EUROPEAN UNION - TACIS

Technical Assistance to the Southern Republics of the CIS and Georgia - TRACECA

TRADE AND TRANSPORT SECTORS

Terms of Reference

for

Infrastructure Maintenance 1

-

Railways

Pre-investment study and Pilot train
Baku - Tbilisi - Batumi - Poti
Bridge over Kura river

Final Recipients:
TRACECA Region Ministries of Transport

Infrastructure Maintenance 1
Railways
-
Pre-investment study and Pilot train
Baku - Tbilisi - Batumi - Poti
Bridge over Kura river

(TRACECA Project No. 14b)

CONTENTS

1. Introduction and Background

1.1 During May 1993 a conference was held in Brussels organised by the Commission and attended by authorities of the eight Republics of the south of the former USSR:

- Armenia,
- Azerbaijan,
- Georgia,
- Kazakstan,
- Kyrgyzstan,
- Tadjikistan,
- Turkmenistan,
- Uzbekistan.

They are the Beneficiary States of this programme.

The objectives of the conference were :

- to stimulate cooperation among the participating Republics in all matters pertaining to the development and improvement of trade within the Region
- to promote the Central Asian - Trans Caucasian - Europe Transport Corridor
- to identify problems and deficiencies in the Region's trade and transport systems
- to define, in terms of contents and timing a Technical Assistance Programme to be financed by the European Union (EU).

TRACECA (Transport Corridor Europe Caucasus Asia) was thence created as a component of the TACIS interstate programme.

1.2 The "Brussels Declaration" issued at the conclusion of this conference recommended the European Union to address in the TACIS programme variously expressed needs for feasibility studies and technical assistance projects.

Regional sectoral Working Groups (trade, rail, road, maritime), composed of experts and officials from each TRACECA state and the EU, have been established as part of the TRACECA programme. They meet periodically in the Region. They have inaugurated specific projects including this present one, and will monitor results.

A strategic study for Central Asia has recently been completed by the EBRD under TACIS financing (see 6.).

1.3 National and Regional Technical Assistance projects carried out, approved or prioritised to date, are mostly aimed at halting a deterioration of the existing transport system due to maintenance difficulties, and obsolescence. Few consider reinforcing capacity. In fact transport demand has declined since the break up of the FSU.

Radical Institutional transformations are taking place in the region. The transport system has been particularly affected by these, especially the rail sector which has been fragmented into national entities.

1.4 The splitting up of the FSU and the creation of new independent railways profoundly distorted the organisation of railway transport and the execution of railway maintenance, repair and replacement activities in the TRACECA states.

Tariff structures under the old regime were detached from economic considerations. It is by no means easy for regional authorities to inaugurate a market-based system.

1.5 This project is aimed to provide Technical Assistance and Training to all rail organisations in the region in the following activity areas :

-infrastructure maintenance, repair and upgrading
-rolling stock maintenance, repair, replacement and construction, including procurement and/or local production of spare parts
-operations and commercial performance of railway transport

1.6 After consultation of the TRACECA states, and taking into account the restructuring efforts to be addressed and / or already under way regarding the Transcaucasian railway link, three Modules were identified for execution under the present project (Modules A to C hereafter), budgetted at 1.2 Mecu in total:

MODULE A : Pre-investment study for the rehabilitation of the main Transcaucasian rail route (Baku - Tbilisi - Batumi - Poti) between Azerbaijan and Georgia

MODULE B : Pilot freight train service on the main Transcaucasian rail route

MODULE C : Feasibility study and Initial design for the repair and reconstruction of a key bridge on the Transcaucasian rail route : bridge over Kura river (Poyli area) in Azerbaijan

2. Project Objectives

2.1 The general objectives of this project are threefold :

(i) Determine the requirements for rehabilitation of the main Transcaucasian rail route between Azerbaijan and Georgia and the level of reconstruction and investments required to rebuild and re-equip the line to the service level required for the most likely future traffic volumes and revenues.

(ii) Provide technical assistance and spare parts for the organisation of a freight pilot train service, EU to act as a catalyst between Azeri and Georgian authorities and railways to :

- Foster cooperation and revive the economic situation in the Caucasus region
- Streamline and increase commercial through traffic on the Transcaucasian rail line
- Improve the operational and financial situation of both railway networks.

(iii) Provide technical assistance regarding the repair of the existing rail bridge over Kura river, and carry out feasibility study and initial design for the construction of a new rail bridge

2.2 The three modules are interrelated e.g. the findings regarding infrastructure and rolling stock condition (Modules A and C) impact upon the operational and commercial performance targets of the pilot train service (Module B) and vice versa.

2.3 Proportional balance of modules in the total project

The project contains theoretical and practical elements. Emphasis should be directed towards visible and technical issues, in particular towards the tasks of Module B.

2.4 The consultant will clearly specify in his proposal the nature and the cost of equipment and supplies, training aids, hardware and software that he intends to deliver to the beneficiaries to support the implementation. It is suggested that 25% of the total budget of the project will be used to this purpose.

3. MODULE A : Pre-investment study for the rehabilitation of the main Transcaucasian rail route (Baku - Tbilisi - Batumi - Poti) between Azerbaijan and Georgia - Module Objectives and Scope of Work

3.1 Introduction

The Caucasus region is hit by several conflicts, and this has had a detrimental effect in the past years on the economies of the countries concerned, and on rail traffic in particular. Practically the only international trains which have been in operation on the Transcaucasian line between Georgia and Azerbaijan in the past years were food aid trains transported under EU or UN sponsorship. Food aid traffic made up more than 80% off all rail freight traffic in Georgia during 1994-1995. Situation was slightly better but comparatively similar in Azerbaijan.

It is no secret that, resulting from the political conflicts and economic downturn in the whole region, the Transcaucasian line is suffering from a state of disrepair of infrastructure (track, signalling, buildings,...), lack of available wagons and locomotives, etc.

Currently, the stability in the region in increasing, and the need for a significant pre-investment study, covering the rehabilitation of Transcaucasian rail lines, is emerging.
This module will concentrate on assessing pre-feasibility for the rehabilitation of the main Transcaucasian rail route (Baku - Tbilisi - Batumi - Poti)

3.2 Objectives and Main outputs

Carry out a pre-investment study in order to determine the requirements for rehabilitatation of the main Transcaucasian rail route between Azerbaijan and Georgia (Baku - Tbilisi - Batumi - Poti).

As final output, the study will provide the recommended reconstruction tasks and levels of investments required to rebuild and re-equip the line to operate to service standards required for the most likely future traffic volumes and revenues.

3.3 Scope of Work

The pre-investment study will cover the Poti - Batumi - Tbilisi - Baku rail link and will comprise :

3.3.1 Institutional / Organisational pre-feasibility

The railway policies of all concerned governments will be examined, in particular regarding :

- regulation of freight and passenger services, service and tariff levels
- intentions regarding rehabilitation of the line
- subsidies and investments planned
- future railway management structure

The road transport situation and policies in the Transcaucasian region (e.g. regarding road construction and maintenance, evolution of road vehicle usage, road user charges, etc.) have to be examined as well. Evolutions in this area may be complementary and / or in competition with the railway transport policy under consideration. The same holds for the planned rehabilitation and construction of pipelines in the region.

Policy direction recommendations for railway investments will be included in the report.

3.3.2 Commercial pre-feasibility

(a) Traffic volume forecasts.

Traffic volume potential (passengers, tonnage, number of trains, etc.) on the rail line shall be identified per line section, commodity category, and type of transport (for freight : individual wagonload and block train) for 20 years ahead.

This estimate shall be based upon economic analysis, taking into account different hypothesis regarding the localisation of existing and potential customers and industries.

(b) Revenue forecasts.

The current situation regarding rail tariffs shall be examined. Recommendations regarding future tariff structure and -levels and the utilisation of through tariffs for international traffic will be examined.

3.3.3 Technical pre-feasibility

A detailed survey of the existing situation of infrastructure (track, signalling, telecommunication, buildings, etc.) and rolling stock situation, repair and maintenance facilities, spare parts availability, procurements channels, etc. will be established. The weakest elements have to be identified, and prioritised in function of future traffic.

The required technical repair, upgrading and reconstruction work will be assessed for the various traffic volume hypothesis.

Recommendations shall be made regarding :
- the infrastructure rehabilitation (or discarding)
- the rolling stock numbers that have to be made operational (or discarded)
- the workshops that have to be rehabilitated, restructured (or closed)
- the operational and training measures needed

One option shall include the bare minimum of rehabilatation work needed, indicating the geographical and technical priorities.

General layouts and descriptions of the proposed repair works and construction of new fixed installations with their main characteristics will be worked out, as well as a tentative realisation schedule.

A proposal for organisation and staffing of future operations will be included.

3.3.4 Financial pre-feasibility.

The financial pre-feasibility of the different options shall be assessed (costs and revenues). Training costs for maintenance and operations staff should be included, as many qualified staff have left.

(a) Construction and equipment cost

On the basis of the descriptions of the proposed installations, specifications of special equipment, sketches of the special structures, etc., the major construction and equipment cost items have to be identified and quantity and cost estimates for works and supplies have to be prepared. These will take into account local and foreign costs, and will include the necessary reserves for contingencies and price increases.

These estimates have to be prepared in the schedule of expenditure form according to the execution schedule of each of the alternatives.

(b) Maintenance costs

Costs for maintenance and periodical replacements of fixed equipment will be calculated on a year by year basis for a suggested 20 year period.

(c) Estimates of benefits and disbenefits

In a brief study, the consultant will estimate the benefits and disbenefits of each of the alternatives considered. If possible and necessary, this study should include also indirect benefits and disbenefits of the project. The main purpose is to demonstrate the methods used in the West; it is expected that precise evaluations may not be possible.

(d) Economic and financial feasibility

The economic and financial feasibility of the different options will be assessed.

- Economic profitability of each alternative will be calculated from the point of view of the national community, taking into account both the operator, as the users and other economic agents.

  This calculation will be in accordance with the rules recommended by the Intenational Union of Railways and the International Finance Organisations

- Financial profitability calculations will be made in a similar way but from the single viewpoint of the operator
  Revenue forecasts will be combined with traffic volume forecasts to establish overall financial forecasts, including investments.

- A sensitivity test will examine the effect of alterations to the basic assumptions, such as traffic levels and implementation costs, on the return of the proposed work

(e) Financing possibilities

Financing possibilities shall be examined and considered. It should be examined whether consortia of potential customers are willing to share part of the investment cost in infrastructure, rolling stock or other.

3.3.5 Further selection criteria that impact upon feasibility

The consultant will examine other factors that may impact upon the feasibility of rehabilitation, such as:

- Government policy and regulations
- Supply of materials and equipment
- Possibilities of local contractors
- Local and foreign funding sources
- Proposal for the management of the rehabilitation programme

3.3.6 Ranking of alternatives and recommendations

The proposed solutions will be classified according to economic and financial criteria, and will also include criteria not assessable in monetary terms.

From this classification, recommendations as to the solution to be implemented and its implementation schedule will be drawn up.

The module will then have reached a basic decision point, which should be reviewed by local authorities and TRACECA management.

4. MODULE B : Pilot freight train service on the main Transcaucasian rail route - Module Objectives and Scope of Work

4.1 Introduction

During several years since the breakup of the FSU, conflicts in and around the region have virtually deprieved Georgian and Azeri Railways from significant international traffic. As an example, border crossings at the Georgian - Azeri border haven fallen from 1990 levels of 35/35 trains to under 4/4 trains per day. Georgian railways remain isolated from a westwards connection into Russia due to the conflict in Abhazia.

Azeri Railways international connections with Russia have been disrupted several times due to the conflict in Chechnia, and the southern part of the network has lost all traffic due to the conflict with Armenia.

This stresses the economic importance of the main Transcaucasian rail route for the economies in the region.

Currently, the stability in the region in increasing, and there is a prospect for increased economic activity in the region. For example, transport of supplies and equipment from Georgian ports into Azerbaijan and Central Asia, and export of "early" petroleum and refined oil products from Azerbaijan to regional and world markets will have to rely on more performant and frequent transport services than currently available.

The Module B : Pilot freight train service on the main Transcaucasian rail route should therefore be regarded as a EU sponsored catalyst in the region to support the development of a commercially oriented transport service.

4.2 Objectives and Main outputs

Provide technical assistance for the organisation of a pilot train service, the purpose of which is :

- Foster cooperation and revive the economic situation in the Caucasus region
- Streamline and increase commercial through traffic on the Transcaucasian rail line
- Improve the operational and financial situation of both railway networks.
- EU to act as a catalyst between Azeri and Georgian authorities.

More specifically, the project aims at providing technical assistance to Azeri and Georgian railways in preparing and putting into operation a high-quality international freight train service, and monitor the operation of this service during a period of three months.

As side objectives, particular attention should be paid to:

- Reliability and commercial attractivity of the freight train service
- Implementing realistic price levels
- Reduction of product losses
- Making available sufficient operational capacity
- Reduction of terminal, transport and border crossing delays

4.3 Scope of Work

4.3.1 This module is considered a major element of the present project and should involve a maximum of local participation.

4.3.2 Selection of origin-destinations, commodities and sites for the purpose of implementing the freight pilot train service :

(a) The Consultant will indicate an intial origin-destination pair and type of commodities of the transport service at the time of his Proposal.

(b) A number of specific origin-destinations, commodity types and sites that are judged appropriate will be evaluated at the start of the project. At the latest at the time of the Inception Report, the final selection will be confirmed or altered.

The selection will be upon findings from other Modules, and take into account in particular :

- demand
- macro-economic and socio-economic projections
- technical characteristics (infrastructure, vehicles, organisation) of the transport system

The selection is to be developed in consultation with the TRACECA Management and National authorities.

4.3.3 Implementation of the freight pilot train service

During its implementation, the case study will concentrate on :
-solving, at least partially, specific problems related to the current organisation of freight train services
-rehabilitation and maintenance of rolling stock, tracks and infrastructure
-training
-management organisation and procedures
-proposing recommendations for future development

The following topics will be addressed and included:

- Explore the political, economic and technical possibilities to streamline commercial traffic on the main Transcaucasian rail line (Azeri and Georgian territory).
  Technical possibilities will largely depend on the condition of the track, availability of rolling stock, repair capacity that can be organised, etc. (see also Modules A and C)
- Define, in close cooperation with local authorities, organisational measures and the bare minimum of technical repair work needed on the infrastructure (track, signalling, buildings,...), refurbishing work to rolling stock (freight wagons and locomotives), etc. in order to run a high quality commercial freight train service on the line. Given the catalyst role of this project, a limited number of regular scheduled block trains, operated with adequate safety and security, is considered a realistic target for this project.
- Setting up of a marketing organisation or promotional effort to sell transport products
- Carry out a market survey to indicate where the use of rail will be viable
- Organise sales training

- Organise personal sales campaign with potential industrial clients, freight forwarders and shippers
- Determine market-based tariffs and railroad costs
- Supply essential spares and consumable products to support the implementation of the project, execute repair of infrastructure and rolling stock, and operate the trains
- Coordinate and monitor the execution of the repair and refurbishing works
- Coordinate and monitor the organisations in the running of the train service during three months
- Determine the type, schedule and frequency of service of the selected service
- Review and give advice on terminal organisation and operation
- Give advice on terminal infrastructure and handling equipment
- Design the operation of economic, efficient, safe and reliable train service
- Give advice for the necessary accounting and waybilling systems, covering document flows and forms used in international traffic
- Work out proposals for the operation and management of the transport service
- Proposals for the further development of rail transport, both within the region and in an international perspective. The consultant will concentrate on options that make better use of existing capacity and also identify options for investment and finance

During the implementation phase, progress review and on-the-job training will be executed. The consultant will also assist the counterparts involved with the project to set future objectives and devising the means to achieve them.

5. MODULE C :

Feasibility study and Initial design for the repair and reconstruction of a key bridge on the Transcaucasian rail line : bridge over Kura river (Poyli area) in Azerbaijan

- Module Objectives and Scope of Work

5.1 Introduction

The rail bridge over Kura river is an essential part of the Tbilisi - Baku rail line, and the importance of this bridge for the whole of the Transcaucasian rail line can not be overstressed.

The existing bridge was built by FSU engineers in 1925 (according to a design from 1907). Total length of the bridge is ca. 200 m composed of 1x11.52 + 1x34.0 + 1x87.0 + 1x55.0 + 1x11.52 profile steel and rivet-shear connections resting on 4 piers. The bridge is carrying a single track electrified rail line (double track beyond the bridge heads).

The bridge lacks maintenance on various parts of the structure. The bridge was said to be worn out and would be closed in the future.

A new bridge of similar design was planned to be built nearly. Earthworks were carried out and new steel profiles were brought to site from Moscow some 4 years ago, but no further activities were undertaken since.

5.2 Objectives and Main outputs

(a) Technical assistance for the repair of the existing rail bridge

(b) Feasibility study and initial design for the construction of a new rail bridge

The results of this Module will be closely linked to Module A : Pre-investment study for the rehabilitation of the main Transcaucasian rail route (Baku - Tbilisi - Batumi - Poti)

5.3 Scope of Work

(a) Technical assistance for the repair of the existing rail bridge over Kura river

- Survey and assess the present situation and wear
- Indicate safety, carrying capacity and expected life of various components of the existing bridge.
- Recommend urgent repair work
- Recommend other repair work, if any, to extend the life of the existing bridge
- Indicate the degree of urgency to undertake the construction of a new bridge.

(b) Feasibility study and initial design for the construction of a new rail bridge over Kura river

- Establish traffic forecasts for future rail traffic. This estimate will be based upon regionwide economic analysis (see also 6.), taking into account different hypothesis, in particular the potential oil and fuel supply from Baku, and possible pipeline alternates.
- Examine the site implantation options from technical viewpoint (land levelling and stability, localisation of approaching rail and road routes)
- Determine construction criteria (maximum admitted axle load and train load, maximum speed) from future rail traffic requirements
- Recommend the construction technology to be used, including, in particular, assessing the possibility to use the profiles already available
- Ranking of alternatives : proposed alternate solutions will be classified according to technical, economic and financial criteria, and criteria not assessable in monetary terms. From this classification, recommendations as to the solution to be implemented and its implementation schedule will be drawn up.
- Draw up initial design proposal(s) for the construction of a new bridge, including foundations, superstructure and approach routes
  Layouts and technical descriptions of proposed fixed installations with their main characteristics will be worked out (with alternates if relevant)

- Assessment of construction cost. On the basis of the descriptions of the proposed installations, the major construction and equipment cost items have to be identified and quantity and cost estimates for works and supplies have to be prepared. These will take into account local and foreign costs, and will include the necessary reserves for contingencies and price increases.
- Investigate the organisational measures that will be required to carry out the work
- Assessment of availability and supply of materials, equipment, logistics and labour
- Recommendations regarding project design and construction management, and possible contractors
- Establish financial requirements, and proposals how to cover them
- Draw up tentative project plan

6. Other Related Projects

6.1 Several related reports prepared by Western consultants precede this project.

They include:

Rail Management Restructuring Studies	Armenia, Turkmenistan, Azerbaijan	TACIS
Rail Sector Survey	Russia, Ukraine, Kazakstan & Bielorussia	EBRD
Roads & Road Transport Study	Russia, Ukraine, Kazakstan & Bielorussia	EBRD
Central Asia Outline Transport Strategy	Kazakstan, Kyrgyzstan, Turkmenistan, Uzbekistan	EBRD/TACIS
Caspian and Black sea Port Studies	Georgia, Azerbaijan, Turkmenistan, Kazakstan	EBRD/TACIS/OTHERS
ESCAP studies	Asia	UN

6.2 At the time of writing, the following projects, sharing certain domains of interest with this one, are expected to commence shortly:

Regional Traffic Forecasting Model and Review of Int'l Route Capacity	TRACECA
Forwarding - Multi-modal Transport Systems	TRACECA
Rolling Stock Maintenance - Railways	TRACECA
Inland Terminals - Railways	TRACECA
Transport Legal Reform	TRACECA
Trade Facilitation, Customs Procedures, Freight Forwarding	TRACECA

Other related projects are or may be expected to commence within the timeframe of this present one.

6.3 The Consultants appointed to carry out this project are to coordinate their work closely with all other related activities within the TRACECA region. A full collaboration with such projects will be required.

In particular coordination and exchange of data with the Traffic Forecasting project and the Rolling Stock Maintenance project is to be foreseen.

The preceding listing of related projects must not be considered limitative.

7. Local Participation

7.1 National consultants should be deeply involved in all aspects of the project. The TRACECA countries involved have Institutions specialising in various aspects of transport planning and engineering.

It is a firm requirement that Organisation and Methodologies include local experts and Institutions to:

- make full use of local experience, antecedent projects and data bases
- promote the emergence of a financially viable local consulting sector
- ensure the effective transfer of know-how to the Beneficiary states
- ensure the enduring effect of project output

7.2 Consultants should base their activities largely in the TRACECA region, carrying out the project in collaboration with a local technical organisation(s), and employing both senior and junior professional staff, from several TRACECA states.

The Consultants Methodology should fully explain his training and transfer of know-how programme within the project.

Consultants must make amply clear in their proposal the arrangements they have made to work with local entities.

8. Foreign Expertise

The Consultant is free to compose his expatriate team for this project as he sees fit, but the following domains of expertise should be clearly visible in his proposed staff list:

- rail infrastructure construction and repair experts (track, bridges, signalling, telecom)
- rail infrastructure planning
- rolling stock management
- investment planning
- transport economics
- workshop management, engineering and equipment
- rail operations
- rail transport planning and management
- rail freight marketing

9. Logistics

The Consultant shall be responsible for arranging necessary living accommodation, transportation, telecommunications, equipment, surveys, investigations, document reproduction, printing, secretarial services, office space and all other input required for the purposes of the work.

10. Time Table and Reporting

10.1 The project is to be completed within a period of fourteen months.

10.2 All reports are to be delivered in the numbers, languages and locations as follows:

	Bound		Loose-leaf		Diskette
	English	Russian	English	Russian	(Eng.+Rus)
TACIS Brussels	5	1	1	1	1
TRACECA CU (per state)	1	5	1	1	0

The word processing programme to be used will be agreed with TACIS.

10.3 Reporting is to be in accordance with standard TACIS Guidelines. These foresee:

Project inception report

An Inception Report shall be issued within 3 months of the start of the project. It shall summarise initial findings and propose any modifications to the methodology and work plan. In particular it will adapt the work plan to the needs of each individual TRACECA state taking into account the parallel activities of other Technical Assistance programmes, avoiding duplication of effort, and addressing unfilled needs.

It will also confirm or modify institutes/organisations/consulting bodies to be directly involved in the implementation.

It will firm up or alter, if required, the arrangements planned for the pilot freight train service part of the work (see Module B above)

Project progress report

This report will be submitted at the end of month 7. It will cover technical progress to date

One month will be allowed for TACIS to consider the contents and to orient the further phase of this project.

Final Report

The Draft Final Report will be submitted at the end of month 14.

Any comments on the Draft Final Report will be issued by TACIS Brussels within six weeks of its receipt. The Final Report incorporating any modifications will be issued one month thereafter (2,5 months after issue of the Draft Final)

All Reports must include an Executive Summary.