	22	22	-	15	15	-
Sugar	25	25	-	1	1	-	11	11	-
Food products	5	5	-	2	2	-	7	7	-
Oils & fats	-	-	-	2	2	-	7	7	-
Coal	2	-	2	7	2	3	4	4	-
Chemicals	7	-	7	5	-	5	1	1	-
Other	13	1	12	15	12	4	19	14	5
Total	993	954	39	664	607	58	742	656	86

Source: port statistics

Table B-6 - Traffic in Georgian Ports (Mt)

Commodity	Turnover		
	1989	1991	1992
Grain	0.8	0.4	0.3
Coal	0.5	0.8	0.3
Ores	1.0	0.4	
Metals	0.1		0.1
Bauxite	0.8	0.8	0.3
Other bulk	1.2	0.3	
Total bulks	4.4	2.7	1.0
Break bulk	0.2	0.1	0.1
Total Poti	4.6	2.8	1.1
Total Batumi	1.6	1.1	0.7 (est.)
Total Georgian ports	6.2	3.9	1.8 (est.)

Source: Rogge Marine (1993)

CASPIAN SEA

- B.18 Maritime transport across the Caspian is one of the major constraints on the TRACECA corridor. The most important service on this corridor is the rail/road ferry operating between Baku and Turkmenbashi. The ports on the Caspian are shown in Figure B.2.
- B.19 There is a growing environmental and operational problem on the Caspian: the water level.
- B.20 The maximum vessel size on the Caspian is about 20,000 deadweight tonnes.

Water Level on the Caspian

- B.21 The water level of the Caspian Sea has been rising rapidly since 1977, 2.37 m to date effectively flooding the coastal areas, including the ports and access to the ports:
- the rail line from Baku to Astara (to Iran) is seriously affected by the rise in the level of the Caspian and yearly rehabilitation of a length of about 40 km is necessary to keep this service running;
 - the rail line to Turkmenbashi is being affected with rehabilitation work being required to 130 km of railway embankment;
 - the road route in Azerbaijan to the south of the Caspian is also threatened by the rising water level.
- B.22 Since the reason for the rise in water level is unknown (it is thought to be related to climatic variations) it is difficult to forecast when the process will stabilise. Work by Sofremer (1995) makes the assumption that the water level will continue to rise at least until the year 2010.
- B.23 The main complex in Baku and the general cargo berth in Turkmenbashi are not endangered by the rising water level. However, without investment in port facilities the car/train ferry will not be able to continue to operate.

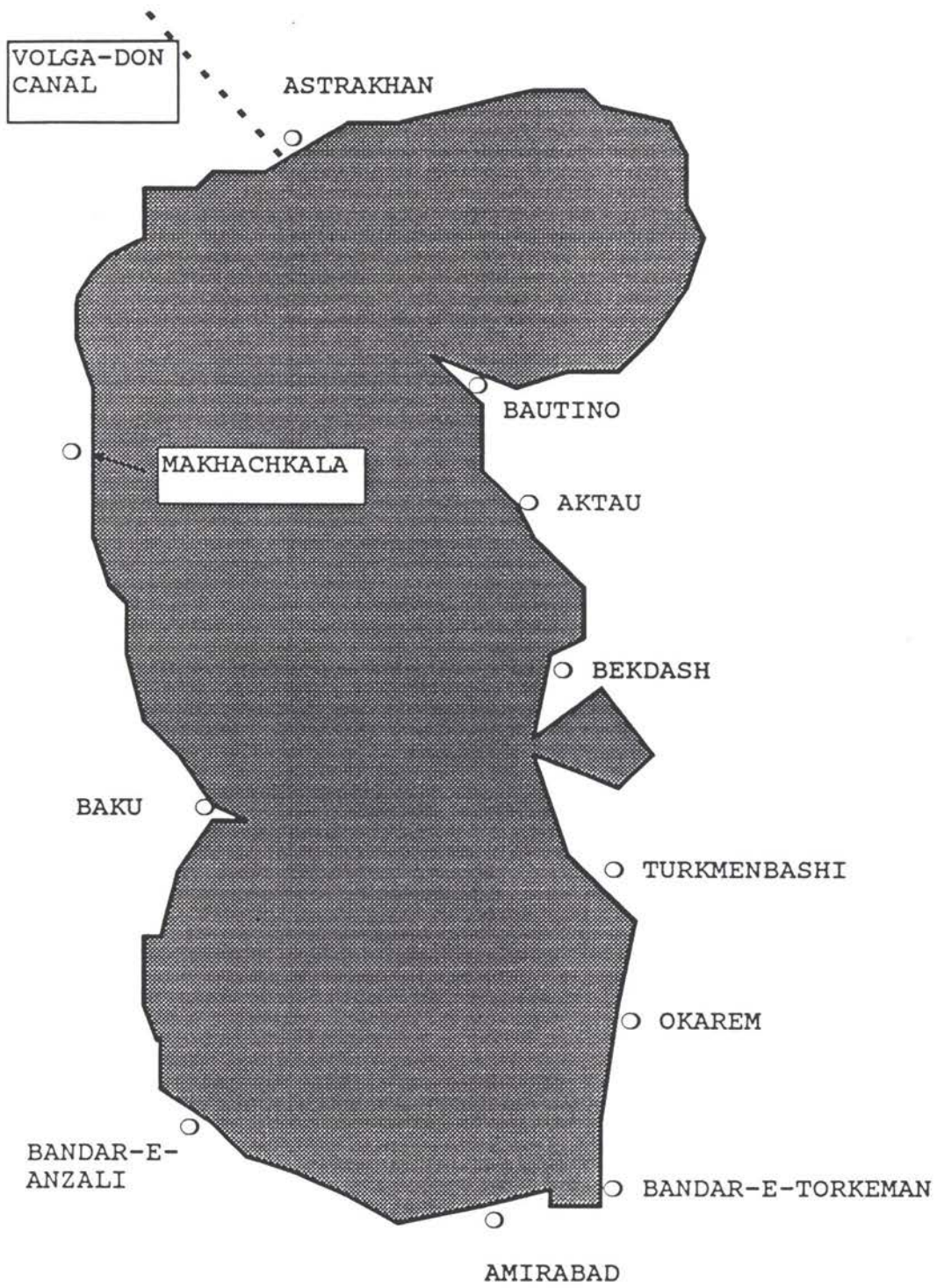


FIGURE 2: MAIN PORTS ON THE CASPIAN SEA

- B.24 Sofremer (1995) estimated that minimal work required for emergency and short-term measures for Baku and Turkmenbashi ports would cost about US\$ 75 million and would result in an increased charge of about \$4.3/t, while a charge in excess of \$1.5/t seems likely to neutralise the competitiveness of the TRACECA route.

Traffic on the Caspian

- B.25 The following table summarises the shipping movements on the Caspian Sea in late 1995.
- B.26 Prior to 1991 navigation in the Caspian Sea was limited to the Soviet shipping fleet: the Baku-based Caspian Shipping Co (KSC). carried more than 95% of the whole annual cargo volume shipped.

**Table B-7 : Ship Movements in TRACECA Caspian Sea Ports
(3rd Quarter)**

From	IN		To	OUT	
	No. Ships	Main Commodities		No. Ships	Main Commodities
BAKU					
Aktau	2	Flour, oil	Atkau	1	Petroleum products
Kianli (Turkm.)	11	Salt	Henzeli (Iran)	11	Petroleum products, chemicals
Turkmenbashi	13	Fuel, machinery	Noushehr (Iran)	10	Petroleum products
			Makhachkala	3	Petroleum products
			Turkmenbashi	16	Petroleum products, machinery
TURKMENBASHI					
Baku	2	Vehicles	Izmir	4	Scrap
Venice	4	Gen. cargo, equipment	Podporozhya	3	Coke
Astrakhan	2	Vehicles, spare parts	Baku	2	Salt
			Kyodja	2	Equipment
			Aladja	1	Chemicals
			Astrakhan	2	Road-metal, containers
			Henzell (Iran)	2	Cotton, steel, containers
AKTAU					
Baka	1	Petroleum Products	Henzeli (Iran)	6	Metal, containers
			Baku	6	Oil, metal, vehicles containers, flour

Source: Port Authorities

Table B.8 - Shipments of the Caspian Shipping Co

	1989	1990	1991	1992	1993	1994	1995
LIQUID CARGO							
of which	10.15	9.53	8.09	3.23	2.94	2.90	1.90
a) Caspian Basin							
of which							
Crude Oil	3.85	3.77	3.58	2.09	1.69	1.46	0.85
Oil products	5.86	5.31	4.11	0.87	0.96	1.12	0.77
Water	0.45	0.45	0.41	0.27	0.28	0.31	0.28
b) Iran	1.19	0.96	1.23	1.19	0.81	1.41	1.26
c) Foreign	1.62	1.76	1.39	0.67	0.86	0.77	0.65
TOTAL	12.96	12.25	10.71	5.09	4.62	5.07	3.80
DRY CARGO							
a) Caspian Basin	6.80	4.78	4.22	2.17	1.12	0.71	1.01
of which							
Building Materials	1.71	1.38	1.40	0.43	0.02	0.0	0.0
Salt	0.57	0.41	0.46	0.27	0.17	0.03	0.10
Ferries	4.52	2.98	2.36	1.48	0.93	0.67	0.91
b) Iran	0.35	0.51	0.36	0.13	0.21	0.19	0.01
c) Foreign							
TOTAL	7.45	5.60	4.87	2.77	1.86	1.49	2.03

Source: Uniconsult (1996)

B.27 Traffic on the Caspian is dominated by the ports of Baku and Turkmenbashi (formerly Krasnovodsk) for dry cargoes and the ports of Apsheron/Baku, Aktau, Turkmenbashi and Makhachkala for liquid bulk cargoes. In 1990 KSC carried 2.4 Mt on the Baku - Turkmenbashi - Baku link, and 1.2 Mt on the Aktan - Astrakhan route, making them the main dry cargo links in the Caspian (about 4.0 Mt in total). For liquid bulks the main flows were between Apsheron (Baku), Aktau, Turkmenbashi and Makhachkala: the main port was Apsheron with imports of 1.8 Mt and exports of 5.1 Mt; the second main trade went from Aktau, Baku and Turkmenbashi to Makhachkala (total 4.2 Mt). Total liquid bulk movements within the Caspian were about 9.2 Mt: about 1 Mt of liquid bulk was moved to/from the Caspian. Other cabotage was about 3.6 Mt.

Table B.9 - Dry Cargo Movements (1995 Thousand Tonnes)

From/to	Baku	Turkmenbashi	Astrakhan	Kianly	Bekdash
Baku	xx	330			
Turkmenbashi	536	xx			60
Astrakhan	7		xx		
Kianly (salt)	60			xx	
Bekdash					xx

Source: Caspian Shipping Co

Table B.10 - Liquid Bulk Movements (1995 Thousand Tonnes)

From/to	Baku/ Aspheron	Turkmen- bashi	Aktau	Astrakhan	Kianly	Makhach-kala	Bekdash	Okarem
Baku/ Apsheron	xx	194 (oil products)			16 (water)		32 (water)	116 (water)
Turkmen- bashi	318 (crude oil)	xx		72 (oil products)		89 (oil products)		
Aktau			xx					
Astrakhan				xx				
Kianly					xx			
Makhachkala						xx		
Bekdash							xx	
Okarem		520 (crude oil)				228 (crude oil)		

(Source: Caspian Shipping Co)

B.28 Since 1991 the level of maritime traffic on the Caspian Sea has collapsed, although traffic on the Baku-Turkmenbashi ferry has recently shown signs of recovery, particularly for ro-ro traffic. However the existing transport capacity offered far exceeds even the most optimistic demand assumptions (Sofremer, 1995). Internal traffic on the Caspian is substantial and is expected to expand, apart from the carriage of crude oil and oil products that will be in competition with pipeline developments.

Commodities shipped on the Caspian

B.29 According to the main directions of trade the following grouping can be made:

- internal Caspian Sea Trade: building materials (sand, gravel, stones, etc.), salt, chemicals, oil & oil products and fresh water.
- trade by rail to/from the north: timber (sawn wood), metals, machines & equipment and other general cargoes
- trade by river-sea vessels to/from the north: containers, cereals or flour, machines & equipment and other general cargoes
- trade to/from the Black Sea: containers, general cargo (cotton) and machines & equipment.

B.30 Main commodities handled in the past at Baku were:

- building materials (sand, gravel, cement) from Turkmenbashi;
- salt from Kianly (Turkmenistan) for fertiliser production and petrochemical processing;
- cereals from Latvia;
- timber (mainly sawn wood) by rail from Russia shipped to Iran;
- metals (mainly iron and structural steel) by rail from Russia, Ukraine and Kazakhstan shipped to Iran;
- equipment and machine (mainly transit);



- chemicals (asbestos and mineral fertilisers) imported from Kazakhstan and Uzbekistan;
 - cotton exported to Bulgaria in containers and as general cargo to Turkey and Italy via the Volga-Don Canal.
- B.31 Oil and oil products are traded mainly within the Caspian Sea. Crude oil is transported from Kazakhstan (Aktau port) and Turkmenistan to the refinery in Baku (capacity 20 Mt/yr), from where exports are made to Makhachkala in Russia (with rail connections or pipeline to Tuapse) and Turkmenbashi. Some crude was transported in the past to Samara and Saratov refineries on the Volga.
- B.32 Fresh water is exported from Baku to Turkmenistan and Kazakhstan.

Ferry Between Baku and Turkmenbashi

- B.33 The Caspian Shipping Co. operates a rail/road ferry between the ports of Baku and Turkmenbashi. The sailing distance is 310 km with a sailing time of about 12h.
- B.34 During 1994 there were two ferries, each sailing three time per week. In November 1994 the schedule was increased by introducing two additional ferries, with sailings being determined by when the main deck (railcars and road trucks) is fully loaded. At Baku the ferry has no regular timetable: departures are announced over the local radio station.
- B.35 The vessels used are of the 'Sovietskiy Dagestan' type constructed to serve rail, road and passenger traffic. The 3950 dwt vessels have a maximum speed of 17.15 knots. The carrying capacity is equivalent to 70 'Lada' type cars on the car deck, and a maximum of 28 railcars plus 5 trucks on the main deck (more trucks can be carried in the place of rail wagons), plus 202 passengers.
- B.36 During the 1994 there were 208 sailings in both directions. Only 77% of the rail wagon carrying capacity was used, with the spare space being used by trucks. Only 11% of the car space and 38% of passenger accommodation were used.

Table B.11 - Ferry Traffic Baku/Turkmenbashi (thousand tonnes)

	Baku to Turkmenbashi	Turkmenbashi to Baku	Total
1989	1995	1722	3717
1990	1312	903	2215
1991	913	712	1625
1992	525	333	858
1993	208	314	522
1994	241	309	550
1995	330	500	830

Source: Umconsult (1996)

Table B.12: Modal Split of Ferry Traffic Baku-Turkmenbashi (thousands net tonnes)

Item	1993	%	1994	%	1995	%
Baku-Turkmenbashi	134	37%	154	43%	235	41%
Turkmenbashi-Baku	231	63%	206	57%	344	59%
Total	365	100%	360	100%	579	100%
Modal split						
Rail wagon	256	70%	252	70%	330	57%
Truck	110	30%	108	30%	249	43%

Source: Ramboll (1996)

B.37 The capacity of sailings could be significantly increased as more vessels are potentially available and the vessels currently used could be operated more intensively.

Port of Baku

B.38 Baku port consists of :

- a 'main complex': a mole approx. 350m long and 185m wide used for miscellaneous goods traffic, edged with quays with an alongside depth at present of about 6m;

- a 'ferry terminal' with two berths (the water level has reached the access bridge for rail traffic); a timber terminal length 500m with draught of 4.2m (this is already submerged);
- the oil terminal at Apsheron (50 km from Baku) with three piers which can accommodate ships of nearly 13m draught.

Table B.13: Traffic at the Port of Baku (excluding oil traffic, million tonnes)

Cargo	1991	1992	1993	1994 (est.)
Ferries	1.92	1.09	0.64	0.53
other	0.90	0.69	0.52	0.43
total	2.82	1.78	1.16	0.96
% ferries	68	61	55	56

Source: Sofremer (1995)

Port of Turkmenbashi

B.39 The port of Turkmenbashi consists of:

- 400m quay (3 berths) for general cargo which can accommodate ships of 8.5m draught;
- the ferry terminal;
- a quay for bulk dry cargo 288m long (which is virtually at water level and the open area has suffered subsidence), accommodating ships of 4.7m draught (2 berths);
- an oil terminal with two piers (four berths) for 5,000t vessels.

**Table B.14 - Traffic at the Port of Turkmenbashi
(excluding oil traffic) (million tonnes)**

Cargo	1991	1992	1993	1994 (est.)
Ferries	2.06	1.25	0.85	0.68
other	2.03	0.99	0.39	0.22
total	4.09	2.24	1.24	0.89
% ferries	50	56	69	75

Source: Sofremer (1995)

Port of Aktau

- B.40 Kazakhstan's only port of significance for international trade is the port of Aktau. The turnover at the two minor ports of Bautino and Gurjev is limited to dry cargoes (mainly building materials and general cargo) and is relatively low (below 0.1 Mt together).
- B.41 Aktau is Kazakhstan's only port handling liquid bulks, mainly exports of crude oil. The level of dry cargo throughput is small (less than 0.1 Mt). The port of Aktau consists of:
- one fishery berth;
 - three operating berths for general cargoes (also used for dry bulk);
 - one ferry terminal;
 - two working oil berths;
 - several damaged berths which cannot be used.
- B.42 The ferry connection to Turkmenbashi (via Bekdash) and Baku are now out of operation, due to low cargo tonnages.

**Table B-15 - Aktau Port: Cargo Throughput
(million tonnes)**

Cargo	1992	1993	1995		
			Total	Imports	Exports
Liquid Bulk Total	2.80	1.19	2.60	0.20	2.50
Crude Oil			2.50	0	2.50
Oil Products			0.20	0.20	0
Dry Bulk Totals	0.10	0.05	0.05	0.03	0.02
Fertilisers			0.05	0.03	0.02
General Cargo of which	0.03	0.05	0.08	0.01	0.07
Metals			0.06	0	0.06
Total	1.93	1.29	2.83	0.24	2.59

Source: EBRD Masterplan Study, quoted in Sofremer (1995) and port statistics (1995 data)

- B.43 Rehabilitation of Aktau port to begin with EBRD funding. Emphasis will be on services to Iran, rather than Baku/TRACECA route.

Traffic Forecasts

- B.44 Sofremer (1995) provide the following forecasts for Caspian Sea traffic.

**Table B-16 - Forecasts for 2000/2005 for the Baku-Turkmenbashi/
Aktau Services**

Cargo Type	Baku	Turkmenbashi	Aktau
Scenario 1			
General cargo	1.3 - 2.2	1.67 - 2.31	0.35
Ferry traffic	0.35 - 0.65	0.35 - 0.65	
Scenario 2			
General cargo	1.1 - 1.9	1.6 - 2.18	
Ferry traffic	0.9 - 1.4	0.9 - 1.4	

(Scenario 1: no investment, rail ferry stopped; scenario 2: investment allowing shipping to continue to operate)

- B.45 For ferry traffic it would be sufficient to operate two vessels and three round trips per week, using a single berth at each port. Existing facilities for general cargo are probably sufficient for the short term.
- B.46 For liquid bulk traffic (oil and oil products) traffic will depend on the pace of pipeline construction.

Scenarios

- B.47 Sofremer (1995) propose three scenarios for maritime traffic on the Caspian. All the scenarios assume a continued increase in water level of 25-30 cm per annum. Already now the ferry bridges are working at their upper limit during August (the seasonal water level peak). Additionally the rail connection behind the bridges is seriously endangered as they are constructed close to present water level (60 cm clearance in August 1994). In both Baku and Turkmenbashi the rail connections in the hinterland are also under threat.
- B.48 The 'worst case' scenario assumes no investment to adapt the ferry bridges in time: consequently ferry traffic will be lo-lo or ro-ro. No investment is assumed on the river Don:
- there is no re-routing of traffic from the Black Sea to the Caspian, but the routing via the Volga to the Baltic will become more competitive.
- B.49 The 'realistic scenario' assumes that investments to rescue the ferry rail connection are available in time: the transport framework of the region remains unchanged up to the year 2005:
- the TRACECA route is quicker and cheaper than Volga-Don traffic with the Black Sea;
 - the TRACECA route is more competitive than the Volga/Baltic option.
- B.50 The 'optimistic' scenario assumes that all transport bottlenecks in the region are abolished (e.g. the lock in the river Don is reconstructed and necessary investments are made in the ports of Baku, Turkmenbashi and Aktau):

- shipments via the Volga-Don canal will compete with the TRACECA route for non-time-sensitive cargoes
- Azerbaijan will effectively be in the hinterland of the Georgian port of Poti and the current transport situation for Azerbaijan is assumed to exist to the year 2000 (i.e. no rail routes to the north or south).

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APPENDIX C

Road and Rail Transport

C. ROAD AND RAIL TRANSPORT

Note: This information will be updated. Please contact the Consultant.

INTRODUCTION

Road Transport

- C.1 The Central Asian and Caucasian republics were well provided with major highways during the Soviet period, often to standards higher than would have been set by Western countries for similar levels of traffic (McDonell, 1995). All of the capital cities and large towns are connected by good asphalt roads of between two and four lanes, although standards of construction vary. Road maintenance has been greatly affected by reductions in funding and a lack of political priority.
- C.2 The road network was developed with little attention to the FSU's internal borders. For example, the main road between the capitals of Uzbekistan and Kyrgyzstan runs almost entirely through Kazakhstan.
- C.3 In the FSU road freight transport was provided by regional enterprises under the various ministries (in particular the Ministry of Automotive Transport). There has been a process of reform and privatisation in the road sector, notably in Kazakhstan and the Kyrgyz Republic, but the new decentralised arrangements are only beginning to take shape.
- C.4 The carrying capacity and axle weights of local vehicles are very low by international standards (6t standard was common). A new development is the growth of long-haul international road operations, based in Turkey, Iran, China and Bulgaria.
- C.5 Traffic trends have been generally downwards and are currently below the levels of the mid-80s: In Uzbekistan traffic levels are falling or static; in Kazakhstan there has been a sharp fall.

Railways

- C.6 The rail network in the TRACECA states formed part of the Soviet system and is therefore Russian wide-gauge. Much of the network is double-tracked and the heavily trafficked sections near Tashkent to Shimkent and Karaganda are electrified. Virtually all of the lines are fitted with automatic block signalling.
- C.7 The network was built with little regard to the FSU's internal borders. For example, the railway between the two largest towns in Kyrgyzstan, Osh and Bishkek, runs from Osh through Uzbekistan, Tajikistan, Uzbekistan again and then Kazakhstan before re-entering Kyrgyzstan just before Bishkek. Similarly the main rail link south from Russia to Chardzhou weaves between Turkmenistan and Uzbekistan. There are several proposals for new rail lines to avoid such 'shared lines' and to re-route lines through national territory although better international co-operation is clearly a better option.
- C.8 The only rail link east (apart from a circuitous Trans-Siberian route) is the Kazakhstan-Urumqi line joining the Chinese network. The only southward link in the foreseeable future is the Turkmenistan-Mashhad line joining the Iranian network.
- C.9 The soviet 'Central Asian Railway' was based in Tashkent and provided services to Uzbekistan, Turkmenistan, the Kyrgyz Republic, Tajikistan and Kazakhstan.
- C.10 Much of the activity on the most heavily trafficked lines in Kazakhstan involves coal and heavy bulk materials, although this has been much reduced in recent years - like other traffics. Within Kazakhstan there are three separate railway administrations: 'Almaty' around the capital, 'Tselinaya' including the main line to Siberia through Karaganda and 'West Kazakhstan' based on the route from Shimkent to Aktyubinsk and European Russia.
- C.11 In the past the main connections to the Far East, the Soviet Union and Europe went via either the Trans-Siberian railway, north of Lake Baikal, or the Trans-Baikal and East Siberian railway, south of the Lake.
- C.12 In 1992 a connection was completed between Urumchi in China and Druzhba in Kazakhstan, with container handling and gauge transfer facilities near

Druzhba, from where the line ran to the trans-Russian 'landbridge', which brought new possibilities for east-west transport. In addition the Turk-Sib line, running through Central Asia from the port of Turkmenbashi (formerly Krasnovodsk) on the Caspian Sea in Turkmenistan was linked to Baku and the Caucasus by a rail ferry.

C.13 In the Caucasus there were two major railways:

- the north Caucasus, coming down from Russia to Baku, on the western shore of the Caspian Sea;
- the line from Azerbaijan to Georgia, connecting with Armenia to the south-west and also north along the Black Sea coast past Batumi and Poti, through Sukhumi and on to the main Russian system.

C.14 From the early 1980s funds for maintenance, rehabilitation and modernisation were cut and since independence the conditions have generally worsened.

C.15 In Kazakhstan the main directions of rail transport are:

- westerly Aktyubinsk line: 9 Mt moving between Kazakhstan and Russia in 1993 (cf. 24 Mt in 1989);
- main Petropavlovsk line: 13 Mt in 1993 (cf. 23 Mt in 1989);
- lines between Kazakhstan, Mongolia and Siberia: 25 Mt (cf. 42 Mt in 1989).

C.16 The possible redevelopment of the trans-Caspian routes linking Turkmenistan, Kazakhstan, Russia (including Dagestan), Azerbaijan and Iran can be expected to be governed by the outcomes of the various negotiations over oil and gas projects (McDonell 1995).

TRANSIT IN THE CAUCASUS

C.17 The TRACECA route runs west-east through the Caucasus from the Black Sea port in Georgia via Tbilisi to the Caspian Sea port of Baku in Azerbaijan and then eastwards across the Caspian Sea. There are connections off the

west-east route to Armenia. The only rail branch currently open to is the Bagratashen line from Tbilisi.

- C.18 The transit situation in the Caucasus is currently highly constrained, with little transit to the north or south due to a number of security problems in the region. The logical - and traditional - routes to Russia in the north (along the west coast of the Caspian Sea and along the east coast of the Black Sea) are currently blocked. The existing rail routes to the south - from Armenia to Turkey and from Nakhichevan/Azerbaijan to Iran (and Turkey) - are also closed. The re-opening of these route would have a significant impact on the routeing of cargo in the region, with a consequent effect on traffic moving along the TRACECA route.
- C.19 In the past the major cargoes transported on the TRACECA Caucasus corridor by rail have been building materials and general cargoes from east to west, and iron ores and general cargoes from west to east.

**Table C-1- Cargo Transported by Rail on the TRACECA Corridor:
Georgia (Beyk-Kesik) to Baku and Ferry to Turkmenbashi
and Vice Versa (1000t)**

Year	From Georgia	To Georgia	Total
1988	49.0	21.3	70.4
1989	43.5	24.2	67.7
1990	35.9	8.4	44.3
1991	21.4	4.0	25.4
1992	4.5	0.8	5.4

Source: Sofremer (1995)

- C.20 The volume of international rail traffic crossing the Caspian and the Caucasus, from Turkmenbashi to Georgia (Beyk-Kesik), collapsed from nearly a quarter of a million tonnes in 1989 to only 8,100t in 1992 (consisting of 1,800t crude oil, 900t building materials, 100t of cement and 5,300t of general cargo). In the direction Georgia to Turkmenbashi the cargo fell by nearly a factor of 10 from 0.436 Mt in 1989 to 0.046 Mt in 1992, including 24,500t of iron ores, 3,600t of 'black metals', 1,700t of minerals and 15,200t of general cargo.

C.21 By 1995 the rail traffic crossing the border between Azerbaijan and Georgia has increased to one and a half million tonnes (Table C.2).

Table C-2: Border Crossing Freight Railway Traffic Azerbaijan - Georgia

	1994		1995	
	Loaded Wagons	1000 t	Loaded Wagons	1000 t
Azerbaijan - Georgia	15,903	892.8	19,036	1068.7
Georgia - Azerbaijan	11,043	500.1	11,925	550.1

Source: Azerbaijan Railways

C.22 The commodity structure of traffic crossing the border in January 1996 shows:

- two major traffics:
 - oil products form Azerbaijan to Georgia (98% of all traffic in this direction);
 - grain from Georgia to Azerbaijan (68% off all traffic in this direction);
- an imbalance of trade 2 $\frac{3}{4}$: 1

Table C-3: Commodity Structure of Border Crossing Railway Traffic Azerbaijan - Georgia (January 1996)

	Azerbaijan - Georgia		Georgia - Azerbaijan	
	('000 t)	%	('000 t)	%
Total	83.0	100.0	303	100.0
Oil products	81.4	98.0	0.3	1.0
Metals			1.3	4.2
Metal construction			1.0	3.3
Grain			20.6	67.9
Flour			6.3	20.9
Other	1.6	2.0	0.8	2.6

Source: Azerbaijan Railways

- C.23 Traffic between Baka and the ports of Poti and Batumi dropped to 5.5 Mt in 1992 and 2.68 Mt in 1993 and was less than 1.5 Mt in 1994. The number of trains routed daily to Georgia fell from 29 in 1988 to only 4 in 1993.
- C.24 The TRACECA route was not the major route for transit traffic in the region in the past. Traffic on the TRACECA corridor was less than 10% of total rail transit via Azerbaijan in 1993. In Soviet times this share was much lower as the route from Russia to Georgia via Azerbaijan was a major transport route. During these times only about one-third of railway transport to soviet Central Asia went via the ferry, while the remaining cargo was routed by rail north around the Caspian Sea.

Transit In Georgia

- C.25 The geography of the Caucasus determines the land access to Georgia and to its Black Sea ports. Traffic potential to/from areas north of Georgia must be judged as being very limited, given the importance of Novorossiysk, while the traffic related to the region south of Georgia (i.e. Turkey) will seek to move through Turkish ports. Georgia's 'natural hinterland' therefore comprises Azerbaijan, Armenia and Iran; via the Caspian Sea the hinterland extends to most of Central Asia.
- C.26 In 1988 international trade of Georgia was:
- north-south trade with Russia: 30 Mt, 26 Mt of which moved by rail and 4 Mt by ship (there was no trade with Turkey)
 - east-west trade amounting to 17 Mt; 12 Mt of railway cargo with eastern neighbours: (Azerbaijan 7 Mt; Armenia 3 Mt; Central Asia 2 Mt) and 5 Mt with overseas trading partners.
- C.27 By 1992/3 this trade had fallen by about 50%.
- C.28 The ports of Poti and Batumi are the major gateways for trade. The tonnage shipped via the port of Poti fell from 4.5 Mt in 1988 to 1.1 Mt in 1992. Despite this fall there have been delays at the port due to non-availability of rail wagons. From Samtredia in west Georgia single track rail lines lead to Batumi, Poti and Sukhumi (which is in the disputed Abkhazia region in the

north-west). There are container terminals capable of handling 20 ft containers in Samtredia and Tbilisi.

Table C-4 - The Potential for Transit Traffic to be Handled by Georgian Ports (Mt).

Transit partner	1997	2003
Armenia	0.9	1.5
Azerbaijan	1.2	2.1
Central Asia	1.6	2.8
Iran	0.8	1.4
Total transit cargo	4.5	7.8
Georgian domestic traffic	3.0	5.3
Total port traffic	7.5	13.0

Source: Rogge Marine (1993)

Road Transit

- C.29 The major entry point for road transit traffic is the large modern complex at Sarpi on the border with Turkey in western Georgia. However the Turkish border closes after 1900 for freight. A system of convoys is also in force in the Adzharia region of Georgia. Russian military are currently enforcing checks on both vehicles and cargoes. The road from Batumi to Sarpi (Turkish border) is good: the road inland to Samtredia is in poor condition.
- C.30 The second busiest road crossing is at Krasni Most (Red Bridge) in the south-east of the country on the border with Azerbaijan.
- C.31 A new secondary road crossing to eastern Turkey was opened in December 1995 at Ochoshani. However the route is not good. The crossing is used mainly by empty Turkish trucks returning home (many of them having entered laden at Sarpi).
- C.32 There is a remote mountainous border crossing at Ninotsminda/Bavra with Armenia. The crossing is at over 2000m, and with poor access roads: consequently traffic flows are low.

Transit in Armenia

- C.33 Armenia is currently blockaded by Turkey and Azerbaijan. The railway and pipeline with Georgia have been bombed and transport to Georgia by road is difficult.
- C.34 The busiest border crossing is in the south with Iran at Meghri, where a bridge has replaced the previous temporary pontoon across the Araks river. There are few signs of congestion, possibly due to the mountainous roads which lead to it. The direct road from the south of Armenia to the north is closed because of the war and the closure of the border with Nakhichevan. The alternative route is a mountainous route with three high passes in excess of 2000m altitude and a deep gorge at the Hagari river. Roads are passable with potholing limiting transit speeds.
- C.35 The TRACECA road link in the south of Armenia, from Meghri to the east (via the closed border crossing of Nyuvadi) is only passable to 4-wheel drive vehicles.
- C.36 The border between Armenia and Azerbaijan does not formally exist - there is a wide 'no-man's land' and Armenia has effectively occupied Nagorno-Karabakh. The main border crossing between the two states - bypassing Georgia - was in the past a road and rail crossing at Ejevan, which is now closed.
- C.37 The links between Armenia and the Azerbaijan enclave of Nakhichevan have also been cut. Thus the road/rail crossing at Yeraskh, which was traditionally the main route from Yerevan and Iran via the Araks valley, is now closed as is the road and rail crossing at Agarek.
- C.38 As a result of the war the borders with Turkey are also closed. The road/rail crossing at Akuzik (to the west of Gyumri) was in the past one of the busiest. The rail line continues westwards via Kars in Turkey.
- C.39 The only international rail crossing open is at Ayrum to Georgia. The rail wagons are operated in closed circuit between Armenia and the Georgian ports of Poti and Batumi (there is an exchange of in/out wagons at the border).

- C.40 Generally current road transport volumes may be only around 30% of the levels prevailing in the 1980s. The busiest road crossing is with Iran at Megri, followed by Bagratashan, in the north-east of the country, across the river Debed. There is a more direct crossing to Poti/Batumi via Bavra (Ahalkalaki - Analche) in the north-west, but the crossing is remote and in a mountainous area. The road is good from Yerevan to Gyumri but then poor up to the border. The remote border crossing at Gogovan/ Dzoranut in the central part of the northern border is an alternative, but is subject to winter closures.
- C.41 Because of security problems on the Georgian side many truckers travel in convoys.

Transit in Azerbaijan

- C.42 Since 1991 rail traffic in Azerbaijan has collapsed with the closure of the Nakhichevan line (due to the conflict with Armenia) which closed the access to Iran and Turkey in the south (Table C.5). The Chechnya conflict in 1994 effectively closed the northern border. The only remaining rail route is the TRACECA corridor connection between Baku and the ports of Poti and Batumi in Georgia. In the 1980s Azerbaijan railways transported about 20 Mt/yr to Georgia, of which one quarter was exports and the remaining 15 Mt were transit, mainly for Russia. By 1994 this traffic had fallen to half a million tonnes.

Table C-5: Freight Transport of Azerbaijan Railways

	1989	1990	1991	1992	1993	1994
Volume (1.000 t)	91.6	80.2	73.0	39.8	25.0	11.1
Performance (Mtkm)	41.9	37.1	30.5	13.8	7.3	3.0

- C.43 The Azerbaijan enclave of Nakhichevan is now only linked by air and by road via Iran. Traffic between Nakhichevan and Azerbaijan has been transferred to the new Iranian road on the south bank of the river. The crossing in Nakhichevan is at Julfa and in Azerbaijan near Horadiz. The rail link south to

Iran from Julfa in Nakhichevan is closed: this line leads to Tabriz in Iran, with a link to Lake Van in Turkey.

- C.44 Road traffic at the Port of Baku was of minor importance in 1994 (95% was rail-based), although the road transit traffic to Central Asia from Iran/Turkey has recently increased substantially, resulting reportedly from a change in Russian customs legislation which made transit via Russia much more expensive than before.

TRANSIT IN CENTRAL ASIA

- C.45 The main road axis runs east-west (M37) from the Caspian port of Turkmenbashi - Gyzylarbat - Ashgabat - Tedjen - Mary - Charzhou - Bukhara (Uzbekistan) - Samarkand. From here the road becomes the M39 and continues to Tashkent and eventually to Almaty, Kazakhstan.

- C.46 The main rail links linked to the TRACECA route are:

- the link from the port of Turkmenbashi, which runs eastwards to Ashgabat then north-east to Charzhou;
- the link from the port of Aktau which runs north-east to Beyneu, where it joins the route running from Astrakhan in Russia around the north of the Caspian Sea to Charzhou;
- From Charzhou the line runs north-east to Samarkand - Tashkent - Shimkent - Jamboul with branches to Bishkek and Almaty. A branch from Jizak (north-west of Samarkand) runs eastwards to Leninabad and the Fergana valley;
- Other lines run south from Russia southeast to Kazakhstan through Aktyubinsk and Karaganda.

Transit in Turkmenistan

- C.47 The Caspian Sea port of Turkmenbashi (formerly Krasnovodsk) lies on the TRACECA route and is a major gateway for trade. However in 1993 total rail traffic to/from the port was only 0.46 Mt. In late 1994 there were large movements of cotton by truck to the port.

Road

- C.48 The main road axis, the M37, runs from Turkmenbashi to the capital Ashgabat, southeast to Mary and then northeast to Charzhou and the border with Uzbekistan. From the town of Mary, 350 km from Ashgabat, the A388 runs south-easterly to Afghanistan. A road leads north from Ashgabat to Nunus in Uzbekistan.
- C.49 The main road border crossings for long-distance international movements are:
- with Iran:
 - Gaudan, about 40 km south of Ashgabat, leading to Mashhad
 - Artyk, to the east of Ashgabat
 - Godriolum (Gulrielu) in the south-west of the country;
 - Serakhs, to the east of Artyk, opened at the beginning of 1995 with Uzbekistan, through Farab on the M37;
 - with Kazakhstan, through Bekdash in the north-west of the country;
 - with Afghanistan, through Kushka (Gushgy) in the south, leading to Herat.
- C.50 Origin/destination surveys conducted by Kocks Consult (1995) provide more information on movements. An average of about 2000 vehicles crossed international borders in 1994 of which about half could be classed as short-distance local movements across the border with Uzbekistan. There were only 4 vehicles a day crossing the Afghanistan border at Gushgy (Kushka) in 1994. The new crossing at Serakhs attracted a significant proportion of international road traffic formerly using Artyk.
- C.51 Over two-thirds (78%) of road transit traffic moves between Serakhs/Artyk in the south and Farab in the north. A further 10% moved between Godriolum (Gulrielu) in the south-west and Farab. Only 12% of transit movements were across the Kazakhstan border near Bekdash. The majority of these movements are in foreign 4 and 5-axle trucks.

- C.52 The main origins and destinations for international road transit traffic are Iran (80%) and Turkey (18%). Major origins/destinations in Turkmenistan were Ashgabat (62%), Dashkovuz (17%), Mary (9%) and Charzhou (8%), with the main partners being Iran and Uzbekistan.

Rail

- C.53 The main Iranian rail crossing is the new crossing at Sarakhs, which opened in mid-May 1996 (via Tedzhen - Sarakhs - Mashad (Iran) -Teheran then through Tabriz to Istanbul or to the Iranian ports of Bandar Emam and Bandar Abbas (Persian Gulf). The rail gauge change stations at Sarakhs will have a capacity of 5 million tonnes per year.
- C.54 Rail traffic has fallen by over half from 1992 to 1995. Since independence transit traffic has fallen by two-fifths. The largest traffic is building materials (52%) and petroleum and petroleum products (24%).
- C.55 The volume of rail traffic loaded in Turkmenistan decreased from 28.1 Mt in 1990 to 18.5 Mt in 1993. Total international rail traffic decreased from 71 Mt in 1992 to 48 Mt in 1993, which was mainly due to a fall in transit traffic from 43 Mt to 30 Mt. In 1993 the railway transported only 0.46 Mt to/from Turkmenbashi: the incoming volume of traffic from the port was only about half the outgoing volume.
- C.56 Most of the rail transit traffic was between the north (Kazakhstan/Russia) and east (Uzbekistan). The line straddles Turkmenistan and Uzbekistan, passing through Charzhou.
- C.57 There is a proposal for a new rail connection Artyk - Lutfabad with Iran, which would be difficult to justify given the existing new connection at Sarakhs.

Transit in Uzbekistan

Road

C.58 Four main roads radiate from Samarkand:

- M37 westwards to Bukhara to Charzhou (Turkmenistan), the main road link between Turkmenistan and Uzbekistan: from Karmana there is a branch north-west towards the Aral Sea;
- M39 northeast to Dzhizak - north-east to the capital Tashkent and then north to Shimkent (Kazakhstan) with a branch east to Fergana and Tajikistan (Khodzhent);
- M37 southwards to Guzar/Karshi and on to Termez on the Afghan border. The more route from Samarkand to Termez across the mountains is unsuitable for heavy trucks (Shakhrisabz): it will be very expensive to widen but some work underway. However there is an alternative, good road via Karshi (A378/A386). From Termez the M41 goes northeast to Dushanbe (Tajikistan).

C.59 There are two main road crossings on the major east-west highway: Gisht-Koprik in the east and Alat in the west.

C.60 The road crossing at Gisht-Koprik, 20 km to the north of Tashkent is the only road crossing in the north. It handles all trade with Russia/CIS as well as through traffic from Turkey and Iran for Kazakhstan and Kyrgyzstan. In some seasons delays have reached 24 hours.

C.61 The road crossing at Alat in the southwest of the country the only crossing on the transit corridor via Turkmenistan. Delays of up to several days have been reported. A major border complex is under construction.

C.62 The densely populated Fergana valley has several links to Kyrgyzstan, which surrounds the valley to the north, east and south.

C.63 There are also several road connections to Tadjikistan. The main crossing is at Sariasy in the southeast of the country, but involves a major diversion via

Termez. There is also a 'back route' crossing at Gulbakor in the south-east corner of Uzbekistan, also via Termez.

C.64 There is a \$150 road user charge for non-CIS trucks.

Rail

C.65 The railway network consists of a main north-east/south-west route Chardjou (Turkmenistan) - Bukhara - Samarkand - Dzhizak - Tashkent. A branch eastwards from Tashkent connects with the Fergana valley, via Tadjikistan (which is the reason behind the planned new line between Angren and Kokan, entirely on national territory).

C.66 The main rail crossing is at Shumilova, in the northern suburbs of Tashkent, located adjacent to a major container freight terminal. There are significant imports of goods in containers.

C.67 To the west of Samarkand a line branches to the south-west to Karshi and Termez in the south of the country - on the border with Afghanistan - and then north-east to Dushanbe. A line branches northeast to Uchkuduk. Uzbekistan intends to build a new 350 km line southeast from Uchkuduk to Lenini/Beruni and from there northeast to Nukus: this would provide independence from the Urgensh - Chardzhou line which straddles the border with Turkmenistan.

C.68 The main rail crossing to Tadjikistan is at Sarasy (Uzun), 10 km from the border. Aluminium, bauxite and mineral sands for the aluminium plant make up a significant proportion of the traffic. The rail crossing at Gagaba with handles significant quantities of traffic with southern Tadjikistan as well as transit cargo to/from Afghanistan.

C.69 There is also work underway to build a new 223 km rail line in the south of the country to link Karshi with Guzar, Baysun and Kumkurgan in the south-east corner of the country to open up undeveloped mineral resources. This line would also avoid the route of the existing line to Termez which crosses Turkmenistan.

Transit in Kyrgyzstan

Road

- C.70 In 1994 road transport accounted for an estimated 95% of freight movements. The main highway - the M41 - links the capital Bishkek with the second largest city, Osh in the south. From Osh a major road (A373) leads through the Fergana valley to Tashkent and another mountainous road runs to the south with two branches crossing the high passes towards Tajikistan.
- C.71 There are three further significant roads from Bishkek:
- M39 north-east to Almaty (Kazakhstan);
 - the A365 east Issyk-Kul lake and from there south to Naryn which to the Chinese border and on to Kashgar (China) and the Karakoram highway: this is not on the TRACECA corridor, is the only outlet from Kazakhstan to the south;
 - M39 west to Kara-Balta and on to Djambul (Kazakhstan) and eventually Tashkent.
- C.72 There are frequent closures of border crossings between Uzbekistan/Kyrgyzstan due to disputes about payments for natural gas (Kyrgyzstan exports hydroelectric power to Uzbeks). There are also less frequent closures between Uzbekistan/Tajikistan for the same reason.
- C.73 The M41 Bishkek - Osh road is the main link between the north and south of the country. In the north is Bishkek, the capital with a population 0.6 million and the adjacent Chui valley. In the south is Osh, with a population of 0.25 million, and neighbouring agriculturally productive regions). The road also acts as an international link to the Fergana valley in Uzbekistan and neighbouring Tajikistan. Previously the north and south of the country had better road links to Kazakhstan and Uzbekistan, respectively than with each other. The 620 km road passes through the territory of Uzbekistan in two places, which can result in delays due to actions by border guards.
- C.74 There are three main segments to the road: Chui valley (60 km from Bishkek to Karabalta); mountain segment (390 km from Karabalta to Tashkumyr); Ferganan Valley segment (170 km from Tashkuyr to Osh). The road crosses two mountain chains, with passes at Taya-Ashu (3586m) where there is a 3.4 km road tunnel at the altitude of about 3200m and Ala-Bel at 3218m. There

are often road closures in winter due to ice, snow and landslips (about 30 days per year, or 20% of the 150-day winter period).

- C.75 On the Bishkek - Osh road in 1994 about 1700t was being moved per day, of which 63% (699t) were fruit and vegetables: other commodities included fuel, coal and building materials. About 28% of the freight movements had a southern origin/destination in Uzbekistan (including almost half the fruit and vegetables, which was mostly destined for Siberia - the total annual flow could amount to 250,000t). Osh and Jalalabad accounted for 50% of the freight.. This flow of agricultural products to the north generates a flow of back-hauls of manufactured products and building materials (Carl Bro 1995).
- C.76 On the same route movement of petrol and diesel were estimated at some 100 t/day (or 35,000 t/yr) in 2-axle 6000 litre tankers. Only about one-third travelled through to Osh. Oil drilled in the Kyrgyz part of the Fergana valley is currently refined in Fergana (Uzbekistan) or Shimkent (Kazakhstan). Refining capacity is being built at Jalalabad, using locally drilled oil. Kyrgyzstan could in principle be self-sufficient in oil products within 3-5 years. This would result in increased shipments of refined products from the south to the north by road, rather than by rail via Tashkent - tentatively 150,000-250,000 t/yr. (Carl Bro 1995).

Rail

- C.77 The rail network consists of separate branch lines connected to the Kazakh system in the north and to the Uzbek system in the south. Customs clearance is done inland at 12 rail stations. The poor condition of the road has led to diversion of traffic by road and rail via Tashkent. Only items such as coal and cement are still moving by rail via Tashkent.
- C.78 Total rail freight traffic on the Kyrgyz system fell by 75% by volume between 1990 and 1994, and the railway's share of total tonnage moved has fallen from 7% to 5%. Only 2 Mt were carried in 1994, although this has increased to over 3 Mt for the first 9 months of 1995.
- C.79 Main trade commodities now are wool, minerals, cotton, sugar, leather and skins. Imports are dominated by petroleum products. There are exports of coal to Uzbekistan in the south and coal imports from Kazakhstan in the north. Other trading partners are China and Turkey.

Transit in Kazakhstan

Road

C.80 The main roads run from the (former) capital Almaty:

- M39/M32 to the west and north-west via Bishkek (Kyrgyzstan) linking the cities of Djambul - Shimkent - Kzyl-Orda - Aktyubinsk - Uralsk;
- M 36 to Karaganda and the new capital Akmola: north of Akmola the road branches off to Petropavlovsk and Kustenai (both close to the Russian border);
- A350 northeast to Semipalatinsk and then a branch leads to Novosibirsk (Russia), while the main road (now the M38) runs through Pavlodar to Omsk (Russia);
- Road east from Almaty (A351) to Yining (China), with a branch south to Kyrgyzstan.

C.81 The northern routes to Russia link up with the main Russian arterial highway (M51) running from Moscow - Samara - Ufa - Chelyabinsk - Omsk - Novosibirsk - Irkutsk to Mongolia and north China. This route crosses Kazakhstan around Petropavlovsk for over 200 km.

C.82 There are three main road border crossings with Kyrgyzstan:

- south-west of Almaty to Bishkek (Korday) the main entry point: some vehicles use this crossing on the transit between Almaty and Tashkent, whilst others use the detour via Blagoveshchenka around Kyrgyzstan;
- further south via Djambul to western Kyrgyzstan (Merke);
- east of Almaty to Pryevalsk and Issyk-Kul Lake.

C.83 There is only one important road to Uzbekistan: the M39 from Shimkent to Tashkent. There is a secondary road in poor condition at Chardana, south-west of Tashkent.

- C.84 There are some movements by road around the northeast side of the Caspian, but the roads are not surfaced.

Rail

- C.85 There are three independent railway systems in Kazakhstan: Almaty, Tselinaya, centred on Akmola; and the Western network, centred on Aktyubinsk. The lines run mainly north-south, with 9 exchange points with Russia, 2 with Uzbekistan, one with Kyrgyzstan and one with China (Aktogai - Druzhba - Urumshi).
- C.86 Druzhba traffic was 0.726 Mt in 1992 and 0.571 Mt in 1993.
- C.87 Raw materials make up the greatest part of international traffic (mainly coal and to a lesser extent ore, petroleum and grain). The lines from Akmola to Russia have the heaviest traffic.

Transit in Tadjikistan

- C.88 There is a road user charge: in 1995/6 this was US\$ 1 for CIS vehicles and US\$ 70 for non-CIS vehicles.
- C.89 The road between Dushanbe and the wealthier Khodzhand (Leninabad) region in the north via the Anzob pass is closed in winter (reportedly until early June). The alternative is a long rail transit route via Samarkand (Uzbekistan) - Kerki (Turkmenistan) - Termez (Uzbekistan).
- C.90 The main road crossing in the country is at Tursun-Zade to the west of Dushanbe, which is also the main entry to the central region. The road crosses the border with Uzbekistan and turns southwest to Termez (on the border with Afghanistan). Rail traffic to/from Central Tadjikistan is dominated by the Tursun-Zade aluminium factory (imports of bauxite/alumina and exports of aluminium). This plant, to the west of Dushanbe, was one of the most modern within the CIS. It was traditionally supplied with bauxite from Guinea via Odessa. The future of the plant is in question given the uncommercial nature of the supply chain
- C.91 The road south from Dushanbe runs through Kurgan-Tjube to Afghanistan. The main crossing point in the south-west of the country is at Aivaj, but

throughput is small and there is little transit. The mountain crossing at Iskra is little used.

- C.92 There is occasional closure of border crossings between Uzbekistan/Tajikistan due to disputes about payments for natural gas.
- C.93 Cotton is exported by rail through Hoskadi to Uzbekistan. There is an export duty on cotton.
- C.94 Marble is also being exported from Tajikistan at Tillogul, transported in blocks to Samarkand (Uzbekistan) where it is loaded on railway wagons and shipped to Odessa.

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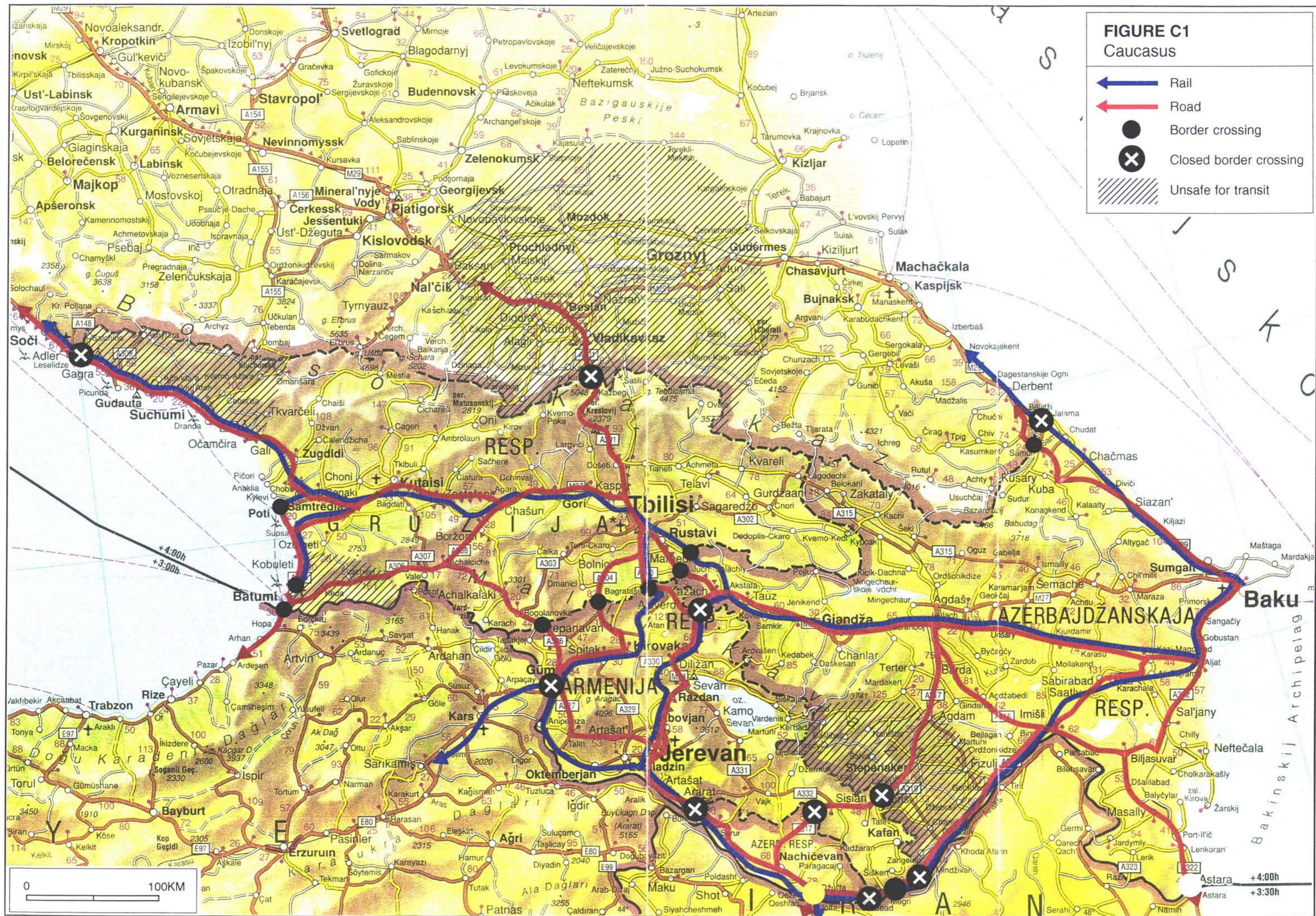
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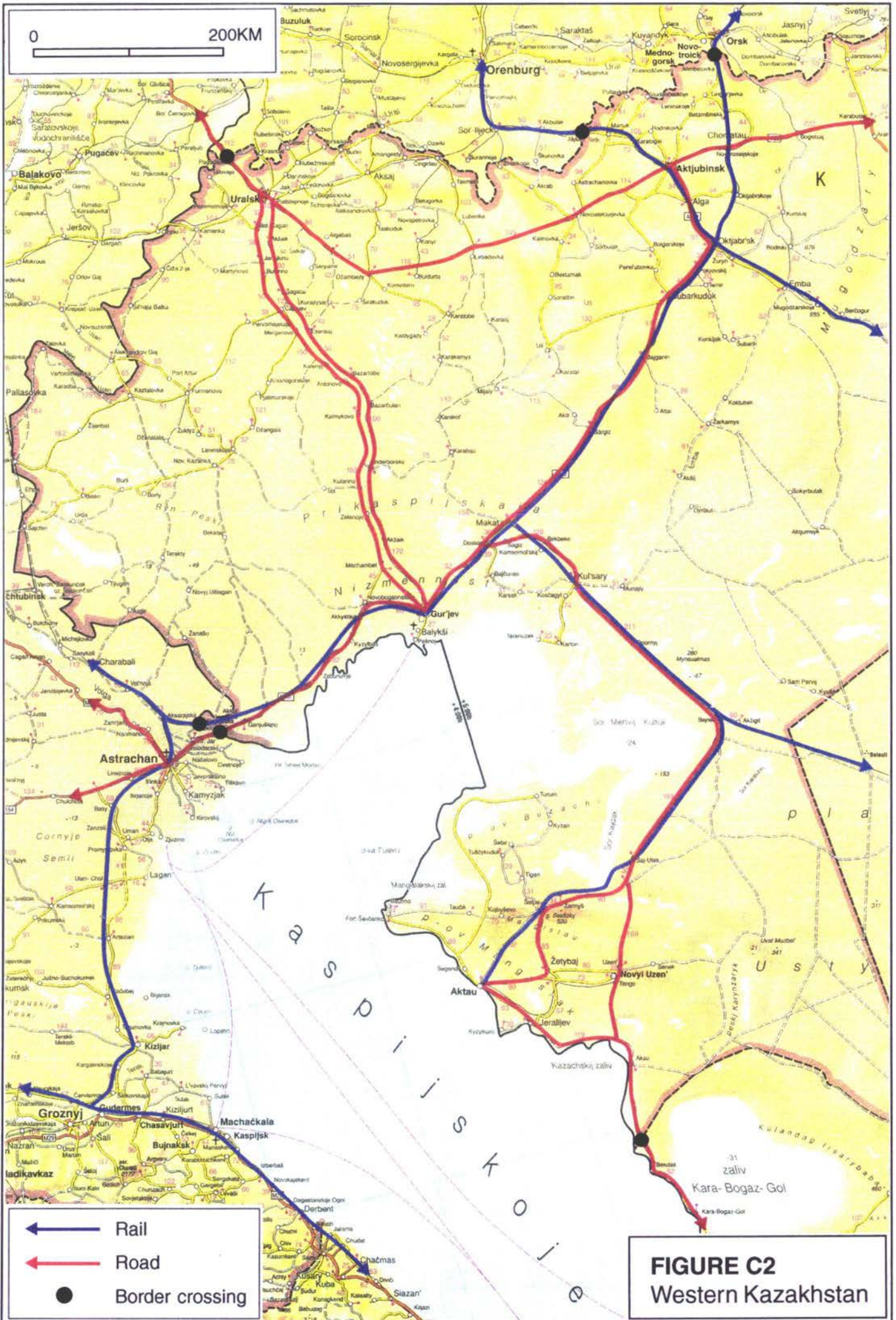
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FIGURE C1
Caucasus

-  Rail
-  Road
-  Border crossing
-  Closed border crossing
-  Unsafe for transit





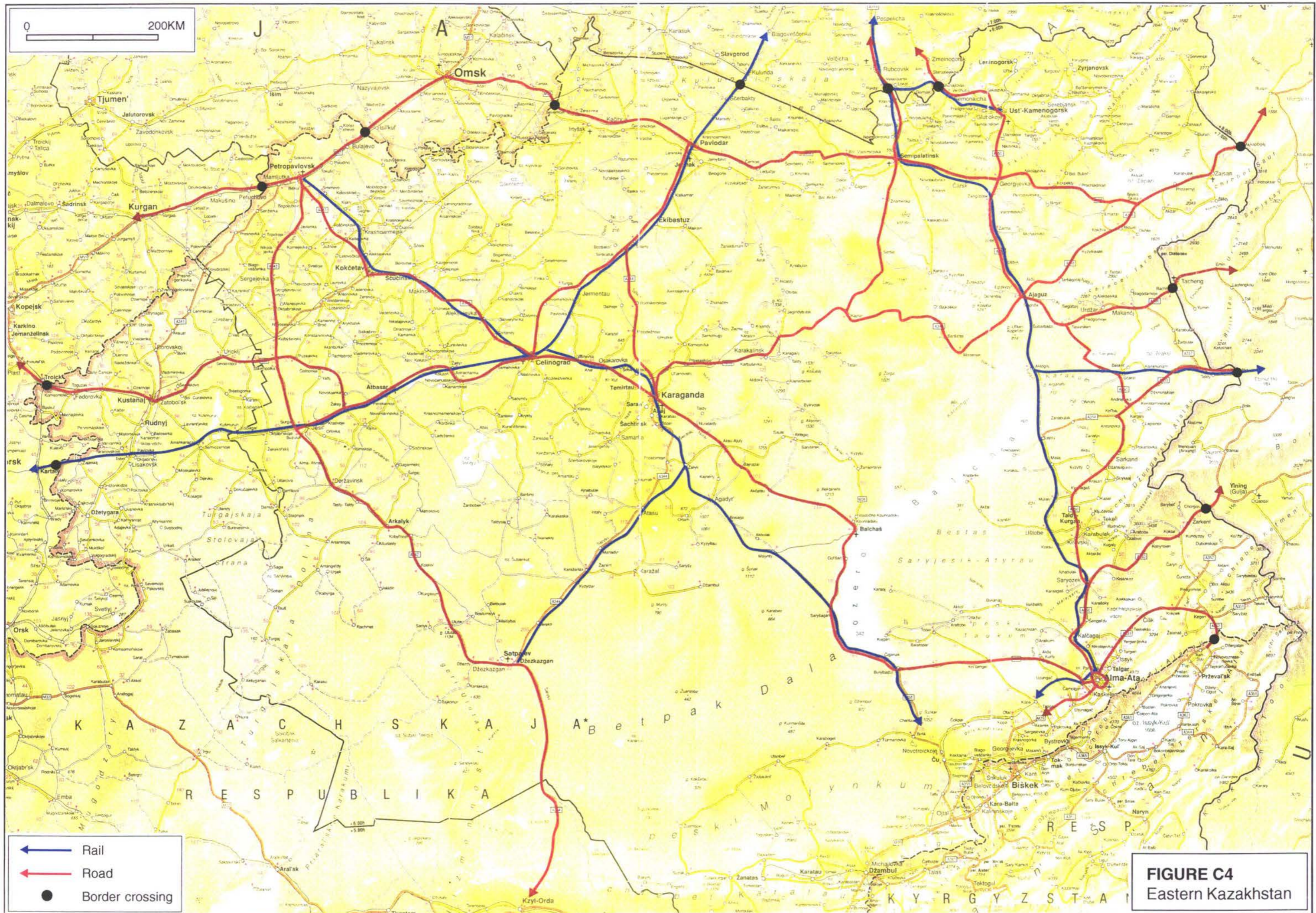


FIGURE C4
Eastern Kazakhstan

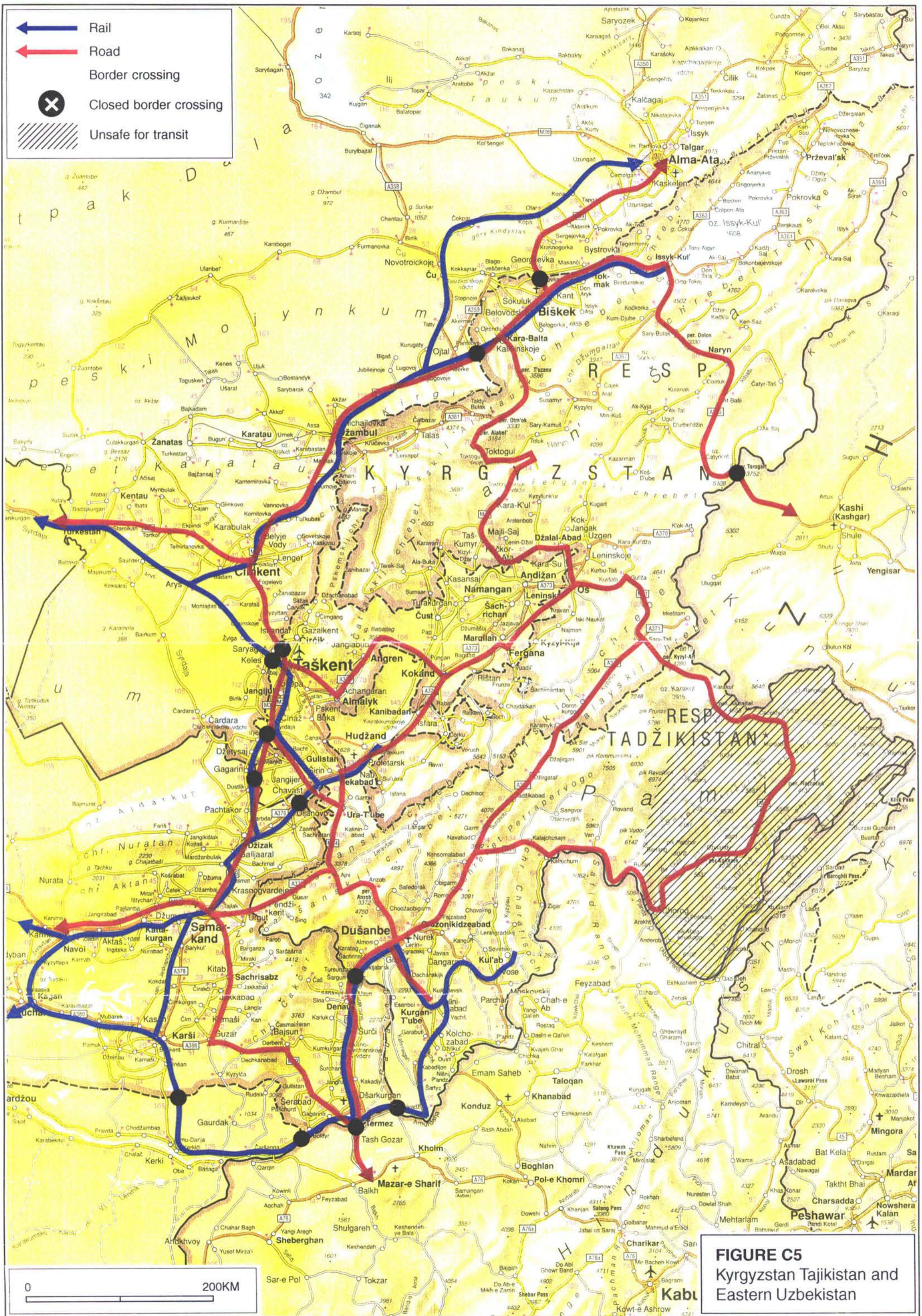


FIGURE C5
Kyrgyzstan Tajikistan and
Eastern Uzbekistan

APPENDIX D

Country Economic Profiles

D. COUNTRY ECONOMIC PROFILES

Note: This information will be updated. Please contact the Consultant.

- D.1 This Appendix presents summary economic profiles for the TRACECA states. For each country there is a SWOT Analysis (a description of Strengths, Weaknesses, Opportunities and Threats), followed by a description of the economic factors that are likely to affect the magnitude of trade and freight transport.

CHARACTERISTICS OF THE TRACECA STATES

- D.2 The TRACECA states have a number of similar characteristics, because of their history of being Newly Independent States (NIS) of the Former Soviet Union (FSU):

- the populations are generally well educated and technically skilled;
- there is a common language (Russian) and common procedures in many areas of the economy (e.g. customs);
- all the states have experienced the dislocation of the Soviet economic system, which had regionally specialised centres of production;
- most of the states are land-locked or with limited options for transport links with the world markets;
- there is a common railway system, structured on links within the FSU.

- D.3 There are also significant differences, however:

- *security situation*: some states (eg Kazakhstan) have been free of conflict, others (e.g. Georgia, Armenia, Azerbaijan, Tajikistan) have been disrupted by civil or international wars;
- *degree of ethnic mix*: from homogeneity in Turkmenistan to diversity in Kazakhstan;

- *degree of economic transition:* from the traditional Uzbekistan to the progressive Kyrgyzstan;
- *potential resource wealth:* from the potentially lucrative oil fields in Kazakhstan and Azerbaijan and the gas fields of Turkmenistan to the relative penury of Tajikistan.

D.4 In order to understand the challenges facing TRACECA States it is important that some aspects of the Soviet period are understood.

THE MARKET ECONOMY AND STRUCTURE OF TRADE

D.5 The dissolution of the Soviet Union has presented challenges for all the TRACECA states. In addition to the collapse of the political ethos of the Soviet Union, the traditionally assured markets for goods produced within the Union have disappeared. The states had previously been more or less dictated to in terms of required output. Now each country has to stand alone and compete for its market share.

D.6 This change of philosophy has had a profound affect. It has become apparent that in some cases the lack of inherent comparative advantage in certain products has left many plants in a weak position to serve other markets. This is especially the case with those countries which do not have major reserves of primary resources. In addition, goods supplied to the Soviet market were subsidised by the State and hence no country has received a real market price for their goods. The impact of this policy has led to poor trade balances and lack of export earnings with which to invest in their economies.

D.7 Most strikingly the collapse of communism has forced all the States to adopt policies of transition towards a market economy. The extent to which countries have embraced transition has differed; however, each has faced similar problems in terms of their economic performance.

D.8 The table below shows cumulative changes in GDP and trade within the Commonwealth of Independent States (CIS) between 1990 and 1994.

**Table D-1 - Cumulative Changes in GDP and Intra-CIS Trade
1991 -1994 (per cent)**

Country	Exports	Imports	GDP
Armenia	-86	-84	-54
Azerbaijan	-81	-43	-64
Belarus	-60	-42	-35
Kyrgyzstan	-52	-70	-48
Moldova	-93	-93	-61
Russian Federation	-80	-83	-47
Ukraine	-79	-65	-47
Uzbekistan	-32	-67	-17
Georgia	-94	-87	-80

Source: CIS Statistical Committee, UN/ECE Secretariat estimates, 1995.

- D.9 The table shows that the decline in trade and the economies of NIS has been dramatic. Of the TRACECA states, Uzbekistan shows the least decline, although observers generally view this as, paradoxically, reflecting the slow pace of reform. The level of decline in GDP parallels the level of breakdown of law and order in each country. Georgia, showing the highest level of decline, has been troubled by natural disasters and civil conflict, while Armenia and Azerbaijan have also suffered from conflict-related hardship.
- D.10 The TRACECA states had to develop fiscal and monetary systems to support their economies in a new market-orientated environment. Once independent from Russia, but within the ruble zone their economies spiralled into decline with rapid inflation and falling output. Products which had been previously produced for the Union were now no longer demanded while access to necessities such as grain and fuel have become increasingly expensive. In the short term there has been a return to barter trade. The TRACECA states are having to re-establish their trade relations with each other.

PRODUCTION AND OUTPUT

- D.11 Production in the USSR was highly specialised and the goods or commodities produced by each country were dictated by GOSPLAN in Moscow. However, determination of production was not based on economic efficiency or financial

cost reduction. This has left some countries with over-specialised economies, dependent on the production of one crop or primary commodity. One of the biggest challenges facing these countries is now to diversify production and increase the industrial and agricultural base.

- D.12 The TRACECA states are experiencing falling output in most sectors of the economy, in particular agriculture. Much of the plant and equipment is poorly maintained because of a lack of spares or is no longer adequate for the job. Soviet policies have led to the exhaustion of cultivated land through over-use and falling water resources for crop irrigation. The new industries which are vital to the development of the NIS economies require substantial amounts of investment which most economies do not have.

PRIVATISATION

- D.13 Another aspect of transition to a market economy is transferring assets to the private sector. As countries embrace market values, privatisation of state-run enterprises has become a significant issue. Many of the state-run enterprises have been deemed "strategic" and hence are unlikely to be moved from the state ownership. However, in order to attract the necessary foreign investment joint ventures with western companies are being sought. Substantial agreements with major western conglomerates are being negotiated by state organisations particularly in the oil and gas industry.

ECONOMIC GROWTH AND FUTURE DEVELOPMENT

- D.14 The main sectors which are likely to be the basis of economic growth for several of the TRACECA states are:

- Oil and gas related industries;
- Minerals, particularly gold;
- Light industry, particularly oriented towards consumer goods;
- Cotton.

- D.15 The TRACECA states are rich in natural resources although these resources are not generally very accessible. The countries also have the benefit of a high proportion of the population being educated or skilled. The exploitation of the oil and gas industry is highly desirable being a means of earning much need hard currency. Fulfilling the potential of the industry is made easier by

the availability of skilled staff however there is little equipment available within the region which meets international standards. There are therefore opportunities for the development of manufacturing capacity to cater to the needs of the oil industry.

- D.16 In addition to reserves of fuels such as oil and gas there are significant reserves of minerals which have export potential. This includes gold, precious and semi-precious stones, manganese and aluminium.
- D.17 Industry represents a means of economic growth through the conversion of existing manufacturing companies to produce higher-quality consumer goods. Within this category is the development of food processing which can be based on agricultural output from within the countries other growth areas could be the production of domestic appliances and textile manufacture.
- D.18 Agricultural output within the TRACECA states has been heavily biased towards grain and cotton, which is likely to remain the case the short to medium term. Grain is produced and consumed within the region although grain imports are still significant. Cotton is generally exported, although the output of cotton is declining and prices received for raw cotton are low. There is therefore scope to add value to the raw cotton by more processing and textile production.

ARMENIA

SWOT Analysis

Strengths

- reform process already well established;
- increasing GDP since 1994;
- powerful 'diaspora' of Armenians;
- skilled workforce;
- industrial infrastructure.

Weaknesses

- conflict with Azerbaijan impacting upon trade and business confidence;
- border closures with Turkey and Azerbaijan;
- weak financial institutions/framework;
- landlocked and thereby dependent on neighbouring countries for transit of goods.

Opportunities

- continued economic growth encouraging investment (especially foreign);
- recovery of export of agricultural products including potatoes and processed foodstuffs;
- development of high-value, low-volume exports such as jewellery, precious metals and stones.

Threats

- continued dispute with Azerbaijan (and Turkey) threatens development of export-orientated growth;
- departure from reform policies;
- poor agricultural recovery through lack of inputs and increasing dependency on imports;
- lack of foreign investment to assist industrial turnaround.

Country Profile

- D.19 Armenia is a landlocked country in the Caucasus region, with a land area of 29,800 square kilometres: it is the smallest of the former Soviet republics. It is bordered by Iran, Turkey, Georgia and Azerbaijan. It has a population of 3.7 million people (mid-year 1995 estimate), of which at least 70% is urbanised.
- D.20 During the Soviet years it became a specialised industrial base producing machinery, electronics and more specifically high technology laser products for the Soviet military. This industrial production did not reflect Armenia's true comparative advantage and resource endowments. Thus the dissolution of the Soviet Union and the subsequent collapse of the Russian markets meant that Armenia's economy was severely disrupted.
- D.21 This position was further weakened when Azerbaijan and Armenia clashed over the enclave of Nagorno-Karabakh which resulted in the invasion of the territory by Armenia and the closure of the borders. Turkey also joined the blockade. The only remaining routes into the country are through Georgia and Iran which provides the link with the Nakhichevan enclave in the south-west.

The Economy

- D.22 Armenia agreed a three year reform programme with the IMF in 1994 and this has contributed to growth in real GDP, reversing the overall decline of 70% between 1989 and 1993. In 1995 GDP growth reached 6.9% (exceeding forecasts): further increases are expected om 1996. The table below shows the trend of GDP decline between 1992 and 1995 with the forecast growth for 1996.

Table D-2 - Real GDP Growth 1992-1996

	1992	1993	1994	1995	1996
Real GDP Growth %	-52.3	-14.8	5.4	6.9	6.5

Source, IMF 1996

- D.23 Agriculture has become one of the most significant sectors of the economy as raw materials for industry have become more scarce. Agriculture employs nearly one quarter of the population and the main crops include grain, vegetables, potatoes, tomatoes, dairy products, fruit, sugar beet and tobacco. Other crops include figs, peaches, pomegranates and apricots as well as some essential oils and speciality teas. Main imports include grain, meat, milk and butter. Armenia imports 60% of its flour and 65% of its dairy products.
- D.24 Armenia's consumption of grain is in the region of 600,000 tonnes per year and production cannot meet demand, therefore some additional supply is imported from the other former Soviet republics and elsewhere. Armenia is still able to export potatoes to Georgia.
- D.25 Armenia has natural resources which include copper, molybdenum, semi-precious and precious metals, natural stone resources including basalt, granite, marble, perlite, bentonite, syenite and some coal. This area represents some of Armenia's greatest potential for developing export-related growth, especially the area of precious and semi-precious stones.
- D.26 There has been a decline in industrial production and despite the Government's efforts to privatise there has been little interest by foreign enterprises to invest in the manufacturing industries. However there has been a slight upturn in the construction industry as well as agriculture. There is an increasing amount of informal activity in terms of small-scale trading and services which goes unreported.

Trade

- D.27 Being a land-locked country, Armenia's prospects for trade depend on the relations it maintains with its neighbours. The highway link with Georgia is due to be improved while the re-opening of the bridge across the River Araks into Iran in 1994 has allowed Armenia to bypass Azerbaijan territory with the result of increasing the amount of consumer goods coming into the country.
- D.28 The composition of trade is moving away from the traditional, bulky products such as machinery and towards the low-energy and transport-intensive commodities such as jewellery, foodstuffs and light industrial products. This is mostly due to the lack of available raw or semi-finished products as well as an overall decline in industrial production within the NIS.

D.29 In 1994 the analysis of imports and exports showed that precious and semi-precious stones have now become the principal export while foodstuffs remain the major import. The full breakdown of imports and exports are contained in Table D.3 below.

Table D-3 - Principal Exports and Imports January-November 1994

Principal Exports 1994	% of total by value	Principal Imports 1994	% of total by value
Precious and Semi-precious Stones	36.9	Food Industry Products	42.7
Machinery & Equipment	25.3	Mineral & Petroleum	39.6
Mineral Products	10.9	Chemical Products	2.1
Chemicals & other Petroleum products	7.3	Light Industry	1.7
Metal Working products	6.1	Metal Working and Metallurgy	1.0
Food Industry	3.7	Others	9.6
Others	9.8		
Total	100.0	Total	100.0

Source: EIU 1996

D.30 Trade is on the increase with countries such as Iran, Belgium, Germany and France although Russia still remains a significant trading partner together with Turkmenistan which supplies the country's natural gas needs. It is thought that most of its imported energy needs are paid for on a barter basis and that 34% of Armenia's imports were goods received in barter transactions. On this basis, since Turkmenistan is responsible for most of the energy imports into Armenia, it is to be expected that the destination for most exports is also Turkmenistan. The relative importance of Belgium as a recipient of exports (in terms of value) is due to the precious stone cutting and finishing enterprise which is operating in Armenia. The direction of trade for 1994 is shown in the table below:

Table D-4: Direction of Trade, 1994

Exports		Imports	
Country	% of Total	Country	% of Total
Turkmenistan	60.9	Turkmenistan	43.3
Russia	20.5	Russia	20.1
Belgium	7.2	USA	18.4
Iran	5.9	Iran	9.7
Germany	1.6	Others	8.4
Ukraine	1.5		
Others	2.4		
Total	100.0	Total	100.0

Source: EIU 1996

- D.31 The direction of trade as indicated from the above table is likely to be flexible as new markets develop. It is generally believed by international observers that export-led growth will be a result of re-establishing trade among the NIS as well as the Middle East and Europe.

AZERBAIJAN

SWOT Analysis

Strengths

- massive oil and gas reserves;
- entrepreneurial culture;
- seeking markets beyond FSU.

Weaknesses

- conflict with Armenia undermining the reform process;
- slow to embrace economic reform and hence slow turnaround in GDP;
- main agricultural areas now in Armenian control;
- closed borders with Russia;
- large number of refugees.

Opportunities

- oil production due to begin in late 1997, generating hard currency revenue;
- investment in plant and machinery for oil industry;
- increased exports of light industrial goods, increasing scope for foreign investment.

Threats

- dispute with Russia delaying the production of early oil from the Azeri and Chirag fields;
- lack of resolution of dispute with Armenia delaying a return in business confidence for foreign investment.

Country Profile

D.32 Azerbaijan is located on the edge of the Caspian Sea and has borders with Iran, Turkey, Armenia, Georgia and Russia. It also has a separate enclave, Nakhichervan, between Armenia and Iran. Azerbaijan has a population of 7.5 million. It has recently been in dispute with Armenia over the Nagorno-Karabakh enclave which has resulted in closure of its borders with Armenia. This conflict (which is now under a ceasefire agreement) has hindered the reform process, as has the recent conflict in the Russian Republic of Chechnya, to the north.

The Economy

D.33 The collapse of the Soviet Union hit the Azerbaijan economy hard. GDP has slumped since 1992 with the average annual decline between 1992 and 1994 being around 21%. However, the decline in GDP is slowing down and according to the EIU a contraction of only -5.0% is expected for 1996. The World Bank forecasts that the economy will begin to show a positive growth by 1999.

D.34 The change in real GDP 1992-1994 is shown in the table below.

Table D-5 - Real GDP Growth 1992-96

	1992	1993	1994	1995	1996
Real GDP Growth %	-22.6	-23.1	-21.9	-17.0	-5.0

Source: EIU 1996

D.35 Despite being one of the first republics of the former Soviet Union to begin a privatisation programme the issue has not been as fully embraced as by Armenia. In particular, the private sector has hardly been introduced to the large scale state farms. However, Azerbaijan possesses massive oil and gas reserves and therefore has considerable hard currency earning potential. It has signed a US\$8 bn agreement to develop the sector with a consortium made up of 12 foreign companies led by BP and Amoco.

- D.36 The predicted rise in GDP will be brought about by the continuing reform process and is largely dependent on the flow of revenue from its oil commencing as planned. It is expected that in the short run there will be some contraction in output as the monetary policies take hold.
- D.37 Despite the prospects for oil and gas in the medium to long term, the current situation shows a decline in output which means that only about 1 Mt (million tonnes) of oil products are exported per year: there are currently no natural gas exports. Crude oil output fell to 9.16 Mt in 1995 from 9.56 Mt the previous year. Natural gas production rose from 6.37 billion cubic metres to 6.64 billion cubic metres. A new gas compressor funded by Pennzoil came into operation at the end of 1994 to reclaim 1.4 billion cubic metres which would otherwise be lost. Azerbaijan is currently importing natural gas from Turkmenistan in order to meet the country's need.
- D.38 The need to develop export pipelines has caused some delay in the exploitation of the resources. The new agreement was signed in 1994 and it became vital that an early decision on the routes of a pipeline was made. In 1995 the decision was taken to pursue two routes: north through Russia (Chechnya) to Novorossisk and west through Georgia to Poti. The refurbishment of the Russian pipelines in order to be suitable for the quantities of oil is expected to cost in the region of \$250 million.
- D.39 There has been a general decline in industrial output which has reflected the collapse of manufacturing. This is in part due to the closure of the Russian border which has reduced the export of manufactured goods. Manufacturing has played an important role in production, although much of the equipment which was used in the Soviet times is now in need of major repair and re-tooling. There has been a partial shift to finished metal goods, machine tools and computers. Other productive sectors include textiles, food processing and beverages. There is also an integrated aluminium industry with an alumina refinery at Gence and a 50,000 t capacity smelter at Sumgait which is in need of rehabilitation and modernisation.
- D.40 State farms and collectives still play the majority role in Azerbaijan's agricultural production. However, about 57% of small-scale production of fruit and vegetables and 80% of domestic meat and milk supplies are in the private sector. The main agricultural areas are now under Armenian control.

Production of most crops in 1995 were substantially lower than the levels reached in the 1980s. Cotton production was down to 280,000 t in comparison to a previous average of 1 Mt. Less than 200,000 t of grapes were produced out of a potential 600-700,000 t. The cotton had been damaged by rain and the lack of new equipment and other financing problems. Loss of pasture has contributed to the reduction in meat output of 55% over 1990-94 period. The republic partly relies on imported dairy products, wheat and flour to make up the shortfall, supplied mainly by and Turkey.

Trade

- D.41 Azerbaijan has looked for markets outside of the former Soviet Union but with mixed success. The share of trade within the CIS has fallen from 57% to 49% for exports and 65% of imports between 1992 and 1994. Within the NIS, Russia, Turkmenistan and Ukraine were the largest trading partners; however this is likely to have declined in 1995 since the closure of Russia's border with Azerbaijan. Outside of the CIS, Iran is the most important destination for exports followed by Turkey and Germany. As for Armenia, Turkmenistan is receiving barter products as payment for its natural gas. Russia, Ukraine and Turkey also major exporters.
- D.42 Trade distribution for 1993 for countries outside of the FSU is contained in the table below:

Table D-6 - Distribution of Trade by country outside of the Former Soviet Union, 1993

Exports		Imports	
Country	% of Total	Country	% of Total
Turkey	53.3	Turkey	45.1
Italy	11.4	Germany	13.4
Austria	5.3	United States	7.8
Finland	5.3	Switzerland	7.0
Poland	5.3	Italy	6.3
Germany	3.5	Austria	5.6
Others	15.7	Others	14.8
Total	100.00	Total	100.00

NB: The above statistics represent 32.5% of total exports and 58% of total imports. (i.e. including trade with the FSU).

Source: Foreign Trade Statistics in the USSR, World Bank, 1995

GEORGIA

SWOT Analysis

Strengths

- highly educated population;
- Black Sea port access;
- shortest route for oil and gas from Azerbaijan and Central Asia to the Black Sea and European markets.

Weaknesses

- political instability (although stabilising);
- declining industrial output owing to lack of inputs;
- poor mineral extraction owing to lack of technology and difficult terrain;
- migration of skilled workforce during the conflict.

Opportunities

- exploitation of mineral resources, in particular oil and gas (although relatively inaccessible);
- development of Poti/Batumi as regional gateways;
- development of agriculture sector;

Threats

- public disenchantment with the reform process;
- slow foreign investment;
- poor crop yields, slowing agricultural-based growth.

Country Profile

- D.43 Georgia, with an area of 69,500 square kilometres lies on southern flanks of the Caucasus mountains and on the Black Sea, bordering Russia, Turkey, Azerbaijan and Armenia. The population was said to be 5.4 million people in 1991, although it is estimated that since then nearly one million people have left owing to the political turmoil in Georgia. The growth rate is in the region of 0.8% which is considered low in the former Soviet Union.
- D.44 Georgia has suffered economic and social breakdown since the break-up of the Soviet Union. It has suffered hyperinflation as well as a complete collapse of the economy which has meant that the UN were warning of extreme poverty and hardship in some sectors of the community. The war in Abkhazia and Chechnya cut off communications to the north with Russia and as a result there were chronic shortages of foodstuffs including bread. This led to civil unrest and a collapse in law and order in 1993 and 1994. Humanitarian aid is still a significant component of traffic coming into the country.

The Economy

- D.45 Georgia has suffered from conflict, political instability as well as natural disasters over the last decade. As a result, the collapse of the Soviet Union has increased pressure on the already fragile economy. The economy went into "free fall" in 1991 and 1992 with GDP declining by -40.3%. Since 1992 there has been a reduction in the rate of decline and GDP growth is expected in 1996. With assistance from the IMF, tighter controls on the economy have been introduced to promote stability: hyperinflation has stopped, and the exchange rate has stabilised.

Table D-7 - Real GDP Growth 1992-1996

	1992	1993	1994	1995	1996
Real GDP Growth %	n/a	-25.4	-11.4	-5.0	8.0

Source, IMF 1996

- D.46 Industry is reported to be working now at only 17% of 1990 levels and this is likely to continue in the short term at least. Shortages of energy, raw materials and spare parts (and sabotage) have resulted in a serious decline in productivity. Industry was dependent on the inter-Soviet economy and the collapse of the Soviet Union has caused a serious decline in demand. However, increased stability should help the progress of reform and in the long term Georgia has much to offer the foreign investor in tourism, viticulture, tea and citrus production. In addition, it is ideally located to provide transport and related services for the Europe-Asia corridor.
- D.47 Agriculture represents nearly one third of Net Material Product and provides almost half of its exports. Agricultural production is diverse and Georgia has not been faced with the problems of a moving away from single commodity production. Despite this diversity, shortage of inputs, declining demand and reduced production has led to the need to import basic foodstuffs.
- D.48 In addition to shortages of raw materials, Georgia now suffers from a lack of national energy sources, although it is developing a number of hydro-electric plants. It imports virtually all of its gas and oil fuel requirements from Russia and Kazakhstan as well as a quarter of its electricity from Russia and Azerbaijan. Although Georgia has a wide range of mineral resources, inaccessibility of sources and lack of suitable equipment has meant that many reserves have yet to be exploited. There are facilities to produce high quality manganese as well as undertaking the processing of Azeri oil.
- D.49 There are plans to put the Azeri Chirag oil pipelines through Georgia, which would promote the region by providing employment as well as opening up the market for associated services.

Trade

- D.50 Georgia has increased its trade with Turkey in the last three years, and it now accounts for 26% of foreign trade. Russia, Iran and Germany are also prominent trading partners: Turkmenistan and Azerbaijan have also increased their trade with Georgia. Several well-known western companies have now organised distribution in Georgia.
- D.51 Imports and exports for 1995 in terms of origins and destinations is as follows:

Table D-8 - Principal Directions of Trade, 1995

Exports		Imports	
Country	% of Total	Country	% of Total
Russia	30.7	Russia	19.7
Turkey	14.5	Turkey	19.0
Iran	12.4	Iran	15.2
Other	42.4	Other	46.1
Total	100.00	Total	100.0

Source: EIU 1996

KAZAKHSTAN

SWOT Analysis

Strengths

- large reserves of minerals including oil and gas;
- strong agricultural tradition, major producer of grain;
- undertaking the reform process and has GDP turnaround;
- political stability.

Weaknesses

- water availability is becoming a problem in southern oblasts - affecting cotton and rice production;
- lack of suitable equipment and infrastructure to enable maximum crop output;
- long lead time for approval for foreign investment projects;
- substantial emigration of non-Kazakh ethnic groups (Russian, German).

Opportunities

- new oil and gas pipeline via Russia to exploit Tengiz field;
- widespread interest in production of other minerals such as copper and phosphates;
- manufacturing turnaround possible with foreign management.

Threats

- delays in pipeline development slowing down early returns of oil and gas;
- administrative problems setting up projects for other mineral extraction slowing down developments.

Country Profile

- D.52 Kazakhstan is the largest of the FSU republics after Russia, covering 2.7 million square kilometres, the size of the whole of Western Europe. It has borders with Russia, China, Turkmenistan, Kyrgystan and Uzbekistan. Its terrain is mostly flat steppe however its borders with Kyrgyzstan lie along the Tianshan mountains and the border with China is a series of mountain ranges. It has a population of approximately 16.5 million which are mostly located in the north and south of the republic where the most fertile and industrialised areas are situated.
- D.53 Kazakhstan has suffered in the post Soviet break-up with the common problems of a declining economy, inflation and a decline in agricultural output. It is reported that the large crop of 1993 had not all been collected owing to lack of harvesting equipment, storage and transport.
- D.54 The current President, Nazarbaev, has been in office since 1989 and a referendum has extended his period of office to the year 2000. The policies of the government have been dedicated to reform and there are indications that this is having the desired effect. The introduction of its own currency, the Tenge, in 1993 allowed Kazakhstan to distance itself from the Russian Rouble. However, Kazakhstan has retained close links with Russia and is part of the Russian customs zone. The rate of emigration has slowed substantially.

The Economy

- D.55 Since its independence Kazakhstan has adopted a progressive approach to its economy. It introduced a privatisation programme and sought to attract foreign investors. This has been partially successful with many of the major multi-nationals seeking to exploit Kazakhstan's natural resources. Kazakhstan has undertaken a three-year economic recovery programme supported by the IMF which relies heavily on tight fiscal and monetary policies. The first quarter of 1996 saw the first growth since 1990.

Table D-9 - Real GDP Growth 1992-1996

	1992	1993	1994	1995	1996
Real GDP Growth %	-13	-12.0	-25.0	-11.0	0.4

Source, IMF 1996

- D.56 The economy, like that of many of the NIS, has suffered decline in output since the late eighties. The rate of this decline is now slowing and it is expected that there will be a increase in output resulting in an increase in GDP in 1996. In the first quarter of 1996 the output of oil was up 21%, gas output up 13% but coal production was static. GDP in the past has been heavily reliant on industry, trade and agriculture. These sectors have been severely disrupted by the decline in investment as well as unfavourable weather conditions which have dramatically reduced agricultural output. Grain production in 1996 is forecast at 16 Mt, compared with 9.5 Mt in 1995. The shortfall in 1995 was caused mainly by a lack of equipment. Kazakhstan is hoping to remedy this by a barter deal with Russia of grain for agricultural machinery.
- D.57 The massive Karmet steel concern was the largest in the FSU and had an output of 7 Mt. At its peak it was responsible for 12% of GNP. The plant has been recently privatised and the main market is now China.
- D.58 The foreign investment which has been attracted to Kazakhstan focuses on the oil and gas industry which represents Kazakhstan's biggest earning potential in the long run.
- D.59 There has also been some interest in the development of mining consortia with joint ventures being proposed by Western, predominantly American, firms. However, this has been slow to develop owing to delays in the signing of deals and the subsequent import of capital goods. Of interest is the gold field at Vasilkovskoye, with reserves of 6.5 million troy ounces.
- D.60 The development of the economy in the short term is likely to be based on increased production from manufacturing sector, particularly metallurgy. In the medium to long term the oil and gas industry is likely to be the biggest

contributor to the economy. However, this is dependent on the development of suitable pipeline and infrastructure for the distribution of the oil. Kazakhstan has recently agreed an 'oil swap' deal with Iran to market production from its Buzachi/Uzen deposits.

Trade

Table D-10 - Breakdown of Exports and Imports for 1995 by Principal Commodity

Principal Exports 1995	% of total	Principal Imports 1995	% of total
Metals	44.9	Machinery	27.8
Oil products	27.3	Energy	26.4
Food	10.1	Food	11.8
Chemicals	3.6	Chemicals	10.5
Machinery	2.4	Vehicles	7.6
Other	11.7	Other	15.9
Total	100.0	Total	100.0

Source: EIU 1996

- D.61 Mining and minerals are currently the principal exports of the Kazakhstan economy. However this is likely to change as oil products become available for export. The increased development of the economy in terms of manufacturing and foreign investment in mining and oil extraction means that a significant amount of machinery is being imported into the country. The energy networks reflect the pre-independence structure with no connections between the north and south of the country. Thus, although Kazakhstan produces and exports its own oil and gas, the country also imports oil, gas and electricity to meet its needs.
- D.62 Kazakhstan's trade is mostly with Russia (42% of exports and 46% of imports by value in 1995) with most of this trade being in oil products/energy, grain, copper, tungsten and other minerals cotton and chemicals. In the first quarter

of 1996 Kazakhstan was Russia's third most important trading partner (6.0% of trade, after Ukraine 13.4%, and Germany 9.2%).

D.63 The breakdown of trade by major source and origin is shown in the table below. In 1995 the main non-NIS trading partners included the Netherlands, China, Germany, Austria and Turkey.

Table D-11: Origins of Exports and Imports 1995 (by value)

Exports		Imports	
Country	% of Total	Country	% of Total
Russia	42.1	Russia	46.2
Netherlands	10.5	Uzbekistan	6.6
China	6.1	Germany	5.0
Uzbekistan	3.2	Austria	3.0
Other	38.1	Other	39.2
Total	100.0	Total	100.0

Source: EIU 1996

KYRGYZSTAN

SWOT Analysis

Strengths

- reform process being undertaken;
- customs union with Russia and Kazakhstan to increase trade relations;
- GDP growth expected;
- substantial hydro-electricity capability;
- stable political situation.

Weaknesses

- landlocked country dependent on traffic routes through other countries to reach markets;
- poor communications within the country owing to terrain and declining road structure.

Opportunities

- investment in unexploited gold mining;
- oil reserves which can be exploited to become self sufficient in next 10 years.

Threats

- lack of foreign investment to stimulate industrial/oil/mining output;
- lack of competitiveness of Kyrgyz manufactured products.

Country Profile

- D.64 Kyrgyzstan is a landlocked country bordered by China, Kazakhstan, Tajikistan and Uzbekistan. The country is predominantly mountainous, straddled by the Tianshan mountains in the north and the Pamirs in the south. The main areas of economic activity are in and around Bishkek, the capital, in the north and Osh in the south. The estimated population is 4.6 million with an annual growth rate around 1.6% (excluding emigration of local Russians which is likely to slow down over the medium term).
- D.65 There has been a reasonably stable political climate since 1992 when the market orientated stabilisation programme was introduced. The introduction of the Kyrgyz currency, the Som, in 1993 also assisted in the ongoing stabilisation process.

The Economy

- D.66 Since independence Kyrgyzstan has suffered from declines in output and GDP in the same way as many of the NIS. The table below shows real GDP Growth between 1992 and 1996.

Table D-12 - Real GDP Growth 1992-1996

	1992	1993	1994	1995	1996
Real GDP Growth %	n/a	-15.46	-20.08	1.3	2.4

Source, IMF 1996

- D.67 The government has embarked on a rigorous policy of economic reform which is bringing some price stability to the economy. The policy includes significant privatisation and financial sector reform. There has been a resultant drop in inflation and controls on prices have been lifted.
- D.68 As shown in the following table GDP is made up predominantly of agriculture (over one-third) and industry (nearly one quarter).

Table D-13 - Origins of GDP 1994

Sector	% of total
Agriculture and Forestry	34.7
Industry	23.8
Construction	4.2
Transport	8.2
Other	29.1
Total	100.00

Source, EIU 1996

- D.69 Industry has declined while the role of agriculture in the economy is increasing. The principal crops remain cotton, tobacco, grains, fruit, vegetables and fodder crops, while there are significant quantities of meat and wool products. With the increasing cost of imported inputs, falling local prices and lower yields, farmers are increasingly returning to subsistence farming rather than commercial crops
- D.70 As with most of the NIS, the dissolution of the Soviet Union destroyed much of the demand for goods which had been produced in Kyrgyzstan. This has resulted in many of the factories being closed or reduced to minimum output, particularly machinery production. In addition, light industry has been affected owing the fall in purchasing power throughout the region.
- D.71 Mining contributes as much as 10% to industrial production. The minerals products include: uranium oxide and molybdenum, antimony and antimony oxides, mercury, mercury compounds and calcium fluoride, gold, rare earths and coal. The Kadamzhay antimony plant (in the Osh region) was the largest in the FSU, producing up to 18,000 t/yr. Output of the main minerals has declined and the prospects for industries such as coal are bleak owing to poor productivity and falling demand. Gold however, is a promising prospect as one of the world's largest untapped deposits is situated at Kumtor. This is now being developed in a Joint Venture with a Canadian Company and production is initially expected in 1998.

Trade

D.72 The principal exports and imports are contained in the table below.

Table D-14 - Structure of Trade 1994

Principal Exports 1994	% of total	Principal Imports 1995	% of total
Electricity & Fuels	21.5	Petroleum & Gas	40.1
Industry	39.2	Machinery & Chemicals	23.0
Metals	18.0	Industry	15.6
Machinery & Chemicals	11.4	Agriculture & Timber	10.7
Construction Materials	5.1	Metals	3.8
Agriculture and Timber	3.5	Construction Materials	1.6
Other	1.3	Other	5.2
Total	100.0	Total	100.0

Source, Goskomstat 1995 (Hoff & Overgaard, 1995)

D.73 More than half of Kyrgyzstan's exports are primary goods including electricity, wool, minerals, cotton, sugar, leather and skins while imports are dominated by petroleum products and gas. There has also been an increase in individuals importing consumer goods from non-NIS countries.

D.74 Kyrgyzstan has begun to seek markets beyond the traditional NIS ones and has begun to trade with various countries such as China, the United Kingdom, the United States and Germany. The table below shows the principal origins and destinations of commodities outside of the former Soviet Union for 1994.

Table D-15 - Trade with Non-NIS Countries 1994

Exports		Imports	
Country	% of Total	Country	% of Total
China	48.1	USA	33.0
UK	25.3	China	10.4
Germany	5.7	Germany	6.4
France	1.9	South Korea	3.8
Afghanistan	1.7	Japan	2.5
Italy	1.5	Sweden	2.5
Other	15.8	Other	41.4
Total	100.0	Total	100.0

Source: EIU 1996

D.75 The bulk of trade is still within the former Soviet Union with Russia, Kazakhstan and Uzbekistan being the largest trading partners, accounting for approximately 60% of imports and exports in 1994. There has been declining trade with these countries owing to a reduction in the demand for Kyrgyz industrial goods and an increase in the amount of non-FSU trade.

TAJIKISTAN

SWOT Analysis

Strengths

- increasing political stability;
- return to the reform process;
- mineral reserves.

Weaknesses

- civil war undermined early commitment to the reform process;
- collapse of traditional markets;
- migration of skilled workers during the war;
- poor transport and communications especially in winter;
- no formal resolution of conflict;
- large number of refugees.

Opportunities

- increased gold mining.

Threats

- lack of resolution of conflict.

Country Profile

- D.76 Tajikistan covers an area of 143,100 square kilometres and borders China, Afghanistan, Uzbekistan and the Kyrgyz Republic. There are high mountain ranges across the county making road travel difficult in winter. It has a population of 5.8 million people of which approximately 600,000 live in the capital, Dushanbe, in the west of the country. It is estimated that the population is growing at a rate of about 2.9% per year - taking into account increasing emigration of Russians, Belarussians and Ukrainians.
- D.77 Since the early 1990's Tajikistan has suffered from an unstable political situation with much conflict and bloodshed. Talks were begun in 1993 when the Government and rebel forces were forced into negotiation by mutli-lateral intervention led by Russia, however the violence has continued in the east of the country. Talks have since continued but no compromise has been reached. Hostilities break out again each year in the Spring and Summer. The Government's position has strengthened thus giving the appearance of returning normality although stability is fragile and tensions throughout the country run high.

The Economy

- D.78 The economy of Tajikistan was the poorest republic of the Soviet Union in terms of income per head. The population in rural areas has been growing faster than the urban putting pressure on scarce land and water. In 1993 the World Bank classed it as a Developing Country enabling it to receive soft loans from the International Development Association. (IDA). The economy is in serious decline, as shown in the following table.

Table D-16 - Real GDP Growth 1992-1996

	1992	1993	1994	1995	1996
Real GDP Growth %	n/a	-11.1	-21.4	-12.5	-7

Source, IMF 1996

- D.79 The future of the country's economy is viewed as relatively bleak by most observers, even in the relatively prosperous northern province of Khodzhent (Leninabad).
- D.80 The economy has suffered from a decline since the mid-eighties and the dissolution of the former Soviet Union pushed the economy into serious decline as demand for Tajik goods and services dropped. The civil war pushed any plans for economic reform into the background and it was only in 1995 that the Government felt in a position to look once more at economic reform. The orientation towards a market economy has started with the publication of a five year plan recommending privatisation of agriculture and industry, trade liberalisation and the removal of state control. Many prices have already been liberalised however, privatisation has remained slow and the state continues to control many areas of the economy.
- D.81 Tajikistan is primarily agricultural, its most important crop being cotton. During the Soviet years cotton from Tajikistan accounted for 11% of all production. However, during 1992 and 1993 production slumped to two thirds of the level achieved during the late eighties as a result of the civil war. The decline in large-scale agriculture has not been compensated by growth in private agricultural production. More farmers and households are producing subsistence crops.
- D.82 Some of the reforms in the agricultural sector include allowing farmers to lease small plots and export some of their cotton crop. (Cotton was previously regarded as state property). In reality these plots are not the good quality land and the larger, better quality farms have not been touched. Private farmers also face constraints to production owing to the state control of inputs.
- D.83 The country has a very small manufacturing base which has been constrained by lack of energy, obsolete plant and lack of spares. As a result the manufacturing industry has been unable to compete with cheaper goods elsewhere. The largest manufacturing plant is an aluminium smelter west of Dunshanbe which is currently working at 40% of its capacity. The location of the plant is unfavourable for the world economy with the transport of inputs and production over long distances adding significantly to costs. The Government hopes to sell off some of the ownership to foreign investors.

Unless a foreign investor can be found the World Bank has recommended that the plant be shut down.

D.84 There has been some effort to develop the gold sector with the development of a UK-Tajik joint venture and the EBRD is prepared to back further development within this sector.

D.85 Agribusiness has been traditionally used to absorb excess labour and has low input costs however, the products such as tobacco, cotton, leather and fruit traditionally went to Russia and that market has now collapsed. The goods are now being used as barter trade with China and Pakistan.

Trade

D.86 Like many of the smaller republics, Tajikistan relied upon the former Soviet Union for its imports and exports. It continues to rely on imports of fuel, grain and equipment. During the years of civil war there was much smuggling and therefore figures for this period are unreliable.

D.87 The composition of Tajikistan's exports and imports in 1990 were as follows:

Table D-17 - Composition of Foreign Trade 1990

Exports	% of total exports	% of which NIS
Primary Goods	41.9	64.1
Manufactured Intermediate Goods	30.8	87.8
Capital Goods	12.6	98.7
Food	9.3	98.9
Other Consumer Goods	5.5	
Total	100.0	
Imports	% of total imports	% of which NIS
Capital Goods	21.8	92.0
Energy	18.0	100.0
Manufactured Intermediate Goods	16.4	85.0
Primary Goods	11.3	89.5
Food	8.5	70.0
Other Consumer Goods	7.7	85.0
Other	16.3	
Total	100.0	

Source: Taken from EIU figures, 1996

D.88 As can be seen from the table there was heavy reliance on trade within the FSU. The Government has since decided to reduce the dependence on this trade and has sought partners outside of the region. Although the amount of trade with non-NIS partners is very small the Government is trying to stimulate trade by liberalising the regime. Producers will be able to export 100% of their cotton crop in 1996.

D.89 The destination and origins of imports and exports for 1994 outside of the former Soviet Union are contained in the table below.

Table D-18 - Direction of Trade Outside of The Former Soviet Union 1994

Exports		Imports	
Country	% of Total	Country	% of Total
Netherlands	38.7	Switzerland	32.9
Switzerland	11.8	UK	22.8
Belgium	8.0	USA	10.7
UK	8.0	Netherlands	5.5
USA	7.1	Sweden	2.5
		Norway	2.2
Others	26.4	Others	23.4
Total	100.0	Total	100.0

NB: Trade within the former Soviet Union accounted for 78% of exports and 55% of imports in 1994.

Source: EIU 1996

TURKMENISTAN

SWOT Analysis

Strengths

- gas and oil resources;
- cotton production and textiles.

Weaknesses

- delays in payment for gas by FSU recipients;
- declining NIS markets for cotton;
- lack of diversified industry to assist growth;
- changing political structure delaying foreign investment;
- slow economic reform;
- lack of pipeline access to western markets.

Opportunities

- further development of gas, oil and mineral extraction with foreign investors;
- increased development of textile industry.

Threats

- continued lack of economic reform and industrial decline;
- lack of foreign investment.

Country Profile

- D.90 Turkmenistan is a country of 448,100 square kilometres (the size of Spain), bordered by the Caspian Sea to the west, Iran and Afghanistan to the south, Kazakhstan to the north and Uzbekistan to the east. Approximately four-fifths of its terrain is at a height of less than 500 metres above sea level and the Kara Kum desert occupies 90% of its territory. There are hills and mountains towards the eastern and southern borders.
- D.91 Turkmenistan has a population of 4.1 million (mid-year 1995 estimates) and has shown consistent growth since 1991. The government has pursued a policy of racial harmonisation and as a result has not suffered for ethnic migration in the same way that other republics have since the dissolution of the Soviet Union and has in fact seen net immigration.

The Economy

- D.92 The GDP growth of the Turkmen economy has been related to cotton, textiles or the extraction and refining of gas. During the Soviet years there was little effort spent on developing other industries.
- D.93 The structure of the Turkmen economy has remained largely unchanged since the break-up of the Soviet Union. However, there has been some adjustment of export prices in order to realign exports with world prices. Production of gas has dropped owing to the inability of other FSU countries to pay in dollars as well as problems reaching agreement with Russia over the use of pipelines for export to the West.
- D.94 GDP growth from 1992 to 1996 is shown below.

Table D-19 - Real GDP Growth 1992-1996

	1992	1993	1994	1995	1996
Real GDP Growth %	n/a	-10.0	-20.0	-13.9	3.7

Source, IMF 1996

- D.95 The economy has undergone a severe depression since 1989 with the IMF estimate of cumulative decline being in excess of 36%. Turkmenistan has not undertaken any IMF-backed stabilisation programme and there have been no concrete announcements about the privatisation of state assets. The government wishes to attract foreign investment and there has been some interest in the energy sector. However, the legal and administrative procedure to undertake a joint venture or other foreign investment is complex and subject to change which has discouraged investors. The government has created incentives such as seven free economic zones with tax holidays for firms with over 30% foreign ownership and free leasing of facilities.
- D.96 Agricultural output suffered from drought in 1991 but has recovered since with grain output rising. Government estimates for 1995 were in the region 1.3 million tonnes compared with 1.4 million tonnes in 1990. The cotton crop has traditionally been exported to other republics and this pattern appears to be continuing although demand has declined as their economies are also depressed. Turkmenistan is also a producer of karakul skins (Persian lamb) and has had an expanding fruit and vegetable market however this has also been hit by the collapsing markets within the former Soviet Union and a lack of inputs which has reduced production. Turkmenistan has to import two-thirds of its grain needs, almost half its milk and dairy requirements and all its sugar. Its dependency on imports has increased as output has declined.
- D.97 Despite the on-going environmental disaster of the falling water level on Lake Aral new irrigation projects are drawing more water from the Amu Darya river (which feeds the lake). For new production at Tedzhen.
- D.98 Industry has been largely reliant on oil and gas related production. Turkmenistan has the world's third-largest natural gas reserves after Russia and Iran. Manufacturing has been also been reliant on these industries as well as cotton production for the manufacture of textiles. Most gas production has been traditionally exported to countries of the FSU particularly Ukraine and Georgia. There have been significant payment difficulties with these countries.
- D.99 The emphasis on cotton, oil and gas has not lent itself to the large scale development of the private sector although it is impossible to estimate the amount of informal, small-scale trading.

Trade

D.100 The principal exports have remained the same as previously: gas and cotton fibre. Most of Turkmenistan's trade continues to be with the NIS. However, payment for natural gas and other exports in hard currency appears to be a major problem and thus the prices received for their exports are below the expected prices set by the government. This has depressed the market and exports of gas and cotton products have fallen. In some cases the republics pay towards their gas requirement by barter trade.

D.101 These barter deals can be complex. For example, in a three-way transfer Turkmenistan exports gas to Ukraine, Ukraine exports a range of transfer products to Iran (chemicals, fertilisers, gas pipes etc) which provides Turkmenistan's contribution for a new gas pipeline through Iran.

D.102 The main components of trade for 1992 are shown in the table below.

Table D-20 - Components of Exports and Imports 1992

Components of Exports 1992	% of total	Components of Imports 1992	% of total
Oil and Gas	75.2	Agriculture and Food	32.8
Electricity	2.6	Machinery and Equipment	22.3
Food Industry	2.4	Light Industry	7.9
Chemicals	1.1	Metallurgy	7.0
Light Industry	0.6	Chemicals	4.7
Other	18.1	Other	25.3
Total	100	Total	100.0

Source: EIU 1996

D.103 Non-NIS trade is mainly exports of gas, which have been hit since 1994 by disagreement with Russia over allowing Turkmen gas to use Russian pipeline. Exports to non-NIS declined from \$1.05 billion in 1993 to \$412

million in 1994. IMF estimates for imports in 1994 were in the region of \$543 million.

D.104 Countries which have developed trade relations with Turkmenistan include Germany, Bulgaria, Czechoslovakia and Turkey.

UZBEKISTAN

SWOT Analysis

Strengths

- principal cotton producer in Central Asia;
- reserves of minerals, including gold, oil and gas;
- trade agreements already in place with non-FSU countries;
- agreements with Kazakhstan and Kyrgyzstan to increase trade.

Weaknesses

- declining NIS markets for cotton;
- lack of diversification of industrial output;
- shortage of foreign exchange for purchase of inputs;
- lack of water and irrigation for agriculture.

Opportunities

- investment opportunities for value-added goods such as textiles, silk;
- increased opportunities for mineral extraction.

Threats

- reduced progress of reform programme especially liberalisation of trade;
- collapse of cotton market in short run;
- severe shortage of water restricting agricultural output.

Country Profile

D.105 Uzbekistan, with an area of 447,400 square kilometres, is bordered by Kazakhstan to the north and west, the Kyrgyz Republic and Tajikistan to the east and Afghanistan and Turkmenistan to the south. Its terrain is variable although over half the country is arid and there are mountains in the south and east. The population is estimated to be 22.6 million, the highest of the TRACECA states, and like most Central Asian republics has recorded high population growth since the eighties although this has slowed in the nineties to around 2.3% per annum. Many of the non-Uzbek population have left. Between 1989 and 1995 Uzbekistan had net emigration.

D.106 Since independence Uzbekistan has sought to increase its ties with other NIS and in particular appears to welcome increased co-operation with the Central Asian republics, particularly Kazakhstan and Kyrgyzstan.

The Economy

D.107 Like most of the NIS, output of the Uzbek economy has been severely affected by the break-up of the Union although the fall in GDP has been modest compared to many other states.

Table D-21 - Real GDP Growth 1992-1996

	1992	1993	1994	1995	1996
Real GDP Growth %	-11.1	-2.3	-4.2	-1.2	-1.0

Source, IMF 1996

D.108 The economy is highly reliant on output of cotton and gold. During the Soviet era Uzbekistan was the largest cotton-producing republic (and the fourth largest producer of cotton in the world) and the second largest gold producer in the FSU. Production has fallen owing to the shortage of water for irrigation and falling productivity. There has also been some shortages of equipment to assist in gathering the harvest which has also contributed to the decline. However, in the short term cotton is likely to remain the biggest export of Uzbekistan primarily.

- D.109 Uzbekistan is planning to harvest 4 Mt of cotton in 1996 (compared to 3,978,000 in 1995). Exports in 1996 are planned to be over 1 million tonnes, compared with 840,000 in 1995 and 510,000 in 1994. However, exports in the first quarter of 1996 were only 80,000 t, 55% of plan. In May 1996 2,000 t of Uzbek cotton arrived in Porti for Europe. The port is due to handle a total of over 300,000 t of Uzbek cotton for Europe in 1996.
- D.110 Uzbekistan also produces fruit, vegetables and grain although it is dependent on imports of grain, primarily from Russia and Kazakhstan. The country is trying to increase the production of grain, however the shortage of irrigated land is becoming a problem.
- D.111 Uzbekistan is also has what is reputed to be the largest open cast gold mine in the world, Muruntau, which, during Soviet rule, produced at least 70 tons per year. There has been increased foreign interest in the mining and energy sector with a joint venture with a US firm receiving funding from the EBRD to extract gold from slag over a period of seventeen years. Other joint ventures plan to develop alternative significant goldfields.
- D.112 Uzbekistan is gradually increasing production of natural gas in order to increase exports. The domestic requirement is in the region of 39 billion cubic metres and production was 47.2 billion cubic metres in 1994. Excess gas is currently exported to Kazakhstan and the Kyrgyz Republic. It is hoped that production can reach levels of 60 billion cubic metres by 2010. Should this be exported within the former Soviet Union, Uzbekistan will face similar payment problems as Turkmenistan.
- D.113 Like other FSU republics, industrial output has declined as the availability of inputs has fallen and machinery has become broken or obsolete. Only 12% of cotton and 60% of silk produced in the country is processed in the country, although foreign investment is being sought for processing plants.
- D.114 There has been some investment for the manufacture of consumer products, particularly by Daewoo of South Korea which is to manufacture domestic appliances in Tashkent for the CIS market and cars which will be produced in the Fergana Valley. British American Tobacco is to buy a 51% stake in the state tobacco company, which will increase cigarette production capacity to 25 billion per year over five years.

Trade

D.115 Trade is dependent on the production of cotton. Light industry (which includes cotton) accounted for 48% of exports in 1992, while machinery and metalworking, the next largest category of exports, accounted for only 15.1%. The breakdown of components trade are contained in the table below.

Table D-22 - Components of Exports and Imports (1992)

Components of Exports 1992	% of total	Components of Imports 1992	% of total
Light Industry	48.0	Food Industry Products	14.0
Machinery and Metalworking	15.1	Ferrous Metallurgy	13.7
Gas and Oil	11.3	Machinery and Metalwork	10.5
Non-ferrous metallurgy	10.2	Light Industry	7.1
Others	15.4	Others	54.7
Total	100.0	Total	100.0

Source: EIU 1996

D.116 It is estimated that the share of cotton exports to the NIS has fallen from 54% in 1991, to 36% in 1994 as a result of a decline in demand. Cotton accounted for 86% of non-NIS exports in 1993. Imported goods were predominantly related to energy, foodstuffs and ferrous metallurgy.

D.117 Uzbekistan trades predominantly within the NIS. Its main trading partners are Russia, Kazakhstan and Tajikistan. In 1993 Russia accounted for 53.2% of all NIS trade while Kazakhstan and Tajikistan account for approximately 14% and 12% respectively. Trade with Tajikistan has increased significantly since 1992 while amount of trade with Ukraine, which had been a significant partner in 1992, has halved.

D.118 The distribution of trade outside of the former Soviet Union for 1994 is shown in the table below. Uzbekistan has signed a number of trade agreements outside the NIS however, the amount of trade undertaken with these countries at present is minimal.

Table D-23 - Direction of Trade outside NIS, 1994

Exports		Imports	
Country	% of Total	Country	% of Total
Switzerland	22.3	Switzerland	28.5
UK	17.4	Germany	14.6
Netherlands	15.2	USA	8.4
China	7.7	China	7.8
Austria	4.2	Turkey	6.0
Turkey	4.2	Hungary	5.4
Other	29.0	Other	29.3
	100.0		100.0

Source: EIU 1996

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APPENDIX E

Zoning

E. ZONING

ZONE STRUCTURE

- E.1 The zoning system proposed in the Inception Report (Annex) defines 33 zones of which 23 are within the 8 TRACECA countries of interest and the remaining 10 cover the countries bordering them. The zoning system has been improved in two ways.
- E.2 Firstly by the introduction of a hierarchy in which the 23 zones of the CIS countries have been split into smaller zones that relate to administrative districts. The form of this could be as follows:

Level 1	No	Name	Level 2	No	Admin. District
Zone	18	Eastern Kazakhstan	Sub Zone	1801	Aqmola
				1802	East Kazakhstan
				1803	Qarghandy
				1804	Semey
				1805	Zhezqazgan

- E.3 Secondly, additional external zones such as for Europe, either at a country level or groups of countries have been introduced as follows:

Level 1	No	Name	Level 2	No	Country
Zone	34	North Western Europe	Sub Zone	3401	France
				3402	Belgium
				3403	Luxembourg
			Etc.		
	35	Southern Europe		3501	Italy
				3502	Greece
				3503	Spain
					Etc.

and extend the definition of the existing defined zones:

Level 1 No	Name	Level 2	No	Country
32	Gulf States		3201	Iran
			3202	United Arab Emirate
			3203	Jordan
				Etc.

- E.4 The use of a hierarchical system where the main zone number is extended from 2 to 4 figures (where the original number is preserved as part of the new number) allows easy correspondence list between zones and sub-zones to be compiled that can later be used within the SATURN freight model.
- E.5 This also allows the database on freight movements to be held at differing levels of detail. For example Georgia may be able to give an accurate breakdown of its exports and imports of a commodity to EU members by country, then again it may only be able to give data for the EU as a whole. If individual country data was aggregated early in the study then valuable data could be lost.
- E.6 The external zoning should be such that it reflects the routes of traffic to and from the study area, however it should not restrict the routing in such a manner that unrealistic routing results. For example a route across the central Asian countries may be un-viable, but if costs fall then it may become the cheapest route.
- E.7 If there are few large zones then the number of routes are restrictive by being only able to load these movements at a few locations. If there are many small zones then the matrix becomes too large and uncontrollable but loading and routing options become many.

E.8 The zoning split of Europe is as follows:

North-Eastern Europe - Poland, Czech Republic, Slovakia, Finland, Latvia,
(Zone 34) Lithuania, Estonia, Belorussia.

Central-Western Europe - Germany, Austria, Switzerland, France.
(Zone 35)

North-Western Europe - Denmark, Netherlands, Belgium, UK, Ireland,
(Zone 36) Norway, Sweden.

South-Eastern Europe - Romania, Former-Yugoslavia, Hungary, Bulgaria.
(Zone 37) Albania.

South-Western Europe - Spain, Portugal, Italy.
(Zone 36)

E.9 The zoning for the rest of the world is shown in the following Annex.

ANNEX

ZONE LIST - Inception Report zones

Internal Zones	Country
1 - 3	Tajikistan
4 - 6	Kyrgystan
7 - 11	Uzbekistan
12 - 14	Turkmenistan
15 - 20	Kazakhstan
21	Georgia
22	Armenia
23	Azerbaijan
External Zones	Country/Region
24	Southern Russia
25	Ukraine
26 - 29	Northern Russian States
30	China
31	Indian Sub Continent
32	Iran, Middle East
33	Turkey

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E.10 The level 1 and 2 zoning split of Europe is as follows:

34	North Western Europe.	France(3401), Begium (3402), Luxembourg (3403), Germany (3404), Netherlands (3405), Denmark (3406).
35	Southern Europe.	Italy (3501), Greece (3502), Spain (3503), Portugal 3504), Former Yugoslavia (3505), Bulgaria (3506), Albainia (3507).
36	Central Europe.	Austria (3601), Hungary (3602), Austria (3603), Slovak (3604), Switzerland (3605).
37	Baltic States.	Latvia (3701), Estonia (3702), Finland (3703), Lithuania (3704), Sweden (3705).
38	Northern Central Europe.	Poland (3801), Czech (3802).
39	Northern Europe.	Norway (3901), UK (3902), Ireland (3903), Iceland (3904).

E.11 The zoning for the rest of the world is as follows:

24		Southern Russia
25		Ukraine(2501), Modovia (2502)
26	- 29	Northern Russian States Including Belarussia
30		China (3001), Loas (3002), Mongolia (3003).
31	Indian Sub-continent.	Afgan (3101), Pakistan (3102), India (3103).
32	Gulf States.	Iran (3201), UAE (3202), Oman (3203), Saudi Arabia (3204), Qatar (3205), Kuwait (3206).
33		Turkey
40	Middle East.	Iraq (4001), Egypt (4002), Syria (4003), Lebanon (4004), Jordan (4005), Israel (4006).

- 41 East Africa. Sudan (4101), Ethiopia (4102), Somalia (4103), Kenya (4104), Uganda (4105), Zaire (4106), Tanzania (4107), Malawi (4108), Mozambique (4109), Zambia (4110), Zimbabwe (4111), Botswana (4112), Lesotho (4113), Swaziland (4114), South Africa (4115), Madagascar (4116), Mauritius (4117).
- 42 West Africa. Lybia (4201), Chad (4202), Central African Republic (4203), Congo (4204), Gabon (4205), Angola (4206), Namibia (4207), Equatorial Guinea (4208), Cameroun (4209), Ghana (4210), Nigeria (4211), Niger (4212), Bennin (4213), Togo (4214), Ivory Coast (4215), Burkina Faso (4216), Liberia (4217), Seria Leona (4218), Guinea Bissau (4219), Guinea (4220), Gambia (4221), Senegal (4222), Mauritania (4223), Mali (4224), Morocco (4225), Algeria (4226).
- 43 East Asia Developing Sri Lanka (4301), Burma (4302), Indonesia (4303), Malaysia (4304), Thailand (4305), Vietnam (4306), Philippines (4307), Papa-New-Guinea (4308), Bangladesh (4309), Cambodia (4310).
- 44 East Asia Industrial. Japan (4401), North Korea (4402), South Korea (4403), Taiwan (4404).
- 45 East Coast America. Atlantic East Coast (half of USA) (4501), Cuba (4502), Canada (4503), Caribbean (4504), Argentina (4505), Brazil (4506), Mexico (4507), Central America (4508), Venezuela (4509), Guyana (4510), French Guinea (4511), Uruguay (4512), Paraguay (4513), Bolivia (4514).
- 46 West Coast America & Pacific. Atlantic West Coast (half of USA) (4601), Australia (4602), New Zealand (4603), Pacific Islands (4604).

APPENDIX F

Commodity Analysis

F. COMMODITY ANALYSIS

MAJOR FLOWS

- F.1 The role of Central Asia in the Soviet division of labour was primarily as a supplier of cotton (Pomfret, 1995). Cotton continues to be by far the most important export trade from Uzbekistan, Turkmenistan, Tajikistan and Kyrgyzstan to the West.
- F.2 Of particular interest are the flows between the TRACECA states and Europe. Analysis of Eurostat trade data for 1994 and 1995 shows that the major commodities traded between the EU and the TRACECA states were:
- EU Imports;
 - oil products (0.74 Mt in 1995);
 - cotton (0.30 Mt);
 - iron and steel (0.09 Mt);
 - ores (0.08 Mt);
 - copper (0.06 Mt).
 - EU Exports;
 - cereals (0.41 Mt);
 - milled products (0.14 Mt);
 - drinks and spirits (0.06 Mt);
 - oil products (0.04 Mt).
- F.3 There are flows of timber from Russia to the south - mainly Tajikistan/Uzbekistan - by rail, with backhauls of vegetables and fruits.
- F.4 Grain cargoes have been significant. There have been food aid shipments via Trabzon (Turkey) and Batumi for Armenia. There have also been shipments of food aid grain from Kazakhstan and Russia to Tajikistan.
- F.5 Petroleum products are shipped from Kazakhstan and Russia by rail to the southern states.
- F.6 Food and consumer goods are shipped predominantly via Iran/Turkey. By truck from Turkey through Sarpi (Georgia); via Iran through the port of Bandar

Abbas from to Armenia/Azerbaijan (where they are transhipped for Georgia). Backloads of metals/scrap are commonly carried.

F.7 Tajikistan traditionally imported alumina, refined in Odessa, from Guinea bauxite to be smelted for sale in the FSU. These flows still continue although the production chain now makes little economic sense.

Cotton

F.8 The Central Asian Republics accounted for four-fifths of cotton output in the FSU with production centred in:

- Uzbekistan: the largest producer of the FSU;
- Turkmenistan: over half the arable land is occupied by cotton, although grain production is being rapidly expanded;
- Kazakhstan: in the south only (Shimkent oblast).

F.9 In 1995 Uzbekistan shipped a trial load of 30,000 t across the Caspian through the port of Poti for Europe (by rail to Turkmenbashi, then the rail ferry to Baku and on to Poti by rail. There is reportedly an agreement to ship up to a 300,000 t in 1996 by this route.

F.10 Previously they had used truck to Bandar Abbas (Iran), but this was reportedly expensive. The export routes via the Baltic ports (Tallinn) and southern Russian ports (Illychevsk, near Odessa) have become uncommercial because of increased Russian/Kazakh rail rates. The most commercial route would probably be via Kabul, Afghanistan to northern Pakistan and then by rail to Karachi for the Pakistani textile market and export.

F.11 Total production in 1996 is forecast at 4 Mt with over one quarter being exported. In Uzbekistan, three big rail-served warehouses are being developed, including Bukhara and Samarkand.

F.12 The local textile market is not well developed: some clothing is produced in Tajikistan.

Grain

- F.13 Kazakhstan is the only state that is a significant grain producer: it was the third-largest producer in the FSU after Russia and Ukraine. Grain production in Kazakhstan is however very unstable because of the low rainfall and short growing season. The other states rely on grain imports.
- F.14 Since independence the governments have encouraged the transfer of land from cotton to grain production and the area cultivating grains increased between 1989 and 1992 by:
- Kyrgyzstan: 20%;
 - Uzbekistan: 38%;
 - Tajikistan: 46%;
 - Turkmenistan: 65% .

Energy

- F.15 The pattern of energy infrastructure of the region reflects the Soviet past and the needs of Russia rather than the needs of the southern republics. The pattern of pipelines, pumping stations and processing facilities involves a complex web of inter-relations and agreements, all of which are dependent to a lesser or greater extent on the goodwill and co-operation of Russia. For example, in December 1993 Russia closed the pipelines in its territory to the export for hard currency of Turkmen gas, and the flows were redirected to the NIS.
- F.16 Energy consumption per unit of production was very high in the FSU. Energy consumption has declined over the past few years. Former important exporters Azerbaijan, Kazakhstan, Turkmenistan have suffered major declines while Uzbekistan has been successful in expanding oil and gas production to reduce imports

Kazakhstan

- F.17 It has been known for many years that Kazakhstan has very large reserves of oil and gas, located principally in the west of the country. Most of the republic's industrial capacity and major cities are located in the east and south-east. There is no pipeline connecting eastern and western parts of the country. The crude oil produced in the west is pumped north to refineries in the southern part of Russia and from here is supplied to the rest of the FSU. The oil required in the east of Kazakhstan is obtained from crude pumped south from the western Siberian system and refined at Pavlodar or Shimkent, or in Uzbekistan. There are three refineries in Kazakhstan: Guryev, Pavlodar and Shimkent. In Turkmenistan there are refineries at Turkmenbashi and Chardzhou: one refines Russian oil and the other refines oil from Kazakhstan and Turkmenistan.
- F.18 In late April 1996 a \$1.5 billion agreement was signed in Almaty to move crude oil from the Tengiz field in north-west Kazakhstan through Russia via a 1,200 km pipeline to the Black Sea at Novorossisk. It is planned to finish the pipeline by 1997, with some 25 Mt projected to be pumped through in the first year. The pipeline from Tengiz to Komsomolskaya in Russia already exists. The new pipeline is likely to be built in two parts: the first in Russia, from Tikhoretsk to Novorossisk, which would help Russia to export its own oil. The second part is from Tikhoretsk east to Komsomolskaya.
- F.19 Other major projects in Kazakhstan include the development of the Karachaganak oil and gas fields in the Urals to the west of the country. Other areas are being explored.

Azerbaijan

- F.20 Across the Caspian Sea in Azerbaijan, a dual pipeline strategy has been adopted - for mainly political reasons - to move oil from three big offshore fields being developed in the Caspian (Chirag, Azeri, and the deepwater Gunashli). The first pipeline runs north from Baku to Grozny (Chechnya) and then on to Novorossisk. The second line runs from Baku through to Georgia's Black Sea port of Supsa/Poti. Both pipelines need upgrading and modernisation, costing \$50m for the northern route and \$200m for the western route.

- F.21 Turkey is hopeful that as production builds and peaks in the early part of the next century, a pipeline to its Mediterranean port of Ceyhan may share in the movement of Azerbaijan crude. Ceyhan has been idle since the twin Kirkuk-Yurmurtalik pipeline was closed in 1990, but it is the long-term route most favoured by AIOC. Crude oil exported through the Black Sea must pass through the Bosphorus.
- F.22 The option of developing pipelines via Iran (e.g. a gas pipeline from Turkmenistan) is being strongly opposed by the US.
- F.23 Petroleum products are shipped by rail from Kazakhstan and Russia to the southern states.

Commodity Groups Selected for Modelling

- F.24 The selection of commodity groups is a compromise between the needs of the forecasting model and the availability of data. Data on observed flows (e.g. port statistics, rail statistics) is available for dry bulk / liquid bulk / breakbulk, plus any large individual commodity flows. Customs trade statistics will be in a specific format, usually by industrial sector. From a transport capacity point of view we need to retain the distinction between dry bulk, liquid bulk, breakbulk and 'containerable' cargoes.

Table F-1 - The Commodities Selected for the Modelling

Commodity Group	Includes:	Form
grain	bulk	dry bulk
cotton	bulk raw cotton	dry bulk
ores & metals	bauxite, aluminium, scrap	dry bulk/breakbulk
oil & petroleum products	oil; gasoline, diesel	liquid bulk
plant & equipment	wheeled vehicles	vehicles
construction equipment	timber, pipelines	breakbulk
other dry bulk	coal, fertiliser, cement	dry bulk
other industrial	machinery, yarn	break bulk/container
other consumer	food, drink, clothing	break bulk/container

APPENDIX G
Questionnaires

G. QUESTIONNAIRES

G.1 This Appendix contains:

- a list of questionnaire tables;
- a summary of the status of returns as of mid-September 1996;
- copies of the individual questionnaire tables.

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<i>Handwritten mark</i>	
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TRACECA - Regional Freight Traffic Model - Status of Data Collection by Questionnaire

Questionnaire	Country																																	
	Armenia				Azerbaijan				Georgia				Kazakhstan				Kyrgyzstan				Tadjikistan				Turkmenistan				Uzbekistan					
	R	E	T	S-E	R	E	T	S-E	R	E	T	S-E	R	E	T	S-E	R	E	T	S-E	R	E	T	S-E	R	E	T	S-E	R	E	T	S-E		
Statistics/Customs																																		
I.1	19/8	22/8	22/8		27/7	9/8	22/8						9/8	9/8			26/8																	
I.2	19/8	22/8	22/8		27/7	9/8	22/8		15/8	19/8	19/8		9/8	9/8			26/8				16/8	22/8			27/8	29/8			2/9					
I.3	19/8				Sep				15/8				(draft)				26/8				16/8	22/8			27/8	2/9			29/8					
I.4	19/8				Sep				15/8				(draft)				26/8				16/8	22/8			27/8									
Road																																		
II.1-1	27/7	2/8	2/8	24/7	27/7	2/8	2/8	24/7	15/8	2/8	2/8	24/7	9/8	2/8	2/8	24/7	26/8	2/8	2/8	24/7	16/8	2/8	2/8	24/7		2/8	2/8	24/7		2/8	2/8	24/7		
II.1-2	27/7	2/8	2/8	24/7	27/7	2/8	2/8	24/7	15/8	2/8	2/8	24/7	9/8	2/8	2/8	24/7	26/8	2/8	2/8	24/7	16/8	2/8	2/8	24/7		2/8	2/8	24/7		2/8	2/8	24/7		
II.2	27/7				27/7				9/8				9/8								16/8								29/8					
Rail																																		
III.1-1	27/7	9/8		17/8	27/7	9/8		17/8	15/8	15/8		17/8	27/7	9/8		17/8	26/8	16/8		17/8	16/8	16/8		17/8	27/8	16/8		17/8	16/8	17/8				
III.1-2	27/7	9/8		17/8	27/7	9/8		17/8	15/8	15/8		17/8	27/7	9/8		17/8	26/8	16/8		17/8	16/8	16/8		17/8	27/8	16/8		17/8	16/8	17/8				
III.2-1/III.2-10	27/7	9/8			27/7	9/8			15/8	15/8			27/7	9/8			26/8	29/8			16/8	29/8			27/8	30/8								
III.3	27/7	9/8			27/7	9/8			9/8	12/8			27/7	9/8							16/8	29/8			27/8	30/8								
III.4	27/7	9/8			27/7	9/8			9/8	12/8							26/8	29/8			16/8	29/8			27/8	30/8								
III.5	27/7	9/8			27/7	9/8			9/8	12/8			27/7	9/8			26/8	29/8			16/8	29/8			27/8	30/8								
Sea																																		
IV.1	-	-	-	-	27/7	9/8	22/8		16/8	20/8	22/8		9/8	14/8			-	-	-	-	-	-	-	-	12/8	13/8			2/9	-	-	-		
IV.2	-	-	-	-	27/7	9/8	22/8		16/8	20/8	22/8		9/8	14/8			-	-	-	-	-	-	-	-	12/8	13/8			-	-	-	-		
IV.3	-	-	-	-	27/7	9/8	22/8		16/8	20/8			9/8	14/8			-	-	-	-	-	-	-	-	12/8	13/8			-	-	-	-		
IV.4	-	-	-	-	27/7	9/8	22/8		16/8	20/8			9/8	14/8			-	-	-	-	-	-	-	-	12/8	13/8			2/9	-	-	-		
IV.5	-	-	-	-	27/7	9/8	22/8		16/8	20/8			9/8	14/8			-	-	-	-	-	-	-	-	12/8	13/8			-	-	-	-		
Air																																		
V.1									9/8	22/8			20/7	9/8							16/8	25/8			12/8	13/8								
V.2									15/8	22/8			20/7	9/8							16/8	25/8			12/8	13/8								
V.3									15/8	22/8			20/7								16/8	25/8			12/8	13/8								
VI.1																	26/8								12/8	13/8								
VI.2																	26/8								12/8	13/8								
R = Returned																																		
E = Entered into spreadsheet																																		
T = Translated																																		
S-E = Sent to Epsom																																		

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		(country)					
		TRANSPORTATION BY MODES OF TRANSPORT					
		Volume of transportation, millions tons					
n/n	Transport mode	Years					
		1990	1991	1992	1993	1994	1995
1	Railway						
2	Road transport, total including transport of common use						
3	Water transport (river and sea)						
4	Air transport						
TOTAL:							
		Freight turnover, billions ton*km					
n/n	Transport mode	Years					
		1990	1991	1992	1993	1994	1995
1	Railway						
2	Road transport, total including transport of common use						
3	Water transport (river and sea)						
4	Air transport						
TOTAL:							

(country)

Road network - characteristics and condition of road sections surfacing (1994-95)

No	Road sections				Total length, km		Wigth, m		Type of pavemant km			Length according to the plane pavement, km		
	Origin	End	Anode	Bnode	Total	In mountain conditions	Roadbed	Pavement	Capital	Facilitated	Others	Good	Sat.	Unsat
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														

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(country)																			
Railway Network - Technical-operating characteristics of railway sections (1994-95)																			
n/n	Railway sections				Length of section, km			Alarm, centralization and blocking appliances on the way (km)				Traction type (E/D) and types of locomotives in use	Length of entrance-departure ways (m)	Leading gradient, %		Train weight norm (ton)			
	Origin	End	Anode	Bnode	Total	double way	single way	dispatc board	automat ic blocking	semi- automat ic	others			to	back	freight back	to	passenger to	back
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

*E - electric; D - diesel.

(country)																	
RAILWAY NETWORK - ANNUAL SHIPMENT OF CONTAINERS FROM RAILWAY NETWORK TERMINALS FOR 199__																	
n/n	Terminal location station	LOADED								UNLOADED							
		TOTAL		including						TOTAL		including					
		physical unit, unit	average weight, kg	Large tonnage		Medium tonnage		special		physical unit, unit	average weight, kg	Large tonnage		Medium tonnage		special	
physical unit, unit	average weight, kg			physical unit, unit	average weight, kg	physical unit, unit	average weight, kg	physical unit, unit	average weight, kg			physical unit, unit	average weight, kg	physical unit, unit	average weight, kg		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

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(country)							
Operational characteristics of sea port							
No	Specifications	Depth, m	Square, m ²	Length, m	Amount	(name)	
						Capacity, 000 tons per day and night	per year
1	Tidal range _____ cm						
2	Port capacity for the receiving of the ships with maximum possible displacement _____ ton						
3	Access canal						
4	Port water area						
5	General cargo pier including						
	-						
	-						
	-						
6	Berth for bulk liquids including						
	-						
	-						
	-						
7	Multipurpose terminals including						
	-						
	-						
8	Specialised piers including						
	- for ferries;						
	- for grain;						
	-						
9	Storages: including						
	- store rooms;						
	- constructions for open goods storage;						
	-						
10	Nominal carrying capacity of goods treatment by port including						
	- general cargo;						
	- bulk cargo;						
	- bulk liquids;						
	-						

(country)			
Seaport loading-unloading handling in 1995			
(name)			
No	Cargo appellation	Export	Import
1	Cargo total, 000 tons including		
1.1	Bulk cargo, total including - sugar; - different ores, fluxes; - coal, coke, including mixture & anthracene; - cement; - construction cargo; - chemical cargo; - others		
1.2	Grain cargo in bulk, total		
1.3	Timber cargo, total		
1.4	General cargo, total including - on ferries (gross); including van container weight (mass) - on lighters (gross) including lighters without cargo (weight) - on rolfers - in large-tonnage containers (gross)		
1.5	Other piece cargo, including - perishable; - different metals not in business; - machinery, equipment & hardware; - chemical cargo		
1.6	Petroleum products transfer		
1.7	Performed tons-operations, total (000)		
1.8	From line 1: - cargo not connected with sea freight turnover - treated cargo in parcels		
2	Amount of large-tonnage containers (20 & 40 Foot), unit		

(country)							
List of vessels accomplished unloading operations in III quarter 1995.							
(name of port)							
No	Name of vessel	Vessel type	Import cargo		Con- tainers, (TEU)	Port of departure	Waiting time during unloading, hour
			Type of cargo	Weight tons			
1	2	3	4	5	6	7	8
1			-				
			-				
			-				
			-				
			-				
			-				
2			-				
			-				
			-				
			-				
			-				
			-				
3			-				
			-				
			-				
			-				
			-				
			-				
4			-				
			-				
			-				
			-				
			-				
			-				
5			-				
			-				
			-				
			-				
			-				
			-				
6			-				
			-				
			-				
			-				
			-				

(country)

List of vessels accomplished loading operations in III quarter 1995.

(name of port)

No	Name of vessel	Vessel type	Export cargo		Con- tainers, (TEU)	Port of destination	Waiting time during loading, hour
			Type of cargo	Weight tons			
1	2	3	4	5	6	7	8
1			-				
			-				
			-				
			-				
			-				
			-				
2			-				
			-				
			-				
			-				
			-				
			-				
3			-				
			-				
			-				
			-				
			-				
			-				
4			-				
			-				
			-				
			-				
			-				
			-				
5			-				
			-				
			-				
			-				
			-				
			-				
6			-				
			-				
			-				
			-				
			-				

(country)												
Information about airport carrying capacity												
No	Specifications	Airport name										
1	Type of aircrafts receiving											
2	Dimensions of run-way											
3	Availability and amount of parking spaces for freight aircrafts											
4	Availability and carrying capacity of freight terminals											
5	Based types of aircrafts											
6	Availability of mechanisation facilities (resources) for loading-unloading											

W

BORDER-CROSSING TRAFFIC SURVEY

Country:

Border station:

Bordering country:

TRUCK TRAFFIC through border in 1995

Month	OUT (leaving the country)		IN (entering the country)	
	Total	In transit	Total	in transit
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
TOTAL				
% of National Truck				
Estimated Number of Containers				

EXPORT through the border station (January-June 1996)

Estimated total volume of export (tons)

Main commodities				
% of total volume				

IMPORT through the border station (January-June 1996)

Estimated total volume of export (tons)

Main commodities				
% of total volume				

TRANSIT TRAFFIC (January-June 1996)

Inbound Traffic	Main countries of origin			
	% of transit traffic			
Outbound Traffic	Main countries of origin			
	% of transit traffic			

APPENDIX H

Traffic Changes in the Short Term

H. TRAFFIC CHANGES IN THE SHORT TERM

- H.1 We have been asked by the TRACECA co-ordinator to provide provisional overview traffic forecasts for 1997.
- H.2 Accommodating this work within the work programme has required certain modifications to our approach. The forecasting model development work and, hence, production of forecasts is not programmed until early 1997. Also, whilst a major data collection exercise has been undertaken, certain data sets are currently incomplete and baseline information for road and rail flows have not yet been validated.
- H.3 We have, therefore, sought to compile a preliminary estimate of current traffic flows in the region based on data provided to date. We stress that this information is provisional and subject to validation using independent data sets.
- H.4 To support the analysis we have also carried out a preliminary review of the economies of the TRACECA states, including the collection of GDP forecasts from the international agencies. This information is contained in Appendix D.

Methodology

- H.5 Changes in these traffic flows over the next year could be caused by due to a number of different factors:
- changes in the demand and production of goods leading to changes in both the volume and pattern of freight work;
 - structural change within the transport sector, including modal shift;
 - transport infrastructure and pricing changes leading to change in the relative attractiveness (costs) of competing strategic routes and modes.

- H.6 Our approach to producing preliminary forecasts for 1997 has been to firstly assemble baseline traffic flows on the model network from count and volumetric data. Clearly there are many different economic, political, and investment scenarios that can be considered. Our approach has been to derive provisional traffic forecasts for 1997 based on a 'no surprise' scenario in which changes in freight flows are considered to be primarily function of changes in GDP - as is the convention in freight forecasting at a macro level. This relationship has been assumed to be modified by structural changes in the transport sector.
- H.7 The purpose of these provisional forecasts is, to provide a starting point for examining current and immediate future patterns of freight flows and for forecasting the effect of political, trade and transport investment scenarios. The definition of these scenarios will need to be agreed with TACIS and the TRACECA states during the next stages of the model development and forecasting work.

Baseline Flows

- H.8 We have processed baseline flow information for road (freight vehicle counts for 1995) and rail (1993 tonnage flows) for the Caucasus and Kazakhstan. Plots of these data are attached (see Figures H.6 to H.11). These plots should be used with caution: we have not yet cross-checked this information with customs information, border crossing flows or port traffic figures.

Demand and Production

- H.9 We have assumed that demand and production, and hence freight flows are affected primarily by changes in GDP (shown in Table H.1). For simplicity we have assumed a GDP/trade elasticity on one: i.e. a direct relationship. Therefore we would expect the baseline flows to rise (or fall) on the basis of actual and estimated GDP growth/decline in 1995/97 for the road flows and 1993/97 for the rail flows. We have further assumed that structural changes in the transport sector will modify these changes.

Table H-1: Real GDP Growth

	1993	1994	1995	1996	1997 (*)
Armenia	-14.8	5.4	6.9	6.5	7
Azerbaijan	-23.1	-21.9	-17.0	-5.0	4
Georgia	-25.4	-11.4	-5.0	8.0	10
Kazakhstan	-12.0	-25.0	-11.0	0.4	3
Kyrgyzstan	-15.5	-20.1	1.3	2.4	5
Tajikistan	-11.1	-21.4	-12.5	-7.0	0
Turkmenistan	-10.0	-20.0	-13.9	3.7	2
Uzbekistan	-2.3	-4.2	-1.2	-1.0	0

Sources: IMF etc. (see Appendix D):

Note : * = consultant's preliminary estimate based on international sources

H.10 We have assumed that the pattern of trade partners remains broadly similar (but see comments below). Trade patterns for Georgia, Kazakhstan, Kyrgyzstan and Tajikistan are shown in Figures H.1 to H.4, together with data summaries.

Structural Change within the Transport Sector

H.11 As the economies become more market oriented it can be expected that the transport intensity of trade will fall. In other words, trade is evolving broadly from inexpensive, heavy, raw and intermediate materials to more expensive, lighter, consumer and manufactured goods.

H.12 The average carrying capacity of long-distance road vehicles can be expected to rise rapidly, with the growth of foreign operators (e.g. Turks and Iranians) and the replacement in local fleets of low-capacity trucks with new foreign freight vehicles for international operations. However there is likely to be a growth in short-distance operations by smaller capacity vehicles, as local distribution centres develop. The result of these two trends will be to increase vehicle flows in the urban areas but decrease them on interurban links.

H.13 We have assumed a continuing trend of transfer of freight traffic from rail to road, as the value of commodities being transported - hence the importance of security - increases. The percentage effect on rail would be less than for road, given the generally high proportion of long-distance traffic carried by rail.

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H.14 The net effect of these changes is an additional downward trend in rail traffic, say an annual 10% fall in Central Asia and a 20% annual fall in the Caucasus, - plus growth in road traffic, say 10% annually. In table H.2 we have combined the GDP figures and these additional trends.

Table H-2: Preliminary indices for freight traffic

	1997 GDP as a percentage of 1993	With further 10% annual decline (rail)	With further 20% annual decline (rail)	1997 GDP as a percentage of 1005	With further 10% annual increase (road)
Armenia	128		53	114	138
Azerbaijan	64		26	99	120
Georgia	100		41	119	144
Kazakhstan	68	44		101	123
Kyrgyzstan	87	57		108	130
Tajikistan	64	42		93	113
Turkmenistan	73	48		106	128
Uzbekistan	94	61		99	120

H.15 These figures can only be considered as illustrative at this stage in our work, but imply that:

- the typical rail flows for 1997 are likely to be significantly less than the 1993 figures, in some countries as low as a quarter;
- the typical road flows in 1997 are likely to be greater than the 1995 flows, in some countries up to two-fifths greater.

Transit Traffic

H.16 Of course, flows on particular links could show quite different changes related to transit traffics, such as cotton or humanitarian aid (mainly grain) and - in the Caucasus the movement by rail of oil products.

H.17 The flow of exports of cotton through the TRACECA route is potentially an important traffic but is uncertain, as the routing is a political decision as well as an economic one. We assume increases over the period but at present we

have little information on previous flows or planned shipments. It appears that trial shipments of cotton along the TRACECA route may have reached 10,000t in 1995 with possibly double this in 1996 (this figure is much less than was planned).

- H.18 The flow of humanitarian aid through the TRACECA routes has been an important traffic particularly in the Caucasus (for Georgia this amounted to 2.3 Mt in 1995). This traffic is likely to cease soon, but is likely to be replaced - to some extent - by commercial shipments of food and grain, although the local sources are more likely to be Kazakhstan and Ukraine - where barter is likely to be possible - rather than world markets.
- H.19 In the Caucasus the transit rail flows are dominated by the export of oil products from Azerbaijan westwards through Georgia. Rehabilitation of the existing - but disused - products pipeline should wipe out this traffic.

Political and Infrastructure Changes

- H.20 We have assumed so far in this analysis that the transport networks and costs and the pattern of trade partners remain broadly similar over the period. In Central Asia there seem to be no obvious options for short-term changes to the transport network. However, for the Caucasus there are potentially significant changes which could change the volume and pattern of trade and transport flows in the TRACECA states, and particularly along the TRACECA routes.
- H.21 In the Caucasus, transport flows are generally constrained to east-west movements only with the borders to the north to Russia closed, as is the border between Armenia and Azerbaijan and Armenia and Turkey. Links between Armenia and Azerbaijan look likely to remain closed in the short term, but there is some justification for thinking that some of the other crossings may re-open:
- a resolution of the Chechnya conflict looks increasingly possible (in September 1996) and could result in the opening-up of the rail link between Azerbaijan and Russia via Makhachkala (the road link has already been re-opened);

- the road and rail links to Russia through Abkhazia in northern Georgia could be re-opened if - as is looking increasingly likely - a political settlement can be found;
- Turkey may soon re-open the road and rail links with Armenia, which would strengthen Turkey's market penetration in the region. However the Nakhichevan rail links to Turkey and Iran seem likely to remain closed with the continued closure of Armenian/Azerbaijan borders.

H.22 The opening of the rail links with Russia, in particular, can be expected to have a significant impact on the movement of bulk traffics, such as grain and oil products. Also Moscow is increasingly developing as a distribution centre for western consumer goods in the CIS.

H.23 For the Caspian Sea we assume that the rail/road ferry service and access to the ports would not be interrupted in Summer 1997 as a result of the continued rise in water level, although the situation is increasingly critical. Rail traffic, rather than road traffic would be most seriously affected.

Conclusions

H.24 Clearly this discussion falls short of being a quantitative forecast of transport flows in the TRACECA region for 1997. However by taking into consideration the trends and the quantitative flow data discussed here, together with supplementary information in other appendices of this report, a reasonable estimate of the likely evolution of traffic flows can be made for most individual links.

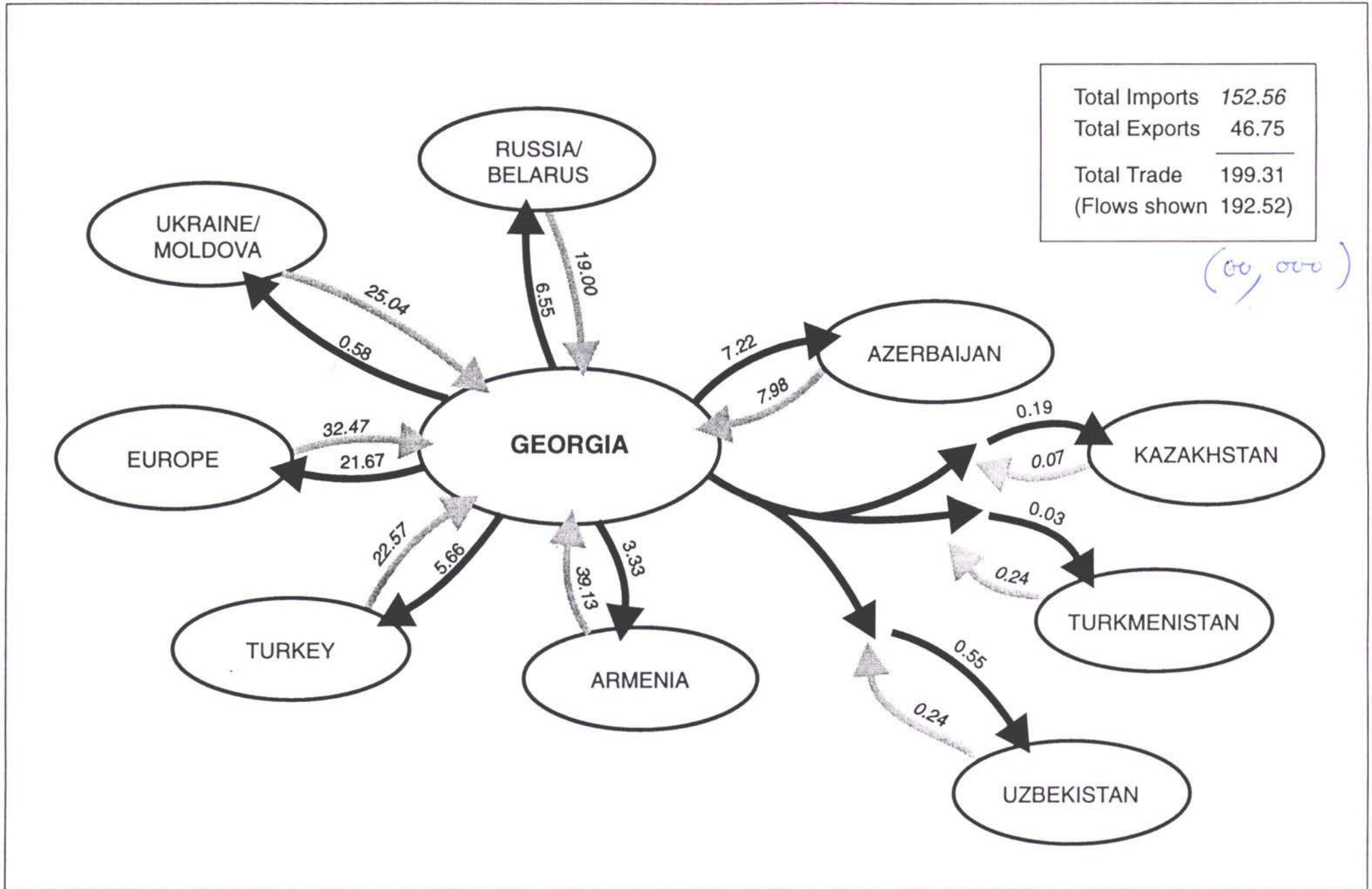


Figure H.1 MAIN TRADE RELATIONS: GEORGIA (1995 Million Tonnes)



Figure H.2 MAIN TRADE RELATIONS: KAZAKHSTAN (1995 Million Tonnes)



Figure H.3 MAIN TRADE RELATIONS: KYRGYZSTAN (1995 Million Tonnes)

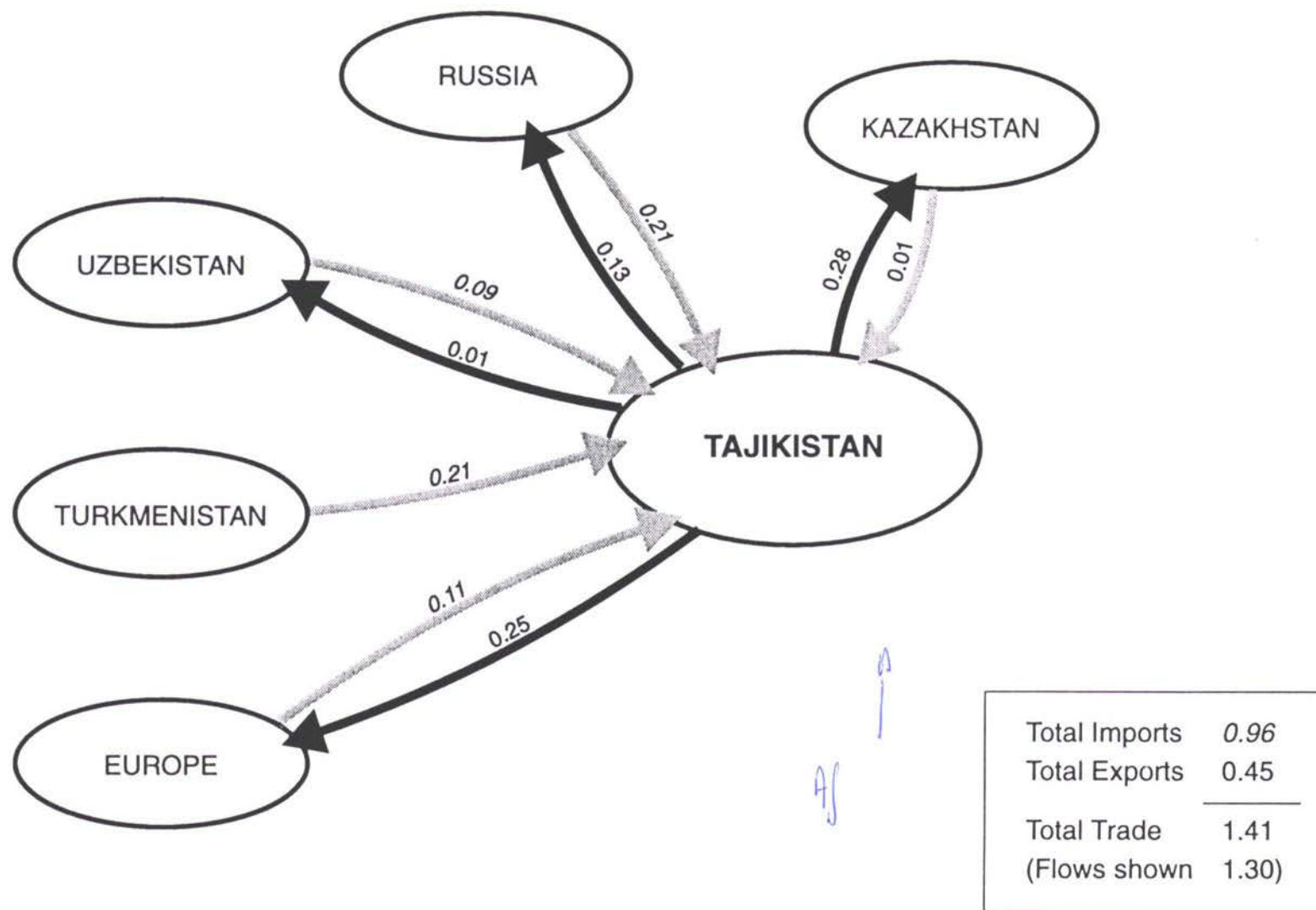


Figure H.4 MAIN TRADE RELATIONS: TAJIKISTAN (1995 Million Tonnes)



FIGURE H.6

Road Goods Vehicle Traffic Flows - Caucasus (1995, thousand vehicles/day)

187

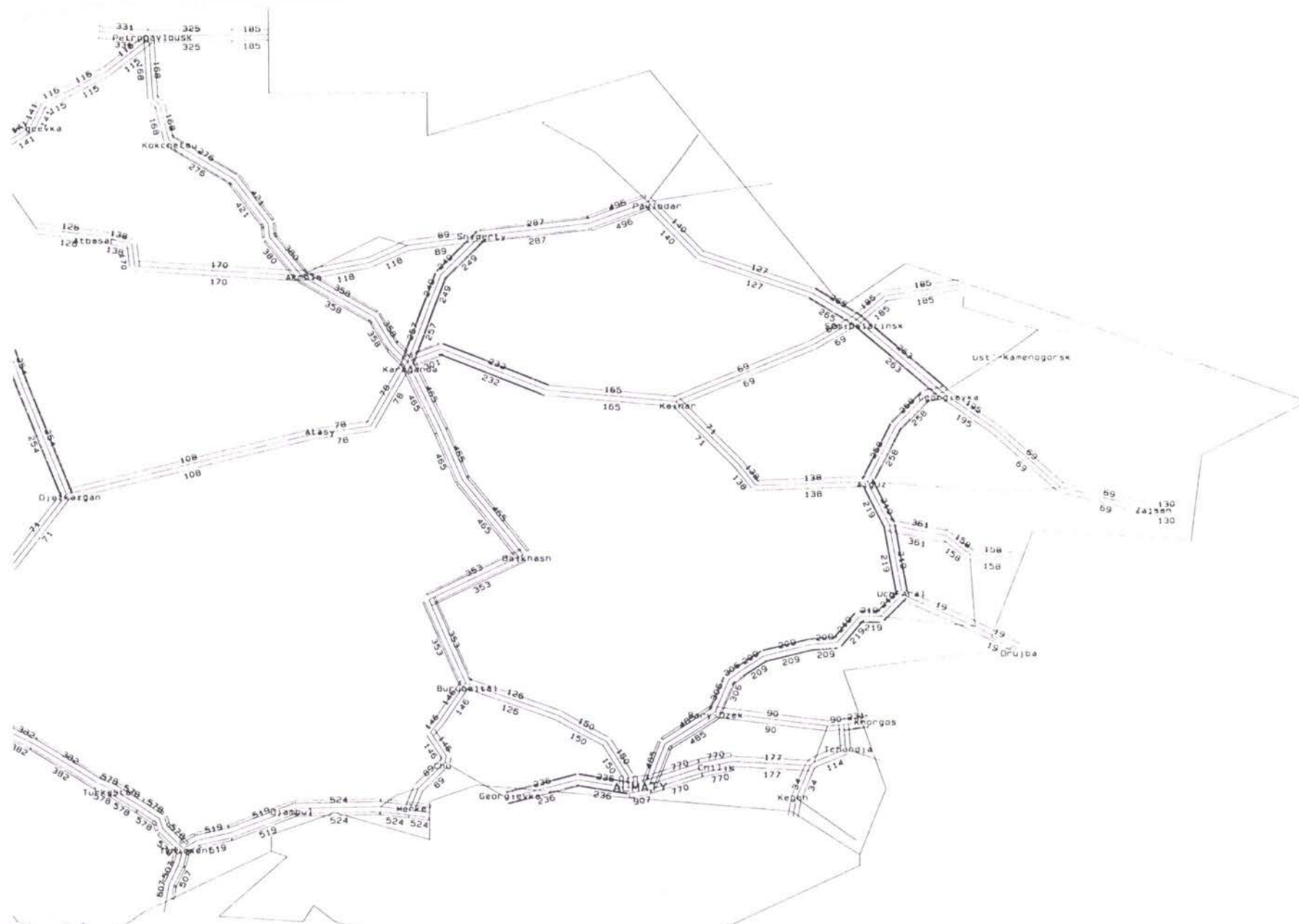


FIGURE H.8 Road Goods Vehicle Traffic Flows - East Kazakhstan (1995, thousand vehicles/day)

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FIGURE H.9 Rail Tonnage Flows in the Caucasus (1993, thousand tonnes per year)

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Appendix A to tables 1.3-1 and 1.4-1

Code of group of commodities	Codes included into group code	Denomination of commodity group
01	01-05	Cattle and products of animal origin
02	06-14	Products of vegetable origin
03	15-15	Fat and oil of animal or vegetable origin
04	16-24	Finished food-stuffs
05	25-27	Mineral products
06	28-38	Products of chemical industry and other industries related with it
07	39-40	Plastics and its wares: caoutchouc and rubber wares
08	41-43	Leather raw materials: leather, fur and their wares
09	44-46	Wood and its wares
10	47-49	Paper and its wares
11	50-63	Textile and its wares
12	64-67	Shoes, head-dresses, umbrellars, walking-sticks, treated feathers and their wares
13	68-70	Wares from stone, gypsum, cement
14	71-71	Precious and semi-precious stones, precious metal and their wares
15	72-83	Non-precious metal and its wares
16	84-85	Machinery, equipment and mechanisms
17	86-89	Road, air and water vehicles
18	90-92	Devices (apparatus) and appliances
19	93-93	Arms and ammunition; their spare parts and accessories
20	94-96	Different manufactured goods
21	97-97	Art products

Appendix B to tables 1.3-1 and 1.4-1

Code of group of countries	Names of countries / regions included into group
Internal Zones	
1 - 3	Tadjikistan
4 - 6	Kyrghyzstan
7 - 11	Uzbekistan
12 - 14	Turkmenistan
15 - 20	Kazakhstan
21	Georgia
22	Armenia
23	Azerbaijan
External Zones	
24	Southern Russia, Northern Russian States including Belarussia
29	Ukraine, Moldova
30	China, Laos, Mongolia,
31	Afganistan, Pakistan, India
32	Iran, UAE, Oman, Kuwait, Saudi Arabia, Qatar
33	Turkey
34	France, Belgium, Luxemburg, Germany, Netherlands, Denmark
35	Italy, Greece, Spain, Portugal, Former Yugoslavia, Bulgaria, Albania, Cyprus, Macedony, Slovenia
36	Romania, Hungary, Austria, Slovakia, Switzerland
37	Latvia, Estonia, Finland, Lithuania, Sweden

38	Poland, Czechia
39	Norway, UK, Ireland
40	Iraq, Egypt, Syria, Lebanon, Jordan, Israel
41	Sudan, Ethiopia, Somalia, Kenya, Uganda, Zaire, Tanzania, Malawi, Mozambique, Zambia, Zimbabwe, Botswana, Lesotho, Swaziland, South Africa, Madagascar, Mauritius
42	Libya, Chad, Central African Republic, Congo, Gabon, Angola, Namibia, Equatorial Guinea, Cameroon, Ghana, Nigeria, Niger, Benin, Togo, Ivory Coast, Burkina Faso, Liberia, Sierra Leone, Guinea-Bissau, Guinea, Gambia, Senegal, Mauritania, Mali, Morocco, Algeria
43	Sri Lanka, Burma, Indonesia, Malasia, Thailand, Vietnam, Philippines, Papua, New- Guinea, Bangladesh, Cambodia, Singapore, Hong Kong
44	Japan, North Korea, South Korea, Taiwan
45	Atlantic East Coast (half of USA), Cuba, Canada, Carribean, Argentina, Brazil, Mexico, Central America, Venezuela, Guyana, French Guiana, Uruguay, Paraguay, Bolivia
46	Atlantic West Coast (half of USA), Australia, New Zealand, Peru, Chile, Ecuador, Colombia

GEORGIA

(country)

Cargo flows data through the border (import, in tons) for 1995

Code of group of countries	Commodity codes																				Total for group	% for a group of countries
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	21		
1				23296																	23296	0,02%
4				1500												8000					9500	0,01%
7				37211							189318					14528					241055	0,16%
12					240000																240000	0,16%
15								47500			6000	12000					5				85505	0,04%
21																					0	0,00%
22				8000	34154100	1503959	1420			119500	4484	12140	925800		2230779	117737	45875		8023	39131597	25,58%	
23	8150		104804	282418	960000	6288048	18970		8000	39791	34282	1072			201000	26950	4250		4250	7977981	5,22%	
Total for TRACECA countries	8150	0	104804	352423	35354100	7839505	18390	0	8000	159291	234084	25212	925600	0	2431779	167213	50130	0	12273	0	47688934	31,18%
% for commodity in cargo flow	0,01%	0,00%	0,22%	0,74%	74,13%	16,44%	0,04%	0,00%	0,02%	0,33%	0,49%	0,05%	1,94%	0,00%	5,10%	0,35%	0,11%	0,00%	0,03%	0,00%		
24		270	208448	284588	172300	6292758	934088		48	405471	38746	18572	8396331	1	3923077	291508	9460	7658	19590	19002872	12,42%	
29			173308	9028980	5657500	4712	78653		7000	405471		1756	5470731		3923077	284558	5210		15340	25036294	16,37%	
30			0	1178			9400				14400	24000				290				49266	0,03%	
31			0																	0	0,00%	
32			0	583900	240100		110101		303804	17500	282808	34324	31082		82474	88249	47136	6650	771200	2579328	1,69%	
33			3484950	6900988	9494808	12850	408758		46961	598549	69184	3580	853880		123741	213821	94823	9129	254930	22568530	14,75%	
34		21788	203792	5202100	14400	10420	878374		7288	166588	129829	48529	17961		58624	188120	90008	103583	72218	310	7211910	4,71%
35		20000	378432	1399904		1081522	99593		30130	217319	28338	18522	96834	282	62529	204190	1810	14952	395142	4045479	2,64%	
36			44640	5978945		720	60283		136	41816	10210	919	17850	1	215246	161539	66328	2939	90324	6689696	4,37%	
37			24300	38283			2000		107104		2713				65000	143458	25		30000	410170	0,27%	
38			0	51980	140		5392		2900	433	2713		16045		250	15878	17781	130	4814	118214	0,08%	
39			53035	13791497						13212	48337	368			32988	18470			43590	14001497	9,15%	
40				83818			14913			51537	11600	3486			8717	15078	40000		4649	213578	0,14%	
41																				0	0,00%	
42																				0	0,00%	
43										95	1550	925				2045				4615	0,00%	
44							2360				73751	27217				29432			679	133439	0,09%	
45			1848269	341967	45		69			4573	74100	16169			771059	107573	9764	28419	120	3198127	2,09%	
46																16897		173		17070	0,01%	
Total for countries	8150	42056	8519978	43998307	50933191	15242487	2818354	0	408247	2188959	1017830	223539	13826114	284	11665573	1942835	450725	171833	1714889	310	Subtotal: 1,53E+08	
% for commodity in cargo flow	0,00%	0,03%	4,26%	28,76%	33,30%	9,96%	1,71%	0,00%	0,27%	1,43%	0,67%	0,15%	9,04%	0,00%	7,63%	1,27%	0,29%	0,11%	1,12%	0,00%	1525629200	

* Source: State Committee for Statistics of Georgia

GEORGIA

(country)

Cargo flows data through the border (export, in tons) for 1995

Code of group of countries	Commodity codes																				Total for group	% for a group of countries	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	21			
1																					0	0,00%	
4			11240																		11240	0,02%	
7																					551286	1,18%	
12										13550	2750					13500	521486				26057	0,06%	
15											12000	10000				3150	907				185402	0,40%	
21											16412					17200	400				0	0,00%	
22	18445		181900	379085	519000	1837330	175733			39200	96953					24593				56900	3331139	7,13%	
23		7000	107788	40850	550225	205600	11981			21065	240000			4709000		454291	3930	7000	857500		7216230	15,44%	
Total for TRACECA countries	18445	7000	300928	419935	1069225	2194170	187864	0	2000	73815	368115	10000	4709000	0	0	512734	526723	7000	914400	0	11321354	24,22%	
% for commodity in cargo flow	0,16%	0,06%	2,66%	3,71%	9,44%	19,38%	1,66%	0,00%	0,02%	0,65%	3,25%	0,09%	41,59%	0,00%	0,00%	4,53%	4,65%	0,06%	8,08%	0,00%			
24		3698	44000	18588	3306100	506148	218425		62144	61369	292496	954	30000		1	1531470	400485	758	75802		6552438	14,02%	
29		810		31438	320000		28800			500	36751	200			5	159761	183	10	2520		580978	1,24%	
30				417143																	417143	0,89%	
31																	93600				93600	0,20%	
32				14680		185800				400	2750	750				87924					310304	0,66%	
33		346410		27081	18450		63247	1278770	1637324		7500					2245969	38924		1000		5664675	12,12%	
34				1598000	20000	30	19803671				64374		110			289				211	21484685	45,96%	
35				10000							7300					115700					133000	0,28%	
36																4222					4230	0,01%	
37																	8				2	2	0,00%
38				57952																		57952	0,12%
39																						0	0,00%
40																					119	119	0,00%
41																						0	0,00%
42																						0	0,00%
43											26965											26965	0,06%
44											16086											16086	0,03%
45											86501											86694	0,19%
46						13														180		0	0,00%
Total for countries	18445	357918	344928	2592817	4733775	2886161	20302007	1278770	1719468	136084	908838	11904	4739110	0	6	4658069	1059923	7770	993902	330	Subtotal: 46750225		
% for commodity in cargo flow	0,04%	0,77%	0,74%	5,55%	10,13%	6,17%	43,43%	2,74%	3,68%	0,29%	1,94%	0,03%	10,14%	0,00%	0,00%	9,96%	2,27%	0,02%	2,13%	0,00%			

* Source: State Committee for Statistics of Georgia

TADJIKISTAN
(country)

Cargo flows data through the border (Import, in tons) for 1995

Code of group of countries	Commodity codes																				Total for group	% for a group of countries
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	21		
1																					0	0,00%
4	13202				330	64															13596	1,41%
7	26239				27178	38978															92395	9,61%
12	1671				211824																213495	22,21%
15	247705				36029																283734	29,51%
21	0				0																0	0,00%
22	0				0																0	0,00%
23	0				1046																1046	0,11%
Total for TRACECA countries	288817	0	0	0	276407	39042	0	0	0	0	0	0	0	0	0	0	0	0	0	0	604266	62,85%
% for commodity in cargo flow	47,80%	0,00%	0,00%	0,00%	45,74%	6,46%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%		
24	97921				108021	4135															210077	21,85%
25	644				369																1013	0,11%
30	214				0																214	0,02%
31	126				3034																3160	0,33%
32	223				795																1018	0,11%
33	112				0																112	0,01%
34	53540				1968																55508	5,77%
35	102				2270																2372	0,25%
36	16911				3931																20842	2,17%
37	19923				5461																25384	2,64%
38	6042				54																6096	0,63%
39	1270				6214																7484	0,78%
40	0				0																0	0,00%
41	0				0																0	0,00%
42	0				0																0	0,00%
43	0				463																463	0,05%
44	6				0																6	0,00%
45	21944				1452																23396	2,43%
46	0																				0	0,00%
Total for countries	507795	0	0	0	410439	43177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ИТОГО: 961411	
% for commodity in cargo flow	52,82%	0,00%	0,00%	0,00%	42,69%	4,49%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%		

Note: Main commodities only

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TADJIKISTAN

(country)

Cargo flows data through the border (export, in tons) for 1995

Code of group of countries	Commodity codes																				Total for group	% for a group of countries
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	21		
1																					0	0,00%
4		649		89		88		19			247				0						1092	0,25%
7		4049		74		780,1		0			1610				6158						12671,1	2,84%
12		1022				286		0			0				805						2113	0,47%
15		4418		189		343		23			759				295						6027	1,35%
21		0				0		0			0				0						0	0,00%
22		0				0		0			0				0						0	0,00%
23		24				0		0			0				228						252	0,06%
Total for TRACECA countries	0	10162	0	352	0	1497	0	42	0	0	2616	0	0	0	7486	0	0	0	0	0	22155,1	4,97%
% for commodity in cargo flow	0,00%	45,87%	0,00%	1,59%	0,00%	6,76%	0,00%	0,19%	0,00%	0,00%	11,81%	0,00%	0,00%	0,00%	33,79%	0,00%	0,00%	0,00%	0,00%	0,00%		
24		75089		6644		296,5		160			32817				14319						129325,5	29,03%
29		958		324		0		0			2741				3051						7074	1,59%
30		0				2123,3		139			2583				544						5389,3	1,21%
31		35,4						719			38				784						1576,4	0,35%
32		0						0			0				376						376	0,08%
33		0						116			4507				136						4759	1,07%
34		0									5251				163128						168379	37,80%
35		0									4781				193						4974	1,12%
36		0									30131				3204						33335	7,48%
37		202									14226				14575						29003	6,51%
38		0									1220				400						1620	0,36%
39		0				128					4036				13151						17315	3,89%
40		0									0				0						0	0,00%
41		0									0				0						0	0,00%
42		0									0				0						0	0,00%
43		0									686				0						686	0,15%
44		0		5							4377				6118						10500	2,36%
45		0									8700				263						8963	2,01%
46		0									0				0						0	0,00%
Total for countries	0	86446	0	7325	0	4044,9	0	1176	0	0	118710	0	0	0	227728	0	0	0	0	0	ИТОГО: 445430,3	
% for commodity in cargo flow	0,00%	19,41%	0,00%	1,64%	0,00%	0,91%	0,00%	0,26%	0,00%	0,00%	26,65%	0,00%	0,00%	0,00%	51,13%	0,00%	0,00%	0,00%	0,00%	0,00%		

Note: Main commodities only

KYRGHYZSTAN

(country)

Cargo flows data through the border (import, in tons) for 1995

Code of group of countries	Commodity codes																				Total for group	% for a group of countries
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	21		
1		765,6	501	63,4	8592	1208	3,4	0,1	10	3	1555,1	0,05	577,8		2,5						13279,95	0,79%
4																					0	0,00%
7	42,1	1526,9	11	417,5	51566	48398	29,3	181,7	89	73,9	5486,9	24,7	1993		106,5	1,1			303,1		110248,7	8,52%
12		10		250	3055	101215					317,3										104847,3	6,20%
15	902,8	21696	44	12161,7	564410	283287,6	209	0,8	16,53	411,8	633,9	1,1	32532		3617,5	2,96			1057,94		920985,4	54,50%
21		242																			242	0,01%
22																					0	0,00%
23		266,2		52,4		10092					564,6		1192,2		4				13,3		12184,9	0,72%
Total for TRACECA countries	945	24507	556	12945	627623	444197	242	183	116	489	6558	26	36295	0	3731	4	0	0	1374	0	1161788	68,75%
% for commodity in cargo flow	0,08%	2,11%	0,05%	1,11%	54,02%	38,23%	0,02%	0,02%	0,01%	0,04%	0,74%	0,00%	3,12%	0,00%	0,32%	0,00%	0,00%	0,00%	0,12%	0,00%		
24	373,55	939	472	58920,1	9852	110160,04	56,56	306,7	18915,8	3640,6	6052,9	106,6	13670		23671	4,8			5265,2		252406,9	14,94%
25		68,6	35,6	38624,5		195,4			29,2		30	0,3	3085		2767				13,7		44869,3	2,66%
30		38	309	1652,5	2	3070,3	29,3			18,4	532,1	362,8	904		1480				75,7		8474,1	0,50%
31		17,5		5957,7		2					0,5										5977,7	0,35%
32		1206,6	34,9	1288	21,9	395,5	56,76			18,3	91,2	9,2			570,4				206,83		3899,59	0,23%
33		518	6530	2034,7	444	1399,2	11,5		20	5,8	93,6	1,1	176		3882,6				674,4		15790,9	0,93%
34	158,2	0,3	605,5	23800	132,3	2708,3	240,8		90,8	59,2	3,56	0,25	103,2		931,5	0,81			905,4		29740,12	1,76%
35		0,7	7,3	1356,1		1471,8				28,4	105,3	1,75			2				0,8		2976,15	0,18%
36				440,05	49	2234				28,5					8				43,2		2802,75	0,17%
37	234	0,8	125,9	1491,3		817,5	0,5	85,9	115,2	78,2	69,83	3	253		258,02				209,61		3742,76	0,22%
38		26,3	4,9	446,1		130	6		28	15,8	0,9								70,6		730,6	0,04%
39			25,1	222,8	14,4					30	16,41								14,9		323,61	0,02%
40				138,6		8				0,1					1,2						147,9	0,01%
41																					0	0,00%
42																					0	0,00%
43		9,6				10									6	6,8			0,4		34,8	0,00%
44				33,6	196	5,5				0,3	169,7		790		3362,2	0,01			21,73		4599,04	0,27%
45	178,3	75554	1051	67203,2	0,1	24,3	4,8			0,1	2,5		1224,2		6282	1,5			11,8		151537,3	8,97%
46																					0	0,00%
Total for countries	1889,65	102885	9757,2	216558,25	638334,7	566828,44	647,92	575,2	19314,5	4412,4	15726,5	510,85	56500,4	0	46992,42	19,98	0	0	8888,61	0	Subtotal: 1689842	
% for commodity in cargo flow	0,11%	6,09%	0,58%	12,82%	37,77%	33,54%	0,04%	0,03%	1,14%	0,26%	0,93%	0,03%	3,34%	0,00%	2,78%	0,00%	0,00%	0,00%	0,53%	0,00%		

KYRGHYZSTAN

(country)

Cargo flows data through the border (export, in tons) for 1995

Code of group of countries	Commodity codes																					Total for group	% for a group of countries
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	21			
1	122	543,7		4379,9	195,1	59228,9	1,9	7	209,3		17,25	0,8		103,1	38,19				10073,9		74921,04	9,96%	
4																					0	0,00%	
7	4172,8	909,9		2055,9	1786,5	96174,5	322,4	70,8	261,7	167,9	378,01	0,9	1726,5	8737,8	5618,95				9692,77		132077,3	17,55%	
12	57,9	105,5		1519,5	4866	4622		4,3			45,15	1,4		245	3551,9				51,4		15070,05	2,00%	
15	769,4	11530,9		16589,2	63323,3	46608,3	162,8	3,8	7,1	495,6	617,4	4,5	440,3	1147,4	0,2				6863,8		148564	19,74%	
21	8,3			229,5				4		8	4,9								0,6		255,3	0,03%	
22				60							10,4										70,4	0,01%	
23	13,2	297		184	1801				63		1,4				0,12				925,2		3284,92	0,44%	
Total for TRACECA countries	5144	13387	0	25018	71972	206634	487	90	541	672	1075	8	2167	10233	9209	0	0	0	27608	0	374243	49,73%	
% for commodity in cargo flow	1,37%	3,58%	0,00%	6,68%	19,23%	55,21%	0,13%	0,02%	0,14%	0,18%	0,29%	0,00%	0,58%	2,73%	2,46%	0,00%	0,00%	0,00%	7,38%	0,00%			
24	1788,1	145596,4		4643,2	14397,6	1399,9	26,9	149,1	288,5	135,5	5404,9	13,2	711,7	1947,8	37626,1				3653,8		217782,5	28,94%	
29		8488,9		398,4	63,8	9,3	0,5	13,2			338,1			218	380,2				59,06		9969,46	1,32%	
30	153,5	455,5		596,8		13,6	13,6	5342,9	0,14		29841,96	2,6		56357,5	11034,8				8,4		103821,3	13,80%	
31	828							59,9			335,75	0,2		16377,5							17601,35	2,34%	
32	420,6			43,4			2,4		12,6	20	483,7			7673	1857,2				496,82		11009,72	1,46%	
33	236,3	101		20,4		0,6	15	688,6	28		1096,5			102	3,12						2291,52	0,30%	
34				10		9		9	203	60	347,45			1610,8	1,2				193,3		2443,76	0,32%	
35	20			18,3		0,2		29,45			1132,9				13,2				397,2		1611,25	0,21%	
36											3035			100					66,7		3201,7	0,43%	
37	25,6	124,4						16,7			251,5			1133,2	6,4				8,4		1557,8	0,21%	
38		50,1				0,8		6			1522,2										1579,1	0,21%	
39											258,6			4641							4899,6	0,65%	
40											29,4										29,4	0,00%	
41																					0	0,00%	
42																					0	0,00%	
43																					0	0,00%	
44						8,1		111,4			227,4			50					0,5		397,4	0,05%	
45		10		0,1	6,8			3,1			19,9			68							107,9	0,01%	
46											34,5			0							34,5	0,00%	
Total for countries	8615,7	168213,3	0	30748,6	86440,1	208075,2	545,5	6519,25	1073,34	887	45434,27	23,6	2878,5	100512,1	60125,18	0	0	0	32489,65	0	752581,3		
% for commodity in cargo flow	1,14%	22,35%	0,00%	4,09%	11,49%	27,65%	0,07%	0,87%	0,14%	0,12%	6,04%	0,00%	0,38%	13,36%	7,99%	0,00%	0,00%	0,00%	4,32%	0,00%			

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KAZAKHSTAN TRADE FLOWS
(Jan.-Feb 1995, thousand tonnes)

Trading partner	Sea		Rail		Road		Pipeline		Waterways		Air		Other		Total		%		Total		
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exp+Imp	%	
TOTAL	182	41	34433	8844	1624	384	14008	11627	696	18	1	11	12	38	50956	20963	50955	20965	71919		
EUROPE	47		2628	312	6	33	3792					6	1	3	6474	354	13%	2%	6828	9%	
ASIA	53	1	1563	164	280	97					1	2			1897	264	4%	1%	2161	3%	
AFRICA			20	2			48								68	2	0%	0%	70	0%	
AMERICA	4		187	50	1	3	130								322	53	1%	0%	375	1%	
AUSTRALIA/PACIFIC			1	2											1	2	0%	0%	3	0%	
CIS	78	40	29525	8281	1334	249	9158	11627	696	18			3	11	35	40802	20253	80%	97%	61055	85%
BALTIC			509	33	3	2	880								1392	35	3%	0%	1427	2%	
TOTAL	182	41	34433	8844	1624	384	14008	11627	696	18	1	11	12	38	50956	20963			71919	100%	
% of total trade	0.25%	0.06%	47.88%	12.30%	2.26%	0.53%	19.48%	16.17%	0.97%	0.03%	0.00%	0.02%	0.02%	0.05%	70.85%	29.15%			100.00%		
TOTAL excl pipelines	182	41	34433	8844	1624	384			696	18	1	11			36936	9298			46234		
% of trade excl pipeline	0.39%	0.09%	74.48%	19.13%	3.51%	0.83%			1.51%	0.04%	0.00%	0.02%			79.89%	20.11%					
Major partners																					
Germany			504	66	3	18	814					2		1	1321	87	3%	0%	1408	2%	
Ireland							913								913		2%		913	1%	
Netherlands			352	10											352	10	1%	0%	362	1%	
Switzerland	45		1022	23			545								1612	23	3%	0%	1635	2%	
UK							874				2				874	2	2%	0%	876	1%	
China			780	12	221	24									1001	36	2%	0%	1037	1%	
Iran	50	1	97	5	29	20									176	26	0%	0%	202	0%	
Pakistan					9										9		0%		9	0%	
Thailand			202	1	18	45									220	46	0%	0%	266	0%	
Turkey	1		127	4											128	4	0%	0%	132	0%	
USA			61	10	1		130					3			192	13	0%	0%	205	0%	
Russia	37	1	25239	7088	1144	196	8124	3455	696	18		2	11	31	35251	10791	69%	51%	46042	64%	
Ukraine			274	219	53	3	1034							2	1361	224	3%	1%	1585	2%	
Baltic States			509	33			880								1389	33	3%	0%	1422	2%	
Armenia																					
Azerbaijan	40	39	94	17	3	8									137	64	0%	0%	201	0%	
Georgia																					
Kyrgyzstan			869	113	37	13									906	126	2%	1%	1032	1%	
Tajikistan			347	17	5	1									352	18	1%	0%	370	1%	
Turkmenistan			352	21	1	3		4212							353	4236	1%	20%	4589	6%	
Uzbekistan			1854	750	87	20		3958							1941	4728	4%	23%	6669	9%	
Total	173	41	32683	8389	1611	351	13314	11625	696	18		9	11	34	48488	20467			68955		
%	95%	100%	95%	95%	99%	91%	95%	100%	100%	100%		82%	92%	89%	95%	98%			96%	96%	
Russia % of total	20%	2%	73%	80%	70%	51%	58%	30%	100%	100%		18%	92%	82%	69%	51%			64%		

TOTAL TRADE BETWEEN EU-12 AND THE TRACECA STATES

(1994/95, thousand tonnes)

	Armenia		Azerbaijan		Georgia		Kazakhstan		Kyrgyzstan		Tajikistan		Turkmenist		Uzbekistan		Total	Total
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
<i>ex. p. r. y.</i> Imports	1	6	16	64	82	55	301	589	15	16	70	44	304	373	371	238	1160	1385
<i>ex. EU</i> Exports	193	98	140	213	482	238	181	85	18	51	145	67	48	22	868	71	2075	845
Total	194	104	156	277	564	293	482	674	33	67	215	111	352	395	1239	309	3235	2230
% Total	6%	5%	5%	12%	17%	13%	15%	30%	1%	3%	7%	5%	11%	18%	38%	14%		

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MAIN EU-12 EXPORTS BY COUNTRY OF DESTINATION
(1994/1995, thousand tonnes)

Class	Description	Armenia		Azerbaijan		Georgia		Kazakhstan		Kyrgyzstan		Tajikistan		Turkmenist		Uzbekistan		Total	Total	1995
		1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	%
2	Meat and edible meat offal													5	3	26	16	31	19	2%
7	Edible vegetables and certain roots and tubers													6		20		26		
8	Edible fruit and nuts; peel of citrus fruits or melons							5										5		
10	Cereals	126	69	48	169	332	161					93	7			770	1	1369	407	48%
11	Products of the milling industry; malt; starches; inulin; wheat gluten	46	17	50	19	83	23			7	40	18	45					204	144	17%
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes							5										5		
17	sugars and sugar confectionary		6			9										6	8	15	14	2%
19	Preparations of cereals, flour, starch or milk; pastrycooks' products					4												4		
22	Beverages, spirits and vinegar	3		8	4	4	10	89	25	3	4	5	3	5	1	10	10	127	57	7%
25	Salt; sulphur; earths and stone; plastering material; lime and cement													4				4		
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	9		13	3	33	31		6									55	40	5%
28	Inorganic chemicals etc.											3						3		
38	Miscellaneous chemical products							7										7		
72	Iron and steel															5		5		
73	Articles of iron and steel							5						5	3	7	3	17	6	1%
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof							13	6			4	11	1	4	6		28	17	2%
85	Electrical machinery etc.											21	3					21	3	0%
86	Railway or tramway locomotives, rolling stock and parts thereof, railway or tramway track fixtures and fittings and parts thereof; etc.							7										7		
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof							6	4							4	4	10	8	1%
94	Furniture, etc							4										4		
	Total selected items	184	92	119	195	465	225	141	41	10	44	140	62	36	8	852	48	1947	715	85%
	TOTAL ALL ITEMS	193	98	140	213	482	238	181	85	18	51	145	67	48	22	868	71	2075	845	
	% of total	9%	12%	7%	25%	23%	28%	9%	10%	1%	6%	7%	8%	2%	3%	42%	8%			
	selected items as % of total items	95%	94%	85%	92%	96%	95%	78%	48%	56%	86%	97%	93%	75%	36%	98%	68%	94%	85%	

MAIN EU-12 IMPORTS BY COUNTRY OF ORIGIN
(1994/95, thousand tonnes)

Clas	Description	Armenia		Azerbaijan		Georgia		Kazakhstan		Kyrgyzstan		Tajikistan		Turkmenista		Uzbekistan		Total	Total	1995	
		1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995	%	
14	Vegetable plaiting materials; vegetable products not elsewhere specified														7				7	0	0%
23	Residues and waste from the food industries; prepared animal fodder																63	24	63	24	2%
26	Ores, slag and ash	0	5		49	3			24									3	78	6%	
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes					52	18	112	423					160	294	7			331	735	53%
28	Inorganic chemicals etc.								9										0	9	1%
31	Fertilizers			3				22	9							11	12	36	21	2%	
39	Plastics and plastic products							9											9	0	0%
51	Wool, fine and coarse animal hair; yarn and fabrics of horsehair							5											5	0	0%
52	Cotton			9	7				5			61	31	136	72	273	180	479	295	21%	
72	Iron and steel					21	32	61	48	5	6								87	86	6%
74	Copper and articles thereof							47	43	3	5					4	8	54	56	4%	
76	Aluminium and articles thereof											5	7						5	7	1%
79	Zinc and articles thereof							20	15							5	8	25	23	2%	
81	Other base metals; cermets; articles thereof									3	3								3	3	0%
	Total selected items	0	5	12	56	76	50	276	576	11	14	66	38	303	366	363	232	1107	1337	97%	
	TOTAL ALL ITEMS	1	6	16	64	82	55	301	589	15	16	70	44	304	373	371	238	1160	1385		
	% of total	0%	0%	1%	5%	7%	4%	26%	43%	1%	1%	6%	3%	26%	27%	32%	17%				
	Selected items as % of total items	0%	83%	75%	88%	93%	91%	92%	98%	73%	88%	94%	86%	100%	98%	98%	97%	95%	97%		

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APPENDIX I

Summary of Visits to TRACECA States

I. SUMMARY OF VISITS TO TRACECA STATES

LIST OF VISITS AND PERSONS MET

IN TRACECA COUNTRIES AS OF 1 SEPTEMBER 1996

(*) = Project partner or closely associated with project work

ARMENIA

First visit: 5-6 February

Second visit: 1-4 June

Third visit: 28-30 July

Genrik KOCHINYAN

Minister of Transport

Ashot S. SHAKHNAZARYAN (*)

First Deputy Minister of Transport

Karlen V. SAHAKIAN (*)

Chief Department of Technical Development

Pavel V. SIRADEGIAN (*)

Senior Expert - Department of Technical Development

Vardan N. MOVSESIAN

First Deputy Minister of Economy

Ansen KARAPETIAN

Chief of Department of Infrastructure - Ministry of Economy

Armen S. BUDAGUIAN

Vice-director of Graduate School - State Engineering University

Avedik YESSAYAN

Logistics assistant - World Food Programme

Sergey SUMBATAYAN

Deputy Chairman "Armentransforwarder"

State Committee for Statistics

TACIS Coordination Unit

K. DANIELIAN

Director

David AVAKIAN

Assistant to the Director

John LYNN

Team Leader / Expatriate team

Matti SALIMAKI

Project Manager

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AZERBAIJAN

First visit: 26-31 January

Second visit: 23-25 May

Third visit: 22 July

Icram M. SADYKHOW (*)
Head of Department of Transport and Communication
Ministry of Economy
Representatives of various institutes
Soltan KIAZIMOV
Chief Engineer - Port of Baku
Tair O. KASIMOV
Vice-President for Marketing - Caspian Shipping Company
Akiev NAGUIEV
Planning and economics Department - Caspian Shipping Company

TACIS Project - National Road Network Study

David I. WOOD
Team leader - Wilbur Smith
TACIS Project - Port Network Plan (Ferry rehabilitation)
Carsten SORENSEN
Project Manager
Moe DAJFINN
Economist

TACIS Coordination Unit

J. CASSIMOV
Director
Makhir KIAZIMOV
Expert
Dominique CHARPENTIER
Team Leader / Expatriate Team

GEORGIA

First visit: 1-3 February

Second visit: 29-31 May

Third visit: 23-27 July

Akaki CHAIDZE

General Manager of Georgian Railways
Chairman of the (now disbanded) Coordination Council on
Transport

Vakhtang LOMATZE

Vice-Chairman of the (now disbanded) Coordination Council on
Transport
Now, Vice-Minister of Transport

Guram DOLBAYA

Vice-Chairman of the (now disbanded) Coordination Council on
Transport

Guram NAKAIDZE

Director - Centre on the Problems of the Euro-Asian Transport Corridor

Tenguiz GOGUELIA

Expert for Policy and Industry - Center Probl. Euro-Asian Tr. Corridor

Ramin MITAISHVILI

Deputy Minister of Economy

Gregori BOKUCHAVA

Chief of the Department Consumption and Communications
Ministry of Economy

Tariel MDIVNISHVILI

Deputy Chairman of the State Concern of Roads "Sakavtogza"

Tali TALIASHVILI

Director - Road Project State Institute "Gruzgiprodor"

George G. TSOMAIA

State Advisor - Transport & Communication
Director - Centre on the Problems of the Euro-Asian Transport
Corridor

Alexander CHKHEIDZE

President of the Georgian International Road Carriers Association,
Former Minister of Transport

Teimuraz GORSHKOV

Expert Road Transport - Coordination Council for Transport

Vladimir CHELIA

Expert Maritime Transport - Coordination Council for Transport

Nikhilesh JAIN

Chief of Rail Operation Unit - World Food Programme

Teimuraz CHUBINISHVILI

Deputy Director of the Georgian Research Institute for Scientific and
Technical Information "Techinformi"

Michael JOBAYA

Local Business Developer - Business Communication Centre (TACIS)

Vazha MAGRADZE

Expert - Business Communication Centre

Michael MISAELIDIS

Transport Policy Adviser (TACIS)

Centre for Marketing Research - Institute of Economy ()*

Elena KVISHASHVILI

Director

TACIS Coordination Unit

Soso Joseph TSISKARISHVILI

Executive Director (since July 1996)

Jemal ACKOBYA

Executive Director (until July 1996)

Paul de St HIPPOLYTE

Team Leader Expatriate Team

Giuseppe NARDELLI

Project Manager

KAZAKHSTAN

Regional Office: since January 1996

Kanat S. MOKHAMEDDJANOV
Vice-Minister of Transport and Communications

Sergey L. LARICHEV
Director - Department of Highways - Ministry of Transport and Communications (MTC)

Ilya P. SEGAL
Director - Department of Railways - MTC

Arkadi I. TARANENKO
Head of Department, Transport Development and Scientific and Technical Policy - MTC

Teodor L. KAPLAN
Head of Economic Department - MTC

Valeri A. MOTUZ
Department of Road Transport - International Transport Division

Vladimir T. PROTSENKO
Deputy Chief, Department of Foreign Economic Relations - MTC

Aigul T. IDRISOVA
Chief of Section, International Relations Department - MTC

Valery I. KACIANOV
Deputy Director - "Giprojeldortrans" Railways Institute

Svetlana L. SMIRNOVA (*)
Senior Economist - "Giprojeldortrans"

Oleg A. KRASIKOV (*)
Deputy Director - Road Research Institute

Pavel P. KVALENKO (*)
Director "Rechmorflot"

Tatiana V. BELAEVA (*)
Chief Research Section - Air Transport Institute "Kazavtoproekt"

Vladimir A. UTEBEKOB
Director General, Consulting and Research Company, "Iskomtrans"

Sholpan K. SAGIMBAYEVA
Chief Manager, "Iskomtrans"

Rustam K. JULAMANOV
Director - Institute for Development of Kazakhstan

Hartmut FISHER
Executive Director - Institute of Management, Economy and Strategic Studies (KIMEP)

John PETROFF (*)
Head of MA Economics Program - KIMEP

TRACECA: Regional Database and Forecasting Model - Progress Report: Phase 1A

Joint Stock Company, Research Institute of Road Transport (AO NIIAT) ()*

Murat M. BEKMAGAMBETOV

Director

Eduard T. KAPLAN

Deputy Director

Elena GRIGORIADI

Senior Road Transport Specialist

TACIS Coordination Unit

Pierre MAHY

Project Manager

KYRGHYZSTAN

First visit: 23-24 February

Second visit: 15 July

Third visit: 19-20 August

Ghantoro Gh. SATYBALDIEV

First Deputy Minister - Ministry of Transport

Adam Z. ZAKIROV

Deputy Minister - Ministry of Transport

Rinat U. RAKHMATULIN

Head of the International Road Department - Ministry of Transport

Almazbek O. IRSALIEV

Head of Foreign Relations and Investment Division - Min. of Transport

Esimbek KURMANBAEV

Chief Transport Section - Ministry of Economy

Kanybek O. ISMANKULOV

Representative - Militzer & Munch International Forwarders

State Institute of Road Design "Kyrghyzdortransproekt" ()*

Levan M. ALIBEGASHVILI

Director

Victor I. SOLOSHENKO

Chief Technical Section

Anatoly N. MASIUTENKO

Chief Engineer

Sergey N. LIUBIANIK

Economic Specialist

TACIS Coordination Unit

Sergey K. KASYMKULOV

National Director - Director The State Agency on Technical

Cooperation Ainura A. ABDYLDAEVA

Expert - TACIS Programme

TADJIKISTAN

First visit: 13-14 February

Second visit: 13-15 August

Victor V. BOLTOV (*)

Deputy Minister of Economy and External Economic Relations

Saddullo RAKHMATOV

Director - "Tadjiknakliot" transport-forwarding company

Martin TREVOR

World Food Programme

State Project & Research Institute "Tajikgiprotransstroy" (Ministry of Transport and Roads) ()*

Timur D. MIRZOEV

Director

Yuri A. ULDASHEV

Chief Engineer

Makhbuba ABDULAEVA

Head - Planning and Economic Section

TACIS Coordination Unit

The CU was visited but unfortunately, during the visits, no meeting could be arranged with Paul McGregor - Team Leader.

TURKMENISTAN

First visit: 22-25 January

Second visit: 20-21 May

Third visit: 8-9 August

Meret S. YAZBERDYEV (*)

Head of the Transport & Communication Department - Cabinet of Ministers

Senakuli RAKHMANOV

Minister of Road Transport

Vladimir F. VOLODIN

Vice-President - State Road Company "Turkmenautoellari"

Berkeli BYASHIMOV

Senior Economist - State Railways of Turkmenistan

Murad Ch. CHARYEV

Vice-rector - Turkmen State Institute of Transport and Communication

Ashir Kh. KHURBANKUSHEV

Vice-rector for scientific and economic matters - TSITC

Jumadurby BAIRAMOV

Director, Institute of Economy - Cabinet of Ministers

TACIS Coordination Unit

Visits were made to the CU with the intention to arrange meetings with Mr. M. BERDYEV, National Director, but unsuccessfully.

UZBEKISTAN

First visit: 16-21 February

Second visit: 25 Mars

Third visit: 4-5 April

Fourth visit: 2-3 May

Fifth visit: 15-17 May

Sixth visit: 5-7 August

Lerik A. AKHMETOV

Chairman - State joint-stock Corporation "Uzautotrans"

Khurshid NAJMIDDINOV

Chief Adviser for Foreign Economic Activities - "Uzautotrans"

Turgunbai A. AZIMBOEV

Vice-chairman, State Road Company "Uzavtoyul"

Vokhid N. AZAMOV

State Road Inspector, State Road Company "Uzavtoyul"

Valeri L. DAVIDOVICH

Chief International Department - "Uzbek Railways"

Navruz S. ERKINOV

Deputy Chief of Service, Department of International Relations -
"Uzbek Railways"

Tulagan Kh. MIRMAKHMUDOV

Deputy Chief, Freight and Commercial Service - "Uzbek Railways"

Erkin DJURAEV

Deputy Head of Department, International Transport, Ministry of
Foreign Economic Relations (MFER)

Vladimir Yu. ONKIS

Section Chief - Department, International Transport (MFER)

Ali G. INIATOV

Head of Transport Department, Gosprognostat [Phone conversation]

Georgui V. DUBNICHIK

Deputy Director General, forwarding company "Shoshtrans"

Murat A. KHALISOV

Deputy Director General, forwarding company "Shoshtrans"

Anvar. A. ASHRABOV

National Project & Programmes Advisor, United Nations Development
Programme (UNDP)

Valery A. TOMALIDI

Chief Scientific and Production Department, Tashkent Institute of
Road Engineers (TADI)

Road Transport Institute "Uzautotranstechnica" ()*

Sobir A. IBRAGIMKHODJAEV

Deputy Director General

Irina M. ASIKOVA

Chief Section 12 (Economy)

Elena T. VASSILIEVNA

Chief Section 6

TACIS Coordination Unit

Bakhtiar B. SADRIDDINOV

National Director

Mizokhid SULTANOV

Deputy Director

Akmal S. KAMALOV

Task Manager for Transport and Communications

APPENDIX J

Mission to UNESCAP

J. MISSION TO UNESCAP IN BANGKOK (26-29 MARCH 1996)

- J.1 The development and strengthening of intra-regional and inter-regional transport and communication links to facilitate international trade and tourism are among the major objectives of Phase II (1992-1996) of the Transport and Communications Decade for Asia and the Pacific. In the field of land transport in Asia, this is being achieved through the implementation of the integrated Asian Land Transport Infrastructure Development (ALTID) project comprising the Asian Highway, the Trans-Asian Railway and facilitation of land transport.
- J.2 Within the frame of this project, several studies concerning TRACECA countries were carried out. A large amount of data on regional transport has been collected in CIS and Asian countries during the last two years. To ensure a coordination between work done under ALTID and under the TRACECA projects a visit to ESCAP was made in late March.
- J.3 The idea of co-operation with TRACECA was welcome by the Director of the Transport, Communications and Tourism Division. The Director of the Land Transport Section presented the work plan of his division and expressed willingness to exchange information and ideas with EU projects.

ESCAP ACTIVITIES OF INTEREST FOR THE TRACECA PROGRAMME

- J.4 Several activities comprised in the plan of action for phase I of the ALTID project cover TRACECA countries located in Asia, including:
- (i) Study on developing land transport linkages from Kazakhstan, Turkmenistan and Uzbekistan to seaports of the Islamic Republic of Iran and Pakistan in the South and those of China in the east.
 - (ii) Feasibility study on connecting rail networks of China, Mongolia, Kazakhstan, the Russian Federation and Korean peninsula.
 - (iii) Study on land transport corridors between Central Asia and Europe.

- J.5 The second study is completed but the final report was not yet published at the time of the mission. Only a draft report could be seen. The third study which is of much relevance for the TRACECA Regional Traffic Forecasting Model Project was still ongoing at the time of the mission. The draft report was expected in July.
- J.6 A Study on Asian Highway network development, carried out in the first half of 1994 by-passed Central Asia.
- J.7 Two activities of the plan of action for Phase II of ALTID (1996-1997) call for co-ordination with TRACECA activities:
- (i) Development of a computerised Asian Highway database; and
 - (ii) Corridor study: port of Bandar Abbas (Islamic Republic of Iran) - Central Asia - China (operationalization of routes)
- J.8 The possibility of exchanging data of the kind included in the Asian Highway database was discussed with the Road Division. It appeared however that the ESCAP database is more focused on technical characteristics than required for the forecasting model.
- J.9 Activities relevant to TRACECA also take place in other divisions. A valuable source of forecasts is the study on Prospects for Container Shipping and Port Development (East Asia Subregion). Although it does not deal directly with Central Asia, it contains an analysis of container movements between Asia and Europe and long-term forecasts for their development.

STUDY ON LAND TRANSPORT CORRIDORS BETWEEN CENTRAL ASIA AND EUROPE

- J.10 This study is closely related with the TRACECA projects. It is under the responsibility of the expert who carried out the feasibility study on connecting rail networks of China, Mongolia, Kazakhstan, the Russian Federation and Korean peninsula and in a sense complements it. Fruitful discussions took place with that expert on transport between Asia and Europe.

- J.11 The rail study was initiated to identify routes, examine potential traffic, border-crossing facilitation measures for the north-east Asian rail network which is part of the Trans-Asian Railway network.
- J.12 The study on land transport corridors is to provide a comparative analysis/assessment of route options in terms of distance, delivery time, capacity of selected land transport routes versus sea-cum-land transport between Central Asia and Europe. The study is also expected to suggest measures for the improvement of transport system operations and infrastructure in those corridors.
- J.13 Data collection for the study covers not only the TRACECA countries but also Iran, Turkey and the Russian Federation. Two sets of questionnaires were sent, one for road transport, the other one for rail with additional questions for water transport. At the time of the mission, answers were still fragmentary. An exchange of information was discussed.

DEVELOPMENT PLANNING

- J.14 It was expected that some kind of forecasts for freight flows between Asian countries and between Asia and Europe could be found in ESCAP. In fact no such information was available. The ESCAP-published Foreign Trade Statistics of Asia and the Pacific include Central Asia as well as Azerbaijan and Armenia and data is patchy. The Annual Bulletin of Transport Statistics for Europe and North America published by UN-ECE includes Kazakhstan.
- J.15 ESCAP has a Development Research and Policy Analysis which follows the development of economies in transition particularly in CIS. Workshops are held in Central Asia. The next one will be in Almaty and deal with revitalisation of links with former Soviet Union countries.

APPENDIX K

Project Planning Tables

TABLE 1

OVERALL PLAN OF OPERATIONS

Project title: Regional Traffic Database and Forecasting Model				Proj no: WW.93.05/05.01/8008				Country: TRACECA States							
Planning period: January 1996 - September 1997				Prepared: September 1996				EU Lead Consultant: WS Atkins International Ltd.							
Project objectives: development and implementation of a traffic database and forecasting model															
NO.	MAIN ACTIVITIES	TIME FRAME								INPUTS					
		1996				1997				PERSONNEL		FLIGHTS		PERDIEM	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	EU Experts (weeks)	Local Experts (weeks)	Long haul (flights)	Local (flights)	(days)	
1	Mobilisation/Inception	XXXX									25	10	3	5	50
2	Data Acquisition & Storage	X	XXXX	XX							45	140	6	15	140
3	Scenarios & Database Development			XX	XXXX	X					20	190	4	20	120
4	Synoptic Forecasts/ Investment Options					XXX					15	100	4	20	120
5	Implementation/ Handover					XXX	XXXX				15	50	4	20	120
6	Final Report							XX			6	30	3	10	50
TOTAL										126	520	24	90	600	
										126	520	24	90	600	

TABLE 2

OVERALL OUTPUT PERFORMANCE PLAN

Project title: Regional Traffic Database and Forecasting Model	Proj no:WW.93.05/05.01/B008	Country: TRACECA States
Planning period: January 1996 - September 1997	Prepared: September 1996	EU Lead Consultant: WS Atkins International Ltd.
Output /target dates	Agreed Objective Verifiable Indicators	Constraints and Assumptions
<p>Inception mission and Report (month 3)</p> <p>Data acquisition and storage: Progress Report I (month 8)</p> <p>Development of database/model: Progress Report II (month 13)</p> <p>Synoptic reports, development of investment options: Progress Report III (month 15)</p> <p>Handover of software and support missions: Draft Final Report (month 18)</p> <p>Final Report (month 21)</p>	<p>For all reports:</p> <ul style="list-style-type: none"> - agreement and support of local partners - completion of tasks <p>For database/model:</p> <ul style="list-style-type: none"> - ease of use by local partners - quality of output - sustainability 	<p>Main constraints:</p> <ul style="list-style-type: none"> - availability of suitable data - availability of suitable local experts - level of co-operation of local authorities <p>Main assumptions:</p> <ul style="list-style-type: none"> - sufficient degree of local co-operation - traffic forecasting is feasible in the region

TABLE 3

PROJECT PROGRESS REPORT: LAST PERIOD

Project title: Regional Traffic Database and Forecasting Model		Proj no: WW.93.05/05.01/B008					Country: TRACECA States										
Planning period: January 1996 - September 1997		Planning period: April-September 1996					EU Lead Consultant: WS Atkins International Ltd.										
Project objectives: development and implementation of a traffic database and forecasting model																	
NO.	MAIN ACTIVITIES	TIME FRAME						INPUTS									
		1996						PERSONNEL				FLIGHTS				PERDIEM	
		APR	MAY	JUNE	JULY	AUG	SEP	EU Experts (weeks)		Local Experts (weeks)		Long haul (flights)		Local (flights)		(days)	
		Pl'n'd	Act'l	Pl'n'd	Act'l	Pl'n'd	Act'l	Pl'n'd	Act'l	Pl'n'd	Act'l	Pl'n'd	Act'l	Pl'n'd	Act'l		
2	DATA ACQUISITION & STORAGE																
2.1	Equipment/software procurement	XX						2									10
2.2	Database/model specification	XXXX						10				1					20
2.3	Definition of data requirements	XX						6	10								15
2.4	Surveys/data collection		XXXX	XXXX	XXXX	XXXX	XX	12	90			3		10			50
2.5	Data review				XXXX	XXXX	XX	8	10			1					20
2.6	Data entry					XXXX	XX	5	20								15
2.7	Progress Report: Phase 1A						XX	2	10			1		5			10
TOTAL								45	40	140	60	6	5	15	10	140	180

45

140

6

15

140

TABLE 3

RESOURCE UTILISATION REPORT

Project title: Regional Traffic Database and Forecasting Model		Proj no:WW.93.05/05.01/B008		Country: TRACECA States	
Planning period: January 1996 - September 1997		Prepared: September 1996		EU Lead Consultant: WS Atkins International Ltd.	
Project objectives: development and implementation of a traffic database and forecasting model					
RESOURCES/INPUTS	TOTAL PLANNED	PERIOD PLANNED	PERIOD REALISED	TOTAL REALISED	AVAILABLE
PERSONNEL (Weeks)					
EU Experts	126	45	40	65	61
Local Experts	520	140	60	70	450
FLIGHTS (Tickets)					
Long haul	24	6	5	8	16
Local	90	15	10	15	75
PER DIEM					
Days	600	140	180	230	370

200

TABLE 4

OUTPUT PERFORMANCE REPORT

Project title: Regional Traffic Database and Forecasting Model		Proj no: WW.93.05/05.01/B008	Country: TRACECA States
Planning period: January 1996 - September 1997		Prepared: September 1996	EU Lead Consultant: WS Atkins International Ltd.
OUTPUT RESULTS	DEVIATION FROM PLAN % (+/-)	REASON FOR DEVIATION	COMMENT: CONSTRAINTS/ASSUMPTIONS
PERSONNEL (Weeks)			
EU Experts	163%	Increased input to recover timetable Staff substitution	Some work will carry over into next phase of work
Local consultants	117%	Delays in approval of local partners	
FLIGHTS (Tickets)			
Long haul	83%	More work in the home office	
Local	67%	Some journeys by road	
PER DIEM			
Days	129%	Increased input to recover timetable	

TABLE 5

PLAN OF OPERATIONS FOR THE NEXT PERIOD

Project title: Regional Traffic Database and Forecasting Model		Proj no: WW.93.05/05.01/B008					Country: TRACECA States					
Planning period: January 1996 - September 1997		Prepared: September 1996					EU Lead Consultant: WS Atkins International Ltd.					
Project objectives: development and implementation of a traffic database and forecasting model												
NO.	MAIN ACTIVITIES	TIME FRAME						INPUTS				
		1996						PERSONNEL		FLIGHTS		PERDIEM
		SEP	OCT	NOV	DEC	JAN	FEB	EU Experts (weeks)	Local Experts (weeks)	Long haul (flights)	Local (flights)	
3	SCENARIOS/DATABASE DEVELOPMENT											
3.1	Database construction/testing				XXXX	XXXX		20	10	4	20	120
3.2	Forecasting model development	XXXX	XXXX	XXXX					10			
3.3	Further data collection/entry	XXXX	XXXX						120			
3.4	Data transfer to database	XXXX	XXXX	XXXX	XXXX				30			
3.5	Scenario proposals					XXXX			20			
3.6	Progress Report: Phase 1B											
		Total						20	190	4	20	120
								20	190	4	20	120