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# **TRACECA: Unified Policy on Transit Fees and Tariffs**

## **Priority Issues Concerning Road Transit Fees**

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## Table of Contents

<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. OBJECTIVES OF TRANSIT FEES .....</b>	<b>2</b>
2.1 POLICY OBJECTIVES .....	2
2.2 TYPES OF ROAD USER CHARGES PAID BY TRANSIT VEHICLES .....	4
<b>3. CURRENT TRANSIT FEE SITUATION .....</b>	<b>5</b>
3.1 STRUCTURE OF CHARGES .....	5
3.2 LEVEL OF CHARGES .....	5
<b>4. USER CONCERNS .....</b>	<b>8</b>
4.1 TRUCK TARIFF LEVELS .....	8
4.2 LIABILITY FOR TRANSIT FEES .....	8
4.3 TRANSIT FEES .....	9
4.4 TRANSPARENCY OF TRANSIT FEE SETTING .....	11
4.5 OTHER ISSUES .....	12
<b>5. ESTIMATION OF REASONABLE FEE LEVEL .....</b>	<b>14</b>
5.1 OBJECTIVES .....	14
5.2 APPROACH TO CHARGING .....	14
5.3 TYPES OF ROAD USE COSTS .....	15
5.4 ROAD USE COSTS IN TRACECA COUNTRIES .....	16
<b>6. CONCLUSIONS .....</b>	<b>19</b>
6.1 MAIN ISSUES AND UNJUSTIFIABLE FEES .....	19
6.2 ESTIMATION OF CURRENT LOSSES .....	21
<b>APPENDIX A .....</b>	<b>23</b>
<b>TRANSIT FEES IN TRACECA COUNTRIES .....</b>	<b>23</b>
<b>APPENDIX B .....</b>	<b>29</b>
<b>ROAD TRANSPORT OPERATOR QUESTIONNAIRE .....</b>	<b>29</b>

## **1. Introduction**

One of the aims of the UPTFT project is to determine a unified policy and equitable levels for the imposition of legitimate road transit fees. The project will seek clarification and, with the active participation of the TRACECA National Commissions, freight forwarding and carriers associations, expose those that cannot be justified.

Initial work has concentrated on establishing, with assistance from the TRACECA member governments, a draft Inventory of Road Transport Fees and Permits. The purpose of establishing this inventory is to improve transparency of the issues and to enable some priorities to be set in resolving the more important issues first. The inventory was collected through a Transit Permit and Fee Questionnaire issued to the governments of all TRACECA countries. Follow-up interviews in all countries were made to check the database.

A road transport operator survey was also carried out in order to examine the transparency of the publication procedures, to estimate differences between advertised and actual fees paid, and to obtain the views of road users. The survey involved issuing a questionnaire to representatives of international road transport operators in each country and interviewing these representatives. Interviews were also carried out with a broad range of other stakeholders – including individual operators and freight forwarders.

The draft inventory has now been compiled, with separate sections for each TRACECA country, and it is being validated before being included in a User Guide for publishing on the internet. This report describes the preliminary analysis of the inventory and the operator survey. Taking account of the objectives of transit charges and likely road user costs in TRACECA countries, possible priority issues are identified, including the main types of unjustifiable transit fees. The economic costs of current policies and practices are estimated.

## **2. Objectives of Transit Fees**

### **2.1 Policy Objectives**

#### **2.1.1 ROAD SECTOR OBJECTIVES**

Charging of heavy trucks and other road vehicles for the use of roads and bridges can have a wide range of objectives. In the EU (according to Directive 99/62/EC of 17 June 1999) the following objectives apply:

- 1) To contribute towards a better functioning of the market in transport by reducing differences in the conditions of competition in goods road transport, due to differences in road taxes between countries,
- 2) to contribute towards a more efficient utilisation of the overall transport system by applying the "user-pays" principle,
- 3) to provide the necessary framework to allow Governments to recover their real road infrastructure costs and impose charges to cover environmental, noise and congestion costs where appropriate, and
- 4) to contribute towards establishing sustainable transport by encouraging the use of more environmentally friendly road and other transport means.

In TRACECA countries there is much concern about differences in levels of taxes levied on road transport (Objective 1), and this leads to lengthy debates between governments about the terms of the bilateral agreements under which international road transport services are provided. Governments are also concerned about Objective 2 – all countries rely heavily on railways for their international transport needs and would want road transporters to pay for their infrastructure costs in a similar way as for railways.

Financing of roads (Objective 3) is a major issue in most countries, especially in TRACECA countries where economic reforms have resulted in increased road traffic. Financial constraints and difficulties in management of the road network have resulted in serious backlogs of road maintenance<sup>1</sup>. Expenditure on roads is often below the minimum level required to maintain the network, either because of low road user charges (especially fuel and vehicle charges) or because revenue collected from road users is not allocated to road maintenance.

Environmental concerns (Objective 4) affect road user charge policies to only a limited extent in TRACECA countries. The main environmental impact of road transport is within urban areas and it is difficult to apply environmental charges without adversely affecting users of the main road network used by international transporters. Consequently, while some countries have introduced environmental taxes on road vehicles, others have removed these.

These general objectives of road user charges are in accordance with the broad objectives of the TRACECA Basic Multilateral Agreement (MLA) which regulates

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<sup>1</sup> As reported in the introductions to the inventories of road transport fees and permits for each country

international transport between TRACECA countries and transport in transit through the territories of the TRACECA countries, as shown below.

**Table 2.1 Relationships Between Objectives of TRACECA Basic Multilateral Agreement and General Objectives of Road User Charging**

Summary of MLA Objectives (Article 3)	Road User Charge Objective	Comments
(a) to develop economic relations, trade and transport communication		General MLA objective
(b) to facilitate access to the international market of road and other forms of transport	Objective (3)	Need for adequate finance to sustain infrastructure
(c) to facilitate international transport of goods and passengers	Objective (3)	Need for adequate finance to sustain infrastructure
(d) to ensure traffic safety and environmental protection	Objective (4)	Possible role of road user charges to internalise the environmental cost
(e) to harmonise transport policy and legal framework	Objective (1)	Need to remove disparities between national road user charge policies
(f) to create equal conditions of competition between different types of transport	Objectives (1) and (2)	Need to establish a level playing field for road freight transport and between road and rail

### 2.1.2 ROAD TRANSIT FEE POLICY OBJECTIVES

The MLA goes further in defining conditions for charging for transit transport:

Article 5, Payment of Taxes, Duties and Other Payments: Taxes, duties and other payments, irrespective of their names and origin shall not be imposed for transport in transit, except payments for transport and customs services, services related to transport, as well as payments for use of transport infrastructure.

This requires road transit fees to be based in some way on cost recovery and "user pays" principles.

Article 6, Preferential Terms and Tariffs: (1) Tariffs for transport transit services shall be established on the basis of preferential terms. (2) The Parties have agreed that should preferential terms and tariffs be established between two Parties for type of transport referred to in Article 1 of the Basic Agreement, no less preferential terms and tariffs will be applicable between these Parties and other Parties.

This requires that transit fee policy should not discriminate between transporters of different TRACECA countries, by charging different amounts for the same service offered.

In the Technical Annex on International Road Transport to the Basic Agreement, there are few further provisions about transit charges. These are in Article 8, Fiscal

Matters, and grant exemption from customs duties, charges and taxes for motor fuel and lubricants (within vehicle design norms), and for spare parts and tools imported into the countries for repair of the vehicle.

### 2.1.3 CRITERIA FOR ASSESSING TRANSIT FEES

Taking account of the objectives of the Basic MLA, the following criteria have been adopted in analysing the current system of transit fees:

- 1) charges should ideally vary with the costs that they impose<sup>2</sup>,
- 2) users ideally should be charged at the point of use, respecting the territoriality principle rather than the nationality principle<sup>3</sup>
- 3) fair pricing - all users should pay on the same, clear basis in order to establish a level playing field between TRACECA operators

## 2.2 Types of Road User Charges Paid by Transit Vehicles

The types of charges that can be levied by a country on foreign transit vehicles are summarised in Table A.1 of Appendix A. They exclude charges, such as annual vehicle fees, that may be paid by foreign vehicles in their home country.

In Table A.2, each type of charge is assessed in terms of the three criteria defined above. Charges targeted at foreign vehicles (Nos. 1 and 2) score badly because they discriminate between domestic and foreign vehicles. In Europe the trend is to abolish such charges.

There is limited scope for road and bridge tolls, except where there is a network of motorways (limited access roads that provide alternative choices of roads for transporters). The scope for using road user charges (through fuel charges, access charges etc.) depends on the acceptable level of fuel and vehicle taxes (which are rather low in most TRACECA countries).

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<sup>2</sup> Mainly the costs of infrastructure. External costs such as accidents, air pollution, noise and congestion are relatively small for non-urban road transport, which is the focus of this paper

<sup>3</sup> So for example, a truck from Country A using roads in Country B is charged by Country B for use of its roads rather than being charged by Country A through national taxation

### 3. Current Transit Fee Situation

#### 3.1 Structure of Charges

Table A.3 of Appendix A summarises the types of charges used by each TRACECA country. Countries impose up to six separate charges per transit vehicle under normal conditions (without overweight or over-sized vehicles). Countries generally charge for issuing permits at borders, levy fuel tax and have special charges for overweight or over-sized vehicles.

Apart from those similarities there is a great deal of divergence in policies for charging foreign transit vehicles:

- In Bulgaria, Moldova, Romania and Turkey, transit fees are charged which vary with distance, weight or vehicle type.
- Several countries charge bridge tolls (but only Turkey has motorway tolls).
- Romania and Ukraine have each recently introduced a road user charge (or unified charge for handling international traffic) which does not discriminate between domestic and foreign vehicles.
- Most countries have one miscellaneous charge (for insurance or other service, or for environmental reasons)

These differences partly reflect the different circumstances of the countries. The non-CIS countries generally have had a long history of transit road transport and have developed charging systems that vary with road use (with distance and vehicle size/type or weight). Some have started to adapt charging policies towards EU practice with a view to eventual harmonisation, and have begun to replace foreign vehicle charges with new charges that apply without discrimination to foreign and domestic transporters.

#### 3.2 Level of Charges

The overall charge levied by each country for a typical transit journey in the TRACECA corridor is estimated in Table A.4 for a fully loaded 38 tonne Gross Vehicle Weight (GVW) truck, for which no abnormal charges would be payable<sup>4</sup>. Separate estimates are made for trucks with and without permits issued under bilateral agreements that would exempt the transporter from certain fees<sup>5</sup>.

The administrative cost of permits issued either under bilateral agreements or at borders is not included in this table. They are usually no more than about USD 30 for a round trip and vary according to government policy. However when supply of permits issued under bilateral agreements is restricted the cost of permits can rise to USD 100 or more.

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<sup>4</sup> Most CIS countries agreed to adopt a maximum GVW limit for articulated vehicles of 38 tonnes – in Agreement about Size and Weight of Transport Means in CIS Countries, Minsk, June 4, 1999.

<sup>5</sup> Not all permits give exemption from transit fees – it depends on the terms of each bilateral agreement



Table A.5 shows the equivalent estimate for the same type of truck carrying no load (assumed to have an unladen weight of 16 tonnes). In most cases empty trucks are liable for the same transit fees as loaded trucks. However in some cases empty transit trucks may be brought through the TRACECA countries as temporarily imported and re-exported goods, thus avoiding liability for transit fees.

These results confirm that transit fees levels, in overall terms, are not based on a common policy. As expected, permit holders pay much less than that paid by non-permit holders (usually 5% or less for loaded trucks). The following specific points can be made.

*For Non-Permit Holders:*

- the overall charge level varies over a wide range from USD 0.09 to 1.88 per vehicle km (although usually from USD 0.40 to 0.90),
- the foreign vehicle permit and transit charges are the main charges levied on transit movement,
- significant contributions to the overall charge also come from other types of charge levied only on foreign vehicles (such as Turkmenistan's bridge toll and fuel adjustment charges),
- fuel tax is only significant in Turkey (it has a relatively high tax level of USD 0.30 per litre making up 20% of the overall charge, compared to only about USD 0.03 per litre in most CIS countries),
- tolls and other charges are relatively insignificant,
- empty trucks pay not much less than loaded trucks – usually between USD 0.30 and 0.70.

*For Permit Holders:*

- the overall charge level is much lower but also varies over a wide range from USD 0.01 to 0.30 (not including Turkmenistan which has no international agreements for exemptions of transit fees for permit holders),
- in eight countries fuel tax is the main charge paid by permit holders, but only in Turkey is it very significant (about USD 0.12 per vehicle km),
- only in Bulgaria do road and bridge tolls make significant contributions to the overall charge level,
- empty trucks pay a similar level of charge to loaded trucks in overall terms.

These findings have to be interpreted with care. In practice, as discussed in the next section, the availability of permits varies widely and this results in widely different levels of charges levied in different countries. In particular, the dominant providers of transit services in the TRACECA region – operators from Iran, Turkey and other countries – often do not have access to road transport permits issued under bilateral agreements, either because there is no agreement for exchange of such permits or because there are insufficient numbers of permits issued<sup>6</sup>.

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<sup>6</sup> This usually happens because there is a substantial imbalance between countries in the number of operators carrying goods between the countries – sometimes the ratio is as high as about 1:9. If the permit quotas of the bilateral agreements are set below that required by the dominant country, then shortages are inevitable.

As a consequence, in countries such as Turkey, Bulgaria and Romania, most TRACECA countries travel with permits which exempt them from most transit charges – resulting in overall charges which vary between USD 0.12 and 0.18 per truck km, according to the estimates in Table A.4 for loaded trucks. However operators from countries with large trucking industries which provide most of the transit services elsewhere in the TRACECA region, are often (if not always) paying the charges applicable to non-permit holders (typically between USD 0.30 and 0.90 per truck km for loaded trucks).

## 4. User Concerns

### 4.1 Truck Tariff levels

A questionnaire survey was carried out during 2002 to find out the main issues of concern to international road transport operators (see Appendix B). Many freight forwarders and other users of road transport were also interviewed to identify their main concerns.

These surveys indicate that current long distance road freight tariffs in the TRACECA region vary widely. This reflects variations in operating and market conditions. Traffic flows are mainly into the region so there are limited opportunities for backhauls (less than about 50% of return journeys have loads). For fully loaded trucks carrying a load of about 20 tonne in the direction of the main flow, the tariff varies between about USD 0.70 and 1.70 per truck km (US Cents 3.5 – 8.5 per tonne km). Rates are about 20% higher for refrigerated traffic. In the return direction rates are often much lower – for example some cotton traffic from Central Asia to Mersin Port is charged at USD 0.60 per truck km (US Cents 3.0 per tonne km).

These rates are similar to long distance truck tariffs in other parts of the world where there is an imbalance in traffic flows. However considering that fuel prices and wage rates are relatively low in the TRACECA region (typically USD 0.20 per litre of diesel compared to USD 0.40 or more in other countries), lower rates could be expected. The difference in operating cost<sup>7</sup> is about USD 0.08 per km (about 10% of current average operating costs in the TRACECA region). Truck operating costs should therefore be at least 10% lower than that found in other countries. The presence of border delays and excessive transit fees could be major reasons for costs not being lower.

Many users perceive that trucking costs are excessively high due to such factors, especially along the TRACECA corridor. This is confirmed by current traffic levels – there is almost no through traffic by road transport along the TRACECA corridor (for example, less than one truck per day using the Baku – Turkmenbashi ferry service). However the TRACECA corridor is important for shorter distance road transport – either between the Caucasus region and Europe or between Central Asia and Iran and Turkey.

### 4.2 Liability for Transit Fees

In the survey, many operators reported that shortages of permits were a major reason for high transit fees (see Table B.1 of Appendix B). The lack of permits arises both from:

- lack of bilateral agreement for exchange of permits, and
- imposition of low quotas for the number of permits issued.

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<sup>7</sup> Assuming a typical fuel consumption of 40 litres per 100 km

Usually permit holders are exempt from paying transit fees (although there are some bilateral agreements that issue two types of permits – one that exempts transporters from transit fees and another that does not). Limited quotas is often a result of policies designed to restrict the number of foreign truckers entering the country without paying fees. This issue is of particular concern to smaller countries like Moldova which have limited international traffic but whose operators wish to engage in international transport between two other countries (third country transport). It is also of concern to countries such as Turkey whose operators supply most of the international road transport services in the TRACECA region, and therefore are most inconvenienced by the lack of permits. Depending on their circumstances, road users report shortages of all types of permits – standard permits for entry or transit, permits to allow empty trucks to enter and pick up loads, and third country permits.

Even permit holders are liable for significant transit fees in some countries (as shown in Table A.4 and A.5). Of particular concern are those fees which are targeted only at foreign vehicles and which may be inconsistent with the principles or terms of bilateral agreements.

### 4.3 Transit Fees

Transport operators considered that foreign vehicle permit fees and transit fees in the TRACECA region are generally too high. Operators making short trips are particularly affected by charges that are fixed rather than varying with distance. Many operators complained about the extremely high charges levied on third country transport, where fees can exceed USD 1,000.

In countries where there is a shortage of permits issued under bilateral agreements, there were complaints about the high black-market price of permits – for example, in one case, permits with a nominal price of USD 20-30 were reported to have a black-market price of over USD 100.

Many operators were concerned about the effect of high transit fees on their transport tariffs. For TRACECA operators making transit trips in countries such as Turkey, Bulgaria and Romania, where road transport permits are usually available, transit fees are a relatively small proportion of the transport tariff - about 20% - but in countries where most operators have to pay transit fees this proportion is much higher – 80% in the example given in Table 4.1.

**Table 4.1 Example Comparison of Transit Fees and Transport Tariffs**

Location	Typical Transit Fee (USD per truck km)			As proportion of Transport Tariff
	Loaded	Unloaded	Average	
Countries in which most operators can obtain permits	0.15	0.13	0.14	20%
Countries in which most operators cannot obtain permits	0.60	0.50	0.56	80%

NOTE (1) Assuming an average transport tariff of USD 0.70 per truck km (assuming 50% of fully laden operation at USD 1.2 per km, 15% of laden operation at USD 0.6 per km, and 35% empty operation)

(2) Typical transit fees estimated in Tables A.4 and A.5.

In practice the precise impact of high transit fees depends on the particular journey made and the proportion of route operated under transit fee-paying conditions. In general the impact would be less than estimated in Table 4.1 because part of the route would be within the transporter's own country where no transit fees would apply. For example, for journeys between Kazakhstan and Mersin Port, only 1,200 km is operated as transit within Uzbekistan and Turkmenistan (about 50% of the overall distance). In this case the impact of transit fees on overall transport tariff would be only 40%, rather than 80%.

Not surprisingly, in view of the high transport fees, operators report being concerned about lack of transit traffic. Traffic between Turkey and many TRACECA countries in the Caucasus and Central Asia has fallen by about 50% between 1998 and 2000. Operators do not attribute this to increased border delays because these have been reduced. Transit fees have increased during this time and this is likely to be of the main causes<sup>8</sup>.

Operators in TRACECA countries in which little traffic is generated (the case for most operators in the Caucasus and Central Asia) could be particularly inconvenienced by the reduction in demand – they already find it difficult to find work and sometimes resort to setting off empty in order to find return loads. If the general level of traffic reduces in the TRACECA region, the risk of delays finding loads is increased correspondingly.

Operators consider various fees to be unjustifiable (for example because they discriminate between operators or are excessively complicated or too high). Some of these are official fees, such as charges levied to compensate for the low price of fuel in the transit country, compulsory charges for transit services from appointed agents, and payments for insurance that arise because there is no mutual recognition of insurance cover between countries<sup>9</sup>. Others are unofficial fees such as payments to the police who make random checks along the route, and payments to oblast or

<sup>8</sup> If for example, the elasticity of demand with respect to price is 1.00 (that is a one per cent increase in tariff causes a one per cent reduction in demand), then a 20% increase in overall transport tariffs due to 40% higher transit fees in Central Asia, would be expected to reduce transit traffic by 20%.

<sup>9</sup> Few TRACECA countries have a "Green Card" type of insurance scheme that is found in Europe, and each country charges different amounts for compulsory insurance of foreign vehicles.

officials at check points or weighbridge stations. Some operators report that such unofficial charges can amount to 50% or more of official payments, but it is clear that such practices vary enormously and it is not possible to estimate its impact with any accuracy.

The reports by operators of unreasonable fees are summarised in Table B.2. They include reports of specific fees in particular countries that are excessively high or are applied with unreasonable conditions (such as maximum length of stay in the country) so that fines or additional charges are levied. There are also reports of unofficial fees which could not be confirmed in practice - nevertheless they are presented in order to promote discussion of the issues. There appears to be some correlation between lack of permits and reports of unreasonable charges (most obviously in the case of Kazakhstan but this country is probably mentioned more than others because it serves as the main transit country for links between most Central Asian countries and Europe).

#### 4.4 Transparency of Transit Fee Setting

Many road transport operators do not fully understand the permit rules and fee structures in TRACECA countries. According to road users, this is attributable to:

- ambiguous regulations defining transit permits and fees,
- frequent changes in regulations and fee levels (for example, amendments which apply only to particular circumstances or to particular countries),
- abrupt changes in implementation of permit agreements,
- complicated fee systems which are difficult to apply – for example charges that vary with vehicle weight (in the absence of any accurate way of determining the weight), or involve multiple elements which are added or multiplied together<sup>10</sup>,
- poor publication - although some countries produce summary lists of main charges, these are often hard to find, not dated, not referenced to legal source documents, and not complete (with all minor charges included). International organisations (within or outside the CIS) do not appear to try to collate this kind of information in the form of a booklet for all TRACECA countries. Their local representatives within TRACECA make attempts to collate transit fee information but they find it very difficult to keep the information up-to-date and clear. There is almost no use of the internet to advertise transit fees in the region and those internet sites that have been created in recent years for some TRACECA countries contain errors because they are not being updated effectively.

Because many operators (especially those from outside TRACECA countries), do not understand the structure of transit fees, they tend to rely on additional cost margins to cover the uncertainty – thus increasing tariffs<sup>11</sup>. Few appear to be full

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<sup>10</sup> For example the charges for abnormal transport (excess size or weight) are difficult to interpret because it is hard to know what the current maximum vehicle size and weight limits are. This is partly because these limits can vary from season to season (to protect roads in springtime during the thaw). However most CIS countries have now agreed to unify size and weight limits and the basis for calculating these charges.

<sup>11</sup> Unfortunately if the operators allow a wide margin to cover uncertainty, this increases tariffs excessively.

members of international operator associations, which could help to provide such information. In the end the extra cost of the uncertainty is passed on to the user.

Operators in Europe consider that offering transport services in TRACECA is difficult not only because of the lack of reliable information but also because of the language difficulty. Because of the particular difficulties facing European drivers in TRACECA, higher rates of pay are given to compensate for the increased risk of having to negotiate problems. This increases costs of transport services in the TRACECA region.

Although operators from outside TRACECA are particularly in need of greater transparency in calculating and publishing transit fees, this need is also felt greatly by operators within TRACECA. There is no doubt that there is general agreement on the need for better transit fee information in the region.

#### 4.5 Other Issues

The questionnaire survey allowed the operators to report other issues which were of important concern to them. The main concerns were as follows.

- The imbalance of competition for international traffic is felt acutely by many operators within TRACECA countries, who find it difficult to compete with foreign competitors that have (a) more modern vehicle fleets, (b) established supplies of credit, (d) convenient access to the market (which mainly originates in other countries) and (e) considerable experience of international transport.
- Problems obtaining driver visas was a recurring theme in the questionnaires. This was attributed to complicated visa procedures and unhelpful visa conditions (as a result for some countries it can take 1-2 weeks to obtain a visa that lasts only four days and if the vehicle breaks down another visa has to be obtained).
- Some operators reported problems with poor roads, especially in Azerbaijan, Georgia, Kazakstan, and Kyrgyzstan. Some strategic sections of road along the TRACECA corridor were reported to be in poor condition (such as between Aktau and Almaty).
- The lack of effective national control in certain autonomous regions and in some oblast areas was reported as a problem (creating uncertainty about transit fees and conditions and opportunities for payments not authorised by central government). In the extreme case of Moldova, this has deterred a considerable amount of potential transit traffic.
- There is weak enforcement of transport regulations – especially those for vehicle size and weight because the weighbridges are not accurate. CIS countries have agreed to introduce a new vehicle weight certificate which would be recognised by all countries but this may not be able to control gross vehicle weight effectively (although it can help to define unladen weight).
- The need for a unified motor vehicle insurance scheme was mentioned by some operators, as the solution to the problem of insurance charges imposed on them.
- Some operators reported difficulties and high costs associated with the vehicle convoy arrangements made by customs in some countries (particularly for

operators not covered by the TIR scheme – a particular problem for operators in Tajikistan where there is no representative able to issue TIR carnets).

- Finally there were reports by some operators of bureaucratic procedures associated with authorising transit traffic movements in some countries, causing delays and discouraging operation of journeys.



## 5. Estimation of Reasonable Fee Level

### 5.1 Objectives

Three criteria were defined in Section 2.1.3 to assess the current transit fee regime:

- 1) charges should ideally vary with the costs that they impose,
- 2) users ideally should be charged at the point of use,
- 3) fair pricing - all users should pay on the same, clear basis

This section describes an analysis of road use costs in the TRACECA region to determine the typical level of costs that fees should be based on in order to meet the first of these criteria.

Even if the fees are related to costs they may not be considered reasonable and fair if they do not meet the third criterion – by discriminating between operators. This is discussed in Section 6.

### 5.2 Approach to Charging

Determining a reasonable transit fee level involves consideration of the objectives of charging policy. In general, to maximise economic benefits, charges should be set at a level at least equal to the cost of the resources consumed by the use of the road network. These short-run marginal costs are essentially the variable costs estimated above.

However setting road user charges to cover only short-run marginal costs would result in revenues failing to cover the fixed costs, and this would result in a financing deficit unless alternative funds were made available.

There are strong arguments for setting road user charges so that they achieve full cost recovery (fixed costs as well as variable costs) – all governments of TRACECA countries have limited funds available for maintenance of infrastructure, and under-funding is not in the interests of road users because it only results in poor roads and higher vehicle operating costs. Furthermore requiring road users to achieve full cost recovery places them on equal footing with railway users who also have to pay for full cost recovery (unless the railway receives a subsidy).

Cost recovery is usually achieved through two main road user charges:

- a charge that varies with use (usually a fuel charge or tax), and
- a fixed charge that is paid irrespective of use (usually an annual vehicle charge that varies with vehicle type in order to ensure that each vehicle type achieves cost recovery)

According to previous work carried out in the TRACECA region<sup>12</sup>, full cost recovery could be achieved in the CIS countries of TRACECA through a combination of a fuel

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<sup>12</sup> Study of the Cost and Financing of Road Usage, TRACECA Project TELREG9305 Report, Kocks Consult, June 1997

tax of about US Cents 5 per litre and an annual vehicle tax for trucks with over three axles of about USD 250. Similar work has been done in other TRACECA countries, either to assess costs of using the road network or to assess levels of charges required to achieve full cost recovery – this includes an analysis of road costs in Turkey<sup>13</sup> as part of the Southeast European Cooperative Initiative (SECI) programme<sup>14</sup> and an analysis of road user charges in Bulgaria and Romania in the PHARE region<sup>15</sup>.

This previous work is used below to assess the reasonable level of transit fees in the TRACECA region.

### 5.3 Types of Road Use Costs

Use of roads by road vehicle can impose the following costs:

- costs of maintaining, repairing, rehabilitating and managing the road network,
- costs of developing the road network (to improve road standards or even construct new roads),
- congestion costs imposed on other road users,
- accident costs imposed on others (road users and non-road users)
- environmental costs such as air pollution and noise

This analysis focuses on the first of these costs because for transit traffic it is the main cost of road use in TRACECA countries and is of vital importance when considering how to finance the road network. There is little congestion on the main roads that requires construction of new roads in most TRACECA countries, although this certainly does not apply to the countries nearer to Europe. Accident and other environmental costs are relatively small.

The costs of maintaining, repairing, rehabilitating and managing the road network can be divided into fixed and variable costs:

- 1) fixed costs do not vary with traffic level or loading, and include items such as drain clearance and road sign cleaning which are carried out on a routine basis irrespective of the amount of traffic, plus the costs of policing, management, interest and overheads,
- 2) variable costs vary with either the traffic flow or with the number and weight of axles using the road as follows:
  - a) vehicle flow related items: such as road cleaning and road marking which vary with the number of vehicles using the road,

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<sup>13</sup> The Impacts of Heavy Vehicles to Highways and Imposed Extra Cost, General Directorate of Turkish Highways, October 2001

<sup>14</sup> Through the work of the Regional Road Transport Committee(RRTC) in implementing the Memorandum of Understanding on the Facilitation of International Road Transport of Goods in the SECI Region, Athens, 28 April 1999.

<sup>15</sup> Road Transport Charges, Draft Final Report, PHARE Programme ZZ-9610 (Contract 98-0472), NEI, November 1999.

- b) axle load related items: such as repairing pot holes, patching and pavement renewal, which vary with the number and weight of axles using the road.

These costs depend on the road design and maintenance practice, and much research has been carried out into the factors that affect these costs for different kinds of roads, under a wide range of conditions. The results of this research have been used by the World Bank to develop a computer model HDM – IV which can be used to predict road use costs in conditions encountered in different countries.

The proportion of fixed and variable cost vary according to road and traffic condition but in the previous TRACECA work the ratio was approximately fixed (35%), traffic-related (35%) and axle-related (30%).

#### 5.4 Road Use Costs in TRACECA Countries

The HDM model has been used in both the previous TRACECA study and in the SECI study to estimate the road use costs in the CIS countries that are included in the TRACECA region. This work is reviewed below.

##### *Road Use Costs in CIS Countries*

The previous work in the CIS used measurements of:

- traffic flow by vehicle type and road design category,
- vehicle kms by vehicle type and road design category,
- axle loadings per vehicle type as measured by Equivalent Standard Axles (ESAL)<sup>16</sup>,
- pavement strength characteristics of TRACECA roads as measured by the modified structural number for each road design category.

The ESAL were estimated from axle load surveys in all the CIS countries in TRACECA. The surveyed vehicles included empty and loaded trucks, so the results reflect the average axle loads of all vehicles. The survey showed that axle loads are relatively light in these countries and that non-CIS trucks tend to have higher axle loads than CIS trucks (which were designed for relatively moderate loadings).

The greatest ESAL is found for the non-CIS 2 axle truck, not the equivalent 5 axle truck – this is because the 2 axle truck is often overloaded. Since the road damage cost varies proportionally with ESAL, it is clear that such 2 axle vehicles (which are not generally used for transit transport) could be the main contributor to road damage costs. It would be expected that in future, as more modern vehicles are introduced into the TRACECA region, most trucks will have similar characteristics to the non-CIS trucks in Table 5.1.

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<sup>16</sup> The ESAL of an axle is defined as  $(AL/8.16)^4$ , where AL is the axle weight in tonnes and 8.16 is a standard international reference weight.

**Table 5.1 Average ESAL per Truck in TRACECA**

Truck Type	All Trucks	Non-CIS Trucks
2 axle	0.11 (0.17)	4.87 (7.49)
3 axle	0.24 (0.37)	1.27 (1.95)
4 axle	0.83 (1.28)	1.92 (2.96)
5 axle	0.45 (0.69)	1.31 (2.02)

NOTE (1) The main figures are averages over both empty and loaded trucks while the figures in brackets are estimates for loaded trucks assuming that ESALs are negligible for empty trucks (for example only about 0.01 for a 4 or 5-axle truck in CIS countries assuming a tare weight of 12 tonnes) and that trucks are empty for 35% of their operating distance.

SOURCE: TRACECA Project TELREG9305 Report, Kocks Consult, June 1997.

These measurements were used with results of HDM model calculations, to estimate the required indicative fuel charges and annual vehicle charges required in each CIS country, to provide full cost recovery by each type of vehicle. The results are shown in Table 5.2.

**Table 5.2 Indicative Fuel Charges and Annual Vehicle Licence Fees Required for Full Cost Recovery**

Country	Required Fuel Levy (US Cents per litre)	Indicative Annual Licence Fees for Trucks (USD)		
		2-axle	3-axle	>3axle
Armenia	5.6	50	100	200
Azerbaijan	3.6	125	205	290
Georgia	5.3	80	140	215
Kazakstan	4.9	80	115	220
Kyrgyzstan	5.5	115	200	305
Tajikistan <sup>(a)</sup>	5.0			
Turkmenistan <sup>(b)</sup>	8.0	120-150	150-200	460-650
Uzbekistan	2.8	100	160	205

NOTE (a) Impossible to estimate because of absence of vehicle fleet data

(b) Licence fees are presented as a range because there are alternative official estimates of the number of licensed vehicles

SOURCE TRACECA Project TELREG9305 Report, Kocks Consult, June 1997.

According to Table 5.2, full cost recovery could be achieved in most of the CIS countries through a combination of a fuel tax of about 5 US Cents per litre and an annual vehicle tax for trucks with over three axles of about USD 250. Assuming an annual truck utilisation of say 50,000 km, this implies that the total annual road cost attributable to such trucks is about USD 1,375 (about USD 0.04 per ESAL, or USD 0.03 per truck km). Such estimates are inevitably rather arbitrary because they involve making decisions about how to allocate fixed costs.

In fact the figures in Table 5.2 represent the minimum estimates of charges required for full cost recovery because:

- costs of maintaining the oblast and local roads are not included, and

- the costs of dealing with the backlog of maintenance are not included (this backlog has increased since 1997 when the study was carried out).

If allowance is made for these factors the total annual cost attributable to trucks with over three axles could increase by about 50-100% to about USD 2,300 (USD 0.046 per truck km).

Trucks used for transit transport include many non-CIS trucks which have higher axle loads and therefore impose higher costs. The ratio of ESAL for non-CIS trucks to that for CIS trucks is about 1:2.5. Assuming that axle-related costs are about half of total costs allocated to heavy trucks, transit trucks could have annual road costs of about USD 2,900 (about USD 0.06 per truck km).

It should be noted that this makes no distinction between loaded and empty trucks. A loaded truck has an ESAL which is about 50% higher than the average for all trucks, while empty trucks have negligible ESALs.

#### *Road Use Costs in Non-CIS Countries*

The economic impact of heavy vehicles on roads in Turkey, carried out for the SECI programme assessed the additional cost imposed on the road network by heavy vehicles – not only the additional maintenance costs but also the cost of strengthening pavements to take increasing flows. Using the HDM model, calibrated under Turkish conditions, the additional cost imposed by each ESAL was estimated to be USD 0.043 per km (very similar to that estimated in the CIS). The average ESAL per heavy truck in Turkey was 4.21 (much higher than in the CIS because of the higher axle loadings in that country), so the average cost imposed by heavy trucks was USD 0.18 per truck km (this would amount to USD 9,000 per year if annual utilisation were 50,000 km).

## 6. Conclusions

### 6.1 Main Issues and Unjustifiable Fees

Based on the analysis of the draft inventory of transit fees and permits, presented in this paper, a number of important issues and unjustifiable types of fees can be identified. These are presented below in order to enable further clarification and discussion of these issues.

#### *First Criterion : Cost-relatedness*

In terms of cost-relatedness the present transit fee regime in most TRACECA countries clearly fails to meet the first criterion defined in Section 2.1.3.

Current charges imposed on foreign trucks, which are usually between USD 0.09 to 1.87 per vehicle km, are much higher than the road use costs that could be allocated to them – the appropriate level of road use cost will vary in accordance with the conditions encountered in each country, but on average it would be about USD 0.06 per vehicle km for typical transit trucks with over three axles.

Charges paid by transit trucks that are issued with permits, which exempt them from permit and transit fees, are closer to road use costs – the charges vary between USD 0.01 and 0.18 per truck km and, in the case of Georgia, Romania and the Ukraine, the charges are fairly close to road use costs. However according to the inventory figures, Azerbaijan, Bulgaria and Turkey (together with Turkmenistan, which does not exchange permits) charge permit holders significantly more than road use costs, while Armenia, Kazakstan, Kyrgyzstan, Moldova, Tajikistan and Uzbekistan charge less.

These results are based on the draft inventory before the final checks have been carried out, so it is possible that some individual figures may have to be changed. However the general conclusion is unlikely to change.

#### *Second Criterion: charging at the point of use*

All the transit fees analysed in this paper contribute to the territoriality principle by relating charges to the use of specific sections of infrastructure, even though the relationship is not closely based on cost. However the granting of exemptions under bilateral agreements undermines this principle and raises the issue of how road users can contribute fully to road user costs.

This particularly affects countries which currently have low fuel taxes and absence of road user charges, such as vignettes, which are levied on both domestic transporters and foreign transporters (including permit holders). As the practice of granting of exemptions increases, and revenue from transit fees reduces, governments are likely to rely increasingly on developing systems of road user charges that apply equally to domestic and foreign vehicles. How this can be done is a major long-term issue, especially for CIS countries that have low levels of fuel and vehicle taxes at present.

*Third Criterion: fair and clear pricing*

The present transit fee system clearly fails to satisfy this criterion in terms of avoiding discrimination between operators. Even before the draft inventory of transit permits and fees is confirmed it is clear that following types of discrimination take place in the TRACECA region.

- 1) Between different foreign operators: transporters from different countries are charged different fees because these tend to be set on a bilateral basis rather than a multilateral basis. Examples include the following:
  - Countries such as Kyrgyzstan which only set transit fees on a country by country bilateral basis and this leads to a very complicated system of fees according to nationality of operator.
  - Where countries define general transit fees to be paid by all foreign trucks, special concessions are sometimes granted to trucks from particular countries.
  - On the other hand, specially increased rates are sometimes imposed, perhaps in retaliation for increased transit charges introduced by other countries (or even for reasons unrelated to road transport).
  - High third country permit fees limit the possibility for operators from two countries to face competition from a third country.
- 2) Between permit holders and non-permit holders: it is not uncommon for the transport market between two countries in the TRACECA region to be distorted by restricting the supply of permits in order to protect the interests of operators who find it difficult to compete with foreign transporters. The danger is that this results in increased transport costs, caused by preventing efficient operators without permits providing services in place of inefficient operators with permits. One consequence of permit shortages in the TRACECA region is that the black-market price of permits can rise from a nominal USD 30 or so, to over USD 100.
- 3) Between domestic and foreign transporters: this is often a major issue in other parts of the world and has led to proposals being adopted to abolish foreign vehicle transit fees in the ECMT area<sup>17</sup> (and the total abolition of such fees in the EU). It appears to be a major issue in the TRACECA area because foreign transporters are paying much higher taxes for conducting international transport in some countries than their competitors are paying in that same country. This can arise in many ways due to the variety of ways that road transport can be taxed. However the following specific factors contribute to such discrimination in the TRACECA region.
  - Annual vehicle taxes for trucks in CIS countries are rather low (less than USD 100 for a heavy truck) which means that, in terms of the average charge per truck km, this is less than USD 0.002 per truck km. By contrast, foreign trucks in those countries are often paying transit fees of over USD 0.200 per truck km which represents a 28% additional operating costs in that country (assuming typical operating costs of USD 0.7 per truck km).

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<sup>17</sup> In accordance with the Resolution on Charges and Taxes in Transport, Particularly in International Road Haulage, ECMT, Prague 30-31 May 2000.

- Different tolls for use of bridges and tunnels are charged for domestic and foreign transporters in some parts of the TRACECA region.
- In some countries special road fund charges are imposed on foreign vehicles (even those holding permits) which are not paid by domestic transporters.
- Various countries levy charges for specific services offered to foreign transporters, which are not necessarily charged to domestic transporters (for example, for vehicle insurance, parking, use of motorways).
- In some countries different regulations about vehicle size and weight apply to foreign and domestic vehicles, so charges for abnormal (overweight or over-sized) transport are not the same.
- In some countries additional types of charges are imposed for environmental or other reasons (such as movement of hazardous goods), which are not levied in the same way on domestic transporters.
- In some areas of the TRACECA region local authorities or autonomous groups levy their own charges on foreign transit vehicles, usually without the support of central government.

In addition to causing these types of discrimination, the present transit fee system fails to satisfy the criterion of fair and clear pricing because of the unclear legal basis for transit fees. As described earlier, road users find it difficult to understand the transit fee system in some TRACECA countries because of the complicated system of fees. This is reported to arise because of ambiguous drafting of legal documents, frequent (sometimes abrupt) changes in regulations and charge rates, and poor means of publicising charges and proposed changes to them. In response to such problems with vehicle size and weight limits and charges, the CIS countries are taking action to unify and clarify the system of charging abnormal transport in their countries

## 6.2 Estimation of Current Losses

The losses caused by the current transit fee regime have been approximately estimated in terms of three elements. Each element is one type of economic loss, caused by transit fees that are in excess of that justified in economic terms – that is, the fees are greater than the level required to achieve full cost recovery of infrastructure maintenance and management costs. The elements are:

- 1) Excessive transport costs involved in current trade that uses road transit transport in the TRACECA region: estimated in terms of the difference between the current official transit fees (estimated in Tables A4 and A.5) and those that can be justified in terms of full cost recovery by road transport (USD 0.06 per truck km).
- 2) Loss of surplus caused by excessive transport cost involved in current trade that could use road transit transport in the TRACECA region but presently uses other routes: estimated by assuming that if official fees were to be reduced to USD 0.6 per truck km, TRACECA traffic would rise in accordance



with an elasticity of demand with respect to price of 1 (that is a 1% fall in transit fee would cause a 1% increase in traffic). The change in surplus is estimated using the standard "rule of half" formula, that is  $0.5 * (\Delta p) * (\Delta t)$ , where  $\Delta p$  is the change in cost and  $\Delta t$  is the potential additional traffic that could be attracted.

- 3) Losses caused by unofficial payments: roughly estimated using a similar approach as for (1) and (2) but assuming that unofficial payments are, on average, 20% of official payments and paid in addition to the official payments.

The estimates assume recent typical truck traffic flows and lengths of transit haul in each TRACECA country (described in the introductions to the draft Inventories of Road Transport Fees and Permits). Allowance has also been made for the variation in proportion of transit vehicles that are liable for transit fees (varying from about 5% in Europe, through about 60% in much of Central Asia and the Caucasus, up to 100% in the case of Turkmenistan). The assumed elasticity of demand is a reasonable estimate given that variations in cost of trade often cause two or three times the equivalent volume of trade. There is considerable road traffic that is moving through corridors that compete with the TRACECA corridor and it is reasonable to assume that if transit fees were to reduce, the volume of traffic would increase due to diversion from other routes.

Since many assumptions have had to be made, especially about the current level of traffic flow and the amount of unofficial payments (which by their nature cannot be reliably estimated), the results should only be used as an indicative (order of magnitude) estimate of the losses.

**Table 5.1 Approximate Losses Caused by Excessive Transit Fees in the TRACECA Region**

Type of Loss	Annual Cost (USD million)
(1) Excess Costs of Existing Trade	59
(2) Loss from Diverted Traffic	8
(3) Unofficial Payments	17
Total Transit Losses	84

NOTE (a) Excluding losses to non-transit international traffic which could be of similar magnitude to the transit losses

(b) Excluding time/delay costs getting permits and discovering transit fee information, and transport tariff margins that are added by operators to cover for uncertainty in transit fees.

SOURCE: Consultant's estimate

According to this estimate the total annual loss to transit traffic is USD 84 million. The main contributor to this figure is the excessively high official transit charges, especially in countries such as Georgia, Turkmenistan, Uzbekistan and Kazakstan that have significant amounts of transit traffic and set relatively high transit fees. By contrast, even if unofficial payments are 20% of current official payments their impact is relatively small. Losses due to diverted traffic are also relatively small.

## **Appendix A**

### **Transit Fees in TRACECA Countries**

**Table A.1 Types of Charges Imposed on Transit Vehicles**

Type of Charge	Description	Comments
<b>(A) Charges for Normal Use of Roads</b>		
(1) Foreign Vehicle Permit Charge	Charge for permit issued to a foreign vehicle, authorising entry, exit or transit through a country	Usually either: (a) for permits issued under bilateral road transport agreements (usually on a parity basis in which each country receives and distributes permits to its operators for a nominal administrative fee), or (b) for permits issued at the border to foreign vehicles without permits issued under bilateral arrangements (often incurring a significant fee of up to USD 1,000, depending on the type of transport involved – such as transit, or import/export from/to a third country <sup>18</sup> )
(2) Charge for Use of Roads by Foreign Vehicle	Charge for use of roads by a foreign vehicle (in excess of the permit charge for entry, exit or transit)	A charge on foreign vehicles, not domestic vehicles, that varies with load and distance travelled. Trucks with road transport permits issued under bilateral agreements are usually exempt from this charge.
(3) Roads or Bridge Tolls	Specific charges levied on all road users (both domestic and foreign)	Sometimes foreign vehicles are charged on a different (higher) basis compared to domestic vehicles (or the latter may be completely exempt).
(4) Fuel Taxes	Excise and other types of tax levied on motor fuel	Usually foreign and domestic vehicles pay on the same basis. Foreign vehicles may often be permitted to import a standard tank of fuel which would reduce tax payable. In countries with low fuel prices, special fuel charges are sometimes levied on foreign vehicles to compensate.
(5) Road User Charge	A specific charge levied on all road users for use of the roads	This may be in the form of a special fuel levy, a unified charge paid by all transporters (foreign and domestic) making international journeys, or a network access charge giving permission to road users (foreign and domestic) to use all or part of the road network
(6) Other Charges for Transport Services	Any other charge not included above which is imposed for transit under normal conditions	These include charges imposed by local authorities on foreign vehicles that pass through their area, environmental charges (per vehicle), charges for third party insurance, charges for use of designated rest areas.
<b>(B) Charges for Abnormal Use of Roads</b>		
(1) Fees for Abnormal Vehicles and Loads	For permitting vehicles and loads that exceed maximum vehicle size and weight limits	The fee may be intended to cover the additional damage caused to the infrastructure, and/or any special measures required (planning of journey, infrastructure strengthening work, police escort etc.)
(2) Fees for Transport of Hazardous Goods and Other Purposes	For permitting transport of hazardous goods	This fee may cover the cost of special public safety measures.

<sup>18</sup> Tri from Country A to Country B by a truck registered in Country C

**Table A.2 Assessment of Types of Charges Imposed on Transit Vehicles**

Type of Charge	Criteria			Comments
	Vary With Costs	Territorially-Based	Non-Discriminatory	
<b>(A) For Normal Road Use</b>				
(1) Foreign Vehicle Permit Charge	X	√ or X	X	(a) Usually a nominal administration charge, but may incorporate the charge for use of the road network and amount to much more. Not based on road use costs. (b) May discriminate between foreign and domestic transporters (c) May discriminate between those with permits issued under bilateral agreements and those without such permits (d) Often discriminates between countries
(2) Charge for Use of Roads by Foreign Vehicle	√ or X	√ or X	X	(a) Not necessarily based on road use costs (b) Discriminates between foreign and domestic transporters (c) Discriminates between those with permits issued under bilateral agreements and those without such permits (d) Often discriminates between countries (e) Transporters exempted from payment make no contribution to road costs on the territoriality principle
(3) Roads or Bridge Tolls	√	√	√ or X	Scope is limited to bridges and motorways
(4) Fuel Taxes	√ or X	√	√ or X	(a) The level of fuel tax is usually too low to cover all costs imposed by heavy trucks (b) Special fuel charges for foreign vehicles are discriminatory
(5) Road User Charge	√ or X	√	√	(a) Does not discriminate between foreign and domestic transporters (b) May be a daily charge that does not vary with distance driven, but can vary with vehicle type
(6) Other Charges for Transport Services	X	√	X	(a) Charges by local authorities are sometimes unrelated to cost and, in some cases, are even illegal (b) Environmental charges are usually general charges which are not related to environmental impact (c) Insurance charges may be imposed due to the lack of mutual recognition of foreign insurance cover (d) Charges may be levied for miscellaneous services such as use of designated rest areas
<b>(B) For Abnormal Road Use</b>				
(1) Fees for Abnormal Vehicles and Loads	√	√	√	(a) Should only affect those few vehicles with loads that cannot be split to keep within the maximum limits (b) Different charges may apply to domestic and foreign vehicles
(2) Fees for Transport of Hazardous Goods and Other Purposes	√ or X	√	√	Should only affect those few vehicles that cannot be adapted to carry hazardous loads safely

Table A.3 Comparison of Types of Transit Charges Imposed in TRACECA Countries

Type of Charge	Armenia	Azerbaijan	Bulgaria	Georgia	Kazakhstan	Kyrgyzstan	Moldova	Romania	Tajikistan	Turkey	Turkmenistan	Ukraine	Uzbekistan
<b>(A) Charges for Normal Use of Roads</b>													
(1) Foreign Vehicle Permit Charge <sup>(a)</sup>	X	X	X	X	X	X	X	X	X	X	X	X	X
(2) Foreign Vehicle Road Use Charge		X	X	X			X	X		X			
(3) Roads or Bridge Tolls			X	X		X		X		X	X		
(4) Fuel Taxes	X	X	X	X	X	X	X	X	X	X	X	X	X
(5) Road User Charge								X				X	
(6) Environmental Charge	X					X							
(7) Local Authority Charge		X			X					X		X	
(8) Insurance Charge				X		X					X		X
(9) Miscellaneous Charges			X				X	X					
<b>(B) Charges for Abnormal Use of Roads</b>													
(1) Fees for Abnormal Vehicles and Loads	X	X	X	X	X		X	X	X	X	X	X	X
(2) Fees for Transport of Hazardous Goods and Other Purposes		X					X					X	
<b>Comments</b>	Environmental charge per truck (according to carrying capacity)		Transit charge for use of motorways plus charge for use of rest areas.	A fuel charge may be levied to compensate for the low fuel price in Georgia	It is government policy to abolish local authority charges on foreign vehicles	Foreign vehicles pay higher tunnel tolls than domestic vehicles.	Foreign trucks pay transit fees on a per vehicle basis, per km basis and per day	Foreign and domestic trucks pay the rovinelette road user charge on the		Foreign vehicles pay a charge at the border to the local authority	Foreign vehicles pay a fuel charge to compensate for the low fuel price	Foreign and domestic vehicles pay for international transport on	

NOTE

(a) May be just an administrative charge or may include, implicitly, a charge for road use

**Table A.4 Estimation of Transit Charges Imposed in TRACECA Countries - Loaded 38 tonne GVW Vehicle (USD per one way trip)**

Type of Charge	Armenia	Azerbaijan	Bulgaria	Georgia	Kazakhstan	Kyrgyzstan	Moldova	Romania	Tajikistan	Turkey	Turkmenistan	Ukraine	Uzbekistan
<b>Characteristic of Transit Trip</b>													
Length (km)	500	508	400	400	500	600	153	700	145	1,500	600	750	600
<b>Charges for Normal Use of Roads</b>													
(1) Foreign Vehicle Permit Charge	200 (0)	100 (0)	400 (0)	310 (0)	163 (0)	50 (0)		620 (0)	200 (0)		150 (150)		400 (0)
(2) Foreign Vehicle Transit Charge		120 (120)	160 (0)				63 (0)	612 (0)		570 (0)			
(3) Roads or Bridge Tolls			55 (55)	? (?)				15 (15)		35 (35)	85 (85)		
(4) Fuel Taxes	6 (6)	6 (6)	19 (19)	8 (8)	3 (3)	7 (7)	4 (4)	56 (56)	? (?)	180 (180)	96 (96)	7 (7)	17 (17)
(5) Road User Charge								16 (16)				25 (0)	
(6) Environmental Charge	27 (0)												
(7) Local Authority Charge		25 (25)								5 (5)		60 (60)	
(8) Insurance Charge				25 (25)							35 (35)		5 (5)
(9) Miscellaneous Charges													
<b>TOTAL CHARGE</b>	233 (6)	251 (151)	634 (74)	343 (33)	166 (3)	57 (7)	67 (4)	1,319 (87)	200 (0)	790 (220)	366 (366)	92 (67)	422 (22)
Charge per truck km	0.47 (0.01)	0.49 (0.30)	1.58 (0.18)	0.86 (0.08)	0.33 (0.01)	0.09 (0.01)	0.44 (0.02)	1.88 (0.12)	1.38 (0.00)	0.53 (0.15)	0.61 (0.61)	0.12 (0.09)	0.70 (0.03)
<b>Comments</b> The estimates are based on the typical transit routes shown here. The charges shown apply to transporters who do not possess road permits issued under bilateral agreements that exempt transporters from transit fees. The figures in brackets apply for holders of such permits.	Bagratashen – Meghri	Baku – Qirmizi Korpu	Burgas – Kalotina, Kapikule - Russe	Sadakhlo – Poti, Krasni Most/Poti, Krasni Most - Sarpi	Shymkent – Merke, Shymkent - Horgos	Merke /Georgievka - Torugart	Leusheni - Dubasari	Constanta–Arad, Giurgui–Siret. With 7 day Rognette issued for non-EURO trucks (2000-2004)	Kurkuk – Kanibadam. For non-CIS truck	Sarpi - Edime	Farap - Serahs	Odessa – Krakovcs/Chernigov	Alat – Gisht Kuprik/ Uzun/Bekobad, Termez - Uzun, Bekobad-Ghist

**Table A.5 Estimation of Transit Charges Imposed in TRACECA Countries - Unladen 38 tonne GVW Vehicle (USD per one way trip)**

Type of Charge	Armenia	Azerbaijan	Bulgaria	Georgia	Kazakhstan	Kyrgyzstan	Moldova	Romania	Tajikistan	Turkey	Turkmenistan	Ukraine	Uzbekistan
<b>Characteristic of Transit Trip</b>													
Length (km)	500	508	400	400	500	600	153	700	145	1,500	600	750	600
<b>Charges for Normal Use of Roads</b>													
(1) Foreign Vehicle Permit Charge	200 (0)	0 (0)	400 (0)	310 (0)	163 (0)	50 (0)		620 (0)	200 (0)		150 (150)		400 (0)
(2) Foreign Vehicle Transit Charge			160 (0)				63 (0)	258 (0)		120 (0)			
(3) Roads or Bridge Tolls			55 (55)	? (?)				15 (15)		35 (35)	85 (85)		
(4) Fuel Taxes	6 (6)	6 (6)	19 (19)	8 (8)	3 (3)	7 (7)	4 (4)	56 (56)	? (?)	180 (180)	96 (96)	7 (7)	17 (17)
(5) Road User Charge		120 (120)						16 (16)				4 (0)	
(6) Environmental Charge	27 (0)												
(7) Local Authority Charge		25 (25)								5 (5)		60 (60)	
(8) Insurance Charge				25 (25)							35 (35)		5 (5)
(9) Miscellaneous Charges													
<b>TOTAL CHARGE</b>	233 (6)	151 (151)	634 (74)	343 (33)	166 (3)	57 (7)	67 (4)	965 (87)	200 (0)	340 (220)	366 (366)	71 (67)	422 (22)
Charge per truck km	0.47 (0.01)	0.30 (0.30)	1.58 (0.18)	0.86 (0.08)	0.33 (0.01)	0.09 (0.01)	0.44 (0.02)	1.38 (0.11)	1.38 (0.00)	0.23 (0.15)	0.61 (0.61)	0.09 (0.09)	0.70 (0.03)
<b>Comments</b> The estimates are based on the typical transit routes shown here. The charges shown apply to transporters who do not possess road permits issued under bilateral agreements that exempt transporters from transit fees. The figures in brackets apply for holders of such permits.	Bagratashen - Meghri	Baku - Qilmizi Korpu	Burgas - Kalotina, Kapikule - Russe	Sadakhlo - Poti, Krasni Most/Poti, Krasni Most - Sarpi	Shymkent - Merke, Shymkent - Horgos	Merke /Georgievka - Torugart	Leusheni - Dubasari	Constanta-Arad, Giurgui-Siret. With 7 day Rovignette issued for non-EURO truck (2 axle)	Kurkuk - Kanibadam. For non-CIS truck	Sarpi - Edime	Farap - Serahs	Odessa - Krakovecs/Chemigov	Alat - Gisht Kuprik/ Uzun/Bekobad, Termez - Uzun, Bekobad-Ghist

**Appendix B**

**Road Transport Operator Questionnaire**



**Table B.1 Reports by Operators of Insufficient Number of Road Transport Permits Under Bilateral Agreements**

	Armenia	Azerbaijan	Bulgaria	Georgia	Kazakstan	Kyrgyzstan	Moldova	Romania	Tajikistan	Turkey	Turkmenistan	Ukraine	Uzbekistan
<b>Countries Reported to Exchange Insufficient Permits</b>													
Armenia													
Azerbaijan										X		X	
Bulgaria							X	X					
Georgia		X						X		X		X	
Kazakstan		X				X	X		X	X		X	
Kyrgyzstan					X								
Moldova													
Romania					X					X			
Tajikistan													
Turkey					X		X						
Turkmenistan						X							
Ukraine							X	X					
Uzbekistan					X					X			
<b>Comments</b>					Not enough Third Country permits for Kyrgyzstan (so USD 1,000 is paid for Third Country permit). Not enough entry permits for other countries.		Insufficient number of permits of all types, including permits for third country transport and for entry of empty vehicle to collect load.	Shortages often occur during the fourth quarter of the year				Shortage of third country permits for transport between TRACECA countries and Europe	

Table B.2 Reports by Road Users and Operators of Unjustifiable Fees in TRACECA Region

	Armenia	Azerbaijan	Bulgaria	Georgia	Kazakhstan	Kyrgyzstan	Moldova	Romania	Tajikistan	Turkey	Turkmenistan	Ukraine	Uzbekistan
<b>Countries Reported to Impose Unjustifiable Fees</b>													
Armenia													
Azerbaijan												X	
Bulgaria													
Georgia	X	X										X	
Kazakhstan		X				X			X	X	X	X	X
Kyrgyzstan					X					X			
Moldova													
Romania													
Tajikistan													
Turkey													
Turkmenistan										X			X
Ukraine							X						
Uzbekistan									X	X	X	X	
<b>Comments</b>	Permit fees are always charged in Georgia because the bilateral agreement is not being implemented	In Georgia: High foreign vehicle permit fee (USD 300), and insurance charge. In Kazakhstan: charges by local authority			High third country permit fee.	Unofficial payments to police. Unofficial payments to oblast officials at weigh stations	Oblast fees		In Uzbekistan: transit fee and insurance fee are excessive, especially for local traffic, and an ecology charge is levied. In Kazakhstan: Insurance fee is charged without receipt	In Turkmenistan: insurance fee, fuel price adjustment, road permit. In Kazakhstan: overweight fines. In Uzbekistan: penalties for staying longer than three	Unofficial payments	High third country permit fees (now reduced in Kazakhstan). High cost of transit fees in Uzbekistan	Oblasts impose fees on operators along Almaty – Aktyubinsk – Russia road. Other unofficial payments in Azerbaijan. High fees in Turkmenistan.

**A2**

# **TRACECA: Unified Policy on Transit Fees and Tariffs**

## **Road Transit Fee Policy Options**

Scott Wilson  
October 2002

## Table of Contents

<b>1. Introduction</b>	<b>1</b>
<b>2. European Union</b>	<b>1</b>
<b>3. Other European (non-EU) Countries</b>	<b>3</b>
<b>4. Southeast European Cooperative Initiative (SECI)</b>	<b>6</b>
<b>5. Possible Options</b>	<b>7</b>

## 1. Introduction

This paper reviews international experience in road transport charging and development of unified policies for transit traffic, focussing on the initiatives being developed in Europe. The latest initiatives are described in:

- For the European Union (EU): various directives and adopted policies, most recently summarised in the EU White Paper “Fair Payment for Infrastructure Use” (1998).
- For non-EU countries in Europe: including
  - members of PHARE - see “Road Transport Charges”, Draft Final Report, PHARE Programme ZZ-9610 (Contract 98-0472), NEI, November 1999, and
  - members of the European Conference of Ministers of Transport (ECMT) - see Resolution No. 00/3 on “Charges and Taxes in Transport, Particularly in International Road Haulage”, CEMT/CM(2000)13/FINAL, and “Harmonization in Road Transport. Efficient Transport Taxes and Charges: Conclusions and Recommendations”, CEMT/CM(2000)14/FINAL.
- For the countries within the Southeast European Cooperative Initiative (SECI): the documents presented at the Regional Road Transport Committee (RRTC) meeting of the Group of Experts on Charging Policies (9-10 October 2001).

Based on this review, the broad options for developing a unified policy on transit fees in the TRACECA region are compared.

## 2. European Union

Road transport operators are able to compete freely on both international and domestic routes (that is, no permits are required for making trips within the EU, and cabotage is allowed without restriction provided minimum regulatory standards are met). This applies both to “own account” and to “for hire” services.

Current EU policy for road user charging is based on the following principles:

- Fair and efficient pricing: road charges should be related to costs incurred by different road users, providing a level playing field for competition,
- user pays: infrastructure costs are met from revenues of user charges (mainly fuel and vehicle charges and motorway tolls), on a sustainable, full cost-recovery basis,
- territoriality: road users should ideally be charged for the costs that they incur at the place where the costs are incurred (so tolls and fuel taxes are preferred to annual vehicle taxes that are levied in the country of registration),
- encouragement of environmentally friendly vehicles (higher taxes on polluting fuels and vehicles)

EU countries have freedom to implement their own road charging policies provided that they are consistent with strict and detailed guidelines that are developed in accordance with these policy principles. This results in a considerable variety of road user charging systems – all rely mainly on fuel and annual vehicle taxes (which in most cases produce almost all revenue

from road users), but policy about additional user charges varies - only some use motorway tolls, others use access charges and some have no additional charges.

Since free competition between transport operators is allowed within the EU, there is considerable concern about ensuring fair competition, within the road transport sub sector and between road, rail and other modes. This has resulted in moves towards harmonizing of road transport taxation through detailed guidelines for different taxes and charges:

- minimum levels of motor fuel excise duty: to provide minimum levels of cost recovery (ECU 0.245 per litre for diesel)
- minimum levels of annual vehicle tax (only for trucks with Gross Vehicle Weight (GVW) over 12 tonnes): to provide minimum levels of cost recovery (for trucks with varying weight, axle configuration and suspension, and level of emissions (about EUR 700 for a modern 40 tonne GVW truck),
- road tolls should be based on costs of facility: include full costs of construction, development, maintenance and operation (only for limited access roads that offer alternative to toll-free roads),
- network access charges should be based on costs: varying with the length of time during which access is provided (price of Euro vignettes should vary with number of days)
- avoid additionality: countries that charge motorway tolls cannot use vignette or other types of motorway access charges,
- avoid discrimination between EU operators according to nationality: in each EU country, trucks from any other EU country should pay identical road user charges (so applying foreign vehicle transit fees on trucks from other EU countries is illegal).

There is also concern in the EU about road users covering the full marginal social cost of road transport. This could involve new or modified charges in future which (a) reflect impact of road use on congestion, accident and environmental impacts, and (b) internalise through use charges these external costs on society.

Such an approach is difficult to implement because it raises pricing issues, such as

- how to vary the road user charge with time and place – so that the cost of using an urban road at peak times is much more than the cost of use of a non-urban road,
- how to develop affordable and workable new technologies for implementing new charging systems (ideally must apply to all vehicles of all ages and from all countries),
- how to gain public support for new charging systems (concern about new charges in cities and privacy issues), and
- how to achieve an adequate level of enforcement.

Much of the debate centres around charging for use of cars that cause most congestion, accidents and environmental impact. Consideration is being given to heavy vehicle charging systems that monitor truck movements and vary charges with vehicle weight, axle configuration and distance travelled on different types of roads.

The long-term goal in the EU is a uniform charging system in which users pay (a) in accordance with the costs that they incur, (b) at the place where those costs are incurred, and (c) without discrimination between vehicles from different countries. However such systems are several years away from implementation.



### 3. Other European (non-EU) Countries

There has been little development of a unified approach to road charging in other European countries in the past. However the situation is rapidly changing due to:

- the interest amongst many countries in joining the EU, which requires adoption in the short or medium term of the harmonised transport policies of the EU, and
- the efforts of the international agencies such as PHARE (in eastern Europe) and ECMT (throughout most of Europe, including the EU) to develop harmonised policies.

Most international trucking between non-EU countries still takes place under the terms of bilateral agreements. However an important innovation has been the ECMT multilateral permit system that promotes movements by truck from any ECMT country between any two other ECMT countries (covering both bilateral and third country movements, including any transit movements).

Although a range of road charging policies apply in different non-EU countries, all rely mainly on fuel and vehicle taxes for charging for road use. The policies used in PHARE countries are summarised in Table 3.1. The road charging situation in these countries is rapidly changing, and although the fuel and vehicle tax levels have varied significantly in the past (as shown in Figure 3.1), and have not been based on the same rational criteria, the levels of tax are steadily moving towards EU minimum levels.

Under these conditions the following observations can be made:

- cost recovery by road users is over 100% when measured as the ratio of road user revenue to the required expenditure for road maintenance and repair – that is, road users pay more than is required to cover the costs of providing the roads, but
- actual expenditure on roads is less than that required for road maintenance and repair – that is, some of the revenue from road users is used for non-road purposes resulting in a financing deficit for the highway authority responsible for road provision.

This contrasts with experience in many TRACECA countries<sup>1</sup>, where cost recovery by road users is usually much less than 100% because of low road user charges, and the actual expenditure on roads is even less than this. The financing deficit in most TRACECA countries is therefore particularly low due to the low level of road user charges.

Road user charges vary between European countries partly because of different road provision costs in each country and also because of different policies on cost recovery (especially the level of annual vehicle tax). Consequently it has been found that hauliers from some countries pay up to three times the road user charges as hauliers from other countries. This demonstrates the importance of replacing charges based on nationality of vehicle (such as annual vehicle taxes) with other types of charges (such as fuel tax, tolls and vignettes) which are levied without discriminating between nationality of vehicle.

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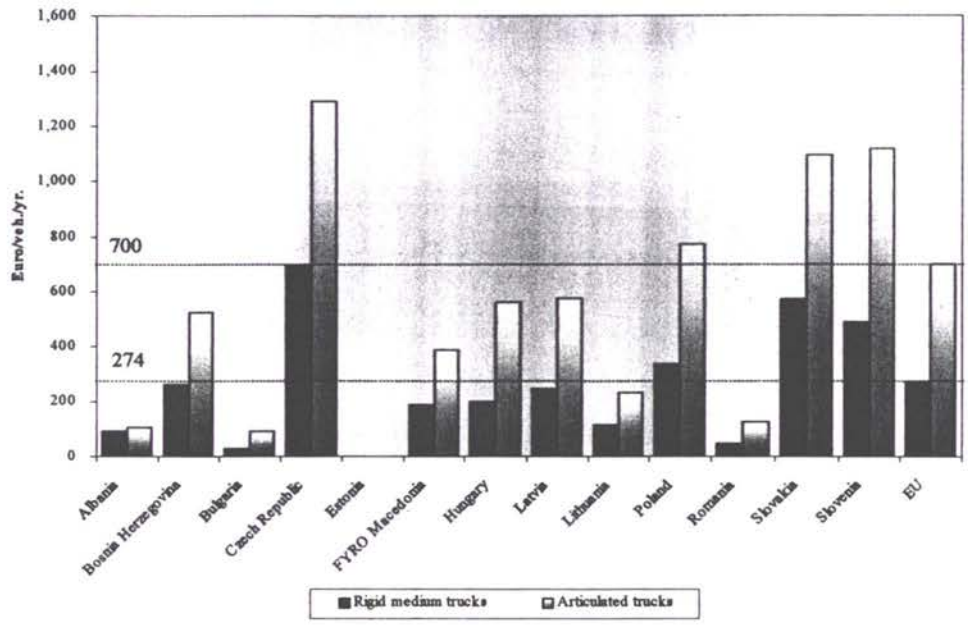
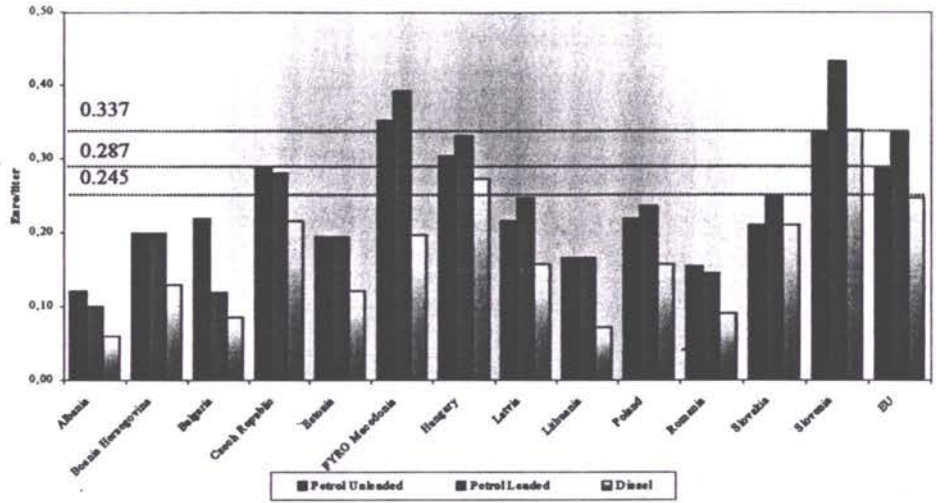
<sup>1</sup> Study of the Cost and Financing of Road Usage, TRACECA Project TELREG9305 Report, Kocks Consult, June 1997

Table 3.1 Taxes and charges in Phare countries

<p><b>Fuel taxation</b></p> <ul style="list-style-type: none"> <li>◦ Fuel excise duties and/or special fuel taxes are levied in Phare countries.</li> <li>◦ Only one Phare country complies with the EU Directive minimum levels for both petrol (leaded, unleaded) and diesel.</li> <li>◦ Fuel taxes have increased considerably in most Phare countries during the past few years.</li> <li>◦ Consequently, fuel prices went up as well in Phare countries, but the level is, on the average, still 2/3 of the EU.</li> <li>◦ Through tax reduction on unleaded petrol, the use of environmentally-friendly fuel is promoted, but in a few Phare countries the price of unleaded is still higher.</li> <li>◦ Fuel taxation still provides both in the EU and CEEC (and elsewhere) the bulk of revenues from road use. It has the following advantages (1) simple to collect (refinery, customs), (2) related to the overall volume of use, (3) territoriality principle respected in theory but, in practice, the country of the purchase of the fuel can be different from the country where the fuel (and consequently the road infrastructure) is actually used. Fuel taxes have the disadvantage of having a loose relationship with the road damage caused by different types of vehicles, since road damage is related to vehicle characteristics such as axle load, weight, suspension type, which are necessarily reflected in fuel consumption.</li> </ul> <p><b>Vehicle taxation</b></p> <ul style="list-style-type: none"> <li>◦ In this study, the collective term for annual tax for vehicle ownership.</li> <li>◦ Advantage: possibility to differentiate as to tax base: vehicle weight, number of axles, type of suspension, friendly vehicles (EURO I,II).</li> <li>◦ Disadvantage: not traffic (volume) related, collected according to nationality principle.</li> <li>◦ In Phare countries there is a wide variation in tax base and level: <ul style="list-style-type: none"> <li>- tax base usually different from EU Directive;</li> <li>- in all countries less progression with vehicle weight;</li> <li>- in most countries the level is substantially lower.</li> </ul> </li> <li>◦ Generally it is considered difficult to approximate to the rather complex EU harmonised system of (minimum values) for vehicle taxes.</li> <li>◦ In a few Phare countries, vehicle taxes are collected at the local level and the destination of the revenues is (totally or partially) the municipality. It is not easy to change this practice.</li> </ul> <p><b>Import Duties</b></p> <ul style="list-style-type: none"> <li>◦ Only considered RTC to the extent that they are in excess of normal/overall duties.</li> <li>◦ Have been decreasing, RTC revenues modest.</li> </ul> <p><b>Transit fees</b></p> <ul style="list-style-type: none"> <li>◦ In force in all Phare countries.</li> <li>◦ In principle a discriminatory measure.</li> <li>◦ In practice little impact on revenues because of bilateral arrangements.</li> </ul> <p><b>Weights and dimensions</b></p> <ul style="list-style-type: none"> <li>◦ Most Phare countries levy special charges for extra-dimensional vehicles</li> <li>◦ Enforcement usually low, revenues small</li> </ul> <p><b>Vignettes</b></p> <ul style="list-style-type: none"> <li>◦ Few Phare countries levy user charges through vignettes.</li> <li>◦ The systems are not (yet) time dependent</li> <li>◦ To date, the levels and revenues are low.</li> </ul> <p><b>Tolls</b></p> <ul style="list-style-type: none"> <li>◦ There are two Phare countries applying tolls on network scale.</li> <li>◦ A few Phare countries are levying tolls on certain bridges.</li> <li>◦ Toll revenues should be dedicated to the cost of construction/ maintenance of the road section for which they are levied (some as part of a concession).</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>◦ There is a series of special taxes/user charges, sometimes for very specific purposes with very little revenues at sometimes very high transition cost.</li> </ul>
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SOURCE: "Road Transport Charges", Draft Final Report, PHARE Programme ZZ-9610 (Contract 98-0472), NEI, November 1999

**Figure 3.1 Fuel and vehicle taxation (1 January 1998, Euro)**



Reflecting the need to continue to harmonise road user charges in Europe, members of ECMT have recently agreed<sup>2</sup> to move towards a system of road user charges that:

- phases out the bilateral system of road transport agreements which is inherently discriminatory (because it exempts some operators from paying fees that have to be paid by other operators) and replaces it with improved multilateral agreements (such as the ECMT Multilateral Permit system that already exists as one option for operators),
- replaces nationality-based charges such as annual vehicle taxes with territorially-based charges such as tolls, daily access charges (or vignettes) or even ultimately some kind of charge that varies with distance and weight of axles, that are paid on exactly the same basis by both foreign hauliers and domestic hauliers,
- simplifies the systems of charges on international transport, by reducing the number and variety of charges, as a simple and practical step to reduce the scope for discrimination between hauliers,
- allows possible control over monopolistic behaviour by countries whose roads are used extensively for transit traffic and who may wish to increase transit charges substantially above the level of road use costs,
- promotes improvements in tax collection efficiency (e.g. in Russia)

#### **4. Southeast European Cooperative Initiative (SECI)**

Recent work carried out by the Group of Experts on Charging Policies, under the Regional Road Transport Committee (RRTC) has identified that there has been little harmonization of road user charge policy in the countries of south-eastern Europe (the Balkan states and the TRACECA countries of Moldova, Romania, Bulgaria and Turkey)<sup>3</sup>. However there has been a noticeable trend towards harmonisation with EU policy and this is expected to continue.

A variety of road transport charges are levied in SECI countries, including:

- fuel excise duties,
- vehicle taxation,
- transit fees,
- charges on abnormal transport (excess size and weight),
- semi-vignette applications,
- tolls,
- other specific taxes.

Cost recovery ratios are high – that is road users contribute more revenue than the cost of maintenance. However not all the revenue from road users is spent on the roads and this contributes to under funding of roads.

There is a high discriminatory element in the road charging systems of most SECI countries because they employ high transit fees to charge foreign trucks for use of the roads. The level of transit fees varies considerably between countries – the highest rate is 58 times the lowest,

<sup>2</sup> Resolution No.00/3 on Charges and Taxes in Transport Particularly in International Road Haulage, CEMT/CM(2000)13/FINAL

<sup>3</sup> Fiscal Harmonisation in Road Transport in SECI Countries, Draft Report, 26 March 2000, UND, Turkey.

as shown in Figure 4.1 - indicating an absence of harmonisation. Clearly the charges are not based on costs.

**Table 4.1 Comparison of Transit Charges of SECI Countries**

Country	Typical Charge (EURO per km)
Albania	0.79
Bosnia and Herzegovina	0.16
Bulgaria	0.00
Croatia	0.16
Hungary	0.45
Macedonia	0.00
Moldova	0.20
Romania	0.92
Slovenia	1.96
Greece	0.03
Turkey	0.41

NOTE (1) For transport involving the most frequently used SECI country border, for a 40 tonne GVW vehicle possessing a road permit

SOURCE Fiscal Harmonisation in Road Transport in SECI Countries, Draft Report, 26 March 2000, UND, Turkey

The SECI members are now examining alternative road charging policies that would meet the requirements set out in their Memorandum of Understanding (MOU) dated 28 April 1999, which states that the parties agree to take all appropriate steps towards rationalisation and gradual convergence of charging policies based on the following principles:

- transparency,
- cost-relatedness,
- non-discrimination,
- clarity,
- efficiency.

The road user charge systems of each SECI member are now being assessed in terms of these principles, in order to identify what actions could be taken to meet the terms of the MOU. In order to improve cost-relatedness, the SECI Group of Experts on Charging Policies are therefore studying ways of defining a method for estimating the costs of road use in each country using a common approach. The approach adopted is based on the HDM model developed by the World Bank.

## 5. Possible Options

Possible policy options for transit fees should be considered in relation to the policy for authorising or permitting international road transport.

TRANSIT FEE POLICY	INTERNATIONAL ROAD TRANSPORT PERMIT POLICY	
	No permits or quotas	Imposition of permit quotas
Non cost-based fees (with exemptions for permit holders)	OPTION A.1 Adopted on a bilateral basis between a few TRACECA countries (e.g. between Moldova and Romania, and between Kyrgyzstan and Tajikistan/Uzbekistan)	OPTION A.2 Adopted on a bilateral basis by most TRACECA countries
Cost-based transit fees (with exemptions for permit holders)	OPTION B.1 Not adopted in TRACECA countries	OPTION B.2 Not adopted in TRACECA countries
Abolish all transit fees (between TRACECA countries)	OPTION C.1 Not adopted in TRACECA countries	OPTION C.2 Being adopted in Ukraine and Romania

Based on this table, possible alternative approaches to developing a unified policy for transit fees for transport between TRACECA countries<sup>4</sup> consist of the following.

### APPROACH I

Leave transit fee policy unchanged but remove permit quotas or permit requirements so that transporters between TRACECA countries no longer have to pay transit fees (that is, apply OPTION A.1 more generally). Such an approach is feasible and would certainly enable the transit fee policy to be based on non-discrimination (at least within TRACECA) and to be made more transparent. However there would be the danger that under current national policies of charging for road use, most international trucks would fail to pay for the costs of road use, through other charges such as fuel and vehicle taxes. Revenue for road maintenance would be reduced unless alternative sources are found.

### APPROACH II

Revise transit fees so that they are based on the costs of road user (OPTIONS B.1 and B.2). Even without any reform of permit policies, this would be a practical step towards avoiding discouraging efficient road transport services in the TRACECA corridor. Even if transporters could not obtain permits they would not be penalised by the excessively high fees that apply at present. This would encourage more use of the TRACECA corridor. Discrimination between operators would be reduced, although not eliminated (the difference in charges paid by permit-holders and non-permit holders would be considerably reduced, in compliance with the aims of the TRACECA MLA). The danger with this policy is that it would not tackle the problem of transparency, because, in order to base transit fees on costs incurred by different vehicles making different lengths of trips, the structure of transit charges could become more complicated. Revenue for road maintenance would reduce from revising transit fees on the costs of road use, so alternative sources of finance would have to be found. However transit fees generate relatively small levels of national revenue so this is may not be a major obstacle.

### APPROACH III

Abolishing all transit fees that are targeted only at foreign vehicles is at the core of EU policy, and this policy is being progressively adopted by neighbouring countries, including

<sup>4</sup> Separate policies would continue to apply between TRACECA and non-TRACECA countries in accordance with bilateral and multilateral agreements.

TRACECA countries in Europe. Such a policy removes discrimination between domestic and foreign operators and can simplify the system of charges paid by foreign vehicles (either on a per km or a per day basis). However under the current policies of charging for road use in most TRACECA countries, foreign vehicles would not pay for the cost of road use and revenue for road maintenance could reduce. The system of charging for road use has to be fundamentally reformed, perhaps through introducing a vignette system which is paid for on the same basis by both domestic and foreign vehicles, to avoid such problems.

Although III could be considered as an ideal approach, it would be extremely difficult to implement in the short-term because the TRACECA countries would need to revise their national systems of charging for road use, including the introduction of new types of charges. This approach can generally be ruled out for most TRACECA countries for the foreseeable future.

Approach I offers many advantages, especially to neighbouring countries that wish to encourage trade and transport across their national boundaries. However in overall terms, it probably would not reduce discrimination and unjustifiable transit fees, nor increase transparency. This is because there would be a tendency for strict permit requirements and high charges to remain targeted at the transporters from TRACECA countries which play a major role in international transport and are perceived as threats to national truck operators.

Approach II offers the possibility of a truly multilateral and practical approach to reform of transit fees. It would provide a policy framework based on a more rational, economic system of charges and, if focussed initially on removing those charges which deviate most from road use costs, could achieve significant impacts with relatively few steps. This kind of approach is currently being considered for implementation within the SECI countries.

None of these alternative approaches prevent the TRACECA countries from taking simple, practical steps towards a more unified transit fee policy, through simplifying the current systems of charges. Most TRACECA countries impose several charges on foreign vehicles, some of which generate little revenue. The basis for calculating certain charges is sometimes not clear. Under any of the above approaches, simplification of the system of charges, by abolishing charges that duplicate other charges and clarifying the way that the charges are calculated, could make a significant impact on transparency, with little or no impact on revenue.

**A3**



# **TRACECA: Unified Policy on Transit Fees and Tariffs**

## **Road Transit Fee Policy Proposals**

Scott Wilson  
May 2003

## Table of Contents

<b>1.</b>	<b>Introduction</b>	<b>3</b>
1.1	<i>Background</i>	3
1.2	<i>Agreed Outline of Policy</i>	3
1.3	<i>Developing The Agreed Approach</i>	4
1.4	<i>Scope of this Working Paper</i>	6
<b>2.</b>	<b>Framework for Calculating Transit Fees</b>	<b>7</b>
2.1	<i>Introduction</i>	7
2.2	<i>Cost Coverage Issues</i>	7
2.2.1	Characteristics of Costs	7
2.2.2	Possible Forms of Transit Fees and Charges	11
2.2.3	Level of Transit Fees	12
2.3	<i>Estimation of Justifiable Level of Transit Fee</i>	14
2.3.1	Normal Road Maintenance Costs	14
2.3.2	Additional Costs of Road Rehabilitation	17
2.4	<i>Summary of Framework Proposals</i>	19
<b>3.</b>	<b>Implementation Options</b>	<b>21</b>
3.1	<i>Introduction</i>	21
3.2	<i>Possible Actions for Implementing a Unified Transit Fee Policy</i>	23
3.2.1	Armenia	23
3.2.2	Azerbaijan	24
3.2.3	Bulgaria	26
3.2.4	Georgia	27
3.2.5	Kazakstan	28
3.2.6	Kyrgyz Republic	29
3.2.7	Moldova	30
3.2.8	Romania	31
3.2.9	Tajikistan	32
3.2.10	Turkey	33
3.2.11	Turkmenistan	34
3.2.12	Ukraine	34
3.2.13	Uzbekistan	35
<b>Appendix A</b>	<b>Estimation of Transit Charges Imposed in TRACECA Countries – 38 tonne GVW Vehicle (USD per one way trip)</b>	<b>37</b>

## 1. Introduction

### 1.1 Background

The first meeting of the Transit Fees and Tariffs Working Group (TFTWG) for roads took place on 27 and 28 November 2002 in Baku. The meeting was attended by representatives from all TRACECA countries except Turkmenistan, and there was unanimous agreement that to meet the problems facing international road transport in the TRACECA region, solutions have to be developed through regional cooperation, in accordance with the TRACECA General Multilateral Agreement (MLA) and other relevant international agreements.

It was agreed that further meetings should take place to discuss a draft policy on road transit fees prepared by the Contractor (Scott Wilson consultants). The working group members resolved to work with the Contractor to supply information and assist in further discussions with relevant organisations concerned with transit fee issues, within the framework of country specific working groups established under the TRACECA National Secretaries.

This paper contains the draft policy proposals which the working group members requested the Contractor to produce, to enable further discussions to take place on developing the unified policy on transit fees.

### 1.2 Agreed Outline of Policy

As described in the TFTWG protocol of the first meeting (Points 3 and 4), the TFTWG has unanimously agreed the basis for the unified policy for road transit fees. In particular it was agreed that, in accordance with the MLA, charges should be:

- (i) related to costs of service provision (for example, the costs of road use, for maintenance and operation of the road network),
- (ii) be levied at the point of use, and
- (iii) be fair (not discriminating between operators) and clear (transparent).

It was agreed that, as described in a discussion document<sup>1</sup> containing an analysis of a draft Inventory of Transit Fees and Permits, the current system of charging falls short of these goals. In particular the charges (a) are effectively charges on access to the market rather than charges for use of roads, (b) in many TRACECA countries do not vary with distance and characteristics of truck, (c) discriminate between different operators, and (d) are often unclear due to untimely notification of tariffs and proposed changes.

Important decisions were made by the TFTWG about the content of the draft unified policy. In terms of overall approach, three alternatives were considered<sup>2</sup> for transit fees that are aimed at foreign transporters:

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<sup>1</sup> Priority Issues Concerning Road Transit Fees, TRACECA Unified Policy on Transit Fees and Tariffs Draft Working Paper, 4 October 2002

<sup>2</sup> Road Transit Fee Policy Options, TRACECA Unified Policy on Transit Fees and Tariffs Draft Working Paper, 27 October 2002.

Alternative I: Leave transit fee policy unchanged but remove permit quotas and requirements so that foreign transporters no longer have to pay transit fees,

Alternative II: Revise transit fees so that they are based on the costs of road use (without necessarily reforming permit policy)

Alternative III: Abolish transit fees aimed exclusively at foreign transporters and replace these with road user charges that are paid by both foreign and domestic transporters on the same basis.

Although Alternative III can be seen as an ideal approach, and is in accordance with EU policy, it requires a fundamental reform of road user charging policies in most TRACECA countries and is therefore not considered to be a practical basis for a unified policy in the short term. Alternative I is also not considered to be realistic because of differences in economic circumstances of TRACECA countries and the desire by governments to protect their national road transport industries. To meet the goals of transit fee policy it was agreed that Alternative II should be adopted as the common approach to defining the unified transit fee policy. However it was recognised that this should not preclude (a) reforms in road transport permit policy where this can reduce barriers to efficiency transport, and (b) progress by some TRACECA countries in pursuing Alternative III as part of their broad strategy to harmonise economic and transport policies with those of the EU.

It was therefore agreed that the Contractor should develop a draft unified policy for further discussion, based on

- revisions in the short-term of the existing transit fee systems rather than on fundamental reforms of road user charging policies, which can only be achieved in the longer term,
- the principles of cost-relatedness, non-discrimination and transparency, in order to develop a fair transit system without excessively high charges, which can attract traffic along the TRACECA corridor, and
- an approach that bases transit fees on costs of service provision (for example, road maintenance), removes unjustifiable fees (for example fees charged by local authorities) and simplifies the system of charges to make them more transparent.

### 1.3 Developing The Agreed Approach

When assessing transit fees, account has to be taken of all charges paid by foreign vehicles. As described in the previous Working Paper<sup>3</sup>, these can include:

- charges aimed at foreign vehicles (permit fees, various kinds of transit and other charges), and
- charges paid by both foreign and domestic vehicles (tolls, fuel taxes and charges, and road user charges).

These transit fees are generally paid not only by vehicles transiting through the country but also by vehicles making import and export journeys that terminate in the country (although often on a slightly different basis). Not included are charges for abnormal use of roads (due to excessive size or weight of loads) which are generally paid by both foreign and domestic

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<sup>3</sup> Section 3 of Priority Issues Concerning Road Transit Fees, TRACECA UPTFT Draft Working Paper, 4 October 2002

vehicles - since the abnormal charges are usually only levied in exceptional cases they should make little significant contribution to the cost of most transit journeys<sup>4</sup>.

This study is concerned with those charges aimed at foreign transit vehicles, and the main focus of the present Working Paper is how to define a framework, which could be incorporated into the unified transit fee policy, for adjusting the structure and level of transit charges:

- to make them more related to road use costs, and
- to reduce discrimination between charges levied on different transporters.

As described in the previous Working Paper, in most TRACECA countries the main transit charge is usually a charge for market access rather than a charge for road use, and it is neither related to the costs of road use, nor to the charges paid by domestic transporters.

As illustrated in Figure 1, there is a possible conflict in pursuing these two different objectives:

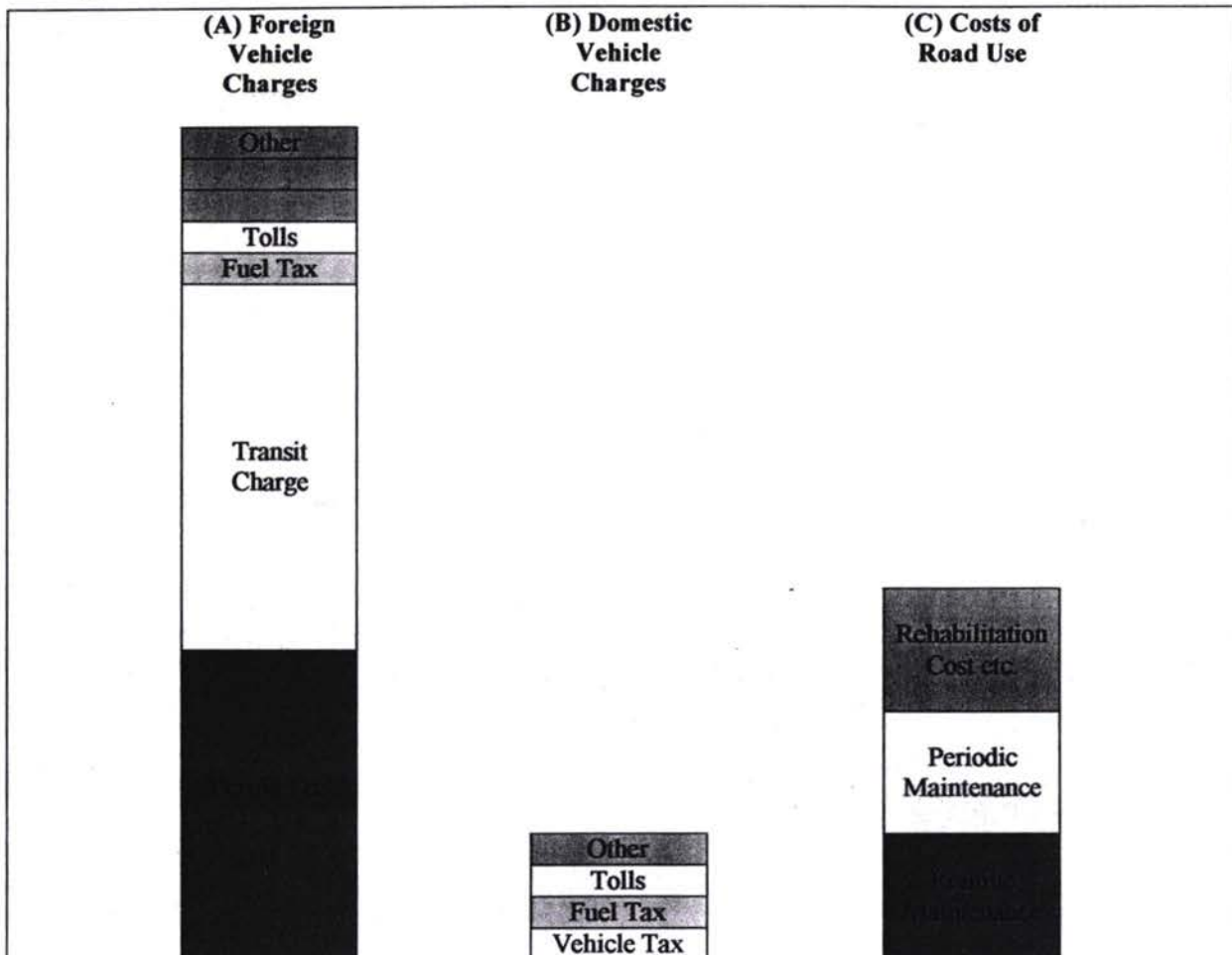
- Increasing cost-relatedness requires reducing transit fees so that the overall charge paid by foreign vehicles for use of a country's roads (Column A) is more equal to the costs of road use (Column C): according to the estimates described in the previous Working Paper, the total transit fee paid by a loaded 38 tonne GVW truck is usually between USD 40 and 90 Cents per vehicle km, which is much higher than the costs of road use for such vehicles (about USD 6 Cents per vehicle km)<sup>5</sup>, so improving cost-relatedness would require a reduction in transit fee from USD 40-90 Cents per km to USD 6 Cents per km.
- Reducing discrimination requires reducing transit fees so that the sum of the fees and charges paid by foreign transporters in the country (Column A) is more equal to the sum of fees and charges paid by a domestic transporter using the same size and type of vehicle on the same trip (Column B): road user charges paid by large domestic trucks in CIS countries are typically only USD 1 Cent per km due to the low levels of fuel and vehicle taxes, and the main reason for the lower charge paid by domestic trucks is the low annual vehicle tax compared to the transit fees – for example, in CIS countries the annual vehicle charge is rarely higher than USD 100 which is equivalent to only USD 0.2 Cents per km for a truck operating 50,000 km – so reducing discrimination would require a reduction in transit fee from USD 40-90 Cents per km to only USD 1 Cents per km.

Since the charges paid by domestic transporters (Column B) are significantly less than the costs of road use (Column C), reducing transit fees to balance costs of road use is not likely to remove discrimination. The appropriate level of transit fees in Column A depends on how to balance the two objectives of cost-relatedness and discrimination. This issue is explored in more detail later in this Working Paper.

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<sup>4</sup> It is reported that in some countries such as Kazakstan, this kind of abnormal charge is charged as a matter of routine, but it is assumed that in accordance with international best practice such practices are phased out.

<sup>5</sup> See Table A.4 and Section 6 of Priority Issues Concerning Road Transit Fees, TRACECA UPTFT Draft Working Paper, 4 October 2002

**Figure 1 Illustration of Relative Road Use Charges and Costs for Trucks (per vehicle km)**

NOTE (1) For illustration purposes, only approximate relative values are shown

SOURCE Consultants' estimate based on results in Priority Issues Concerning Road Transit Fees, TRACECA UPTFT Draft Working Paper, 4 October 2002

## 1.4 Scope of this Working Paper

To provide a basis for further discussions, this working paper examines in Section 2, several key questions which arise when developing a unified framework for calculating transit fees, and makes suggestions for the possible answers. Then use is made of available information to indicate the approximate level of transit fees in TRACECA countries which would be justified according to the framework.

Attention is focused on the estimation of road use costs attributable to heavy trucks because this is crucial to setting transit fees that are more closely related to costs, reduce discrimination and are simpler to apply. Particular attention is given to road use costs in CIS countries because<sup>6</sup>:

- excessively high transit fees in these countries are the main contributors to economic losses in the TRACECA region caused by current transit fee systems, and

<sup>6</sup> See Section 6 of Priority Issues Concerning Road Transit Fees, TRACECA UPTFT Draft Working Paper, 4 October 2002.

- transit fees in these countries are particularly high in relation to road user charges for domestic vehicles, and so they have a greater discriminatory effect than in other countries.

These results are then used in Section 3 to make suggestions how this policy could be implemented in each country, taking account of a number of agreements already reached during the first TFTWG for roads, concerning the goals, principles and scope of the unified transit fee policy. These suggestions are made in order to provide a basis for further discussion about the unified policy and its implementation.

## 2. Framework for Calculating Transit Fees

### 2.1 Introduction

This section of the working paper analyses the nature of road use costs and describes the issues raised when defining a unified framework for foreign vehicle transit fees, to improve cost-relatedness and remove discrimination. A number of policy questions are raised and possible answers are given in order to provide a basis for further discussion.

Then use is made of previous work on analysing road use costs in TRACECA countries to indicate how these costs can be approximately estimated in each country in accordance with this unified framework.

### 2.2 Cost Coverage Issues

#### 2.2.1 CHARACTERISTICS OF COSTS

As described in the previous working paper<sup>7</sup>, road users incur a range of types of costs – costs of maintaining and developing the infrastructure, congestion costs, accident costs and environmental costs. This paper focuses on the first of these types of costs because in most TRACECA countries these are the most crucial to consider when setting transit fee policy.

The costs of providing unit length of road depend on many factors such as traffic flow, axle loadings of vehicles, strength of pavement, and weather conditions. The costs of maintaining and developing infrastructure can be considered as either fixed (independent of traffic level) or variable (varying with either vehicle flow or with the axle loadings imposed on the road<sup>8</sup>). They can be estimated from the unit costs and frequencies of various types of interventions required to maintain the road, which are conventionally defined as:

- routine maintenance (carried out annually or even more frequently, usually on a small scale – for example drain clearance, road sign cleaning, winter maintenance),

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<sup>7</sup> See Section 5.3 of Priority Issues Concerning Road Transit Fees, TRACECA UPTFT Draft Working Paper, 4 October 2002.

<sup>8</sup> Conventionally the loading is measured in terms of ESALs, usually defined for an axle as  $(AL/8.16)^4$ , where AL is the axle weight in tonne and 8.16 is a standard international axle weight.

- periodic maintenance (major works planned to be carried out less often – for example resealing pavements, resurfacing or renewal of overlays), and
- rehabilitation or reconstruction (major works which only occur irregularly and incur substantial capital investment).

The costs of road maintenance vary between TRACECA countries according to local conditions and unit prices of maintenance works. Based on international experience for a typical main road with two lanes, carrying 1,000 vehicles per day, the normal annual maintenance figures for one km can be approximately estimated as follows.

- (1) Routine maintenance costs would incur expenditure of about USD 2,000 per km per year (including winter maintenance),
- (2) Periodic maintenance over a 15 year pavement life could involve a reseal after five years costing USD 15,000 (USD 1,000 per km per year) plus renewal of the pavement overlay after ten years, costing USD 75,000 (USD 5,000 per km per year),
- (3) Costs for bridges and other items would add an extra 10% to these costs.

Based on these typical figures, the annual cost of road maintenance would be USD 8,800 per km. Higher figures would be incurred on the busiest roads (especially on four lane roads) but lower figures would be incurred on minor roads. The figures exclude possible rehabilitation or reconstruction costs for:

- dealing with the backlog of maintenance caused by inadequate maintenance in the past,
- improvements of roads to higher technical standards, and
- construction of new roads.

Although estimates such as these can and are used to estimate the budgetary requirements for road maintenance in TRACECA countries, much more detailed information would be required to estimate the structure of road use costs in terms of fixed and variable. Such detailed information is needed in order to allocate costs to different road users, and since such information is not available in the region, use has to be made of experience in other parts of the world (for example the experience acquired by the World Bank in assessing road use costs).

When seeking to develop a unified approach for calculating transit fees, assessment of the characteristics of road use costs in TRACECA countries would raise the following issues.

ISSUE 1: Since road use costs vary between TRACECA countries, what can be the basis for a unified policy for transit fees?

Since the costs of road use vary between countries a unified policy aimed at setting transit fees on costs is bound to result in different charges in different countries. However a unified policy can usefully define the framework for calculating the fees – this can help to make the debate about national transit fee policies more rational and transparent, based on economic rather than political factors.

ISSUE 2: Given the lack of detailed information about road use cost characteristics in TRACECA countries, how can a unified basis for estimating fixed and variable costs be established?



Estimating the cost attributable to road use by different types of vehicle requires considerable information about road strengths and conditions, traffic flows by different types of vehicle, axle loads, and costs of different types of road works. The required information would take many years to collect and analyse. The only possible approach is to use:

- all relevant, locally-available information on road use costs, to establish the main assumptions about cost levels, in conjunction with,
- international experience on cost characteristics obtained from models such as the World Bank's HDM model, calibrated as far as possible in accordance with local conditions.

As described in the previous working paper<sup>9</sup>, such an approach has already been adopted in CIS countries in TRACECA to indicate the approximate costs of road use attributable to trucks of different weights and axle configuration (as measured using ESAL). This work is used in Section 2.3 later in this paper to estimate the justifiable level of transit fees in TRACECA countries.

### ISSUE 3: Should transit fees be based on total costs or just variable costs?

From an economic perspective, for efficient use of resources, all vehicles should pay at least the short-run marginal cost of road use, so a distinction has to be made between fixed and variable (or marginal) costs. While vehicles should pay the variable cost of road use attributable to the road damage that they incur, there is less justification from a purely economic point of view for users to pay also for the fixed costs. However in practice, because of the need to raise finance for road maintenance, it is usually accepted that road user charges should cover the fixed costs of maintenance.

For most TRACECA countries there are inadequate financial resources for maintaining and developing the road network, and this confirms that transit fees should cover the full costs of maintenance, including the fixed costs. Nevertheless for countries that are seeking to attract transit traffic it could make sense to set transit fees so that they cover only marginal, or variable costs. In most TRACECA countries transit traffic is only a small proportion of traffic and revenue from transit traffic is small compared to total revenue (less than 10%), so if the policy objective was to increase traffic along the TRACECA corridor, there is a case for setting transit fees according to variable costs. However ultimately this is a decision for each country to make.

### ISSUE 4: Should transit fees only be based on the cost of normal maintenance (routine and periodic) or should it also include the additional costs of dealing with maintenance backlogs, improving roads and construction of new roads?

Most TRACECA countries have substantial backlogs of maintenance due to years of inadequate funding. They also have many main roads that require strengthening to carry modern designs of trucks with heavier axle loads. This important issue raises questions concerning:

- whether existing road users should pay for the costs incurred by past policy failures (and therefore have to pay the cost of the backlog from user charges),
- the extent to which heavy vehicles should pay for rehabilitation projects that strengthen the pavements in order to allow increased axle loads, and

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<sup>9</sup> Section 5.4 of Priority Issues Concerning Road Transit Fees, TRACECA UPTFT Draft Working Paper, 4 October 2002

- whether or not existing road users should pay for new road construction, whose benefits will be shared with future road users and the economy as a whole.

The policy in most TRACECA countries is not to charge road users for such capital costs, and there are many economic arguments in support of this policy. In particular covering high capital costs from user charges would raise these charges substantially above the short-run marginal cost of road use and deter use of the roads. This in turn could hamper economic development. Even so, some countries adopt road user charging policies aimed at covering such costs – for example Turkey’s motorway tolls, which help to finance development of improved roads.

Nevertheless there is a general need to raise more finance for essential road investments, especially for the rehabilitation of the main road network. Although existing road user charges such as fuel and annual vehicle taxes are generally lower even than normal maintenance costs in TRACECA countries, it is possible that this policy could change in future. To avoid discrimination, the policy for cost coverage of transit fees should be consistent with the policy for overall cost coverage of road user charges. This implies that

- in countries where revenue from road user charges does not cover even normal maintenance costs (as in the case of most CIS countries), transit fees should not cover additional costs of road rehabilitation and improvement (although this should be reviewed once general road user charges have been raised to cover normal maintenance costs, probably through higher fuel and vehicle taxation plus, perhaps, specific tolls for certain highly trafficked roads),
- in countries where revenue from road user charges is generally higher than normal maintenance costs (for example in Bulgaria, Romania and Turkey) consideration could be given to setting transit fees so that they cover additional costs of road rehabilitation and improvement (but only if this does not discriminate between foreign and domestic vehicles).

#### ISSUE 5: Should transit charges cover additional costs such as congestion, accident and environmental costs?

In most TRACECA countries these external costs are small compared to the costs of infrastructure provision so transit fees should not include such additional costs. In countries such as Bulgaria and Romania where transport policy is increasingly oriented towards future EU membership, road user charge policy is likely to have to take account of such factors (mainly through differential taxes and charges for vehicles and fuels that meet different emission standards). To avoid discrimination, and where this can be fully justified in terms of costs and environmental benefits, it would be appropriate for countries to levy environmental charges on foreign vehicles provided that this is done on the same basis as for domestic vehicles.

#### ISSUE 6: The cost of providing local roads can be very significant, but foreign vehicles make relatively little use of them. To what extent should transit fee calculations take account of the possibly different cost characteristics of local and main roads?

The cost characteristics of main and local roads are likely to be different. For example due to the low levels of traffic on most local roads (outside urban areas), fixed costs can be a major proportion of total road maintenance costs. As mentioned above (Issue 3), from an economic point of view, transit vehicles should pay the variable cost of their use of the local road

network but not necessarily the fixed costs, so it is important not to impose these costs unduly on transit and other vehicles which rarely use the local network. In practice there is little information about use of local roads by transit vehicles so it is difficult to estimate the fixed and variable costs incurred. A reasonable, practical approach is to base transit charges on the costs of using the main road network and to apply the resulting charges for use of all roads – both the main and the local roads.

### 2.2.2 POSSIBLE FORMS OF TRANSIT FEES AND CHARGES

At present the form of transit fees varies from country to country, reflecting different policies and practices. Many countries impose more than one type of transit fee – for example, one for entry into the country and another, say, for particular services offered at borders.

Changes in the form of transit charge are clearly more difficult to make than changes in transit fee level, due to the more involved policy and legal issues that may be raised. Although in the short-term it may be difficult to make changes in the form of transit charge, the possible issues that are raised in the longer term, through more fundamental reforms, are discussed below.

#### ISSUE 7: Should permit or transit fees vary with distance travelled or time spent in the country, or should the fees be a fixed amount?

Ideally, from both economic and fairness points of view, it could be argued that transit charges should vary with use of road, especially with distance travelled since variable costs constitute the majority of road use costs.

However in practice this is difficult to implement due to the complexity of calculations involved and the difficulty of determining the distance travelled (this is especially difficult for import/export journeys for which routings are not easily defined, but the same difficulty may also arise for transit journeys). Undue constraints on choice of route will reduce operating flexibility and increase transport costs.

For countries like Kazakhstan and Turkey, where some transit distances can be very long, there could be a strong case for distance-based transit fees, or at least some sort of zonal system that simplified the need for calculations, especially for relatively short distance journeys. However a distance-based fee structure is particularly difficult to implement in situations where there are many relatively short-distance trips using a variety of border-crossing points, as often occurs in the TRACECA region (for example between Uzbekistan, Kyrgyzstan and Tajikistan whose borders frequently cross the main regional routes). In these situations a time-based fee structure seems more appropriate, perhaps with provision for multiple entries to avoid unnecessary delays at borders.

One advantage of the time-based fee approach is that it allows in the longer term the development of vignette types of network access charging systems, in which charges for foreign vehicles are unified with those imposed on domestic vehicles (as recently implemented in Romania).

Because of the different circumstances of the TRACECA countries it seems unlikely that a unified form of transit fee, based on distance or time, would be appropriate for the whole region. However, whatever the basis for charging, there is still significant scope for basing the various charging rates on unified transparent charging principles (in terms of clear

assumptions about the assumed road use cost per vehicle km and the distances travelled per transit trip or per day). The priority in the short-term is to alleviate the burden of high fixed transit charges on transporters making short distance transit trips, either by:

- reducing the charges for short stays in the country or for defined short distance transit trips, or
- granting broader exemptions for transit fees between countries that have significant interchange of road traffic.

ISSUE 8: To what extent should transit fees vary between vehicle types and size?

For charges to reflect road use costs, different charges would have to be defined for different weights of vehicles and axle loadings. In practice that is far too complicated to implement, partly because of the difficulty of assessing weights of vehicle loads and the distribution of weight between axles.

Assessing charges based on weight of vehicle and load is an even worse option because it disregards the crucial effect of different axle configurations on road use costs and would not encourage the use of efficient multi-axle trucks that minimise pavement damage. For example a three axle truck carrying an eight tonne load would be charged the same as a two axle truck carrying the same load even though it would cause less road damage.

A better option would be to base the charges on vehicle type and axle configuration. This would take account to a large extent of the pavement damage done by different vehicles and, by avoiding the need to weigh vehicles, would also be simple to administer. Suitable categories of vehicle type would be small bus/light truck, large bus, two axle heavy truck (designed for use with double-tyred rear wheels), three axle heavy truck and multi-axle truck/trailer combinations.

ISSUE 9: To what extent should transit fees vary for loaded and unloaded trucks?

This raises similar difficulties to those discussed under Issue 8 above. Road use costs vary significantly between loaded and unloaded trucks and, since it is easy to distinguish laden and unladen trucks, it seems reasonably practical to define charges that differentiate between loaded and empty trucks.

This is consistent with current practice of several countries that either grant exemption of transit fees for empty trucks (for example, Azerbaijan), or charge reduced rates (for example, Turkey).

### **2.2.3 LEVEL OF TRANSIT FEES**

Whatever the structure of transit fees, two important issues remain to be considered concerning the level at which transit fees are imposed.

ISSUE 10: To what extent should transit fees match road user charges paid by domestic transporters rather than the costs of road use?

This important issues was highlighted in the example described in Figure 1 in which charges paid by domestic vehicles are less than the cost of road use. Under these circumstances, lowering transit fees to match charges paid by domestic transporters would remove discrimination but reduce the extent to which cost-recovery is achieved. On the other hand,

lowering transit fees to match the costs of road use would allow full cost recovery from foreign vehicles but would still discriminate against foreign transporters.

Current road user charging policies which fail to provide for full cost recovery are probably unsustainable because of the growing demands for road provision and the lack of financial resources available for road provision. It seems inevitable that the governments of TRACECA countries will increasingly adopt policies of greater cost recovery from road users.

Implementing in full a unified transit fee policy is likely to be a long-term process because of the need to reform national legislation on trade and transport and it seems reasonable to assume that, over such a time scale, the present conflict between cost-relatedness and discrimination objectives can be resolved in the TRACECA countries by raising domestic road user charges and implementing scales of charges that differentiate between the costs incurred by different types of vehicles. Accordingly the TRACECA unified policy should generally aim to set transit fees according to the costs of road use rather than current user charges paid by domestic vehicles.

A special case applies in those countries such as Bulgaria and Romania which are embarking on reforms to adopt road user charge policies consistent with EU practice. In such cases, road vehicle charges would be expected to rise significantly above the costs of road provision, to cover environmental and other external impacts. There would be no reason to set transit fees lower than this – to do so would discriminate against domestic transporters – so the result would be transit fees that exceeded the cost of road use, as in the rest of the EU.

ISSUE 11: To what extent should transit fees be set to match required expenditure on road provision rather than the actual expenditure?

This question matters because current expenditure on road provision in most TRACECA countries is significantly less than the actual requirement. Even the minimum amounts required for basic maintenance are often not spent.

Inadequate road maintenance results in poor road conditions and it could be argued that it would be wrong to charge transporters the full amount of maintenance because this would mean over-charging for the poor service provided to them by the highway authority. However as described above for charging policy, serious under-funding of maintenance is not likely to be a sustainable policy because it results in a deterioration in the road network, higher road user costs and higher road maintenance and rehabilitation costs. It therefore seems likely that in the long-term expenditure on maintenance will increase significantly and will eventually approximate the level of required expenditure. Consequently it is recommended that transit fees are based on the required maintenance expenditure rather than the actual expenditure.

A different conclusion could be reached regarding expenditure on road rehabilitation and other capital expenditure on road improvement and construction. In this case, if transit fees are to cover these additional costs, the choice is between setting fees on the planned requirement or the actual expenditure. Most TRACECA countries have substantial road improvement programmes but the actual investment always tends to fall short of the estimated requirement. This situation will probably continue even in the long-term, as more and more ambitious road development plans are developed to meet the growing demand. It is therefore recommended that, if transit fees are to cover such additional road use costs, the

fees should be based on the realistic expected expenditure, as confirmed from historical records of investment in roads, taking account of likely financial and economic constraints.

## 2.3 Estimation of Justifiable Level of Transit Fee

### 2.3.1 NORMAL ROAD MAINTENANCE COSTS

Using available information, the road use costs attributable to three types of heavy trucks have been estimated for eight of the TRACECA countries using the results described in previous TRACECA<sup>10</sup> and other<sup>11</sup> reports. These estimates include the full cost of normal maintenance over the lifetime of the road, including routine and periodic maintenance, but exclude any additional costs incurred in tackling maintenance backlogs or making road improvements. They also exclude the costs of bridge maintenance. They are based on optimum maintenance policies that minimise overall transport costs (user costs plus road maintenance costs).

The estimates have been obtained using the World Bank's HDM model, calibrated for road conditions encountered in each TRACECA country (in terms of road strengths, traffic flows and axle loadings) in recent years (1997). Due to lack of reliable information on road conditions, the results are only approximate. However they are sufficiently accurate to indicate the typical level of road use costs attributable to heavy trucks and how these costs vary between countries and types of vehicles.

The results of the calculations are shown in Table 2.1 and are presented in accordance with a framework that can be used to update these estimates or to make similar calculations for other countries, as and when more up-to-date data become available.

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<sup>10</sup> Study of the Cost and Financing of Road Usage, TRACECA Project TELREG9305 Report, Kocks Consult, June 1997.

<sup>11</sup> Study of the Reform of Ukrainian Road Sector Financing, EBRD Project on M17 Rehabilitation, Carl Bro, October 1997

Table 2.1 Estimation of Normal Road Use Costs of Main Roads in Some TRACECA Countries

	Armenia	Azerbaijan	Georgia	Kazakstan	Kyrgyz Republic	Tajikistan	Ukraine	Uzbekistan
<b>(A) Estimation of Road Maintenance Cost</b>								
(A.1) Length of International and Other Main Roads (km)	3,148	4,689	5,005	17,496	3,110	1,785	31,078	21,825
Incl: International	1,569	1,409	946	6,132	748	1,089	11,547	1,393
Other Republic	1,579	3,280	4,059	11,364	2,362	696	19,531	20,432
(A.2) Average Annual Cost (USD/km)								
International	13,763	22,219	18,887	11,189	13,876	5,662	15,706	28,066
Other Main Roads	5,695	8,561	3,726	8,182	6,865	5,963	15,706	6,110
(A.3) Total Annual Cost (USD million)	30.6	59.4	33.0	161.6	26.6	10.3	488.1	163.9
Incl: Variable (number of vehicles)	11.7	25.6	10.1	60.5	9.4	3.5	140.7	52.8
Variable (number of ESALs)	8.2	16.3	7.6	43.9	7.1	2.7	95.8	42.5
Fixed	10.6	17.4	15.2	57.3	10.1	4.0	251.7	68.6
<b>(B) Estimation of Unit Road Use Costs</b>								
(B.1) Annual Traffic on Main Roads								
Vehicle km (million)	1,970	4,497	2,088	10,089	1,506	621	27,833	10,629
ESAL km (million)	165.0	634.0	395.9	367.0	84.5	32.2	4,958.0	1,925.3
(B.2) Unit Cost								
Variable (USD/ vehicle km)	0.0059	0.0057	0.0048	0.0060	0.0062	0.0056	0.0051	0.0050
Variable (USD/ESAL km)	0.0497	0.0257	0.0192	0.1196	0.0840	0.0839	0.0193	0.0221
<b>(C) Estimation of Variable Costs per Vehicle km</b>								
(C.1) Two-Axle Trucks								
ESAL/vehicle	0.16	0.13	0.10	0.05	0.07	0.07	0.18	0.19
Cost (USD/km)	0.0139	0.0090	0.0067	0.0120	0.0121	0.0115	0.0086	0.0092
(C.2) Three-Axle Trucks								
ESAL/vehicle	0.41	0.18	0.50	0.18	0.17	0.17	0.49	0.19
Cost (USD/km)	0.0262	0.0103	0.0144	0.0275	0.0205	0.0199	0.0146	0.0092
(C.3) Trucks with > 3 Axles								
ESAL/vehicle	0.36	0.34	1.13	0.21	0.63	0.63	1.34	1.01
Cost (USD/km)	0.0238	0.0144	0.0265	0.0311	0.0591	0.0585	0.0310	0.0273

SOURCE: Consultants' estimates based on previous studies

The framework is as follows:

- (A) Estimation of Road Maintenance Costs: based on the HDM model calculations, in terms of the road lengths and strengths of each national main road network (excluding local roads), producing results that allocate the annual costs into three components - (i) those costs that vary with number of vehicles, (ii) those costs that vary with number of ESALs, and (iii) fixed costs that do not vary with traffic or loading.
- (B) Estimation of Unit Road Use Costs: for variable costs only (per vehicle km for costs that vary with number of vehicles, and per ESAL km for costs that vary with loading), by dividing the annual costs estimated above in (i) by the annual vehicle km using the road network, and in (ii) by the annual ESAL km using the network. The vehicle km can be estimated from available traffic statistics and survey data to give typical average traffic flows on each class of road. The ESAL km are estimated from the vehicle km figures and average axle loads and ESAL for each type of vehicle.
- (C) Estimation of Variable Costs per vehicle km: for two axle, three axle and multi-axle trucks, as the sum of (i) the unit cost per vehicle km for costs that vary with number of vehicles, and (ii) the product of ESAL per truck and the unit cost per ESAL km.

The results indicate that for these TRACECA countries, the normal variable road use cost varies from USD 0.007 – 0.014 per km for heavy two axle trucks, USD 0.009 – 0.027 per km for three axle trucks, and USD 0.014 – 0.059 per km for multi-axle trucks.

Adjustments could be made to allow for the following factors:

(1) Allowance for future growth in axle loads: the previous TRACECA study indicated that axle loads are currently rather low by international standards because of the low carrying capacity of former Soviet Union models (the ESAL for non-CIS trucks was found to vary between about 1 and 2 for all types of trucks compared to average values in Table 2.1 of 0.12 for two axle trucks, 0.29 for three axle trucks and 0.71 for multi-axle trucks). Assuming that ESAL per truck increases by 50% in future years due to the use of more modern truck designs, the road use cost per truck km could increase to USD 0.008 – 0.018 for two axle trucks, USD 0.011 – 0.038 for three axle trucks, and 0.019 – 0.086 for multi-axle trucks.

(2) Inclusion of fixed costs: according to Table 2.1 fixed costs represent between 30 and 50% of total road use costs (about 67% of variable costs on average), so if these are allocated in proportion to variable costs, the estimated costs would be about 67% higher.

(3) Possible differences between unit costs of road works assumed in the HDM model and those recorded in the TRACECA region: there is some evidence that the costs assumed in the HDM model could be slightly different from those prevailing in the TRACECA countries (for example, the model assumed costs of USD 22,400 per km of road for a reseal and USD 56,000 per km for a 40 mm overlay, whereas typical figures reported in the TRACECA region are USD 13,000 per km and USD 97,000 per km respectively). This implies that overall the HDM model could under-estimate the current road maintenance costs by a small amount (say 15% on average).

(4) Allowance for the bridge maintenance costs: these typically amount to 10% of normal road maintenance costs.



Allowing for these possible adjustments, in future the normal road use costs (including fixed costs) attributable to trucks would be USD 0.01 – 0.04 per km for two axle trucks, USD 0.02 – 0.08 per km for three axle trucks, and USD 0.04 – 0.18 per km for multi-axle trucks.

In some other TRACECA countries where axle load limits are higher than normal (above about ten tonne per single axle) the road use cost per truck km is likely to be higher. Information from Turkey confirms this – see a study<sup>12</sup> carried out recently that estimated the marginal road provision cost attributable to heavy vehicles. The marginal road maintenance cost per ESAL was estimated to be USD 0.043 per ESAL km, very similar to the variable costs per ESAL km estimated in Table 2.1 (USD 0.053 on average, but varying between USD 0.019 and 0.084). However since a heavy truck in Turkey typically has an average ESAL of 4.21, partly due to the high axle load limit of 11.5 tonne that is in force in that country, the road use cost is much higher – USD 0.18 per km. Similar figures may apply in Romania and Bulgaria, where axle load limits are similar.

### 2.3.2 ADDITIONAL COSTS OF ROAD REHABILITATION

The possible allocation of road rehabilitation costs to heavy vehicles has been approximately estimated below based on available information about expected expenditure in four TRACECA countries. The allocation of costs is inevitably rather arbitrary and there is uncertainty about the extent of future expenditure. Nevertheless the figures can give an approximate estimate of the possible allocation of rehabilitation costs to heavy vehicles in the TRACECA region.

The results, shown in Table 2.2, are presented in the following framework:

- (A) Estimation of Additional Annual Cost on Main Roads: the expenditure is estimated based on the planned road investment plan, the actual investments made in recent years and the likely financial constraints in future years. Part of this expenditure is considered as a variable cost to be assigned on the basis of vehicle km while the balance is assigned on the basis of ESALs. For simplicity a 50:50 split is assumed – and this is reasonable considering that about half of the cost of typical road rehabilitation projects in the TRACECA region is due to pavement construction or reconstruction (and therefore associated with ESAL) and half is due to earthworks and other components that would be appropriate to share on the basis of vehicle km. However this split is necessarily rather arbitrary.
- (B) Estimation of Unit Road Use Costs: for each of the two cost components, the unit cost is estimated by dividing the annual costs estimated in (A) above by the annual vehicle km and annual ESAL km using the main road network, estimated from available traffic statistics and survey data.
- (C) Estimation of Assigned Costs per vehicle km: for two axle, three axle and multi-axle trucks, as the sum of (i) the unit cost per vehicle km for costs that vary with number of vehicles, and (ii) the product of ESAL per truck and the unit cost per ESAL km.

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<sup>12</sup> The Impacts of Heavy Vehicles to Highways and Imposed Extra Cost, General Directorate of Turkish Highways, October 2001

**Table 2.2 Estimation of Additional Annual Investment Cost of Roads**

	Kazakstan	Kyrgyz Republic	Tajikistan	Ukraine
<b>(A) Estimation of Additional Annual Cost on Main Roads (USD million)</b>				
(A.1) Planned Future Investment	249	20-25	30-35	200-300
(A.2) Actual Investment in Recent Years	30-130	33-36	9	90-130
(A.3) Assumed Cost Assignment	125	20	10	130
Incl: Variable (number of vehicles)	62.5	10	5	65
Variable (number of ESALs)	62.5	10	5	65
<b>(B) Estimation of Unit Cost</b>				
<b>(B.1) Annual Traffic on Main Roads</b>				
Vehicle km (million)	10,089	1,506	621	27,833
ESAL km (million)	367.0	84.5	32.2	4,958.0
<b>(B.2) Unit Cost</b>				
Variable (USD/ vehicle km)	0.0062	0.0066	0.0081	0.0023
Variable (USD/ESAL km)	0.1703	0.1183	0.1553	0.0131
<b>(C) Assigned Cost per Vehicle km</b>				
<b>(C.1) Two-Axle Trucks</b>				
ESAL/vehicle	0.05	0.07	0.07	0.18
Cost (USD/km)	0.0147	0.0149	0.0190	0.0047
<b>(C.2) Three-Axle Trucks</b>				
ESAL/vehicle	0.18	0.17	0.17	0.49
Cost (USD/km)	0.0369	0.0267	0.0345	0.0087
<b>(C.3) Trucks with &gt; 3 Axles</b>				
ESAL/vehicle	0.21	0.63	0.63	1.34
Cost (USD/km)	0.0420	0.0811	0.1059	0.0199

NOTE: (1) Excluding investment in local rural and urban roads.

SOURCE: Current plans of Government and consultant estimates of future financing levels

When assessing the investment plans the following considerations were made.

Kazakstan has a five year highway plan<sup>13</sup> which involves expenditure of USD 1,649 million, including USD 405 for maintenance. However the actual maintenance requirement is at least USD 900, so it is possible that the actual level of investment would be less than planned. However the plan includes several committed foreign financed projects, so a future annual expenditure of USD 100-150 million seems a reasonable assumption – mainly for rehabilitation of international roads.

The Kyrgyz Republic has a five year road plan<sup>14</sup> which gives priority to completion of rehabilitation projects that are either on-going or currently being developed, amounting to USD 200 million, or USD 40 million per year. This represents 2.5% of GDP and appears to be unrealistic, especially considering the need to fund road maintenance at USD 22 million per year (compared to only USD 4 million at present). Past investment has been over USD 30 million but, under financial constraints, the current investment plan is USD 20-25 and could possibly be achieved.

<sup>13</sup> State Program of the Republic of Kazakstan Road Sector Development 2001-2005 (November 28, 2001)

<sup>14</sup> Concept and Program of Development of Highways in Kyrgyz Republic for 2002 – 2012, in Government Resolution No. 59 dated February 9, 2002.

Tajikistan has plans for road rehabilitation and construction which could amount to over USD 30 million per year. Current investment is USD 9 million and could perhaps be sustained at about this level if foreign support continues.

According to the most recent international study<sup>15</sup>, Ukraine has a substantial backlog of road maintenance and also an investment programme of new road construction. It is assumed that investment continues in future at the same level as in past years.

According to these assumptions, the possible allocation of rehabilitation costs to trucks varies from USD 0.005 – 0.019 per km for two axle trucks, USD 0.009 – 0.037 per km for three axle trucks, and USD 0.020 – 0.106 per km for multi-axle trucks. These are approximately half of the normal maintenance costs assigned to heavy trucks above.

However it is extremely doubtful whether transit fees should cover such costs at the present time in TRACECA countries. Most governments seem to regard road rehabilitation as a cost to be financed from general taxation rather than road users, so setting transit fees to cover these additional costs would discriminate heavily against foreign transporters. Road user charges paid by domestic transporters do not even cover normal maintenance costs, let alone the additional costs of road rehabilitation. Until the road user charge policies of the TRACECA region are adjusted to increase cost recovery from domestic road users, it is recommended that transit fees are based mainly on the normal maintenance costs estimated in the previous section.

## 2.4 Summary of Framework Proposals

The proposed framework for calculating transit fees has the following features.

### Estimation of Costs

- Takes account of different costs of road use in different countries.
- Makes use of local cost data where available, plus cost characteristics developed by standard analysis techniques and models under similar conditions in other parts of the world.
- Generally bases transit fees on total normal road maintenance costs (fixed and variable costs of maintenance), although some countries may wish, in the short term, to encourage transit traffic by calculating transit fees based on only variable costs.
- Extent of cost coverage from foreign transporters – particularly road rehabilitation costs and environmental costs - takes account of differences in national policies for charging domestic road users (between those countries with high cost recovery from domestic road users and those countries with low cost recovery).
- Bases the rates of transit fees on the rates applicable for use only of the main road network (making no adjustments for differences between rates for main and local roads).

### Forms of Charges

- Takes account of different circumstances, especially the balance that might need to be made between setting (i) distance-based rates for well-defined short or long distance main

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<sup>15</sup> Study of the Reform of Ukrainian Road Sector Financing, EBRD Project on M17 Rehabilitation, Carl Bro, October 1997

transit routes, (ii) time-based rates for less well-defined local routes, and (iii) multiple entry situations.

- Takes account of differences in road use costs attributable to different vehicle types and axle configurations.
- Allows for differential charges for loaded and unloaded trucks.

### **Level of Charges**

- In the first instance, while cost recovery by domestic transporters is low, gives priority to setting transit fees in order to cover road use costs rather than to reduce discrimination between domestic and foreign transporters, but allows greater emphasis to be placed on reducing discrimination once reasonable cost-recovery levels are achieved.
- Bases transit fees on (i) the required road maintenance expenditure rather than the actual maintenance expenditure, and (ii) if relevant, on actual road rehabilitation expenditure rather than planned road rehabilitation expenditure.

### **Implementation Implications**

If the proposed framework is incorporated into a unified policy, it would enable firm agreements to be made about the way that transit fees should be calculated, to encourage discussions about fee rates to take place based on economic and technical issues rather than political issues.

On the other hand it gives flexibility for countries to take account of local circumstances when implementing a unified policy. For example the higher road user cost recovery levels achieved in Turkey, Romania and Bulgaria mean that transit fees in these countries could justifiably be set to cover more than just normal road maintenance costs (including the cost of network improvements and any allowance for environmental impact agreed with EU countries). The higher axle load limits pertaining in these countries would also affect the road use costs attributed to heavy vehicles. The proposed framework also allows all sorts of alternative approaches to road user charges, for example using tolls and vignettes, which are of particular relevance because of the existence of high quality high speed roads in these countries.

For most CIS countries the proposed framework allows the major issue of high transit fees to be tackled on a rational basis, putting emphasis on setting transit fees according to the level of normal road maintenance costs, while simultaneously allowing cost recovery from domestic users to be increased – for example through higher fuel and annual vehicle charges and, eventually, the introduction of vignettes.

Based on the application of the framework to several TRACECA countries, using available information on road use costs, it is possible to define the likely range of transit fees that could be expected in the TRACECA region in future if the fees are set in order to cover all normal road maintenance costs – USD 0.01-0.04 per truck km for two axle trucks, USD 0.02-0.08 per truck km for three axle trucks and USD 0.04-0.18 per truck km for multi-axle trucks. These estimates allow for growth in axle loadings and coverage of fixed maintenance costs but not for road rehabilitation costs. Based on these ranges, it is possible to identify transit fees that are currently unreasonably high – say those significantly above USD 0.05 per truck km for two axle trucks, USD 0.10 per truck km for three axle trucks and USD 0.20 per truck km for multi-axle trucks. These upper limits should apply not only in the CIS countries but also in non-CIS countries where axle loadings are higher.

### **3. Implementation Options**

#### **3.1 Introduction**

To help develop a unified policy on transit fees in accordance with the request of the members of the first Transit Fee and Tariffs Working Group (TFTWG) for roads, the consultants have developed the following suggestions for actions that could be taken by each country to implement a unified policy on transit fees.

These suggestions are not recommendations. However they include actions that would support the implementation of a unified policy that meets the policy objectives agreed at the TFTWG.

The purpose of preparing these suggestions is to provide a basis for further debate at the next TFTWG, about the unified policy and options for its implementation.

The overall strategy for the suggested actions is summarised in Table 3.1, which relates the actions that could be taken in order to tackle each of the main issues identified in the Draft Working Paper: Priority Issues Concerning Road Transit Fees (October 2002) and endorsed at the first TFTWG.

The proposed strategy is consistent with the approach agreed during the first TFTWG, to base transit fees on costs of service provision, removes unjustifiable fees and simplifies the system of charges. The actions are listed under three main groups, according to how they can meet the three main policy objectives for transit fees set out in the Protocol of the first TFTWG:

- Cost-relatedness (setting transit fees that are not unjustifiably high compared to costs and that vary with the costs imposed by different road users),
- Non-discrimination (imposing transit fees on transporters on an equal basis, irrespective of nationality), and
- Transparency (enabling liabilities for transit fees to be clearly understood by road users).

**Table 3.1 Unified Transit Fee Policy Implementation Strategy**

ISSUE	POSSIBLE ACTION
<b>(A) COST RELATEDNESS</b>	
A.1 Overall level of transit fees is higher than road use costs (or charges for domestic vehicles)	Reduce charge level to below the maximum justifiable levels
A.2 Transit fees do not vary with vehicle type and axle configuration	Set different charges for different types of vehicles
A.3 Transit fees do not vary with distance	Define charges on a per km (or possibly on a per day) basis
A.4 Transit fees do not distinguish between loaded and unloaded trucks	Set different charges for loaded and unloaded trucks
A.5 Charges for abnormal transport are not based on the three standard components - excess vehicle weight, excess axle load and excess size	Define charges for each level of excess size/weight for each of these three aspects
A.6 Road user charges are imposed that duplicate other charges imposed for the same purpose	Remove one of the duplicate charges
<b>(B) NON-DISCRIMINATION</b>	
B.1 Unauthorised fees are charged by local authorities	Abolish unauthorised fees. Improve enforcement
B.2 Transit fees vary with nationality of truck	Unify/reduce foreign transit fees
B.3 Road user charges vary for foreign and domestic vehicles	Unify rates so that the same rates are charged irrespective of nationality
B.4 Abnormal transport charges vary for foreign and domestic vehicles	Unify rates so that the same excess size and weight charges are imposed irrespective of nationality
<b>(C) TRANSPARENCY</b>	
C.1 Complicated system of charges	Abolish unnecessary charges
C.2 Complicated basis for charge	Simplify basis for charge calculation
C.3 Lack of clear information about charges	Publish up-to-date charge rates in users guide and advertise proposed changes well in advance

The analysis of issues and suggested actions is based on the inventories of Road Transport Fees and Permits (one for each of the 13 TRACECA countries) that were prepared earlier in this project. The draft inventories were presented at the first TFTWG and have now been finalised using comments received from the TFTWG members. The results are published in the TRACECA users guide.

The analysis also uses the information presented in the Draft Working Paper: Priority Issues Concerning Road Transit Fees (October 2002) on the typical transit fees paid by large multi-axle trucks in each TRACECA country. The results are shown in Appendix A (incorporating some minor corrections made following receipt of comments from the TFTWG members) firstly for laden trucks and secondly for unladen trucks.

For each country, the analysis of cost-relatedness includes a comparison of the current level of total transit fees paid by foreign transporters, as described in Appendix A, with the maximum justifiable level identified in the previous section through the analysis of road use costs. As described at the conclusion of Section 2.4, for a typical multi-axle truck the maximum justifiable charge is USD 0.20 per km. Where current transit fees are higher than this, indications are then given about how the fees could be reduced. In this comparison, the total payment includes fees targeted at foreign transporters (transit permits and fees) and fees that may be paid by both foreign and domestic transporters (fuel tax, tolls etc.). Fuel tax includes all taxes on fuel, and not just specific charges for road use, and this limits the precision with which recommendations could be given about levels of user charges. In any case, fuel taxes are low in most TRACECA countries and are expected to rise in future years in order to increase cost-recovery from road users.

The extent of discrimination in transit fee policy between different types of operators in each country is also analysed to identify the actions that could be taken to reduce differences in the charges paid by transporters from different countries.

Possible actions to improve the transparency in transit fee setting are also mentioned. These suggestions are made taking account of the steps that have already been agreed during the TFTWG to adopt a more transparent transit permit and fee system:

- the agreement by the TFTWG members to provide information to the Contractor on current road transport permits and fees in order to update its draft Inventory of Road Transport Fees and Permits,
- use of this information by the Contractor to incorporate the information into a User Guide for publication on the TRACECA internet site, and
- the agreement of the TFTWG members to inform the TRACECA Inter-Governmental Commission (IGC) of any changes in transit fees so that the user guide can be updated in future years.

The following section describes, for each of the 13 TRACECA countries, using the transit fee information described in Appendix A, the analysis of possible actions that could help to implement a unified transit fee policy. Unless otherwise stated the transit fees are those that are payable for use of vehicles that do not have road transport permits that exempt them from transit fees. In practice, many vehicles are operated with permits that exempt them from some of the transit fees (as indicated in brackets in Appendix A).

## 3.2 Possible Actions for Implementing a Unified Transit Fee Policy

### 3.2.1 ARMENIA

#### *Cost Relatedness*

The current charges on foreign vehicles result in payments for a multi-axle 38 tonne GVW truck of about USD 233 per trip (USD 0.47 per km) for a typical transit trip of 500 km, which is over twice the maximum justifiable rate. The main charges are:

- the Tariff for Use of Armenian Roads by Foreign Vehicles (Dram 110,000 or about USD 200 per entry of a truck between 20 and 36 tonne capacity), which is charged on all foreign trucks without a permit, and
- the Environmental Tax for Use of Armenian Roads by Foreign Vehicles (Dram 15,000 or about USD 27 per transit trip), which is charged on all trucks with or without a permit.

Fuel tax is insignificant (only about USD 0.01 per km for a 38 tonne truck) but it is likely that this would have to be raised to increase cost recovery of the road sector as a whole.

Reducing the overall level of transit charge below the maximum justifiable rate would require reducing the Tariff for Use of Armenian Roads by Foreign Vehicles and possibly abolishing the Environmental Tax for Use of Armenian Roads by Foreign Vehicles. The extent of reduction would have to take account of any plans for increasing the tax on diesel fuel.

Consideration could be given to varying the transit charge with distance travelled, varying the charges for heavy trucks with axle configuration rather than carrying capacity, and introducing lower charges for unloaded trucks.

### *Non-Discrimination*

The Environmental Tax for Use of Armenian Roads by Foreign Vehicles is inherently discriminatory and, if it is to serve as a true environmental tax, should apply equally to domestic and foreign vehicles. However its basis as a true environmental tax is extremely doubtful because of lack of information about environmental costs and the limited effect that such a vehicle tax would have in reducing pollution. There is a strong case for abolishing this charge in the short term. It could be replaced eventually with a road network access charge that is levied on both domestic and foreign vehicles.

The charges for abnormal vehicles and loads also appear to apply only to foreign vehicles. There is no charge for excess size, reflecting the absence of appropriate size and weight regulations. The charge structure is expected to be modified to be consistent with the recent CIS agreement<sup>16</sup> on the structure for these charges, in conjunction with implementation of size and weight limits agreed within the CIS<sup>17</sup>.

### *Transparency*

Abolishing the environmental tax would simplify the charging system. Transparency could also be enhanced with clear regulations that define any modifications to other charges.

## **3.2.2 AZERBAIJAN**

### *Cost Relatedness*

The current charges on foreign vehicles result in payments for a multi-axle 38 tonne GVW truck of about USD 251 (USD 0.49 per km) for a typical transit trip of 508 km, which is over twice the maximum justifiable rate. The main charges are:

- the Tariff for Permit for Use of Azerbaijan Roads by Foreign Trucks, which varies between USD 100 and 600 according to type of journey and nationality of vehicle (with exemptions for permit holders), and
- the Tax on Entry and Crossing the Territory of Azerbaijan Republic by Foreign Means of Transport, which is intended to fund road maintenance and varies with (i) number of days spent in the country, (ii) the type and carrying capacity of vehicle, and (iii) nature of cargo (extent to which it is hazardous). It is charged on all trucks with or without a permit, and amounts to about USD 120 for a typical transit trip (allowing two days per trip).

Fuel tax is insignificant (only USD 0.01 per truck km for a 38 tonne truck) but it is likely that this would have to be raised to increase cost recovery of the road sector as a whole.

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<sup>16</sup> Agreement about Methodology of Defining Size of Payment for Road Transportation of Heavy and Large-scale Goods, Chisinau, May 17, 2002

<sup>17</sup> Agreement about Size and Weight of Transport Means in CIS Countries, Minsk, June 4, 1999



Reducing the overall level of transit charge below the maximum justifiable rate would require reducing both the main charges, and possibly abolishing one of these charges. The extent of reduction would have to take account of any plans for increasing the tax on diesel fuel.

Consideration could be given to varying the Tariff for Permit for Use of Azerbaijan Roads by Foreign Trucks with distance travelled (or time spent in the country). The Tax on Entry and Crossing the Territory of Azerbaijan Republic by Foreign Means of Transport varies with number of days but the rate increases after seven days and again after 30 days, presumably to penalise trucks that might be engaging in illegal cabotage operations. However this penalises legitimate transporters that are unavoidably delayed in the country. One of the first steps in reducing this charge could be to abolish these penalty charges, in conjunction with stricter enforcement of cabotage regulations.

Cost-relatedness would also be increased if both the main charges were to be adapted to vary with truck type and axle configuration.

### *Non-Discrimination*

Both the main charges are inherently discriminatory. If the Tax on Entry and Crossing the Territory of Azerbaijan Republic by Foreign Means of Transport is to serve as a genuine road user charge for road maintenance it should apply equally to domestic and foreign vehicles. There is a strong case for replacing this charge eventually with a road network access charge that is levied on both domestic and foreign vehicles. To unify domestic and foreign vehicle charges, to avoid excessively high charges, this would probably require:

- abolishing the high initial component of the current charge (USD 40 for trucks up to 10 tonne capacity, up to USD 100 for trucks over 24 tonne capacity), and
- reducing the daily rate of the current charge (USD 8 for trucks up to 10 tonne capacity, up to USD 20 for trucks over 24 tonne capacity).

Another discriminatory charge is the charge levied on foreign trucks entering certain cities. Discrimination would be reduced if such charges were to be abolished.

The charges for abnormal vehicles and loads also apply only to foreign vehicles. There is no charge for excess size. The charge structure is expected to be modified to be consistent with the recent CIS agreement on the structure for these charges, in conjunction with implementation of size and weight limits agreed within the CIS.

### *Transparency*

Abolishing the charge for entry into cities would simplify the charging system. Transparency could also be enhanced with simplification of the Tariff for Permit for Use of Azerbaijan Roads by Foreign Trucks to remove the variations associated with different nationalities of truck, such as:

- those variations associated with whether or not there is a bilateral agreement with Azerbaijan, and
- special rates that apply to particular countries such as Iran.

The Tax on Entry and Crossing the Territory of Azerbaijan Republic by Foreign Means of Transport can be simplified by removal or at least by clarification of the types of cargoes and

extent of charges that may be levied for “moderately dangerous”, “dangerous” or “very dangerous” cargoes.

### **3.2.3 BULGARIA**

#### *Cost Relatedness*

For a foreign multi-axle 38 tonne GVW truck without a road transport permit the current charges would result in payments of about USD 634 (USD 1.58 per km) for a typical transit trip of 400 km. This is far above the maximum justifiable rate, and this is mainly because of a high fee (USD 400) issued at the border for vehicles not possessing any road transport permit. However almost all trucks would avoid paying this high permit fee by obtaining a road transport permit issued in their own country (which may or may not exempt them from transit fees).

For example in cases where trucks have a permit that does not exempt them from transit fees, the transit charges would amount to USD 0.59 per km. Apart from the above-mentioned permit fee, the main foreign vehicle transit charges are an entry charge, a motorway charge and a charge for use of rest areas. The overall transit charge varies with vehicle type and number of axles, and is typically between USD 140 and 179 for a 38 tonne GVW truck (say USD 160 on average), depending on the particular transit journey (because the motorway charge varies with distance).

Other significant charges that are paid by both domestic and foreign vehicles are the fuel tax (USD 0.05 per km for a 38 tonne truck) and the Rouse bridge toll (USD 55).

Excluding the bridge toll, if the present fuel tax could be regarded as a road user charge, the foreign vehicle transit charges would have to be reduced from an average of USD 160 to about USD 60 in order to reduce the overall level of transit charge below the maximum justifiable rate (USD 80 at USD 0.20 per km for 400 km).

Although the transit charges already vary with vehicle type and number of axles, charges could be related even closer to road use costs if the entry charge were to be related to distance travelled, and lower rates were set for unladen vehicles.

#### *Non-Discrimination*

Both the permit fee and the transit charges are inherently discriminatory because they are targeted only at foreign transporters. Discrimination can be reduced in the short-term by reducing the level of transit charge as described above and by exchanging enough road transport permits to allow all transporters to obtain permits in their respective countries (even if these permits do not exempt the transporter from paying transit fees, they would avoid the need to pay the high permit fee currently levied at the border).

In the medium term, discrimination can be further reduced by replacing the transit fee by some sort of road use charge – for example, a road network access charge similar to the vignette that has been introduced in Romania, or specific tolls for use of motorways. It is understood that the government is currently considering the latter option.

### *Transparency*

Information about Bulgarian transit fees is already available from various sources. However some of these sources, such as the internet web site of the UNECE project on trade facilitation, are not official ones and may not be kept up-to-date. The priority is therefore to make sure that official information is also readily available and kept fully up-to-date.

### **3.2.4 GEORGIA**

#### *Cost Relatedness*

The current charges on foreign vehicles result in payments for a multi-axle 38 tonne GVW truck of about USD 343 (USD 0.86 per km) for a typical transit trip of 400 km, which is more than four times the maximum justifiable rate. The main charge is the Tax for Use of Georgian Roads by Foreign Vehicles which varies for trucks between about USD 180 and 420, depending on carrying capacity of the truck.

Diesel fuel excise and ecology taxes amount to about USD 0.02 per km for a 38 tonne truck, and foreign transporters may be liable for additional charges to cover the difference between the prices of fuel in Georgia and other countries.

Reducing the overall level of transit charge below the maximum justifiable rate would require reducing, considerably, the Tax for Use of Georgian Roads by Foreign Vehicles. The extent of reduction would have to take account of any plans for adjusting the taxes on diesel fuel.

To increase cost-relatedness, consideration could be given in the short-term to varying the Tax for Use of Georgian Roads by Foreign Vehicles as follows:

- varying the charge with distance travelled (or time spent in the country),
- varying the charge with truck type and axle configuration, rather than carrying capacity, and
- charging unladen vehicles at lower rates than for loaded trucks.

#### *Non-Discrimination*

The Tax for Use of Georgian Roads by Foreign Vehicles is inherently discriminatory because it is targeted only at foreign transporters. Discrimination can be reduced in the short-term by reducing the level of charge as described above.

The fuel price adjustment charge is also highly discriminatory because it affects in different ways the transport charges paid by transporters using Georgian roads. Discrimination would be reduced if this charge were to be abolished.

The current charges for abnormal transport are discriminatory because they are levied only on foreign vehicles. They can be related closer to transport costs by varying these charges with distance travelled rather than levying fixed charges per trip. There is no charge for excess size. The charge structure is expected to be modified to be consistent with the recent CIS agreement on the structure for these charges, in conjunction with implementation of size and weight limits agreed within the CIS.

### *Transparency*

Abolishing the fuel price adjustment charge would simplify the charging system. Transparency could also be enhanced with improved supply of information about transit fees to road users.

### **3.2.5 KAZAKSTAN**

#### *Cost Relatedness*

The current charges on foreign vehicles result in payments for a multi-axle 38 tonne GVW truck of about USD 166 (USD 0.33 per km) for a typical transit trip in the TRACECA corridor of 500 km, which is over 50% more than the maximum justifiable rate for this type of vehicle. The main charge is the permit charge defined in Transit Procedures and Regulations on Issuing permits for Transit Vehicles on the Territory of the Kazakstan Republic<sup>18</sup>, which is about USD 163 per transit trip, irrespective of type or size of truck.

Fuel tax is insignificant (less than USD 0.01 per truck km for a 38 tonne truck) but it is likely that this would have to be raised in the medium term to increase cost recovery of the road sector as a whole. Charges are also reported to be levied on foreign transporters by certain local authorities in Kazakstan. However there is no defined rates for these charges.

Reducing the overall level of transit charge below the maximum justifiable rate would require reducing the permit charge, and this could be done in the short-term. The extent of reduction would have to take account of any plans for increasing the tax on diesel fuel.

Cost relatedness could be significantly improved if the permit charge could be adapted to vary with truck type and axle configuration, and setting lower charges for empty vehicles.

Consideration could also be given to varying the permit charge with distance travelled (or time spent in the country). This is particularly relevant in Kazakstan because of the wide variation in length of transit trips (from less than 500 km to about 3,000 km), resulting in charge rates that vary from USD 0.06 – 0.35 per km for various transit routes.

#### *Non-Discrimination*

The permit charge is inherently discriminatory because it is levied only on foreign trucks (although the legislation provides for a charge to be levied on domestic transporters carrying out international transport). Reducing the permit charge as proposed above would therefore reduce discrimination. There is a case for replacing this charge eventually with a road network access charge that is levied on both domestic and foreign vehicles at the same daily rate.

The local authority charges are also discriminatory and should be abolished (as required by Kazakstan law but the charges appear to remain because of difficulties in implementing the regulations).

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<sup>18</sup> Decree No. 62 dated January 19, 2002

Although there is no discrimination between foreign and domestic vehicles in the way that charges are levied for abnormal vehicles and loads, the charges are not fully based on road use costs. In particular there is limited variation with degree of overload and there is no charge for excess size. The charge structure is expected to be modified to be consistent with the recent CIS agreement on the structure for these charges, in conjunction with implementation of size and weight limits agreed within the CIS.

### *Transparency*

The present system of transit charges is relatively simple and clear, and implementing the suggested improvements to cost-relatedness could make the system of charges less clear. Improvements should therefore be defined clearly and advertised more widely.

## **3.2.6 KYRGYZ REPUBLIC**

### *Cost Relatedness*

The current charges on foreign vehicles result in payments for a multi-axle 38 tonne GVW truck of about USD 67 (USD 0.11 per km) for a typical transit trip in the TRACECA corridor of 600 km, which is less than the maximum justifiable rate for this type of vehicle. However most transit traffic would be carried by two or three axle trucks, which would pay the same charge. This charge rate of USD 0.11 per km is similar to the maximum rate estimated earlier for three axle trucks (USD 0.10 per km). The main transit charge is defined in various bilateral agreements and it varies according to nationality of vehicle. A typical figure is USD 50 per truck trip and this charge does not vary with type or size of truck. Empty trucks pay the same as loaded trucks.

Fuel tax is rather insignificant (less than about USD 0.01 per truck km for most types of truck) but it is likely that this would have to be raised in the medium term to increase cost recovery of the road sector as a whole. A vehicle emission certificate charge of between USD 3 and 10 per trip is also charged on foreign trucks.

Cost relatedness could be significantly improved if the permit charge could be adapted to vary with truck type and axle configuration, and setting lower charges for empty vehicles. Consideration could also be given to varying the permit charge with distance travelled (or time spent in the country).

### *Non-Discrimination*

The permit charge is inherently discriminatory because it is levied only on foreign trucks. Reducing the permit charge as proposed above would therefore reduce discrimination. This charge could eventually be replaced with a road network access charge that is levied on both domestic and foreign vehicles at the same daily rate.

No charges are currently defined and levied for abnormal vehicles and loads because there is not yet a legal basis for vehicle size and weight limits. The charge structure is expected to be developed to be consistent with the recent CIS agreement on the structure for these charges, in conjunction with implementation of size and weight limits agreed within the CIS.

### *Transparency*

The present system of transit charges is not as clear as in other countries because the charge rate varies according to nationality of vehicle. Consideration could be given to defining a uniform rate that applied to vehicles irrespective of nationality.

Transparency could also be improved by abolishing the vehicle emission certificate charge, which is basically a source of finance rather than a tool for improving air pollution. A higher fuel tax could raise similar revenue in a more convenient way, and could enable the more polluting vehicles to be taxed more heavily than others (paying in proportion to amount of fuel consumed and also, perhaps, at higher rates for the more-polluting fuels).

### **3.2.7 MOLDOVA**

#### *Cost Relatedness*

The current charges on foreign vehicles result in payments for a multi-axle 38 tonne GVW truck of about USD 67 (USD 0.44 per km) for a typical transit trip in the TRACECA corridor of 150 km, which is more than double the maximum justifiable rate for this type of vehicle. The main transit charge is the charge for use of Moldovan roads by foreign vehicles which has a fixed element (per entry) and a variable element (per vehicle km). For a typical transit trip this charge amounts to USD 63 for a multi-axle 38 tonne GVW truck. Lower charges apply to smaller trucks, and empty trucks pay the same as loaded trucks. Vehicles staying more than 24 hours in the country are subject to an additional daily charge of USD 24.

Fuel tax is about USD 0.03 per truck km for large trucks but it is likely that this would have to be raised in the medium term to increase cost recovery of the road sector as a whole.

Cost relatedness could be improved if the foreign vehicle charge:

- were lowered – especially the fixed element (USD 25 per large truck) and the daily charge,
- varied with axle configuration, and
- had lower charges for empty vehicles.

#### *Non-Discrimination*

The permit charge is inherently discriminatory because it is levied only on foreign trucks. Reducing the permit charge as proposed above would therefore reduce discrimination. This charge could eventually be replaced with a road network access charge that is levied on both domestic and foreign vehicles at the same daily rate.

Charges for abnormal vehicles and loads are also discriminatory because different (higher) rates are imposed on foreign vehicles. Discrimination would be avoided if the same charges were to apply irrespective of nationality. The charge structure is consistent with the recent CIS agreement on the structure for these charges, and the size and weight limits agreed within the CIS.

### *Transparency*

Although the present system of transit charges is reasonably clear, transparency could be enhanced with improved supply of information about transit fees to road users.

### **3.2.8 ROMANIA**

#### *Cost Relatedness*

For a foreign multi-axle 38 tonne GVW truck without a road transport permit the current charges would result in payments of about USD 1,341 (USD 1.92 per km) for a typical transit trip of 700 km. This is far above the maximum justifiable rate, and this is mainly because of a high fee (USD 620) issued at the border for vehicles not possessing any road transport permit. However almost all trucks would avoid paying this high permit fee by obtaining a road transport permit issued in their own country (which may or may not exempt them from transit fees).

For example in cases where large trucks have a permit that does not exempt them from transit fees, the transit charges would amount to about USD 720 (USD 1.0 per km). Apart from the above-mentioned permit fee, the main foreign vehicle transit charge is set at USD 0.023 per gross tonne per km (USD 612 for a typical trip by a 38 tonne GVW truck).

Other significant charges that are paid by both domestic and foreign vehicles are bridge tolls over the River Danube (up to about USD 70 per trip), fuel tax (USD 0.08 per km for a 38 tonne truck), and the rovinette (USD 16 per week for a large non-EURO truck).

Excluding the bridge tolls but assuming that the present fuel tax and rovinette can be regarded as road user charges, foreign vehicle transit charges would have to be reduced from USD 612 to about USD 70 in order to reduce the overall level of transit charge to the maximum justifiable rate (USD 140, or USD 0.20 per km for 700 km).

Although the transit charges already vary with vehicle weight and length of trip, charges could be related even closer to road use costs if the entry charge was related to axle configuration and lower rates were set for unladen vehicles.

#### *Non-Discrimination*

Both the permit fee and the transit charges are inherently discriminatory because they are targeted only at foreign transporters. Discrimination can be reduced in the short-term by reducing the level of transit charge as described above and by exchanging enough road transport permits to allow all transporters to obtain permits in their respective countries (even if these permits do not exempt the transporter from paying transit fees, they would avoid the need to pay the high permit fee currently levied at the border).

In the medium term, discrimination can be further reduced if the transit fee is completely replaced by the vignette that has recently been introduced in the country.

### *Transparency*

Information about Romanian transit fees is already available from various sources. However some of these sources, such as the internet web site of the UNECE project on trade facilitation, are not official ones and may not be kept up-to-date. The priority is therefore to make sure that official information is also readily available and kept fully up-to-date.

### **3.2.9 TAJIKISTAN**

#### *Cost Relatedness*

The current charges on foreign vehicles result in payments for a multi-axle 38 tonne GVW truck of about USD 200 (USD 1.38 per km) for a typical transit trip in the TRACECA corridor of 145 km, which is about seven times the maximum justifiable rate for this type of vehicle. The only transit charge is that imposed on foreign vehicles for use of Tajik roads and varies according to nationality (especially whether it is registered in the CIS or not) and carrying capacity of the vehicle. For a 38 tonne GVW truck the normal charge is USD 200 for non-CIS trucks (USD 150 for CIS trucks). However special (usually lower) rates are applied to trucks from particular countries. Vehicles exceeding their allowed term of stay in the country (usually five days for most trucks) are charged USD 50 per day. Empty trucks pay the same transit charges as loaded trucks.

No specific fuel tax is imposed on road users but it is likely that such a tax would have to be raised in the medium term to increase cost recovery of the road sector as a whole.

Cost relatedness could be significantly improved if the transit charge were lowered and varied with axle configuration, and if lower charges were set for empty vehicles. Consideration could also be given to varying the permit charge with distance travelled (or time spent in the country).

#### *Non-Discrimination*

The permit charge is inherently discriminatory because it is levied only on foreign trucks and varies with nationality of truck. Reducing the permit charge as proposed above would therefore reduce discrimination. This charge could eventually be replaced with a road network access charge that is levied on both domestic and foreign vehicles at the same daily rate.

No charges are currently defined and levied for abnormal vehicles and loads because there is not yet a legal basis for vehicle size and weight limits (apart from certain rules that apply only to foreign vehicles). The charge structure is expected to be developed to be consistent with the recent CIS agreement on the structure for these charges, in conjunction with implementation of size and weight limits agreed within the CIS.

### *Transparency*

The present system of transit charges is not as clear as in other countries because the charge rate varies according to nationality of vehicle. Consideration could be given to defining a more simpler uniform rate that applied to vehicles irrespective of nationality.



### 3.2.10 TURKEY

#### *Cost Relatedness*

For a foreign multi-axle 38 tonne GVW truck without a road transport permit the current charges would result in payments of about USD 790 (USD 0.53 per km) for a typical transit trip of 1,500 km. This is more than double the maximum justifiable rate, and this is mainly because of a high foreign vehicle transit fee (USD 0.01 – 0.015 per gross tonne km, equivalent to at least USD 570 (USD 0.38 per km) for a typical transit journey by a 38 tonne truck). Lower rates are charged for unladen trucks.

In addition to this transit fee, local authorities at border crossing points impose additional fees on foreign registered vehicles transiting the border (varying between about USD 0.7 and 7.5).

Other significant charges that are paid by both domestic and foreign vehicles are the fuel tax (USD 0.12 per km for a 38 tonne truck), motorway tolls (equivalent to a rate of about USD 0.06 per km) and the FSM bridge toll (USD 11 for a truck-trailer).

Excluding the bridge toll, if the present fuel tax could be regarded as a road user charge, the foreign vehicle transit charges would have to be reduced from typically USD 570 to about USD 90 in order to reduce the overall level of transit charge below the maximum justifiable rate (USD 300 at USD 0.20 per km for 1,500 km).

Although the transit charges already vary with vehicle weight, loading and distance, charges could be related even closer to road use costs if the transit fee was related to axle configuration.

Charges for abnormal loads are levied for vehicles exceeding GVW limits. Foreign vehicles are charged on the same basis as domestic vehicles. Cost-relatedness could be improved if these charges were not only based on GVW but also on axle loadings.

#### *Non-Discrimination*

The transit charge is inherently discriminatory because it is targeted only at foreign transporters. The local authority charge is also discriminatory for the same reasons. Discrimination can be reduced in the short-term by reducing the level of transit charge as described above. The local authority charge could either be abolished or, if it can be justified as a user charge for services rendered at the border, levied equally on domestic and foreign vehicles.

In the medium term, discrimination can be further reduced by replacing the transit fee by some sort of road use charge – for example, a road network access charge similar to the vignette that has been introduced in Romania. However care would have to be taken to avoid over-charging users of motorways, firstly through the network charge and secondly through the motorway tolls.

#### *Transparency*

Information about Turkish transit fees is already available from various sources. The priority is to make sure that official information is also readily available and kept fully up-to-date.

### 3.2.11 TURKMENISTAN

#### *Cost Relatedness*

For a foreign multi-axle 38 tonne GVW truck without a road transport permit the current charges would result in payments of about USD 366 (USD 0.61 per km) for a typical transit trip of 600 km. This is three times the maximum justifiable rate, and this is mainly because of a high foreign vehicle transit permit fee (USD 150 per entry) and a fuel price adjustment charge (USD 96 for 600 km at 0.16 per km) for a typical transit journey by a 38 tonne truck. Empty trucks are charged on the same basis as laden trucks.

In addition to these transit fees, there are two other charges imposed on foreign (but not domestic) vehicles – a toll for use of the Amudarya River pontoon bridge near Farap (USD 80 per one-way crossing by a large truck) and a compulsory motor vehicle insurance charge (typically USD 70 for a round trip by a large truck).

Even if the bridge toll and insurance charge were to be excluded, the other foreign vehicle transit charges would have to be reduced from USD 246 to USD 120 (600 km at USD 0.20 per km) to avoid exceeding the maximum justifiable limit.

Although the total transit charge paid already varies with vehicle carrying capacity and distance, charges could be related even closer to road use costs if the fees were related to axle configuration.

#### *Non-Discrimination*

All the above mentioned charges are inherently discriminatory because they are targeted only at foreign transporters. Discrimination can be reduced in the short-term by reducing the overall level of these charges as described above. Domestic fuel is currently subsidised and this results in a very low retail price (about USD 0.02 at the black market exchange rate). The fuel price adjustment charge could be abolished if this subsidy were to be removed.

#### *Transparency*

Information about Turkmenistan transit fees is not easy to obtain and there is currently doubt about the basis and level of charges for abnormal transport. Transparency could be improved by improving the way current charges on foreign vehicles are advertised.

### 3.2.12 UKRAINE

#### *Cost Relatedness*

For a foreign multi-axle 38 tonne GVW truck without a road transport permit the current charges would result in payments of about USD 92 (USD 0.12 per km) for a typical transit trip of 750 km. This is within the maximum justifiable rate. The main official charge is the unified charge for use of Ukrainian roads which is levied on all international journeys, by both Ukrainian and foreign transporters (about USD 25 for a typical journey). Even lower rates are charged for unladen trucks.

In addition to this unified charge, some local authorities currently charge foreign and Ukrainian vehicles fees for crossing their territory (varying between about USD 30 and 90). However these fees are not in accordance with central government policy and steps are being taken to abolish them. Both domestic and foreign transporters also pay fuel tax, although this is rather low (USD 0.01 per km).

The unified charge is higher for abnormal transport – vehicles with excess GVW, axle loads or physical dimensions. Although the unified transit charges already vary with vehicle weight, loading and distance, charges could be related even closer to road use costs if the transit fee was related to axle configuration.

#### *Non-Discrimination*

None of the above mentioned charges are discriminatory by targeting only foreign transporters. However the unified charge and the local authority charges do discriminate against international transport (by either domestic or foreign transporters).

In the medium term, to reduce discrimination still further, consideration could be given to replacing the unified fee by some sort of road use charge paid by all road users, engaged in both domestic and international transport – for example, a road network access charge similar to the vignette that has been introduced in Romania. Replacing the unified fee by a higher fuel tax would also be a possible option, although this would reduce the extent to which charges were related to costs of road use (it would tend to result in low cost recovery by heavy trucks).

#### *Transparency*

Although the unified fee helps to make transit fees very transparent, uncertainty remains about the local authority charges. Transparency would be increased still further if these charges were abolished.

### **3.2.13 UZBEKISTAN**

#### *Cost Relatedness*

The current charges on foreign vehicles result in payments for a multi-axle 38 tonne GVW truck of about USD 422 (USD 0.70 per km) for a typical transit trip in the TRACECA corridor of 600 km, which is more than three times the maximum justifiable rate for this type of vehicle. The main charge is the charge for use of Uzbek roads (USD 400 per entry, which is equivalent to USD 0.67 per km for a typical trip). In practice there are many variations in the amount charged, in accordance with various bilateral agreements, so the charges vary according to nationality of vehicle. Empty trucks pay the same as loaded trucks. Additional charges are imposed for transit vehicles staying longer than three days in the country.

Fuel tax is rather low (about USD 0.03 per truck km for most types of truck) but it is likely that this would have to be raised in the medium term to increase cost recovery of the road sector as a whole. A charge on foreign vehicles is levied for compulsory third party motor insurance – the amount varies with nationality of vehicle according to the equivalent rates charged in other countries (between USD 2 and 75 for trucks).

Even after excluding the insurance fee, the transit permit charge would have to be reduced from USD 400 to 100 to avoid total charges exceeding the maximum justifiable charge level for large trucks making typical transit journeys. Cost relatedness could be significantly improved if the permit charge could be adapted to vary with truck type and axle configuration, and setting lower charges for empty vehicles. Consideration could also be given to varying the permit charge with distance travelled (or time spent in the country).

### *Non-Discrimination*

The permit charge is inherently discriminatory because it is levied only on foreign trucks. In practice the charge also discriminates between transporters from different countries. Reducing the permit charge as proposed above would therefore reduce discrimination.

In the medium term this charge could possibly be replaced with a road network access charge that is levied on both domestic and foreign vehicles at the same daily rate.

Charges are currently levied on foreign vehicles that exceed defined vehicle and load weight limits (but not size limits). These charges discriminate against foreign vehicles because such charges are not levied on domestic vehicles. The charge structure is expected to be developed to be consistent with the recent CIS agreement on the structure for these charges, in conjunction with implementation of size and weight limits agreed within the CIS.

### *Transparency*

The present system of transit charges is not as clear as in other countries because, under various bilateral agreements, the charge rate is often modified according to nationality of vehicle. Consideration could be given to defining a uniform rate that could be applied to all vehicles irrespective of nationality.

Transparency could also be improved by a further simplification – abolishing the compulsory motor vehicle insurance charge, by establishing reciprocal agreements for recognising insurance cover in other countries.

## **Appendix A Estimation of Transit Charges Imposed in TRACECA Countries – 38 tonne GVW Vehicle (USD per one way trip)**

The tables below describe the estimated transit charges paid by foreign vehicles making typical transit trips on TRACECA routes in each of the TRACECA countries. The first table is for laden trucks and the second table is for unladen trucks. They are updated versions, with minor corrections, of Tables A.4 and A.5 in Draft Working Paper: Priority Issues Concerning Road Transit Fees (October 2002).

In each table two sets of charges are shown:

- those imposed on vehicles without road transport permits that exempt them payment of transit fees, and
- those (shown in brackets) imposed on vehicles with road transport permits that exempt them from payment of fees.

It should be noted that for, Bulgaria and Romania, the Foreign Vehicle Permit Charge is rarely imposed because almost all vehicles entering the country can be expected to have road transport permits which either do or do not exempt them from transit fees. Even those vehicles with permits which do not exempt them from transit charges do not pay this Foreign Vehicle Permit Charge. For example in Bulgaria large trucks with permits that do not exempt them from transit fees would pay a total of USD 234 per entry (USD 634 minus 400).

In many cases charges vary with the nationality of the vehicle. In these cases a typical figure is used.

The fuel tax figures include all taxes – both general taxes, such as sales tax, and specific road user charges. Therefore the figures may not be regarded as wholly charges for transit vehicles.

In some cases assumptions have to be made about the particular route followed, and hence the bridge and motorway tolls that are imposed. Note that in the case of several countries, the average of more than route is used. For example in Romania, two routes (one north-south, one east-west) are used to estimate the typical charges paid and the estimated bridge toll paid is the average of the Fetesti-Cernavoda (east-west) and Guirgiu-Russe (north-south) bridge tolls.

Type of Charge (Figures are for Laden Vehicles)	Armenia	Azerbaijan	Bulgaria	Georgia	Kazakistan	Kyrgyzstan	Moldova	Romania	Tajikistan	Turkey	Turkmenistan	Ukraine	Uzbekistan
<b>Characteristic of Transit Trip</b>													
Length (km)	500	508	400	400	500	600	153	700	145	1,500	600	750	600
<b>Charges for Normal Use of Roads</b>													
(1) Foreign Vehicle Permit Charge	200 (0)	100 (0)	400 (0)	310 (0)	163 (0)	50 (0)		620 (0)	200 (0)		150 (150)		400 (0)
(2) Foreign Vehicle Transit Charge		120 (120)	160 (0)				63 (0)	612 (0)		570 (0)			
(3) Roads or Bridge Tolls			55 (55)	? (?)				40 (40)		35 (35)	85 (85)		
(4) Fuel Taxes	6 (6)	6 (6)	19 (19)	8 (8)	3 (3)	7 (7)	4 (4)	53 (53)	0 (0)	180 (180)	96 (96)	7 (7)	17 (17)
(5) Road User Charge								16 (16)				25 (0)	
(6) Environmental Charge	27 (27)					10 (10)							
(7) Local Authority Charge		25 (25)								5 (5)		60 (60)	
(8) Insurance Charge				25 (25)							35 (35)		5 (5)
(9) Miscellaneous Charges													
<b>TOTAL CHARGE</b>	233 (33)	251 (151)	634 (74)	343 (33)	166 (3)	67 (17)	67 (4)	1,341 (109)	200 (0)	790 (220)	366 (366)	92 (67)	422 (22)
Charge per truck km	0.47 (0.07)	0.49 (0.30)	1.58 (0.18)	0.86 (0.08)	0.33 (0.01)	0.11 (0.03)	0.44 (0.02)	1.92 (0.16)	1.38 (0.00)	0.53 (0.15)	0.61 (0.61)	0.12 (0.09)	0.70 (0.03)
<b>Comments</b> The estimates are based on the typical transit routes shown here. The charges shown apply to transporters who do not possess road permits issued under bilateral agreements that exempt transporters from transit fees. The figures in brackets apply for holders of such permits.	Bagratashen - Meghri	Baku - Qirmizi Korpu	Burgas - Kalotina, Kapikule - Russe	Sadakhlo - Poti, Krasni Most/Poti, Krasni Most - Sarpi	Shymkent - Merke, Shymkent - Horgos	Merke /Georgievka - Torugart	Leusheni - Dubasari	Constanta-Arad, Giurgui-Siret. With 7 day Rovignette	Kurkak - Kanibadam. For non-CIS truck	Sarpi - Edirne	Farap - Serahs	Odessa - Krakovcs/Chernigov	Alat - Gisht Kuprik/ Uzun/Bekobad, Termez - Uzun, Bekobad-Ghist Kuprik

Type of Charge (Figures are for Unladen Vehicles)	Armenia	Azerbaijan	Bulgaria	Georgia	Kazakhstan	Kyrgyzstan	Moldova	Romania	Tajikistan	Turkey	Turkmenistan	Ukraine	Uzbekistan
<b>Characteristic of Transit Trip</b>													
Length (km)	500	508	400	400	500	600	153	700	145	1,500	600	750	600
<b>Charges for Normal Use of Roads</b>													
(1) Foreign Vehicle Permit Charge	200 (0)	0 (0)	400 (0)	310 (0)	163 (0)	50 (0)		620 (0)	200 (0)		150 (150)		400 (0)
(2) Foreign Vehicle Transit Charge			160 (0)				63 (0)	258 (0)		120 (0)			
(3) Roads or Bridge Tolls			55 (55)	? (?)				40 (40)		35 (35)	85 (85)		
(4) Fuel Taxes	6 (6)	6 (6)	19 (19)	8 (8)	3 (3)	7 (7)	4 (4)	53 (53)	0 (0)	180 (180)	96 (96)	7 (7)	17 (17)
(5) Road User Charge		120 (120)						16 (16)				4 (0)	
(6) Environmental Charge	27 (27)					10 (10)							
(7) Local Authority Charge		25 (25)								5 (5)		60 (60)	
(8) Insurance Charge				25 (25)							35 (35)		5 (5)
(9) Miscellaneous Charges													
<b>TOTAL CHARGE</b>	233 (33)	151 (151)	634 (74)	343 (33)	166 (3)	67 (17)	67 (4)	987 (109)	200 (0)	340 (220)	366 (366)	71 (67)	422 (22)
Charge per truck km	0.47 (0.07)	0.30 (0.30)	1.58 (0.18)	0.86 (0.08)	0.33 (0.01)	0.11 (0.03)	0.44 (0.02)	1.41 (0.16)	1.38 (0.00)	0.23 (0.15)	0.61 (0.61)	0.09 (0.09)	0.70 (0.03)
<b>Comments</b> The estimates are based on the typical transit routes shown here. The charges shown apply to transporters who do not possess road permits issued under bilateral agreements that exempt transporters from transit fees. The figures in brackets apply for holders of such permits.	Bagratashen - Meghri	Baku - Qirmizi Korpu	Burgas - Kalotina, Kapikule - Russe	Sadakhlo - Poti, Krasni Most/Poti, Krasni Most - Sarpi	Shymkent - Merke, Shymkent - Horgos	Merke /Georgievka - Torugart	Leusheni - Dubasani	Constantia-Arad, Giurgui-Siret. With 7 day Rovignette	Kurkuk - Kanibadam. For non-CIS truck	Sarpi - Edirne	Farap - Serahs	Odessa - Krakovcevs/Chernigov	Alat - Gisht Kuprik/ Uzun/Bekobad, Termez - Uzun, Bekobad-Ghist Kuprik

**A4**



# **TRACECA: Unified Policy on Transit Fees and Tariffs**

## **Proposals for Road Vehicle Excess Size and Weight Charges**

Scott Wilson  
October 2003

## Table of Contents

<b>1. Introduction</b>	<b>3</b>
<b>2. Comments on Implementation Strategy</b>	<b>4</b>
2.1 <i>Vehicle Size and Weight Limits</i>	4
2.2 <i>Excess Vehicle Size and Weight Charges</i>	5
2.3 <i>Vehicle Insurance</i>	6
2.4 <i>Exemptions from Transit Fees</i>	6
<b>3. Analysis of Excess Weight Charges and Cost</b>	<b>7</b>
3.1 <i>Introduction</i>	7
3.2 <i>Charges</i>	8
3.3 <i>Costs</i>	11
<b>4. Policy Issues Requiring Further Discussion</b>	<b>14</b>
<b>5. Conclusions</b>	<b>19</b>

## 1. Introduction

The second meeting of the Transit Fees and Tariffs Working Group (TFTWG) for roads took place on 2 and 3 July 2003 in Baku. The meeting was attended by representatives from all TRACECA countries except Armenia and Turkmenistan, and there was unanimous agreement on many aspects of road transit fee policy, including

- the framework for calculating transit fees, and
- the implementation strategy for a unified policy on transit fees, including the maximum level of transit fees to be set in the short term.

It was agreed that the Contractor (Scott Wilson consultants) should draft a unified policy based on the agreements reached during the first and second TFTWG meetings, for circulation before the third meeting in October 2003.

A draft Working Paper on Road Transit Fee Policy Proposals was presented by the Contractor during the second TFTWG meeting describing possible actions that could be taken by each country to implement a unified transit fee policy. It was agreed during the meeting that the TFTWG members would submit by 20 July any comments on these possible actions.

Several countries have submitted comments and these were generally in support of the suggested actions. The comments clarified the transit fee information contained in previous documents and the TRACECA users' guide. Some comments included suggestions for further development of the unified policy in areas of

- maximum vehicle size and weight limits,
- charges for excess vehicle size and weight, and
- charges for vehicle insurance.

The Contractor is grateful for all comments received and these have been carefully considered. However although issues such as maximum vehicle size and weight limits are important for transport efficiency, these are outside the terms of reference of the UPTFT. Therefore in such cases no further work can be carried out as part of this study. However other comments on excess vehicle size and weight charges are helpful in developing the unified policy for transit fees.

This paper describes the comments made by the TFTWG members and then carries out further analysis of excess vehicle size and weight charges and costs in order to identify those key issues that need to be discussed during the third TFTWG meeting to develop in more detail the aspects of the draft unified draft policy concerned with excess vehicle size and weight charges.

## 2. Comments on Implementation Strategy

### 2.1 Vehicle Size and Weight Limits

This issue has been raised in written comments by TFTWG members from Romania and Uzbekistan, pointing out the serious consequences of different limits that apply in various TRACECA countries. In particular there are issues arising from the variation in weight limits summarised in Table 1.

**Table 1 Vehicle Weight Limits on International Roads in TRACECA Countries (tonne)**

Country	Gross Vehicle Weight	Single Axle (four tyres)	Double Axle (1.4 m apart)	Triple Axle (1.4 m apart)
Armenia	36.0	10.0	18.0	22.0
Azerbaijan	37.0	10.0	16.0	n/a
Bulgaria <sup>(a)</sup>	40.0	11.5	18.0	24.0
Georgia	n/a	n/a	n/a	n/a
Kazakhstan	38.0	10.0	16.0	22.5
Kyrgyzstan <sup>(b)</sup>	38.0	10.0	16.0	22.5
Moldova	40.0	10.0	16.0	22.0
Romania <sup>(c)</sup>	40.0	9.0	16.0	20.0
Tajikistan <sup>(b)</sup>	38.0	10.0	16.0	22.5
Turkey <sup>(d)</sup>	40.0	11.5	18.0	24.0
Turkmenistan <sup>(e)</sup>	36.0	n/a	n/a	n/a
Ukraine	38.0	10.0	16.0	22.0
Uzbekistan	40.0	8.0	16.0	24.0
CIS <sup>(e)</sup>	38.0	10.0	16.0	22.5

NOTE

(a) 44 tonne GVW for combined transport of 40' ISO container.

(b) Proposed limits not yet implemented

(c) 42 tonne GVW for combined transport of a 40' ISO container (44 tonne for European roads rehabilitated to European standards). Higher axle load limits apply for pneumatic suspension vehicles on European roads (up to 11.5 tonne for single axle, 19 tonne for double axle and 24 tonne for triple axle)

(d) 44 tonne GVW for combined transport of 40' ISO container

(e) Limits agreed within the CIS<sup>1</sup> but not yet implemented in all countries

SOURCE: TRACECA User Guide (based on UPTFT Inventory of Transit Fees and Permits, December 2002)

Variations in limits between CIS countries are already being tackled through a unified policy approach and this is expected to result in all CIS countries adopting the CIS standard limits. The non CIS countries are expected to adopt the same limits as adopted within the EU. Although this would result in less variation, two different sets of standards would remain within the TRACECA region.

Different size and weight limits can prevent efficient use of vehicles and increase costs. In particular the weight limits agreed to by CIS countries, allow lower weights than in Europe, so vehicles designed for European conditions, which provide most of the international services in the TRACECA corridor, cannot be operated to their full potential in other TRACECA countries. The weight limits within CIS are also lower than some neighbouring

<sup>1</sup> Agreement about Size and Weight of Transport Means in CIS Countries, Minsk, June 4, 1999

countries, such as Iran which has a higher axle load limit, and this limits road transport efficiency within the region.

There is strong case for considering the raising of maximum vehicle size and weight limits in CIS countries. This could be done by:

- determining the optimum limits that would apply in CIS countries (that is, the limits that would achieve lowest overall road transport costs, including both vehicle operating costs and road maintenance and development costs),
- assessing the economic impact of adopting within CIS countries the limits adopted within the EU, and
- assessing the infrastructural implications of CIS countries adopting EU limits (especially how this would affect road maintenance and financing requirements).

This is an area in which TRACECA could give assistance for an economic and engineering study. However the success of such a study depends greatly on obtaining reliable data, much of which is not currently available. Success also would depend on full support from all TRACECA countries.

## 2.2 Excess Vehicle Size and Weight Charges

TFTWG members have often emphasised the importance of a unified policy on excess vehicle size and weight charges, and CIS countries have made the first steps towards establishing a common policy<sup>2</sup>. The TFTWG members agreed during the second TFTWG meeting that in this area the short-term priority is (a) for all CIS countries to implement both this CIS agreement and the related CIS agreement signed in Minsk described above, and (b) to remove any differences in the way that domestic and foreign transporters are charged. The CIS agreement is modelled on international good practice and implementing it would be a significant move towards basing excess vehicle size and weight charges in all TRACECA countries<sup>3</sup> on three components:

- a vehicle GVW-related component,
- an axle weight-related component, and
- a physical size (weight, width and length) component.

However implementation of the CIS agreement would not result in any common agreement on the detailed framework for calculating the charges, nor on the level of charges.

This issue has been regarded as important partly because of the different limits that apply in different TRACECA countries and the lack of strict enforcement of these limits (especially the provision to require overloaded trucks to unload the excess load in order to keep within the legal limits). This has resulted in a significant number of movements that are within the weight limits of one TRACECA country but not another, and it has become common practice in some countries to allow over-weight vehicles to use the roads on a routine basis provided

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<sup>2</sup> Agreement about Methodology of Defining Size of Payment for Road Transportation of Heavy and Large-scale Goods, Chisinau, May 17, 2002

<sup>3</sup> Not all non-CIS countries in TRACECA have adopted such a practice – for example Turkey has no specific axle load or physical size component

that over-weight fees are paid, even if the vehicle and axle weights can be reduced by dividing the load between more than one vehicle.

According to international best practice, weight limits are strictly enforced in order to protect the roads from excessive damage, and vehicles are only allowed to carry excess weight if the load cannot be divided between more than one vehicle. Assuming this practice is followed in all TRACECA countries, there would be very few road vehicles carrying excess loads in future years and this issue will decrease in importance.

Nevertheless, since vehicle size and weight charges are currently considered to be an important issue, further analysis is carried out as described in the following section of this paper, to allow further discussion and development of a more detailed unified policy on excess size and weight fees.

## 2.3 Vehicle Insurance

International truck operators in the TRACECA region are faced with charges for compulsory third party vehicle/driver insurance which vary significantly from one country to another. This arises mainly because of the lack of a green card type of insurance system which recognises the insurance cover obtained in one country to be used in another.

Introducing such a green card system is important for reducing delays at borders and encouraging a competitive market for motor insurance. However even if such a system were to be introduced, variations in insurance premiums would be expected to remain due to differences in

- the assessment of accident risk in different countries,
- the assessment of risk of different vehicles/drivers (resulting in drivers that are involved in many accidents having to pay more for their insurance), and
- services and charges for insurance provided by different companies (assuming that they are not controlled by government).

Since most of these factors arise from the operation of the insurance market there is very limited scope for a unified policy on motor vehicle/driver insurance fees which harmonises the insurance charges between countries. The priority for governments is to promote mutual recognition of insurance policies and competition in the insurance market, so that insurance can be provided at least cost to safe vehicles and drivers without the need for delays at border posts.

## 2.4 Exemptions from Transit Fees

Both Romania and Bulgaria submitted written comments on the presentation of the findings on transit fees in Appendix A of the draft working paper Road Transit Fee Policy Proposals, May 2003. In this appendix separate figures are included for transit fees paid by transporters in each TRACECA country who do and who do not possess road transport permits that exempt them from certain fees. The amounts paid by transporters without permits are much higher than those paid by transporters with permits. The TFTWG members from Romania and Bulgaria supplied the following additional information about the proportion of transporters who pay the fees:

- In Bulgaria less than 0.03% of foreign transporters engaged in transit traffic without a road transport permit issued before arrival at the border, so virtually all transporters would have paid the lower figures (estimated in Appendix A as USD 74 for a typical trip with a laden truck with a permit, compared to USD 634 for the same trip by a truck without a permit).
- In Romania less than 1.6% of foreign transporters entering the country in 2002 paid the transit fee which was estimated in Appendix A, for typical transit trips by a laden truck without a permit, as USD 1,341, compared to only USD 109 for a truck possessing a permit (or not requiring a permit at all). So almost all foreign transporters would have paid the lower amount.

These findings support the analysis described in the draft working paper on Priority Issues Concerning Road Transit Fees, October 2002, which described how the exemption rate varied between TRACECA countries. Such low rates of exemption are not found in all TRACECA countries (especially in CIS countries), so comparisons of permit fees paid in different countries have to be made with care.

### 3. Analysis of Excess Weight Charges and Cost

#### 3.1 Introduction

In accordance with the principles of the unified transit fee policy agreed during the first and second TFTWG meetings, the goal of setting excess size and weight charges is to establish a fair charging system, without excessively high charges which can attract trade and traffic along the TRACECA corridor. The guiding principles are cost-relatedness (charges should be based on the additional costs incurred by vehicles carrying excessive size and weight of loads), charging at point of use, non-discrimination and transparency. There is little dispute about policy in the latter three areas, so the focus of the analysis described below is on cost-relatedness.

As in the case of transit fees in general, applying the cost-relatedness principle would not be expected to result in one set of unified charges, even if all countries adopt the same maximum size and weight limits. This is because the costs incurred by transport of excess loads would vary between countries. Carrying excess loads can result in the following additional costs, compared to the costs incurred by normal traffic.

- pavement damage cost due to higher axle loadings,
- infrastructure cost, for example to bridges, due to higher GVW, in terms of damage to structures and/or cost of special strengthening works to protect the structures from damage,
- other infrastructure works, for example temporarily to adjust height clearances or construct short bypasses to allow high vehicles to avoid low bridges,
- highway management expenses to plan and supervise the movement (possibly with convoy protection).

Since the costs inevitably vary significantly with the circumstances of each movement of excess load, and since costs may also vary from one country to another, it is clearly not possible to define strict cost guidelines, especially where special road works are required to

allow passage. However it may be possible to define a unified policy in terms of a common framework for calculating excess size and weight charges and perhaps even define upper limits for certain cost elements. In particular it may be possible to estimate the maximum level of additional pavement damage costs caused by movement of axles carrying weights in excess of the legal maximum. Under normal conditions, pavement damage costs are far greater than other infrastructure repair and maintenance activities, so it would be expected that, for many movements of excess loads, the additional pavement damage cost would be a major part of the total additional cost incurred.

The variation in costs due to the wide range of circumstances of transport of excessive large or heavy loads is one important reason for the lack of unified excess size and weight charge policies adopted at regional level in other parts of the world. Even in the EU little attempt has been made to develop a unified policy in this area. Instead priority has been given to unifying maximum size and weight limits, to avoid constraints on efficiency, and to removing any discrimination in charges imposed on domestic and foreign vehicles.

Charging for excess weight is generally considered to be a more important issue than charging for excess size, and also more amenable to development of a cost-based unified approach. The rest of this section therefore analyses the charges and costs for excess vehicle and axle weight.

### 3.2 Charges

Current charges for carrying excess weights in TRACECA countries are illustrated in Tables 2 and 3. The charges are estimated assuming that the GVW of a large five axle tractor-trailer are, respectively, 10% and 30% greater than the legal maximum. The corresponding excess axle weights are estimated assuming typical distribution of weight between the five axles.

Simple comparisons between all TRACECA countries cannot be made in these tables because of the differences in the legal limits – so a 10% excess weight in a country with a high weight limit is greater than a 10% excess weight in a country with a lower weight limit. Nevertheless comparisons between countries with the same weight limits demonstrate considerable variation in the charge rates, as shown in the following two examples.

- In countries with a maximum GVW weight limit of 38 tonnes, the charge for a 10% overload varies from USD 0.18 per truck km in Ukraine to USD 2.16 per truck km in Kazakstan. No charges are levied in the Kyrgyz Republic and Tajikistan. The equivalent figures for a 30% overload in Ukraine and Kazakstan are USD 0.90 and 2.35 per truck km.
- In countries with a maximum GVW of 40 tonnes, the charge for a 10% overload varies from USD 0.15 per km in Turkey to USD 2.39 in both Romania and Moldova. The equivalent figures for a 30% overload are USD 0.35 in Turkey, 4.93 in Romania and 5.29 in Moldova per truck km. However the charge in Bulgaria for a 30% overload is USD 13.32 per truck km.

The large variation in charges suggests that the charges are not set according to common principles.



Table 2 Current Excess Weight Charges for Foreign Five Axle Truck Exceeding the GVW Limit by 10%

Country	Assumed Weight Distribution (tonne)				Current Excess Weight Charges (USD per veh km)				Comments
	Front Axle	Axles 2&3	Axles 4&5	Total Weight	Excess GVW	Excess Axle Weight	Other	Total	
Armenia	6.0	17.0	17.0	40.0	0.80	0.00	0.02	0.82	Including charge for issuing special permit
Azerbaijan	6.0	17.5	17.5	41.0	0.15	1.00	0.00	1.15	Two double axles overloaded by less than 20%
Bulgaria	7.0	18.5	18.5	44.0	0.40	1.40	0.12	1.92	Two double axles overloaded by 0.5 tonne. Including USD50 for issue of permit for a 400 km haul
Georgia									Insufficient information available to make calculation
Kazakistan	6.0	18.0	18.0	42.0	0.11	2.05	0.00	2.16	Two double axles overloaded by more than 10%, assuming MRI = USD 5.4.
Kyrgyzstan	6.0	18.0	18.0	42.0	0.00	0.00	0.00	0.00	No charges currently levied
Moldova	7.0	18.5	18.5	44.0	1.00	0.80	0.59	2.39	Two double axles overloaded (charged at USD 0.25+0.15 per axle km). Including USD 90 for other fixed charges, for a 153 km haul.
Romania	7.0	18.5	18.5	44.0	0.039	2.204	0.150	2.393	Two double axles overloaded by 2.5 tonne each. Including USD 104.80 for issuing special permit for a 700 km haul
Tajikistan	6.0	18.0	18.0	42.0	0.00	0.00	0.00	0.00	No charges currently levied
Turkey	7.0	18.5	18.5	44.0	0.00	0.00	0.15	0.15	Including USD 128 fixed charge for exceeding GVW limit plus authorisation fee of about USD 92, for a 1,500 km haul
Turkmenistan	6.0	17.0	17.0	40.0	n/a	n/a	n/a	n/a	No information is available to base calculation
Ukraine	6.0	18.0	18.0	42.0	0.08	0.10	0.00	0.18	Excluding USD 0.02 per km which would be charged for normally loaded trucks.
Uzbekistan	7.0	18.5	18.5	44.0	0.02	0.28	0.051	0.351	For two double axles overloaded by ratio of 18.5:16.00 = 1.15 each. Including USD 25 fixed fee for issuing permit for a 600 km haul (USD 0.04 per km)

## NOTE

- (a) For a five axle truck with a single steering axle and two double axles. Excluding weighing fees.
- (b) Fixed charges that do not vary with distance are included in Other charges assuming the rate per km that applies for average transit distances estimated in Appendix A, Draft Working Paper: Road Transit Fee Policy Proposals, May 2003.
- (c) Assuming EURO 1 = USD 1.

SOURCE: TRACECA User Guide (based on UPTFT Inventory of Transit Fees and Permits, December 2002)

Table 3 Current Excess Weight Charges for Foreign Five Axle Truck Exceeding the GVW Limit by 30%

Country	Assumed Weight Distribution (tonne)				Current Excess Weight Charges (USD per veh km)				Comments
	Front Axle	Axles 2&3	Axles 4&5	Total Weight	Excess GVW	Excess Axle Weight	Other	Total	
Armenia	7.0	20.0	20.0	47.0	3.08	2.76	0.02	5.86	Two double axles overloaded (charged at 2x0.69 per km each). Including charge for issuing special permit.
Azerbaijan	7.0	20.5	20.5	48.0	0.30	2.00	0.00	2.30	Two double axles overloaded by 21-50%
Bulgaria	8.0	22.0	22.0	52.0	1.20	12.0	0.12	13.32	Two double axles overloaded by 4.0 tonne. Including USD50 for issue of permit for a 400 km haul
Georgia									Insufficient information available to make calculation
Kazakhstan	7.0	21.0	21.0	49.0	0.30	2.05	0.00	2.35	Two double axles overloaded by more than 10%, assuming MRI = USD 5.4.
Kyrgyzstan	7.0	21.0	21.0	49.0	0.00	0.00	0.00	0.00	No charges currently levied
Moldova	8.0	22.0	22.0	52.0	3.00	1.70	0.59	5.29	Two double axles overloaded (charged at USD 0.25+0.60 per axle km). Including USD 90 for other fixed charges, for a 153 km haul.
Romania	8.0	22.0	22.0	52.0	0.081	4.696	0.150	4.927	Two double axles overloaded by 6 tonne each. Including USD 104.80 for issuing special permit for a 700 km haul
Tajikistan	7.0	21.0	21.0	49.0	0.00	0.00	0.00	0.00	No charges currently levied
Turkey	8.0	22.0	22.0	52.0	0.00	0.00	0.35	0.35	Including USD 435 fixed charge for exceeding GVW limit plus authorisation fee of about USD 92, for a 1,500 km haul
Turkmenistan	7.0	20.0	20.0	47.0	n/a	n/a	n/a	n/a	No information is available to base calculation
Ukraine	7.0	21.0	21.0	49.0	0.18	0.72	0.00	0.90	Two double axles overloaded by 31%. Excluding USD 0.02 per km which would be charged for normally loaded trucks.
Uzbekistan	8.0	22.0	22.0	52.0	0.06	0.70	0.051	0.811	For two double axles overloaded by ratio of 22.0:16.00 = 1.37 each. Including USD 25 fixed fee for issuing permit for a 600 km haul (USD 0.04 per km)

## NOTE

(a) For a five axle truck with a single steering axle and two double axles. Excluding weighing fees.

(b) Fixed charges that do not vary with distance are included in Other charges, assuming the rate per km that applies for average transit distances estimated in Appendix A, Draft Working Paper: Road Transit Fee Policy Proposals, May 2003.

(c) Assuming EURO 1 = USD 1.

## SOURCE:

TRACECA User Guide (based on UPTFT Inventory of Transit Fees and Permits, December 2002)

### 3.3 Costs

The additional variable pavement damage cost that would be attributable to carrying excess loads is estimated in Tables 4 and 5 for 10% and 30% overload respectively. Not included are

- those elements of road use cost, such as fixed road maintenance cost, that would remain constant whether or not the load was in excess of the legal limit,
- the costs of bridge strengthening/maintenance that might be required, and
- administrative costs for planning and supervision of the movement.

Although the estimated costs underestimate the total costs incurred they can give a reasonably good indication of the additional costs incurred by vehicles carrying excess weights.

In Tables 4 and 5 the same assumptions are made about weight distribution on axles as were used for estimating the charges in Tables 2 and 3. This allows the charges and costs to be compared in the two sets of tables. The additional cost of carrying excess load is estimated by multiplying the additional Equivalent Standard Axles (ESAL) per truck<sup>4</sup> by the unit cost per ESAL estimated in previous work<sup>5</sup>.

The additional cost caused by overloaded trucks is very significant. For example, for Armenia, increasing the GVW of a five axle truck by 10% will increase the ESAL per truck from 2.63 to 3.90 (meaning that the heavier truck causes 48% more pavement damage). Based on the variable cost (USD 0.050 per ESAL km) estimated in the previous working paper, this increases cost per truck from USD 0.13 to 0.19, which is an increase of USD 0.06. Increasing the GVW by 30% will increase the ESAL per truck to 7.42 (an increase in pavement damage of 142%, with correspondingly higher cost per truck km).

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<sup>4</sup> This is defined in previous TRACECA working papers and allows the traffic loading on roads to be measured in terms of the amount of pavement damage caused by axles. For a single axle with four tyres this is usually defined for as  $(AL/8.16)^4$ , where AL is the axle weight in tonne and 8.16 is a standard international axle weight in tonne. For a single axle with two tyres, the equivalent standard international axle weight is 6.60 tonne. For a double axle with eight tyres, the equivalent figure is 15.10 tonne.

<sup>5</sup> Table 2.1 of Draft Working Paper: Road Transit Fee Policy Proposals, May 2003, which estimates unit road use costs, in USD per ESAL km, in item B.2. The other unit road use cost estimated in B.2, expressed in terms of USD per vehicle km, is not relevant for the current analysis because road use costs that vary only with vehicle km are not affected by the load of truck.

**Table 4 Calculated Additional Pavement Damage Cost of Five Axle Truck with GVW 10% Above Legal Maximum**

Country	Normal Load Characteristics			Actual Load Characteristics			ESAL per Truck		Additional Cost (USD) per	
	GVW	Front Axle	Double Axles	GVW	Front Axle	Double Axles	Normal	Actual	ESAL km	Truck km
Armenia	36	6	15.0	40	6	17.0	2.63	3.90	0.050	0.06
Azerbaijan	37	6	15.5	41	6	17.5	2.90	4.29	0.026	0.04
Bulgaria	40	6	17.0	44	7	18.5	3.90	5.77	0.043	0.08
Georgia										
Kazakstan	38	6	16.0	42	6	18.0	3.20	4.72	0.120	0.18
Kyrgyzstan	38	6	16.0	42	6	18.0	3.20	4.72	0.084	0.13
Moldova	40	6	17.0	44	7	18.5	3.90	5.77	0.043	0.08
Romania	40	6	17.0	44	7	18.5	3.90	5.77	0.043	0.08
Tajikistan	38	6	16.0	42	6	18.0	3.20	4.72	0.084	0.13
Turkey	40	6	17.0	44	7	18.5	3.90	5.77	0.043	0.08
Turkmenistan	36	6	15.0	40	6	17.0	2.63	3.90	n/a	
Ukraine	38	6	16.0	42	6	18.0	3.20	4.72	0.019	0.03
Uzbekistan	40	6	17.0	44	7	18.5	3.90	5.77	0.022	0.04

**NOTE**

(a) For a five axle truck with a single steering axle and two double axles. Distribution of load is the same as estimated in Table 2.

(b) ESAL estimated as  $(AL/6.6)^4$  for the steering axle and  $(AL/15.1)^4$  for each of the double axles, where AL is the axle load (HDM4 Manual, World Bank, 2001)

(c) The additional cost per ESAL is given in Table 2.1 of Draft Working Paper: Road Transit Fee Policy Proposals, May 2003.

**SOURCE**

Consultants' estimate

**Table 5 Calculated Additional Pavement Damage Cost of Five Axle Truck with GVW 30% Above Legal Maximum**

Country	Normal Load Characteristics			Actual Load Characteristics			ESAL per Truck		Additional Cost (USD) per	
	GVW	Front Axle	Double Axles	GVW	Front Axle	Double Axles	Normal	Actual	ESAL km	Truck km
Armenia	36	6	15.0	47	7	20.0	2.63	7.42	0.050	0.24
Azerbaijan	37	6	15.5	48	7	20.5	2.90	8.06	0.026	0.13
Bulgaria	40	6	17.0	52	8	22.0	3.90	11.17	0.043	0.31
Georgia										
Kazakstan	38	6	16.0	49	7	21.0	3.20	8.75	0.120	0.66
Kyrgyzstan	38	6	16.0	49	7	21.0	3.20	8.75	0.084	0.47
Moldova	40	6	17.0	52	8	22.0	3.90	11.17	0.043	0.31
Romania	40	6	17.0	52	8	22.0	3.90	11.17	0.043	0.31
Tajikistan	38	6	16.0	49	7	21.0	3.20	8.75	0.084	0.47
Turkey	40	6	17.0	52	8	22.0	3.90	11.17	0.043	0.31
Turkmenistan	36	6	15.0	47	7	20.0	2.63	7.42	n/a	
Ukraine	38	6	16.0	49	7	21.0	3.20	8.75	0.019	0.11
Uzbekistan	40	6	17.0	52	8	22.0	3.90	11.17	0.022	0.16

**NOTE**

(a) For a five axle truck with a single steering axle and two double axles. Distribution of load is the same as estimated in Table 3.

(b) ESAL estimated as  $(AL/6.6)^4$  for the steering axle and  $(AL/15.1)^4$  for each of the double axles, where AL is the axle load (HDM4 Manual, World Bank, 2001)

(c) The additional cost per ESAL is given in Table 2.1 of Draft Working Paper: Road Transit Fee Policy Proposals, May 2003.

**SOURCE**

Consultants' estimate

As in the case of the charges shown in Tables 2 and 3, simple comparisons between countries cannot be made because of the different weight limits that apply in each country. Nevertheless the following comparisons can be made, confirming that there are significant variations in road use cost between countries due to differences in the underlying road provision cost structure.

- For countries with a 38 tonne GVW weight limit, the additional cost per truck km for a 10% overload varies from USD 0.03 in Ukraine to USD 0.18 in Kazakstan. The equivalent figures for a 30% overload are USD 0.11 and 0.66 respectively.
- For countries with a 40 tonne GVW weight limits, the additional cost per truck km for a 10% overload varies from USD 0.04 in Uzbekistan to 0.08 in Bulgaria, Moldova, Romania and Turkey. The equivalent figures for a 30% overload are USD 0.16 and 0.31 respectively.

Comparison of the estimated costs with the charges in the previous two tables shows that, for most countries, charges for carrying excess weight are far higher than the additional pavement damage cost, as indicated in the following examples.

- For the countries with a 38 tonne GVW limit, the additional costs for a 10% excess load, which vary between USD 0.03 and 0.18 per truck km, are much less than the charges, which vary between USD 0.18 and 2.16 per truck km. For 30% excess load, a similar disparity is found – with costs between USD 0.11 and 0.66, compared to charges between USD 0.90 and 2.35 per truck km.
- For countries with a 40 tonne GVW limit, the additional costs for a 10% excess load, which vary between USD 0.04 and 0.08 per truck km, are much less than the charges, which vary between USD 0.15 and 2.39 per truck km. For 30% excess load, a similar disparity is found – with costs between USD 0.16 and 0.31 per truck km, compared to charges between USD 0.35 and 13.32.

In most cases charges are more than five times the additional pavement damage costs for both 10% and 30% excess load. It is not uncommon for charges to be between 20 and 50 times the additional pavement damage cost. The main exception is Turkey, where charges are only about double the additional pavement cost for 10% excess load, and charges are only 13% greater than costs for 30% excess load. This strongly suggests that, even if full allowance were made for other costs incurred by overloaded trucks such as bridge strengthening, maintenance and administration, most TRACECA countries impose charges that are substantially higher than is justified according to the cost-relatedness principle.

The variation in costs between countries confirms that there is little scope for agreement within TRACECA on the level of excess weight charges. However, in view of the extremely high level of charges levied by most TRACECA countries, consideration could be given to reducing unjustifiably high charges through setting a maximum level for the charges.

#### **4. Policy Issues Requiring Further Discussion**

To develop the unified policy in more detail, consideration can be given to refining the framework for calculating each of the three components defined in the CIS agreement. According to the agreement each of these three components is required to vary with vehicle distance travelled.

1. The analysis described above suggests that there is scope in most TRACECA countries for increasing the cost-relatedness of the axle-related charge component by basing the charge on the pavement damage costs (ESAL per truck). This could be supported by a unified policy which defined the basis for calculation and could, in turn, even define a maximum level of charge.
2. It may also be possible to relate the GVW-related charge to the bridge strengthening and maintenance costs but since this depends so much on the local circumstances of particular movements, it is doubtful that the unified policy could be further developed in this area.
3. It may also be possible to relate the size-related charge component to the cost of modifying structures and supervising the movement of large loads. However, as in the case of the GVW-related charge component, the precise cost varies so much with local circumstances that there is little scope for defining a unified policy in further detail.

In view of these considerations the following issues are raised when developing a unified policy in more detail.

**ISSUE 1: The Basis of a Unified Policy.** Since additional costs incurred by movement of loads with excess size and weight vary with local circumstances such as the maximum legal size and weight limits, and unit road use costs, what can be the basis of a unified policy?

There are broadly three levels of depth and detail which could be considered for the unified policy:

LEVEL 1 Accepting the CIS Agreement Approach without Modification or Development: this is the least detailed of the three levels, and the one which has already been endorsed by the TFTWG members. It requires countries to charge for excess size and weight in accordance with three elements (a) Excess GVW, (b) Excess Axle Weight, and (c) Excess Physical Dimensions (length, width and height). The formula agreed within the CIS is as follows:

$$P_1 = [P_{ew} + (P_{eawl} + \dots + P_{eawi})] \times S + (C_l + C_w + C_h) * \times S$$

where

$P_1$  = payment for **one** (valid for one occasion only) haul of freight by road vehicle;

$P_{ew}$  = payment if gross weight of vehicle exceeds the maximum legally allowed weight;

$P_{eawi}$  = payment (per axle) if an axle load exceeds the maximum legally allowed weight;

$S$  = length of haul (in hundred km);

$C_l$ ,  $C_w$ ,  $C_h$  are the payments if length, width and height of vehicle exceed the maximum legally allowed dimensions.

\* NOTE: According to the CIS agreement  $(C_l + C_w + C_h) = 0$  for those CIS countries, which don't have a legislative base for imposing taxes for exceeding maximum length, width and height of vehicle.

**LEVEL 2 More Detailed Definition of Charging Framework:** this requires a more detailed approach than the CIS agreement and, at the simplest level, would involve agreeing a more detailed description of the factors which should be taken account of in estimating the variables in the formula described above. For example,

- $P_{ew}$  to be based on the additional costs of strengthening, maintenance or repairing bridges and similar infrastructure which are explicitly related to the planned haul,
- $P_{caw}$  to be based on the pavement damage costs as measured by Equivalent Standard Axles (ESAL km), and
- $C_l$ ,  $C_w$ ,  $C_h$  to be based on the additional costs of modifying overhanging infrastructure or providing alternative routes that avoid low bridges.

This approach would be a logical next step to develop the CIS agreement into a more powerful unified policy. The unified policy could be defined in even more detail than suggested above if there was broad support within TRACECA member countries for a more in-depth approach.

**LEVEL 3 Setting Upper Limits for the Charges:** this approach would build on the more detailed framework outlined above, by setting upper limits for one or more components of excess size and weight charges in order to remove unjustifiably high charges.

Because the regulations and road use costs vary so much between TRACECA countries, as described earlier, it would not be practical to reach agreement on specific target values for any of the variables included in the CIS formula ( $P_{ew}$ ,  $P_{caw}$ ,  $C_l$ ,  $C_w$ , and  $C_h$ ). However, based on the work described above, unjustifiably high values of  $P_{caw}$  could possibly be avoided by calculating  $P_{caw}$  using an agreed maximum value for the variable road use cost (per ESAL km).

To set a maximum limit for the excess axle load charge it is recommended that a maximum value for the variable road use cost of USD 0.15 per ESAL km is agreed for the unified policy. This cost varies in TRACECA countries between USD 0.019 and 0.120 according to the most recent studies<sup>6</sup>, so the proposed target figure exceeds the highest figure found in any of the countries by a small but reasonable margin. This margin is sufficiently high to cover any additional costs not included in the estimated pavement damage cost – such as the expenses for planning and supervising the haul.

An example of the maximum charges  $P_{caw}$  that would result from using this target figure, for overloaded five axle trucks, is shown in Table 6. In most countries, applying the maximum cost figure of USD 0.15 per ESAL km would result in much lower charges for excess axle loads.

**ISSUE 2: Coverage of Total or Variable Costs?** In developing any unified policy in more depth than LEVEL 1, the question arises about whether excess size and weight charges should cover just the additional road use costs arising from carrying the excess load, or whether the charges should also include a margin to cover fixed costs (which would not vary whether or not the excess load was carried or not).

<sup>6</sup> Table 2.1 of Draft Working Paper: Road Transit Fee Policy Proposals, May 2003



**Table 6 Maximum Excess Axle Load Charge for a Five Axle Truck for a Unified Policy Based on a Maximum Charge per ESAL km**

Country	ESAL per Truck			Maximum Road Use Cost USD/ESAL km	Estimated Maximum Axle Load Charge		Current Axle Load Charge	
	Normal	10% Overload	30% Overload		10% Overload	30% Overload	10% Overload	30% Overload
Armenia	2.63	3.90	7.42	0.15	0.19	0.72	0.00	2.76
Azerbaijan	2.90	4.29	8.06	0.15	0.21	0.77	1.00	2.00
Bulgaria	3.90	5.77	11.17	0.15	0.28	1.09	1.40	12.0
Georgia								
Kazakhstan	3.20	4.72	8.75	0.15	0.23	0.83	2.05	2.05
Kyrgyzstan	3.20	4.72	8.75	0.15	0.23	0.83	0.00	0.00
Moldova	3.90	5.77	11.17	0.15	0.28	1.09	0.80	1.70
Romania	3.90	5.77	11.17	0.15	0.28	1.09	2.204	4.696
Tajikistan	3.20	4.72	8.75	0.15	0.23	0.83	0.00	0.00
Turkey	3.90	5.77	11.17	0.15	0.28	1.09	0.00	0.00
Turkmenistan	2.63	3.90	7.42	0.15	0.19	0.72	n/a	n/a
Ukraine	3.20	4.72	8.75	0.15	0.23	0.83	0.10	0.72
Uzbekistan	3.90	5.77	11.17	0.15	0.28	1.09	0.28	0.70

NOTE (a) Examples of estimated maximum axle load charge ( $P_{eaw}$ ) for all overloaded axles of a five axle tractor trailer which has 10% (or 30%) excess gross weight, assuming a unified policy based on a uniform maximum variable road use cost of USD 0.15 per ESAL km.

(b) Excluding the cost and possible charges for excess GVW and excess physical dimensions.

SOURCE Consultant's estimate and TRACECA User Guide (based on UPTFT Inventory of Transit Fees and Permits, December 2002)

There are compelling reasons for excess size and weight charges to cover only the variable costs – which are those additional costs fully attributable to carrying the excess portion of load. In particular the transporter would already be liable for paying normal road use charges, which are applicable for carrying normal loads, and so charging more than the additional variable costs attributable to the excess load would be regarded as unfair, and involving double-charging.

It is therefore recommended that, provided all variable costs are included (including administrative costs of planning and supervising the haul), the excess size and weight charges should cover only variable costs.

**ISSUE 3: Variation of Excess Size and Weight Charges with Distance and/or Time?**

Although as implied by the CIS charging formula, many of the costs imposed by carrying excess loads will increase with distance, not all costs will vary in this way. In particular the structural costs associated with estimating  $P_{cw}$ ,  $C_l$ ,  $C_w$ , and  $C_h$ , may often not vary in a simple way with distance (for example, if much of the excess cost is caused by having to deal with access across or under one or more specific bridges). Even costs associated with  $P_{eaw}$  are not purely distance based (as in the case of pavement damage costs for example) but also involve administration expenses for planning the haul which would be independent of distance to some extent.

It is therefore recommended that, when developing the unified policy in more detail, charges are not necessarily restricted to varying with distance or time. Instead the policy should allow both a fixed and distance-related amount per trip to be charged in order to reflect underlying costs of road use and to maximise cost-relatedness, provided that the table of charges is still clear and transparent to road users.

**ISSUE 4: How Best to allow Excess Size and Weight Charges to Vary with Vehicle Type and Size?** This depends on the component of excess size and weight charge under consideration, as described below.

- The charge for excess GVW, which should reflect the possible damage to bridges and other structures and/or strengthening work, is likely to vary in a simple way with GVW. Although more complicated charging formulae could be devised which distinguish the damage effect of long and short vehicles (the shorter vehicle of a given GVW will tend to put more strain on structures) this is unlikely to be a practical way of charging.
- In order for the charge for excess axle load to reflect the pavement damage caused by additional weight, this charge component is likely to be best estimated in terms of the pavement damage effect (ESAL per axle and per vehicle). This requires tables of charges that increase sharply with axle weight in accordance with the fourth power law used to calculate ESAL (as illustrated in Tables 4 and 5).
- Although the costs incurred by operation of excess vehicle sizes would be expected to increase with the height, width and length of the loaded vehicle, the relationship is too complicated to be encapsulated in a simple formula, and varies significantly with local circumstances. Tables of charges for this component would therefore have to be based on local experience in handling over-sized loads on different types of roads. Transparency can be achieved by publishing with the charges supporting information such as unit rates for convoy services.

Estimating the effects on costs of different vehicle types and sizes can to a large extent be reflected in the charging structure, through use of the relationships described above, between costs and key variables such as GVW, ESAL and the physical dimensions of the loaded vehicle. Therefore there is no obvious need for any additional guidelines to be included within the unified policy.

## 5. Conclusions

In most TRACECA countries current charges for carrying excess weight are much greater than the additional costs incurred (at least in terms of the pavement damage caused). The additional pavement damage cost caused by carrying a given excess load varies considerably from one country to another.

The policy for excess vehicle size and weight, already agreed to by the TFTWG for roads, based on recent agreements within the CIS, is a useful first step towards a unified policy, However it can be developed by specifying in more detail the way in which the charges should be calculated, including definition of the key variables such as GVW and ESAL that are used to make the calculations, and the relationship between charges and costs. The following definitions for terms used in the CIS agreement formula are recommended:

- $P_{ew}$  to be based on the additional costs of strengthening, maintenance or repairing bridges and similar infrastructure which are explicitly related to the planned haul,
- $P_{caw}$  to be based on the pavement damage costs as measured by Equivalent Standard Axles (ESAL), and
- $C_l$ ,  $C_w$ ,  $C_h$  to be based on the additional costs of modifying overhanging infrastructure or providing alternative routes that avoid low bridges.

It is further recommended that, to ensure that charges cover only the additional costs incurred, the unified policy should require excess size and weight charges to be based on the variable road use costs, provided all variable costs are included (including administrative costs of planning and supervising the haul). It is recommended that the unified policy allows charges to be either fixed or to vary with distance or time.

Adopting these definitions can help the unified transit fee policy to achieve greater cost-relatedness in setting excess size and weight charges, and to increase transparency in their application.

It would not be practical to set upper limits to the charges for excess GVW, axle weight or physical size of vehicle because costs vary significantly between countries and these costs vary so much with local circumstances of each particular haul. However to help reduce excessively high charges in TRACECA countries, consideration could be given to defining within the transit fee policy, an upper limit to the road use cost assumed when calculating the charge for excess axle weights. To set upper limits on the excess axle weight charge while still allowing for variations in road use costs between countries, it is recommended that the excess axle charge is calculated using an upper limit of USD 0.15 per ESAL km for the variable road use cost.

**A5**

# **TRACECA: Unified Policy on Transit Fees and Tariffs**

## **Unified Policy on Road Transit Fees**

Scott Wilson  
October 2003

## Table of Contents

<b>1. Introduction</b>	<b>3</b>
<b>2. Goals</b>	<b>4</b>
<b>3. Objectives of Transit Fee Policy</b>	<b>5</b>
<b>4. Basis for Calculating Fees</b>	<b>5</b>
<b>5. Implementation Strategy</b>	<b>6</b>
5.1 Overall Strategy	6
5.2 Short-term Priorities	6
5.3 Other Priorities	7
5.4 Institutional Arrangements	8
<b>Annex A Framework for Estimating the Cost of Normal Road Use</b>	<b>9</b>
<b>Annex B Framework for Calculating Road Vehicle Excess Size and Weight Charges</b>	<b>13</b>
<b>Annex C Implementation Strategy for the Unified Policy for Road Transit Fees</b>	<b>14</b>

## 1. Introduction

One of the aims of the UPTFT project is to determine a unified policy and equitable levels for the imposition of legitimate road transit fees. The project seeks clarification and, with the active participation of the TRACECA National Commissions, freight forwarding and carriers associations, exposes those that cannot be justified.

Initial work concentrated on the Contractor, Scott Wilson consultants, establishing with assistance from the TRACECA member governments, a draft Inventory of Road Transport Fees and Permits. The purpose of establishing this inventory was to improve transparency of the issues and to enable some priorities to be set in resolving the more important issues first. A road transport operator survey was also carried out in order to examine the problems from the users' point of view.

Based on this initial work two draft working papers were prepared:

- Priority Issues Concerning Road Transit Fees, October 2002, and
- Road Transit Fee Policy Options, October 2002.

These reports identified priority issues, including the main types of unjustifiable transit fees and the economic costs of current policies and practices, and proposed possible options in broad terms. These proposals were discussed in the first meeting of the Transit Fees and Tariffs Working Group (TFTWG) for roads on 27 and 28 November 2002 in Baku. The meeting was attended by representatives from all TRACECA countries except Armenia and Turkmenistan, and there was unanimous agreement that to meet the problems facing international road transport in the TRACECA region, solutions have to be developed through regional cooperation, in accordance with the TRACECA General Multilateral Agreement (MLA) and other relevant international agreements. During this meeting agreement was reached on the goals, objectives and form of a unified policy for road transit fees as described in:

- Protocol On Results of the First Transit Fee and Tariffs Working Group for Roads (referred to hereafter as Protocol TFTWG 1)

Following this meeting, at the request of the TFTWG members, the Contractor prepared draft policy proposals to enable further discussions to take place during the second meeting of the Transit Fees and Tariffs Working Group (TFTWG) for roads which took place on 2 and 3 July 2003 in Baku. The proposals are described in the draft working paper:

- Road Transit Fee Policy Proposals, May 2003

The meeting was again attended by representatives from all TRACECA countries except Armenia and Turkmenistan, and there was unanimous agreement on many aspects of road transit fee policy, including

- the framework for calculating transit fees, and
- the implementation strategy for a unified policy on transit fees, including the maximum level of transit fees to be set in the short term.

These agreements are described in:

- Protocol Second Transit Fee and Tariffs Working Group for Roads (referred to hereafter as Protocol TFTWG 2)

It was agreed that the Contractor (Scott Wilson consultants) should draft a unified policy based on the agreements reached during the first and second TFTWG meetings, for circulation before the third meeting in October 2003. It was also agreed that the TFTWG members would submit to the Contractor by 20 July any comments on the possible actions that could be taken by each country to implement the unified transit fee policy. This has led to further analysis and proposals for excess vehicle size and weight charges in the draft working paper:

- Proposals for Road Vehicle Excess Size and Weight Charges, August, 2003

The current document describes the draft unified policy as requested by the TFTWG members. Accompanying notes and references are included in the document to help the reader understand the basis for each part of the policy. Almost all the text of the policy document quotes word-for-word the agreements reached in Protocols TFTWG 1 and TFTWG 2. Some additional text has been added in order to improve the presentation and to include modifications proposed in Proposals for Road Vehicle Excess Size and Weight Charges, August 2003. The latter proposals are to be discussed during the third TFTWG in October 2003. To assist during discussions, any significant additional text in the main policy document is highlighted as shown in this sentence. The material in the annexes is mainly taken from draft working papers that have been discussed during the TFTWG meetings.

## 2. Goals

In accordance with the General Multilateral Agreement (MLA), the goals of the policy are to establish a fair transit system, without excessively high charges, which can promote trade and attract traffic along the TRACECA corridor.

*The goals of transit fee policy are described in Protocol TFTWG 1 (4b) and Protocol TFTWG 2(2a).*

*Other paragraphs of Protocol TFTWG 1 (3 and 4) describe how there is a need to rationalise and increasingly harmonise charging policies for international road transport of goods.*

*Current problems include:*

- (a) present transit charges in most TRACECA countries are effectively charges on access to the market rather than charges for use of the roads,*
- (b) permit and transit fees that are levied on foreign trucks in many TRACECA countries do not vary with distance or characteristics of truck,*
- (c) transit charges discriminate between operators from different countries, between permit holders and non-permit holders, and between domestic and foreign transporters,*
- (d) transit charges are often unclear due to untimely notification of tariffs and proposed changes*
- (e) TRACECA countries have failed to agree on policies for charging of overweight or oversized vehicles*



type of vehicle. A costing framework agreed by the TFTWG is outlined in Annex A in terms of the total annual fixed and variable costs of road network provision, the total annual traffic using the network (traffic flows and traffic loading measured in terms of Equivalent Standard Axles (ESALs), and the derived unit costs per vehicle km and ESAL km.

A common framework should also be adopted by TRACECA countries in calculating charges imposed on road vehicles permitted to carry loads which exceed the normal maximum allowed size and weight. The framework agreed by the TFTWG is outlined in Annex B.

To avoid double-charging, separate user charges shall not be imposed at the same time for the same road section. Transit charges shall be based on internationally recognised standard elements for the calculation of costs of road use, in either local currency or a freely convertible currency.

*The agreed framework for calculating transit fees is described in Protocol TFTWG 2(3a, b, c, and d). Other specific agreements about imposing charges are described in Protocol TFTWG 1(4d and f). The costing framework described in Annex A is based on Tables 2.1 and 2.2 of the Draft Working Paper on Road Transit Fee Policy Proposals (May 2003). These tables were used to justify the maximum levels of transit fees agreed by TFTWG members for trucks with two, three, and more than three axles.*

*The proposal for a common framework for calculating charges imposed on road vehicles that are permitted to carry loads which exceed the normal maximum size and weight limits, is described in Draft Working Paper on Proposals for Road Vehicle Excess Size and Weight Charges, August 2003, and is due for discussion in the third TFTWG meeting in October 2003.*

## 5. Implementation Strategy

### 5.1 Overall Strategy

In terms of overall strategy, coordinated action is required to tackle the issues of cost-relatedness, discrimination and transparency, through measures such as reducing, restructuring and simplifying transit fees. The implementation strategy described below is summarised in Annex C.

*The overall strategy was agreed in Protocol TFTWG 2(4a) based on the proposal in Table 3.1 of Road Transit Fee Policy Proposals, May 2003, which is reproduced in Annex C*

### 5.2 Short-term Priorities

The short-term priority is (i) to reduce or abolish those transit fees which have already been identified by the TFTWG to be excessively high, and (ii) where appropriate, to relate fees to type and size of vehicle and to distance travelled (or time spent) in the country. In particular, it is recommended to consider the possibility of reducing charges where overall charges for loaded trucks currently exceed (in equivalent terms) USD 0.20 per km for trucks with more than three axles, USD 0.10 per km for a three axle truck and USD 0.05 per km for a two axle

truck. Charges for empty trucks should be no more than 50% of the above figures. In the medium term, consideration should be given to further reductions and abolishing of unjustifiable transit fees.

TRACECA countries should also seek to abolish differences in bridge tolls and similar charges imposed on domestic and foreign transporters, and set transit fee rates for foreign transporters that apply irrespective of country of registration of vehicle.

TRACECA countries should improve the transparency of the procedures for setting transit fees by simplifying the system of setting rates and by making available updated information about transit fees (giving at least six months notice of any changes being proposed).

TRACECA countries should prepare, in the short-term, plans for abolishing those fees which were considered by the TFTWG to be unjustifiable – in particular

- (i) fees charged by local authorities which are targeted at foreign vehicles,
- (ii) environmental charges that are not related to environmental impacts and do not apply equally to domestic and foreign transporters, and
- (iii) fuel adjustment charges imposed on foreign transporters designed to compensate for low fuel prices in the country.

TRACECA countries should work with domestic and foreign transporters to improve the supply of permits on a fair basis and to improve the way that transit fee regulations are formulated, in order to abolish unjustifiable charges.

In the case of excess size and weight fees, the short-term priority is for all CIS countries to implement the CIS agreements on harmonised vehicle size and weight limits and on the structure of fees for excess size and weight, and remove any differences in the way that domestic and foreign transporters are charged. To remove unjustifiably high excess axle weight charges, it is recommended that, when calculating these charges, a maximum value of USD 0.15 per ESAL km is adopted for the variable road use cost.

*The short-term implementation strategy was agreed in Protocol TFTWG 2(4b, c, d, e, f, and g). The strategy for excess size and weight has been developed to include tentatively the proposals for a maximum level of excess axle weight charges described in Draft Working Paper on Proposals for Road Vehicle Excess Size and Weight Charges, August 2003.*

### 5.3 Other Priorities

TRACECA countries should also consider other important reforms of charges levied on transit traffic which could be introduced in the medium term such as

- (i) increasing fuel tax and introducing daily network access charges in order to increase cost recovery from all transporters (domestic and foreign) and allow further reductions in discriminatory transit fees aimed at foreign transporters,
- (ii) establishing international agreements to recognise, on a reciprocal basis, foreign motor insurance policies, in order to reduce additional insurance charges imposed on foreign vehicles,
- (iii) reducing excessive transit charges due to immigration and Customs practices (especially by full implementation of the TIR convention and setting convoy charges so that they reflect the cost of the service provided), and

- (iv) **reducing unduly restrictive limits on length of stay of international vehicles to reduce penalty charges.**

*These other priorities were agreed in Protocol TFTWG 2(4h).*

## 5.4 Institutional Arrangements

In further developing the unified policy and the identification of changes recommended by this project, full use should be made of the National Working Groups established in each TRACECA country under the supervision of the TRACECA National Secretaries, in order to ensure that any proposed draft policy has broad support from all stakeholders in each country.

IGC TRACECA should consider ways to assist its members in establishing a means of strengthening and coordinating the national mechanisms for implementing and enforcing the unified transit fee policy – for example through establishing within IGC TRACECA a coordinating organisation and managing the TRACECA users' guide to keep transit fee information up-to-date.

The TFTWG members would timely inform the IGC of any changes in transit fees, so that the users' guide can be updated. The International Road Transport Union (IRU) and other similar groups are invited to provide the information in the TRACECA Users' Guide to all interested users in whatever form they prefer.

*These institutional arrangements were agreed in Protocol TFTWG 2(2d and 5d) and in Protocol TFTWG 1(4j and k).*

## Annex A Framework for Estimating the Cost of Normal Road Use

(A) Estimation of Road Provision Cost	Defined Variable
(A.1) Length of International and Other Main Roads (km)	
Incl: International	Li
Other Republic	Lo
(A.2) Average Annual Cost of Normal Maintenance (USD/km)	
International	Mi
Other Republic	Mo
(A.3) Proportion of Annual Cost of Normal Maintenance which is Variable or Fixed (%)	
Variable (number of vehicles)	Pv
Variable (number of ESALs)	Pa
Fixed	Pf
(A.4) Additional Annual Investment Cost for Rehabilitation (USD million)	
Actual Investment to be Incurred	It
Incl: Variable (number of vehicles)	Iv
Variable (number of ESALs)	Ia
(A.5) Total Annual Cost (USD million)	Ct
Incl: Variable (number of vehicles)	Cv
Variable (number of ESALs)	Ca
Fixed	Cf
(B) Estimation of Unit Road Use Costs	
(B.1) Annual Traffic on Main Roads	
Vehicle km (million)	Kv
ESAL km (million)	Ka
(B.2) Unit Cost	
Variable (USD/ vehicle km)	Uv
Variable (USD/ESAL km)	Ua
(C) Estimation of Road Use Costs per Vehicle km	
(C.1) Two-Axle Trucks	
ESAL/vehicle	E <sub>2</sub>
Variable Road Use Cost (USD/km)	R <sub>2</sub>
Total Road Use Cost (USD/km)	T <sub>2</sub>
(C.2) Three-Axle Trucks	
ESAL/vehicle	E <sub>3</sub>
Variable Road Use Cost (USD/km)	R <sub>3</sub>
Total Road Use Cost (USD/km)	T <sub>3</sub>
(C.3) Trucks with > 3 Axles	
ESAL/vehicle	E <sub>4</sub>
Variable Road Use Cost (USD/km)	R <sub>4</sub>
Total Road Use Cost (USD/km)	T <sub>4</sub>

Estimating the cost of normal road use (that is by vehicles carrying loads within the normal maximum permitted size and weight limits) involves the following steps for each country<sup>1</sup>.

<sup>1</sup> As estimated for most TRACECA countries in UPTFT Draft Working Paper: Road Transit Fee Proposals, May 2003 (Section 2.3).

**(A) Estimating the Road Provision Cost for the Road Network**

A.1 Obtain the length of the main road network ( $L_i$  and  $L_o$ ). This would normally include roads serving both international and republic functions. If local roads are to be included this should be made clear.

A.2 Obtain from local or international sources the average annual cost per road km required (which may be more than the actual amount spent) for normal maintenance for international roads ( $M_i$ ) and other roads ( $M_o$ ). Unless otherwise stated these values include all expenditure required to preserve the road over its design life, including routine work patching and periodic pavement renewals. The values vary with road standard, traffic flow (vehicle km) and traffic loading, or flow of Equivalent Standard Axles (ESAL km). Default values are given for many TRACECA countries in Table 2.1 of Road Transit Fee Policy Proposals, May 2003 based on international experience for roads meeting the road standards and traffic levels and loadings in each country.

A.3 Estimate the proportion of annual cost of road maintenance which varies with traffic flow ( $P_v$ ), varies with axle loading ( $P_a$ ) and is fixed ( $P_f$ ). These proportions can only be estimated from detailed study, such as those used to calibrate the World Bank HDM model. Default values have been estimated for TRACECA countries as follows.

Country	$P_v$	$P_a$
Armenia	38	27
Azerbaijan	43	27
Georgia	31	23
Kazakstan	37	27
Kyrgyz Republic	35	27
Tajikistan	34	26
Ukraine	29	20
Uzbekistan	32	26

NOTE (a)  $P_f$  is estimated simply as  $(100 - P_v - P_a)$

SOURCE - Table 2.1 of Road Transit Fee Policy Proposals, May 2003

A.4 Obtain the actual (not planned) additional annual investment expenditure ( $I_t$ ) on the road network for road rehabilitation, including any backlog maintenance not already included in the figures included in A.2. Enter that part of the additional annual investment expenditure ( $I_t$ ) which is considered as varying with traffic flow ( $I_v$ ) and flow of Equivalent Standard Axles ( $I_a$ ).

Choosing  $I_v$  and  $I_a$  is inevitably rather arbitrary and depends on government policy. In countries where cost recovery from domestic road users is low (as in most CIS countries) it would be appropriate to set  $I_v$  and  $I_a$  as zero, especially if there is a risk that high transit fees would deter transit traffic and discriminate against foreign hauliers.

Other external costs of road use such as congestion, accident and environmental costs would not normally be included. If such additional costs are to be included, they should be included as a separate entry with a clear justification.

A.5 Calculate the total annual network costs ( $C_t$ ), including road maintenance and investment as follows:

$$C_t = L_i * M_i + L_o * M_o + I_t$$

The breakdown into costs that vary with traffic flow ( $C_v$ ), that vary with flow of ESAL ( $C_a$ ), or that do not vary with traffic or loading ( $C_f$ ), are calculated as follows:

$$C_v = (L_i * M_i + L_o * M_o) * (P_v / 100) + I_v$$

$$C_a = (L_i * M_i + L_o * M_o) * (P_a / 100) + I_a$$

$$C_f = (L_i * M_i + L_o * M_o) * (P_f / 100) + I_t - I_v - I_a$$

### (B) Estimation of Unit Road Use Costs

B.1 Obtain the annual total traffic flow for the road network defined in A.1 in terms of vehicle km ( $K_v$ ) and ESAL km ( $K_a$ ). The ESAL km can be estimated by multiplying, for each vehicle type (for example, cars, buses, light trucks, two axle heavy trucks, three axle heavy trucks, multi-axle trucks), the vehicle km (estimated from classified traffic counts) and typical ESAL per vehicle (obtained from axle load surveys). In the absence of such surveys  $K_a$  can be approximately estimated from  $K_v$  using default values for the ratio of  $K_a:K_v$  obtained from the most recent TRACECA surveys as shown below.

Country	$K_a/K_v$
Armenia	0.084
Azerbaijan	0.141
Georgia	0.190
Kazakhstan	0.036
Kyrgyz Republic	0.056
Tajikistan	0.052
Ukraine	0.178
Uzbekistan	0.181

NOTE: (a) These values were measured in 1997. As the vehicle fleet is modernised with vehicles able to carry heavier axle loads, the value of  $K_a/K_v$  would be expected to increase.

SOURCE: Table 2.1 of Road Transit Fee Policy Proposals, May 2003

B.2 The unit variable costs can be estimated from:

$$U_v = C_v / K_v \text{ (USD per vehicle km)}$$

$$U_a = C_a / K_a \text{ (USD per ESAL km)}$$

Typical values for these unit costs are given in Table 2.1 of Road Transit Fee Policy Proposals, May 2003. The average value for  $U_a$ , the most critical cost in transit fee calculations, is USD 0.052, varying between USD 0.019 and 0.120 for the countries in this table. A value of USD 0.043 for  $U_a$  has been estimated recently for Turkey. For other TRACECA countries not included in this table, Bulgaria, Romania and Moldova, the same value as estimated for Turkey could be used as a rough guide to the expected figure.

### (C) Estimation of Road Use Costs per Vehicle km

The average variable road use cost per vehicle km ( $R$ ) is estimated for each vehicle type from the two unit costs defined above and the ESAL per vehicle estimated from axle load surveys. The average total road use cost per vehicle km ( $T$ ) is the variable road use cost plus a margin

to allow for fixed costs. The margin added depends on the way that fixed costs are allocated. The following subsections give the estimation for heavy trucks with two, three and over three axles. The same principle can be applied to any vehicle type.

C.1 For two axle heavy trucks the formula for variable costs is:

$$R_2 = Uv + E_2 * Ua$$

where  $E_2$  is the average ESAL per vehicle for two axle heavy trucks

Unless reliable, comprehensive and recent survey data are available, the value obtained from the most recent TRACECA surveys should be used:

Country	$E_2$	$E_3$	$E_4$
Armenia	0.16	0.41	0.36
Azerbaijan	0.13	0.18	0.34
Georgia	0.10	0.50	1.13
Kazakstan	0.05	0.18	0.21
Kyrgyz Republic	0.07	0.17	0.63
Tajikistan	0.07	0.17	0.63
Ukraine	0.18	0.49	1.34
Uzbekistan	0.19	0.19	1.01

SOURCE: Table 2.1 of Road Transit Fee Policy Proposals, May 2003

If total costs per vehicle km including fixed costs are to be estimated, a suitable formula would have to be defined which allocates the fixed costs in the desired way. For example:

$$T_2 = R_2 * Ct / (Ct - Cf)$$

assuming that fixed costs are allocated evenly in proportion to the variable costs for each vehicle type.

C.2 For three axle heavy trucks the formulae are:

$$R_3 = Uv + E_3 * Ua$$

where  $E_3$  is the average ESAL per vehicle for three axle heavy trucks (see above table)

$$T_3 = R_3 * Ct / (Ct - Cf)$$

C.3 For multi-axle heavy trucks the formulae are:

$$R_4 = Uv + E_4 * Ua$$

where  $E_4$  is the average ESAL per vehicle for multi-axle heavy trucks (see above table)

$$T_4 = R_4 * Ct / (Ct - Cf)$$

## Annex B Framework for Calculating Road Vehicle Excess Size and Weight Charges

According to the CIS agreement<sup>2</sup> which is modelled on standard international practice, countries are required to charge for excess size and weight in accordance with three elements (a) Excess GVW, (b) Excess Axle Weight, and (c) Excess Physical Dimensions (length, width and height). The formula agreed within the CIS is as follows:

$$P_1 = [P_{ew} + (P_{eaw1} + \dots + P_{eawi})] \times S + (C_l + C_w + C_h)^3 \times S$$

where

$P_1$  = payment for **one** (valid for one occasion only) haul of freight by road vehicle;

$P_{ew}$  = payment if gross weight of vehicle exceeds the maximum legally allowed weight;

$P_{eawi}$  = payment (per axle) if an axle load ( $i = 1,2,3\dots$ ) exceeds the maximum legally allowed weight;

$S$  = length of haul (in hundred km);

$C_l, C_w, C_h$  are the payments if length, width and height of vehicle exceed the maximum legally allowed dimensions.

When calculating the charge the following guidelines should be followed:

- $P_{ew}$  should be based on the additional costs of strengthening, maintenance or repairing bridges and similar infrastructure which are explicitly related to the planned haul,
- $P_{eaw}$  should be based on the pavement damage costs as measured by Equivalent Standard Axles (ESAL km), and
- $C_l, C_w, C_h$  should be based on the additional costs of modifying overhanging infrastructure or providing alternative routes that avoid low bridges.

To ensure that charges for carrying loads with excess size or weight cover only the additional costs incurred, the charges should be based on variable road use costs which exclude fixed and other costs that would be incurred in carrying a normal load.

<sup>2</sup> Agreement about Methodology of Defining Size of Payment for Road Transportation of Heavy and Large-scale Goods, Chisinau, May 17, 2002

<sup>3</sup> According to the CIS agreement  $(C_l + C_w + C_h) = 0$  for those CIS countries, which don't have a legislative base for imposing taxes for exceeding maximum length, width and height of vehicle.




## Annex C Implementation Strategy for the Unified Policy for Road Transit Fees

The following table summarises the implementation strategy that has been agreed to in Protocol TFTWG 2(4a). In Road Transit Fee Policy Proposals, May 2003, it has been applied to each country in order to identify the actions that would be necessary to implement a unified policy of road transit fees.

ISSUE	POSSIBLE ACTION
<b>(A) COST RELATEDNESS</b>	
A.1 Overall level of transit fees is higher than road use costs (or charges for domestic vehicles)	Reduce charge level to below the maximum justifiable levels
A.2 Transit fees do not vary with vehicle type and axle configuration	Set different charges for different types of vehicles
A.3 Transit fees do not vary with distance	Define charges on a per km (or possibly on a per day) basis
A.4 Transit fees do not distinguish between loaded and unloaded trucks	Set different charges for loaded and unloaded trucks
A.5 Charges for abnormal transport are not based on the three standard components - excess vehicle weight, excess axle load and excess size	Define charges for each level of excess size/weight for each of these three aspects
A.6 Road user charges are imposed that duplicate other charges imposed for the same purpose	Remove one of the duplicate charges
<b>(B) NON-DISCRIMINATION</b>	
B.1 Unauthorised fees are charged by local authorities	Abolish unauthorised fees. Improve enforcement
B.2 Transit fees vary with nationality of truck	Unify/reduce foreign transit fees
B.3 Road user charges vary for foreign and domestic vehicles	Unify rates so that the same rates are charged irrespective of nationality
B.4 Abnormal transport charges vary for foreign and domestic vehicles	Unify rates so that the same excess size and weight charges are imposed irrespective of nationality
<b>(C) TRANSPARENCY</b>	
C.1 Complicated system of charges	Abolish unnecessary charges
C.2 Complicated basis for charge	Simplify basis for charge calculation
C.3 Lack of clear information about charges	Publish up-to-date charge rates in users guide and advertise proposed changes well in advance

**B1**



The European Union's Tacis TRACECA programme  
for Armenia, Azerbaijan, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Romania, Tadjikistan,  
Turkey, Turkmenistan, Ukraine, Uzbekistan

# **REVIEW OF TURKISH PORTS**

## **JULY 2003**

### **Unified Policy on Transit Fees and Tariffs Project**

for Azerbaijan, Armenia, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan,  
Moldova, Romania, Tadjikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan



This project is funded by  
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**TABLE OF CONTENTS**

<b>SUMMARY AND CONCLUSIONS.....</b>	<b>3</b>
<b>INTRODUCTION.....</b>	<b>4</b>
<b>PORT TARIFF STRUCTURE IN TURKEY.....</b>	<b>5</b>
<b>TARIFFS AT TCDD PORTS .....</b>	<b>6</b>
<b>PORT OF DERINCE.....</b>	<b>7</b>
<b>PORT OF HAYDARPAŞA (ISTANBUL).....</b>	<b>12</b>
<b>PORT OF HOPA .....</b>	<b>17</b>
<b>PORT OF IZMIR .....</b>	<b>24</b>
<b>PORT OF SAMSUN.....</b>	<b>30</b>
<b>PORT OF TRABZON .....</b>	<b>34</b>
<b>PORT OF ZONGULDAK .....</b>	<b>39</b>
<b>SHORT OVERVIEW RAILWAY DEVELOPMENTS IN TURKEY.....</b>	<b>42</b>
<b>SUMMARY OF MAIN STATISTICS.....</b>	<b>43</b>

### SUMMARY AND CONCLUSIONS

The tariffs at the Turkish ports are similar to those on the Caspian and Black Seas. The handling charge for a 20' laden container is US\$85-90, while Roro handling costs range between US\$10 and US\$26 per unit. Tariffs at the main ports for conventional cargoes are 5-7 and 4-5 for dry bulks.

With these current tariffs the main ports of Haydarpaşa and Izmir generate large profits, although there are losses at Derince and Hopa.

2001	Revenues \$/tonne	Profits \$/tonne
Haydarpaşa	7.4	4.2
Izmir	5.7	4.0
Derince	8.4	-2.9
Hopa	4.5	-0.2
Samsun	n.a.	n.a.
Trabzon	8.1	1.7
Zonguldak	3.1	n.a.

None of the Turkish ports which were visited, however, are handling any Traceca transit cargo at present. The only Traceca transit traffic which was handled in the past appears to have been minor volumes of cotton, handled at Hopa. This cargo is now exported from Central Asia, mainly via Bandar Abbas.

The Turkish ports are nevertheless in a position to offer discounts to try to attract Traceca transit cargoes. This is because most of the ports have surplus capacity (with the exception of Izmir). The average berth occupancies at the main ports were as follows in 2001

#### Berth occupancies 2001

Derince	33%
Haydarpaşa	33%
Hopa	16%
Izmir	64%
Samsun*	53%
Trabzon	14%
Zonguldak	31%

As they handle no Traceca transit traffic at all, they have nothing to lose by conceding large discounts to attract this new traffic. On the assumption that additional volumes of additional cargoes could be handled with existing staffs and with no investment, the promotional tariffs could be very low.

## INTRODUCTION

Turkey has 15 major government owned ports that are all included in a privatisation programme, which has been under consideration for many years. In addition, Turkey has some 30 municipally owned ports and more than 40 private piers and ports. The private ports mainly serve local trade and industry and most of them are located between Derince and Haydarpaşa. These private ports are mostly designed for the particular needs of local industry but are also allowed to be used by third parties.

The government owned ports and the municipal ports are operated according to the service port model. This means that the port offers the complete range of services required in a seaport. The port owns and maintains all assets (fixed and moveable) and all stevedoring activities are executed by permanently employed labour, or contracted by the Port Management or Port Authority. The role of the private sector is limited to that of client. Service ports generally do not allow intra-port competition between terminals so this has a limiting effect on the efficiency and future performance of the port.

The government-owned ports are operated by State Economic Enterprises. The Turkish State Railways (TCDD) operates the following ports:

- Haydarpaşa;
- Derince;
- Bandirma;
- Izmir;
- Mersin;
- Iskekenderun; and
- Samsun.

All of these ports have well developed connections with the railway network.

The Turkish Maritime Organisation (TDI) operates the following ports:

- Trabzon;
- Kuşadası; and
- Antalya.

TDI is managed by the Ministry of State which is responsible for the privatisation of these particular ports. The port of Hopa used to be operated by TDI. However, for the last 5 years this port has been operated by a private company.

The port of Zonguldak is operated as a private port.

The two state economic enterprises TCDD and TDI report to the Ministry of Transport but are reported to operate as private enterprises. The headquarters of both organisations have a separate Department of Ports which is responsible for planning and their coordination.

Each port is managed by a Port Manager appointed by the related State Enterprise.

The organisation of the Ministry of Transport is as follows:

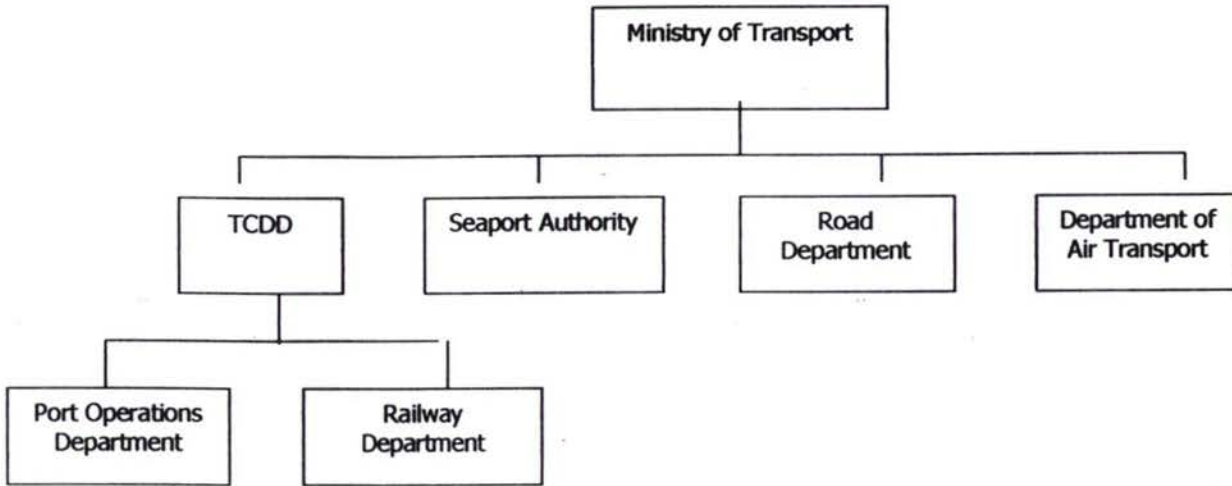


Figure 0-1 Organisation chart Ministry of Transport Turkey

The municipal ports are comparatively small and in general limited to handling small volumes of coastal traffic

### PORT TARIFF STRUCTURE IN TURKEY

Main services offered by the ports are:

- pilotage;
- towages;
- quay occupation;
- fresh water supply solid and waste water removal;
- handling services;
- storage;
- weighting; and
- rent of equipment.

### TARIFFS AT TCDD PORTS

The tariffs applicable in the TCDD ports are mostly similar. Differences are caused by variations in geographical circumstances.

**Table 0-1 Tariffs applicable at TCDD ports, 2002 (USD)**

Vessel tonnage	Pilotage		Towage	
	Up to 1,000 GT	> 1,000 GT for each additional 1,000 GT	Up to 3,000 GT	> 3000 GT for each additional 1,000 GT
Haydarpaşa	-	-	350	65
Samsun	190	80	340	60
Derince	240	114	354	66
Izmir	n.a.	n.a.	n.a.	n.a.

Source: TCDD, April 2003

**Table 0-2 Additional tariffs applicable in TCDD ports, 2002 (USD)**

	Quay dues (USD/day/100GT)	Water supply (USD / ton)	Waste collection (USD / 1,000 GT)	
			Solid	Liquid
Haydarpaşa	1.60	10	45	60
Samsun	1.50	10	45	60
Derince	1.50	0	45	60
Izmir	1.60	5	45	60

Source: TCDD, April 2003



## PORT OF DERINCE

### Introduction

The port of Derince is located in the Eastern part of the Sea of Marmara and serves Izmit's industrial hinterland. From the port, regular rail ferry services are offered between Constantia (Romania) and Ilychevsk (Ukraine).

### Technical details

The port has 8 berths, of which 5 are operational. The port was heavily damaged in August 2000 as a result of the Marmara Earthquake.

**Table 0-1 Traffic and Facilities at the Port of Derince, 2002**

	Ships per year	Berth length (m)	Max depth (-m)
Container	300	200	-14
General cargo	324	752	-6, -10
Ro-Ro	238	140	-14
<b>Total</b>	<b>862</b>	<b>1.092</b>	

Source: Port of Derince, April 2003

**Table 0-2 Storage Capacity, 2002**

	Sqm	Tons
Open storage	122,990	2,952,000
Closed storage	2,000	32,000

Source: Port of Derince, April 2003

### Cargo Movements

Derince handled 1.15 million tonnes of cargo in 2002

**Table 0-3 Cargo movements Port of Derince 1999 – 2002 (tons)**

	1999	2000	2001	2002
<b>Loading</b>				
Export	175,792	135,750	161,446	286,925
Domestic	0	12,074	1,520	3,433
Transit	363	0	0	0
<b>Total</b>	<b>176,155</b>	<b>147,824</b>	<b>162,966</b>	<b>290,358</b>
<b>Unloading</b>				
Import	577,124	551,096	383,620	844,716
Domestic	3,566	1,851	1,371	13,901
Transit	104	0	263	0
<b>Total</b>	<b>580,794</b>	<b>552,947</b>	<b>385,254</b>	<b>858,617</b>
<b>Overall total</b>	<b>756,949</b>	<b>700,771*</b>	<b>548,220*</b>	<b>1,148,975</b>

\* The port was damaged by an earthquake in August 2001

Source: Port of Derince, March 2003

The Port of Derince is predominantly handling import and export cargo, of which import represents the main part of the volumes. In 2002 the share of import cargo was more than 70 % of the total volumes handled. Important types of cargo handled are paper (import), timber (import) and wheat (import). Grain originates from the US and China and is shipped through, amongst others, the ports of Antwerp and Bremerhaven. Chrome and Magnazit are amongst the most important export cargoes.

**Table 0-4 Overview of Types of Cargo Handled, 1999 - 2002**

	1999	2000	2001	2002
General cargo	403,103	468,934	335,549	503,256
Container cargo	37,054	6,701	4,988	5,232
Ro-ro	19,796	10,914	71,291	189,273
Dry bulk	238,377	187,875	127,913	400,042
Liquid bulk	58,088	26,977	8,479	51,172
<b>Total</b>	<b>756,949</b>	<b>700,771</b>	<b>548,220</b>	<b>1,148,975</b>

Source: Port of Derince, March 2003

Cargo throughput suffered heavily from the year 2000 earthquake. This explains the significant drop in cargo volumes handled in the year 2001 with a decrease of more than 20 %. The decrease in container cargo handled was due to container lines diverting their container flows from Derince to other ports.

Maximum cargo handling capacity of the port is estimated to be around 1.65 m tons per annum. In the year 2001, the port was using only about 33 % of its capacity. In the year 2002 this was less than 70 %. In addition, the port is able to handle 40,000 TEU per annum.

The following types of cargo are transported by rail ferry:

**Table 0-5 Overview of Cargo Handled by Ferry (import, export, transit)**

<b>Unloaded</b>	
Tyres	Transit Syria / Iran
Cellulose	Transit Syria / Iran
Steel profiles	Import
Cosmetic articles	Import
Logs	Import
<b>Loaded</b>	
Sodium sulphate	Export
Construction materials	Export
Cars	Export
Pulp	Export

Source: Port of Derince, April 2003

For a more detailed overview of cargoes handled in the period 1999 - 2002 reference is made to Annex 1.

**Table 0-8 Operational Revenue Structure Port of Derince, 1999 – 2002 (USD)**

	1999	2000	2001	2002
Pilotage	-	569,954	485,127	840,330
Towage	440,582	676,206	568,131	1,046,816
Berthing	120,128	182,787	122,811	193,103
Waste	88,923	98,719	74,170	127,304
Cargo handling	2,453,814	2,298,132	1,689,173	2,612,158
Terminal handling	226,638	245,509	398,483	527,267
Storage	896,714	468,386	351,429	248,035
Other	238,850	190,911	264,102	451,029
<b>Total</b>	<b>4,465,649</b>	<b>4,730,604</b>	<b>3,953,426</b>	<b>6,046,042</b>

Source: Port of Derince, May 2003

Income from "Other" includes fresh water delivery, weighting of trucks, rental income from using port's equipment etc. Non-operational incomes were as follows:

**Table 0-9 Non-operational Income Generated by the Port of Derince, 1999 – 2002 (USD)**

	1999	2000	2001	2002
Railway storage	321,881	483,080	478,261	965,281
Other non-operational revenues	1,840,209	376,472	189,013	145,534
<b>Total</b>	<b>2,162,090</b>	<b>859,552</b>	<b>667,274</b>	<b>1,110,815</b>

Source: Port of Derince, April 2003

The costs of operation are dominated by wages, which account for half of the total.

**Table 0-10 Overview costs Port of Derince, 1999 – 2002 (USD)**

	1999	2000	2001	2002
Wages	4,322,013	5,758,326	3,857,061	5,077,894
Part time workers		293,764	463,473	970,210
State staff	122,327	108,548	78,442	116,873
Contracted staff	987,041	1,016,937	709,086	1,128,178
Material	237,242	326,338	137,479	250,472
Non-operational costs	757,434	1,002,593	949,695	2,274,444
Amortisation	557,918	667,569	-	843,283
<b>Total</b>	<b>6,953,975</b>	<b>9,174,075</b>	<b>6,195,237</b>	<b>10,661,354</b>

Source: Port of Derince, April 2003

The port has made a loss in all of the last four years.

**Table 0-11 Profitability Port of Derince, 1999 – 2002 (USD)**

	1999	2000	2001	2002
Total revenues	6,627,739	5,590,156	4,620,700	7,156,857
Total costs	6,953,975	9,174,075	6,195,237	10,661,354
Net total result	- 326,236	- 3,583,919	- 1,574,537	- 3,504,497
Operational Revenues	4,465,649	4,730,604	3,953,426	6,046,042
Operational costs	5,638,623	7,503,913	5,245,542	7,543,627
<b>Net operational result</b>	<b>- 1,172,974</b>	<b>- 2,773,309</b>	<b>- 1,292,116</b>	<b>- 1,497,585</b>

Source: Port of Derince, April 2003

### Employment in the port

The table below shows the staff employed by the port. It includes number of temporary staff. In the years 2001 and 2002 a temporary staff of 80 people was hired for cargo handling operations.

**Table 0-12 Employment overview Port of Derince, 1999 - 2002 (number of people)**

	1999	2000	2001	2002
Supporting staff	139	132	131	134
Workers	298	291	370	315
<b>Total</b>	<b>437</b>	<b>423</b>	<b>501</b>	<b>449</b>

Source: Port of Derince, March 2003

### TRACECA Traffic

The port personnel report that no TRACECA linked cargo is currently handled, but they are very interested in becoming part of the TRACECA corridor, since this would be expected to result in increasing volumes of cargo handled in the port.

### Other issues

#### *Competitive position*

As there are some 30 ports in the Sea of Marmara (of which most are industrial ports) the Port of Derince faces heavy competition.

#### *Port investment plans*

The port is planning to acquire two cranes with a capacity of 15 tons as well as two gantry cranes.

Reportedly, a Japanese company will finance the reconstruction of berth no. 6, the container berth.

TCDD makes any final decision with regard to investment plans.

## PORT OF HAYDARPAŞA (ISTANBUL)

### Introduction

The port of Haydarpaşa is situated on the Anatolian side of the Bosphorous in Istanbul. It serves a hinterland that is the most industrialized area of Turkey. Moreover, it has a great importance, being the biggest container port in the Marmara region.

The port of Haydarpaşa currently has a total of 18 berths of which 12 are operational.

**Table 0-1 Technical Information Port of Haydarpaşa, 2003**

Quay no.	Type of activity	Length (m)	Depth (m)
1	Tug boats		
2	General cargo	220	6
3	Dry bulk	190	9.5
4, 5	General cargo	334	9.5
6	General cargo	220	9.5
7, 8	General cargo	246	9.5
9	General cargo	153	8.5
10, 11	General cargo	350	10
12	Container	300	12
13,14	General cargo	295	10
15	General cargo	220	8
16	General cargo	96	8
17	Ro-Ro	141	8
18,19	General cargo	n.a.	n.a.

Source: Port of Haydarpaşa, April 2003

Quay numbers 2 and 3 are predominantly used for handling imported cars (VW, Renault, Citroen). Quay number 9 (ro-ro ramp) is currently not in operation because of the unavailability of a crane. In addition, quay numbers 13,14, 15, 18 and 19 are not operational.

The table below provides an overview of the capacity of open and covered storages in the port.

**Table 0-2 Storage Capacities in the Port of Haydarpaşa**

	Sq m
Open storage	126,750
Covered storage	29,808
<b>Total</b>	<b>156,558</b>

Source: Port of Haydarpaşa, April 2003

### Cargo movements

All the main types of cargo at Haydarpaşa have been declining, with the exception of Roro cargo.

**Table 0-3 Cargo Handled at the Port of Haydarpaşa, 1999 - 2002 (tons)**

	1999	2000	2001	2002
General cargo	356,632	470,844	132,502	51,811
Containerised cargo	2,713,449	2,882,750	2,202,474	2,338,146
Ro-ro	2,373,815	2,136,731	2,408,286	2,666,499
Dry bulk	244,721	93,987	45,750	5,212
Liquid bulk	0	0	0	2,073
<b>Total</b>	<b>5,688,617</b>	<b>5,584,312</b>	<b>4,789,012</b>	<b>5,114,958</b>

Source: Port of Haydarpaşa, March 2003

In the year 2002 about 955 tons of cargo was transported to Afghanistan.

### Maximum cargo handling capacity

**Table 0-4 Cargo Handling Capacity Port of Haydarpaşa (mln tons)**

	tons (mln)
General cargo	3
Ro-Ro	2.6
Containers	4-5
Containers (tons)	4
<b>Total</b>	<b>13.6-14.6</b>

The port's maximum cargo handling capacity is 13.6-14.6m tons. Based on this, the port had an occupancy rate of about one third in the year 2002.

## Vessel Movements

Vessel movements at Haydarpaşa are declining:

**Table 0-5 Overview vessel movements Port of Haydarpaşa, 1999 – 2002 (number)**

	1999	2000	2001	2002
Turkish flag				
< 1,000 GT	386	270	165	86
> 1,000 GT	435	442	448	364
<i>Total</i>	<i>821</i>	<i>712</i>	<i>613</i>	<i>450</i>
Foreign flag				
< 1,000 GT	819	898	657	694
> 1,000 GT	336	391	262	288
<i>Total</i>	<i>1,155</i>	<i>1,289</i>	<i>919</i>	<i>822</i>
<b>Overall total</b>	<b>1,976</b>	<b>2,001</b>	<b>1,532</b>	<b>1,285</b>

Source: Port of Haydarpaşa, March 2003

## Tariffs

Tariffs for the main cargoes are as follows:

**Table 0-6 Cargo Handling Tariffs at the Port of Haydarpaşa (USD / ton)**

	loading	Unloading	shifting	transhipment
General cargo	5	5	4	7
Liquid bulk				1.25
Dry bulk	4	4	3.5	5
Ro-ro	26	26	26	
Containers (per unit)				
• full	60	90	85	110
• empty	35	35	40	50

Source: Port of Haydarpaşa, April 2003

For general cargo handling sometimes discounts of more than 30 % are given, leaving the client to pay USD 3.2 per ton of cargo handled.

For fresh water supply, the port provides a discount of 40 % as a result of which USD 6 per ton has to be paid instead of USD 10.

## Vessel related

In the Port of Haydarpaşa, for vessels up to 1,500 GT towage is not compulsory. One tugboat is compulsory for the vessels larger than 1,500 GT and two tugboats for vessels over 5,000 GT.

In general, tariffs change every 2 to 3 years based on policy issued by TCDD. After the year 2001 only small changes took place in the tariffs: some increased and some decreased.

Discounts are provided based on the volumes of cargo handled. Moreover, discounts have to be discussed first with TCDD.

## Financial Results

**Table 0-7 Financial Overview Port of Haydarpaşa, 1999 – 2002 (USD)**

	1999	2000*	2001	2002
<b>Revenues</b>				
Towage	5,406,676	5,663,119	3,981,540	3,850,285
Quay dues	882,660	924,525	910,010	759,396
Fresh water	45,180	47,323	10,502	5,280
Sludge	789,190	826,622	626,581	422,427
Cargo handling	18,074,624	18,931,918	12,871,250	13,938,782
Terminal storage	6,528,125	6,837,759	4,617,488	5,007,493
Demurrage	21,919,378	22,959,032	11,568,917	9,528,283
Rent	126,255	132,243	96,730	88,502
Other	1,373,166	1,348,296	771,860	755,708
Weighing	23,233	24,335	14,930	35,768
Passenger				6,197
<b>Total Revenues</b>	<b>55,168,487</b>	<b>57,785,174</b>	<b>35,469,808</b>	<b>34,398,121</b>
<b>Costs</b>				
Wages	15,930,949	18,748,634	11,880,700	13,305,778
Depreciation	669,572	847,562	751,723	840,476
Repair and maintenance	378,642	705,679	767,090	1,539,595
Electricity / water ect.	800,451	6,416,721	439,822	487,263
Other	3,383,187	2,826,731	1,587,460	5,138,827
<b>Total costs</b>	<b>21,162,800</b>	<b>29,545,327</b>	<b>15,426,794</b>	<b>21,311,939</b>
<b>Net result</b>	<b>33,105,801</b>	<b>28,239,847</b>	<b>20,043,014</b>	<b>13,086,182</b>

Source: Port of Haydarpaşa, March 2003

\* detailed overview estimated based on previous years

Lower profits are partly caused by the depreciation of the Turkish Lira against the USD. Whilst the exchange rate in 1999 was USD 1 = 420,649, in the year 2002 this was USD 1 = 1,542,022.

## Employment in the port

According to the port, as per the 1<sup>st</sup> of January 2003, around 700 people were employed by the port.

## Port investment plans

There are no development plans.



**TRACECA Traffic**

There are no identified volumes of TRACECA cargo handled in the port but they report being keen to become an active partner in the programme.

**Other issues**

*Hinterland connections*

*The port is connected with Kazakhstan (Almaty) through a block train which leaves every Saturday from Haydarpaşa. It takes about 19 to 20 days to reach Almaty. According to the port, transportation of cargo by train is cheaper than by seaway. The costs are shown below.*

**Overview Cost of Transportation per Block Train between Haydarpaşa and Almaty**

**USD**

	<b>20 ft appr. 13 tons</b>	<b>40 ft appr. 20 tons</b>
Turkey	640	1,006
Iran	472	779
Turkmenistan	167	360
Uzbekistan	235	360
Kazakhstan	156	311
<b>Total</b>	<b>1,670</b>	<b>2,816</b>

According to the port management, in general road transportation is more efficient in terms of time than railway transport as shown below:

<b>Routing</b>	<b>By rail (days)</b>	<b>By road (days)</b>
Istanbul – Izmir	5	1

Source: Port of Haydarpaşa, March 2003

However, transportation by rail is more expensive than by road, as shown below:

	<b>By rail (USD / ton)</b>	<b>By road (USD / ton)</b>
Haydarpaşa – Izmir	10.60	12.95

Source: Port of Haydarpaşa, March 2003

## PORT OF HOPA

### Introduction

The Port of Hopa is operated and owned by a joint venture with two companies Park Denizcilik ve Hopa Liman İşmetmeleri A.Ş which is a joint venture of:

- Park Holding owning 60 %;
- Imisk owning 40 %.

The core business of Imisk is transportation, forwarding and distribution services. Recently, the company has formed a partnership with Kühne & Nagel under the name of Ibrakom.

This partnership deals also with transportation of cotton from the Central Asian region. In addition, Imisk has a share in a cotton terminal in Batumi.

The company has leased the port from TDI (Turkish government) for a period of 30 years.

After the conclusion of the leasing contract in 1997, the company invested considerably in the modernisation of the port and its facilities.

The lease agreement with TDI includes paying 25 % of the revenues annually to TDI, subject to a minimum payment.

### Technical details

**Table 0-1 Facilities at the Port of Hopa**

Quay no.	Type of cargo handled	Length (m)	Depth (m)
1	Ores & general cargo	215	-10
2	Passenger & general cargo	198	-10
3	Gen. cargo	190	-10
4	Gen. cargo	100	-10
5	Naval	100	-5.5
6	Yachts	185	-4.5
7	Fishing vessels	120	-4.5
8	Ro-ro	38	-9
9	Ro-ro	38	-7

Source: Port of Hopa, March 2003

**Table 0-2 Storage Capacity in the Port of Hopa**

Covered	18,220 sqm
Open	40,000 sqm
Tank storage	130,000 cbm

Source: Port of Hopa, March 2003

The port has five tanks for storage of oil and oil products. Currently, four are operational and the fifth one is being restored. The smallest tank is operated by Shell importing gasoline for local use.

**Cargo movements**

**Table 0-3 Cargo Movements at the Port of Hopa, 1999 – 2002 (tons)**

	1999	2000	2001	2002
<b>Loading</b>				
Domestic	185,215	139,758	111,784	87,129
Export	1,301	8,419	4,806	745
Transit	12,856	10,656	7,462	0*
<b>Total</b>	<b>199,372</b>	<b>158,833</b>	<b>124,052</b>	<b>87,874</b>
<b>Discharging</b>				
Domestic	84,793	71,626	87,101	30,489
Import	190,868	292,536	215,773	218,303
Transit	29,064	16,406	17,756	9,954
<b>Total</b>	<b>304,725</b>	<b>380,568</b>	<b>320,539</b>	<b>258,746</b>
<b>Overall total</b>	<b>504,097</b>	<b>539,401</b>	<b>444,591</b>	<b>346,620</b>

Source: Port of Hopa, March 2003

\* was mainly cotton; currently handled by amongst others Bandar Abbas.

Major cargoes handled at the port are coal, raw cotton, wheat, gas oil and project cargoes for dam construction. The total handling capacity of the port is 2.75 m tons. Currently, it is operating at less than 15 % of its maximum capacity.

During the discharging operations of coal, the port is assisted by a private company that has special equipment to take coal from the ship's hull.

**Table 0-4 Cargo Handling Capacity, Port of Hopa (tons)**

	tons
General cargo	750,000
Dry bulk	1,500,000
Liquid bulk	500,000
Containers	35,000 TEU
<b>Total</b>	<b>2,750,000</b>

Source: Port of Hopa, March 2003

The port had an occupancy rate of only 16 % in 2001 and 13 % in 2002.

## Vessel movements

**Table 0-5 Vessel Calls at the Port of Hopa, 1999 – 2002**

	1999	2000	2001	2002
Loaded		140	117	88
Discharged		118	107	95
<b>Total number of vessels</b>	<b>304</b>	<b>258</b>	<b>230</b>	<b>183</b>
Total gross tonnage	408,197	457,470	357,731	287,331
Average gross tonnage	1,343	1,773	1,555	1,570

Source: Port of Hopa, March 2003

## Tariffs

Pilotage is compulsory for foreign flagged vessels larger than 150 GT. For Turkish flagged vessels, pilotage is compulsory for vessels larger than 1,000 GT. This is in accordance with TDI policy.

**Table 0-6 Overview port tariffs applicable in the Port of Hopa**

Type of service		
Pilotage	< 1,000 GT	USD 270
	> 1,000 GT	USD 114 per 1,000 GT
Towage	< 3,000 GT	USD 480
	> 3,000 GT	USD 84 per 1,000 GT
Quay dues		USD 2.5 per day per 100 GT
Anchorage		USD 1.72 per hour per 100 GT at quay
		USD 2 per hour per 100 GT at buoy
Extra berthing*		USD 3.6 per hour per 100 GT
Solid Garbage intake	At quay	USD 70 per 1,000 GT
	Off shore	USD 150 per 1,000 GT
Liquid Garbage intake	At quay	USD 100 per 1,000 GT
	Off-shore	USD 200 per 1,000 GT
Fresh water		USD 7.5 per ton

Source: Port of Hopa, March 2003

\* only for shipping vessels

For cabotage, discounts are available of up to 45 % for pilotage services and 40 % for towage services.

## Cargo handling tariffs

No cargo handling tariffs were made available.

During the first 5 years of the agreement, until 2002, tariffs were not allowed to increase more than 10 %. If a planned rate increase would exceed 10 % prior consent of TDI was required. At the moment, the Port of Hopa can change the tariffs without any involvement of TDI.

Tariffs directly charged by the government are:

- Light dues;
- Port master dues;
- Sanitary dues.

**Financial results**

**Table 0-7 Overview of Costs at the Port of Hopa, 2000 – 2002 (USD)**

	2000	2001	2002
<b>Operational expenses</b>	1,005,416	581,481	671,548
Salaries	521,541	331,244	465,710
Discharging services	249,383	142,287	129,472
Materials for workshop	74,617	7,924	4,960
Supplies	159,875	100,026	71,406
<b>General expenses</b>	1,931,306	1,529,598	1,230,411
Wages and salaries	414,718	283,571	399,642
Supplies	115,082	67,677	85,463
Office, travelling	110,182	109,992	144,158
Fees and dues	43,548	26,221	11,479
Leasing	576,451	191,433	0
Depreciation	207,252	132,705	107,018
Insurance	89,457	45,194	61,672
Interest	79,903	398,270*	25,528
Payment to privatisation**	294,712	274,535	395,452
<b>Total</b>	<b>2,936,722</b>	<b>2,111,080</b>	<b>1,901,959</b>

Source: Port of Hopa, March 2003

\* Intercompany loan

\*\* 25 % of revenues (payment to TDI)

## Depreciation methodology

Buildings are depreciated at 3 % per annum. Equipment is depreciated at 20 % per annum.

**Table 0-8 Revenues at Port of Hopa, 1999 – 2002 (USD)**

	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>Discharging</b>	<b>1,259,723</b>	<b>1,099,075</b>	<b>1,005,710</b>
Fertilizer	7,437	29,315	,233
General cargo	1,608	10,303	43,280
Coal	1,181,771	995,276	916,045
Wheat	13,131	14,879	19,457
Bitumen	2,223	0	2,600
Fuel	52,787	48,931	17,095
Container	767	372	
<b>Loading</b>	<b>130,852</b>	<b>141,699</b>	<b>106,316</b>
General cargo	5,699	19,214	8,493
Pyrite	115,707	117,705	81,370
Wheat	7,675	3,916	16,464
Container	1,770	864	
<b>Tugs &amp; Pilotage</b>	<b>214,765</b>	<b>170,482</b>	<b>118,876</b>
Domestic	42,319	45,169	12,181
Export	3,584	0	
Import	156,140	116,389	106,695
Transit	12,722	8,924	
<b>Garbage</b>	<b>17,725</b>	<b>18,447</b>	<b>13,057</b>
<b>Berthing</b>	<b>80,313</b>	<b>58,021</b>	<b>52,643</b>
Domestic	34,690	25,194	21,136
Export	1,426	288	
Import	40,505	30,824	30,873
Transit	3,693	1,715	635
<b>Extra labour</b>	<b>3,186</b>	<b>8,591</b>	<b>13,243</b>
<b>Anchorage</b>	<b>5,127</b>	<b>6,961</b>	<b>1,459</b>
<b>Fresh water</b>	<b>3,161</b>	<b>4,293</b>	<b>3,140</b>
<b>Weighing</b>	<b>64,265</b>	<b>51,104</b>	<b>43,232</b>
<b>Storage</b>	<b>679,941</b>	<b>442,539</b>	<b>367,917</b>
Project cargo	12,274	12,926	89,760
Cotton	320,281	161,374	66,398
Liquid tanks	310,488	210,000	120,000
Wheat	9,180	0	45,900
Other	27,268	58,239	45,858
<b>Total</b>	<b>2,459,688</b>	<b>2,001,212</b>	<b>1,725,594</b>

Source: Port of Hopa, March 2003

**Employment in the port**

**Table 0-9 Employment in the Port of Hopa, 2000 – 2002**

	2000	2001	2002
Mariner	13	13	13
Office	13	13	9
Terminal	13	13	10
Storage	5	5	4
Weighing	2	2	2
Engineers	8	8	10
Security	18	18	17
<b>Total</b>	<b>72</b>	<b>72</b>	<b>65</b>

Source: Port of Hopa, March 2003

**Port investment plans**

There are plans to develop a railway ramp in the port, despite the fact that there are no railway connections. The purpose is to link Hopa to the railroad network between the Black Sea countries. Wagons will be discharged and loaded from the vessel.

Trucks will be used to transport cargo to their destination or from its origin. From a market study as well as a cooperation agreement with Ukrferri it is considered to be a feasible project. The market study takes into account amongst others transit cargo to and from Iran, Iraq and as a result of transportation through the TRACECA corridor.

In addition, the ferry connection will provide the possibility for transportation of trucks between Europe and Middle East countries.

At the beginning of March 2003, Ukrferri has provided Hopa with a conceptual design for such a railway ramp as well as a shunting area in the port.

The investment amount is estimated to be around USD 3 million. However, more detailed investment cost estimations are still under preparation.

**TRACECA Traffic**

Currently, the port is not handling any TRACECA cargo. The Port of Batumi is located rather close to Hopa, and has better developed connections within the TRACECA corridor than Hopa.

Through the rail ferry project, however, the port aims to be connected to the TRACECA corridor.

**Other issues***Competition*

The port of Trabzon is considered to be the main competitor for Hopa. The main reason is that Trabzon has better influence in Ankara.

*Hinterland connections*

Currently, the port is connected to its hinterland by road.



## PORT OF IZMIR

### Introduction

The Port of Izmir is located on the Aegean Sea. It is mainly focussed on serving its considerable agricultural and industrial hinterland.

### Technical details

In total the port operates 24 berths.

**Table 0-1 Facilities at the Port of Izmir**

	Quay length (m)	Max. depth (m)
General cargo	1,429	- 7 - 10.5
Container	1,050	- 13
Dry bulk	150	- 10.5
Passenger	330	- 8 - 10.5
<b>Total</b>	<b>2,959</b>	

Source: Port of Izmir, April 2003

**Table 0-2 Storage capacity in the Port of Izmir**

	m <sup>2</sup>	
Open storage	85,000	565,000 ton / annum
Covered storage	29,205	394,848 ton / annum
Container	295,000	266,000 TEU / annum

Source: Port of Izmir, April 2003

### Cargo movements

The port experienced a growth of about 15 % in the year 2002 compared to the year 2001. In the last 4 years a growth of no less than 35 % was achieved.

**Table 0-3 Overview Cargo Handling in the Port of Izmir, 1999 – 2002 (tons)**

	1999	2000	2001	2002
General cargo	400,791	417,676	394,868	432,633
Container	4,244,775	4,614,209	4,671,425	5,439,787
Ro-ro	11,105	70,508	101,137	133,852
Dry bulk	2,236,837	2,795,771	2,986,219	3,454,532
Liquid bulk	290,378	266,306	272,420	191,910
<b>Total</b>	<b>7,184,413</b>	<b>8,164,470</b>	<b>8,426,069</b>	<b>9,652,714</b>

Source: Port of Izmir, March 2003

The main type of dry bulk cargo handled is cement, predominantly for export purposes. The most important general cargo types are aluminium, tomato products and paper.

The table below provides an overview of the volume of cargo loaded (export, domestic, transit) and unloaded (import, domestic, transit) in the period 1999 - 2002.

**Table 0-4 Loading and unloading in the Port of Izmir, 1999 - 2002 (tons)**

	1999	2000	2001	2002
Loading	4,553,059	5,215,710	6,500,021	7,058,510
Unloading	2,631,354	2,948,760	1,926,048	2,594,204
<b>Total</b>	<b>7,184,413</b>	<b>8,164,470</b>	<b>8,426,069</b>	<b>9,652,714</b>

Source: Port of Izmir, April 2003

By far the largest part of the cargo volumes handled in the port is linked to export, domestic trade or transit trade. In the years 2001 and 2002, this share was 77 % and 73 % respectively.

**Table 0-5 Container handling in the Port of Izmir, 1999 - 2002**

	1999	2000	2001	2002
TEU	435,970	464,455	491,277	573,231
Ton	4,244,775	4,614,208	4,671,425	5,439,787

Source: Port of Izmir, March 2003

In the last 4 years the growth of container traffic averaged about 32 %.

Main destinations for import and export are the EU, representing almost 40 % of container export in the year 2002. For import this share was about 35 % in the year 2002. Main types of cargo exported in containers are ceramics and marble, electronic goods, foodstuff and textiles. Main types of cargo imported in containers are raw material, electronic goods, chemicals and paper & packaging.

Container transport represents the largest part of the total volumes handled with a share of around 55 % in 2001 and about 56 % in 2002.

The table below shows an overview of loading and unloading TEU in the period 1999 - 2002.

**Table 0-6 Overview of Container Handling in the Port of Izmir (TEU)**

	1999	2000	2001	2002
<b>Unloading</b>				
20 ft				
• full	27,485	29,090	24,498	32,997
• empty	59,050	58,434	72,693	74,469
40 ft				
• full	32,774	42,862	32,242	40,497
• empty	27,996	24,951	37,956	43,475
<b>Total</b>	<b>208,076</b>	<b>223,150</b>	<b>237,587</b>	<b>275,410</b>
<b>Loading</b>				
20 ft				
• full	91,774	93,749	101,309	114,177
• empty	6,604	5,348	4,573	4,962
40 ft				
• full	59,405	63,426	70,728	85,865
• empty	5,353	7,678	3,176	3,474
<b>Total</b>	<b>227,894</b>	<b>241,305</b>	<b>253,690</b>	<b>297,821</b>
<b>Overall total</b>	<b>435,970</b>	<b>464,455</b>	<b>491,277</b>	<b>573,231</b>

Source: Port of Izmir, April 2003

**Maximum cargo handling capacity**
**Table 0-7 Cargo Handling Capacity Port of Izmir**

Type of cargo	Maximum capacity (tons)
General cargo	1,000,000
Container	7,500,000
Ro-ro	200,000
Dry bulk	4,000,000
Liquid bulk	400,000
<b>Total</b>	<b>13,100,000</b>

Source: Port of Izmir, March 2003

Container handling capacity is around 700,000 to 800,000 TEU.

**Table 0-8 Berth Occupancy rate 2001 (%)**

	%
General cargo	39
Container	62
Ro-ro	50
Dry bulk	75
Liquid bulk	68
<b>Total</b>	<b>64</b>

**Vessel movements**
**Table 0-9 Vessel movements Port of Izmir, 1999 - 2002**

	1999	2000	2001	2002
General cargo	409	363	390	390
Container	1,518	1,502	1,414	1,509
Ro-ro	445	537	386	469
Dry bulk	178	131	146	93
Liquid bulk	55	113	152	135
Ferry	96	97	77	30
Passenger	23	14	9	19
<b>Total</b>	<b>2,724</b>	<b>2,757</b>	<b>2,574</b>	<b>2,645</b>

Source: Port of Izmir, April 2003

Among the shipping lines calling at the Port of Izmir are Hual, Maersk Sea-Land, Turkon, Zim, Senator etc. In total around 30 shipping lines call at the port on a regular basis.

**Table 0-10 Container Shipping Sines calling at the Port of Izmir, 2002 (%)**

	%
MSC	25
Maersk	15
P&ONedlloyd	10
Turkon	8

Source: Port of Izmir, April 2003

**Tariffs**
*Cargo handling tariffs*
**Table 0-11 Overview cargo handling tariffs in the Port of Izmir (USD / ton)**

	Loading	Unloading
General cargo	7,0	7,5
Dry bulk	4,5	5,0
Liquid bulk	n.a.	n.a.
Container		
• Empty	35	35
• Full	70	90
Ro-ro	10	10

Source: Port of Izmir, March 2003

In case of domestic transport, a 20 % discount is applied to almost all tariffs.

*Vessel handling tariffs*

For information on vessel tariffs, reference is made to paragraph 0.

**Financial results**
**Table 0-12 Overview Financial results Port of Izmir, 1999 - 2002 (USD)**

	1999	2000	2001	2002
<b>Revenues</b>				
Cargo handling	1,527,005	1,690,183	1,613,415	1,875,524
Vessel handling	43,618,935	49,054,447	45,180,957	51,409,848
Other	859,448	819,987	613,889	810,285
Subtotal	46,005,387	51,564,617	47,408,262	54,095,657
<b>Revenues from activities</b>				
electricity / water etc.	222,558	262,702	478,109	262,417
Subtotal	222,558	262,702	478,109	262,417
<b>Total</b>	<b>46,227,945</b>	<b>51,827,320</b>	<b>47,886,370</b>	<b>54,358,074</b>
<b>Costs</b>				
Wages	10,942,913	14,129,053	10,001,951	10,329,510
Depreciation	858,771	880,224	1,085,550	2,054,674
Repair and maintenance	1,654,359	1,663,014	1,162,455	1,728,614
Fuel	429,418	620,953	502,762	647,768
Other	1,790,990	1,152,432	1,253,649	1,883,839
<b>Total</b>	<b>15,676,450</b>	<b>18,445,676</b>	<b>14,006,366</b>	<b>16,644,405</b>
<b>Net result</b>	<b>30,551,494</b>	<b>33,381,643</b>	<b>33,880,004</b>	<b>37,713,670</b>

Source: Port of Izmir, March 2003

Note: By far the largest part of repair and maintenance works are executed by third companies.

**Employment in the port**
**Table 0-13 Employment in the Port of Izmir, 1999 – 2002**

	1999	2000	2001	2002
Officers	63	61	59	49
Workers	555	550	507	456
Contracted staff	205	207	204	203
Officers	7	10	8	8
Temporary workers	-	110	107	107
<b>Total</b>	<b>830</b>	<b>938</b>	<b>885</b>	<b>823</b>

Source: Port of Izmir, March 2003

**Port investment plans**

A second container terminal is under construction. The second container terminal will add an additional capacity of 800,000 TEU to the existing capacity of 800,000 TEU.

There are plans to widen and deepen part of the navigation channel. Total length of the channel is 13 km. In the beginning of the channel and at the end of the channel works are required to deepen and widen it along a total length of 7.5 km.

## **TRACECA Traffic**

Although the port is very interested in the TRACECA concept the management were not aware of any detail on the volumes, types and destinations of TRACECA cargo handled in the port.

## **Other issues**

### *Institutional changes*

A project is being executed with the purpose of preparing the organisation of the port to make it more compliant to EU and IMO regulations. It is a pilot project and, if proven successful, will be implemented in other TCDD ports as well.

### *Competition*

The management of the Port of Izmir considers the ports around the MEDA countries as their main competitors. Their main competitors are Malta, Port Said and Cyprus.

Their advantage over Istanbul is that it takes two days longer to reach Istanbul ports by vessel. Moreover, by calling at the Port of Izmir, congestion in the Bosphorous is avoided.

## PORT OF SAMSUN

### Introduction

The port is owned and operated by TCDD, the railway ministry.

### Technical details

**Table 0-1 Port Facilities at Samsun**

Total quay length	1,756 m
Max. draft	
• General cargo	- 6 / - 12 m
• Dry bulk	- 10.5
Storage capacity	
• open	6.6 mln tons
• closed	0.2 mln tons
• containers	50,000 TEU

Source: Port of Samsun, April 2003

### Cargo movements

Until about 15 years ago, the port handled considerable volumes of transit cargo coming from or going to Iran (90%) and Iraq (10 %). Currently, the Port of Samsun is handling some rolling stock coming from Russia and going to Iraq under supervision of the UN.

**Table 0-2 Cargo handling in the Port of Samsun, 1999 – 2002 (tons)**

	1999	2000	2001	2002
<b>Loading</b>				
Export	345,831	334,447	536,802	541,002
Domestic	153,939	107,955	203,763	205,680
Transit	15,998	7,793	987	3,237
<b>Total</b>	<b>515,768</b>	<b>450,195</b>	<b>741,552</b>	<b>749,919</b>
<b>Unloading</b>				
Import	1,227,790	1,834,960	1,521,739	1,602,142
Domestic	315,306	243,053	279,695	237,893
Transit	11,090	9,028	949	20,941
<b>Total</b>	<b>1,554,186</b>	<b>2,087,041</b>	<b>1,802,383</b>	<b>1,860,976</b>
<b>Overall total</b>	<b>2,069,954</b>	<b>2,537,236</b>	<b>2,543,935</b>	<b>2,610,895</b>

Source: Port of Samsun, March 2003

By far import cargo represents the largest part of total cargo volumes handled with a share of more than 60 %. Volumes of transit cargo are small although they are increasing in 2002.

The Port of Samsun has a maximum cargo handling capacity of around 2.4 m tons per annum. The total volumes of cargo handled in the port are partly (about 50 %) taken care of by ship's cranes. In the year 2002 around 1.3 m tons was handled through port equipment. As a result, the occupancy rate of the port is around 55 %.

The table below shows the main types of cargo handled.

**Table 0-3 Types of cargo handled by the Port of Samsun, 1999 – 2002 (tons)**

	1999	2000	2001	2002
Dry bulk	1,264,635	1,693,414	1,523,142	1,739,177
Liquid bulk	4,728	4,468	3,000	13,988
General cargo	790,230	827,306	1,005,852	849,850
Container	10,361	12,048	11,941	7,870
<b>Total</b>	<b>2,069,954</b>	<b>2,537,236</b>	<b>2,543,935</b>	<b>2,610,895</b>

Source: Port of Samsun, March 2003

Container handling in the port was partly related to the construction of an LNG pipeline between the Ukraine (Novorossiysk) and Turkey (Samsun). Since this project was finalised by the end of 2002, no container handling is expected for the year 2003.

Another important source of containers was the cargo flow generated by tobacco coming from the US destined for a factory in Tokat some 170 km from Samsun. However, two years ago, this cargo flow was diverted to the port of Izmir.

The main types of dry bulk are coal (import), wheat and scrap.

**Table 0-4 Number of Containers handled in the Port of Samsun, 1999 – 2002**

	1999	2000	2001
<b>Loading</b>			
20 ft			
• full	0	0	11
• empty	6	0	0
40 ft			
• full	0	0	0
• empty	558	405	107
<b>Unloading</b>			
20 ft			
• full	2	0	50
• empty	0	0	0
40 ft			
• full	390	507	564
• empty	0	0	0
Total units	956	912	732
<b>Total TEU</b>	<b>1,904</b>	<b>1,824</b>	<b>1,403</b>

Source: Port of Samsun, March 2003



Until the year 1989 the port used to handle a lot of transit traffic to and from Iran and Iraq. For obvious reasons, this traffic has ceased.

**Vessel movements**

By far the main part of the vessels calling at the Port of Samsun are Turkish flagged vessels.

**Table 0-5 Number of Vessels calling at the Port of Samsun, 1999 - 2002**

	1999	2000	2001	2002
Number of vessels	985	1,009	1,110	1,187

Source: Port of Samsun, March 2003

The following regular services are operated:

- a regular ro-ro service between Samsun and Novorossiysk. On average the service is operated two times a week, provided there is enough cargo. Main types of cargo carried are wooden logs and construction equipment from Russia. From Turkey (Mersin, Antalya) fruit is exported to Russia. Normally, two vessels are employed. A round trip takes about 2 days.
- a regular, once a week service between Samsun and Odessa. Predominantly fruit (oranges, lemons) are exported to Odessa. There is hardly any return cargo.

**Tariffs**

**Table 0-6 Cargo handling tariffs in the Port of Samsun (USD / ton)**

	Loading	Unloading	Shifting	Transshipment
General cargo	6.5	7.0	6.5	10
Liquid bulk				1.25
Dry bulk	4.5	4.5	4.5	6
Ro-ro	25	25	25	25
Containers (per unit)	60	25	40	50
• Full	35	70	110	-
• Empty				

Source: Port of Samsun, April 2003

For vessel related and other dues reference is made to paragraph 0.

**Financial results**

No information was available on the financial results.

**Employment in the port**

In general, the number of people working in the port is decreasing, partly due to the fact that volumes of (labour intensive) general cargo are decreasing.

About 320 people are employed by the port.

### **Port investment plans**

The port has plans to develop a container terminal. However, so far these plans were not approved by TCDD.

### **TRACECA Traffic**

Currently, according to the port's information no TRACECA cargo is currently handled.

### **Other issues**

#### *Hinterland connections*

The port has well developed road connections and in addition some short distance railway connections to nearby factories. About 80 % of the cargo handled by the port is transported by road, the remaining part by rail. Coal is mainly transported by rail to the earlier mentioned factories.

#### *Ferry jetty (no. 8)*

In the year 1988 an agreement was reached with the Romanian government to start operating a rail ferry connection between Constantia and Samsun. After a number of calls the operations were cancelled because of lack of cargo. Currently, the ferry jetty is not in operation.

## PORT OF TRABZON

### Introduction

The Port of Trabzon is situated in the North Eastern part of the Turkish Black Sea coast. The port is managed by TDI, the Maritime Organisation which is headquartered in Istanbul.

The port operates 4 quays with a total length of about 1,500 meters.

### Cargo movements

**Table 0-1 Overview volumes of cargo handled by the Port of Trabzon, 1999 – 2002 (tons)**

	1999	2000	2001	2002
<b>Loading</b>				
Export	39,881	23,604	74,552	256,544
Domestic	3,636	5,847	-	-
Transit	1,071	503	2,856	1,878
<b>Total</b>	<b>44,588</b>	<b>29,954</b>	<b>77,408</b>	<b>258,422</b>
<b>Unloading</b>				
Import	390,190	580,027	465,686	703,255
Domestic	51,574	359,937	18,766	24,059
Transit	12,098	3,082	6,193	11,501
<b>Total</b>	<b>454,862</b>	<b>943,046</b>	<b>490,645</b>	<b>738,815</b>
<b>Overall total</b>	<b>499,450</b>	<b>973,000</b>	<b>568,053</b>	<b>997,237</b>

Source: Port of Trabzon, April 2003

The year 2002 showed an increase of almost 50 % compared to the previous year (2001) due to a considerable increase of coal import from both Russia and the Ukraine. Main ports of loading are: Mariupol, Tuapse, Yeisk, Mikolayev, and Odessa. The main type of cargo handled by the port is coal which is used locally. In the year 1999 coal represented about 70 % of the total cargo volumes handled. In the year 2001 this was no less than 78 % decreasing to 66 % of the total in 2002.

Other types of cargo are fresh fruits and vegetables exported from Turkey to Sochi, Poti and Gelendzhik.

The oil terminal in the port handles oil products (fuel oil and gasoline) only and is operated by a private company. The Port of Trabzon receives USD 0.12 per ton of oil handled through the terminal.

With a total capacity of 4 million tons, it is clear that the port is largely under-utilised. In the year 1999 only about 12.5 % of the total capacity was used increasing to about 25 % in 2002.

For the years 2000 to 2002 a more detailed overview of cargo handling is provided in annex 2.

**Table 0-2 Containers Handled in the Port of Trabzon, 1999 – 2002 (pieces)**

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Import	471	381	383	545
Export	493	386	410	501
<b>Total</b>	<b>964</b>	<b>777</b>	<b>793</b>	<b>1,046</b>

Source: Port of Trabzon, March 2003

By far the largest part, about 90 %, of the containers handled are 20 ft containers.

### Vessel movements

**Table 0-3 Overview vessels calling at the Port of Trabzon, 1999 – 2001**

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
General cargo	93	112	137	180
Container	20	20	42	25
Tankers	17	99	2	2
Dry bulk	188	223	147	166
Ro-ro	2	10	37	224
Other	345	258	299	232
<b>Total</b>	<b>665</b>	<b>722</b>	<b>656</b>	<b>829</b>

Source: Port of Trabzon, March 2003

Other vessels include passenger vessels, mostly passenger / cargo ferries.

The following regular connections are operated:

- Between Sochi and Trabzon, every day  
This service is operated with three ferry vessels by the following private companies: Karden Shipping, Gürgen Shipping, Sari Shipping and Trabzon Shipping
- Between Poti and Trabzon, every day  
This service is operated with four ro-ro vessels by three private companies: Asya Tour Shipping, Silbir Shipping and KRD Ro Ro
- Between Gelendzhik and Trabzon, with regular calls  
This connection is operated by two private companies: Gelenchik Gida and TRB-Tur

### Tariffs

Tariffs in general are determined by TDI. The application of discounts can only be done with prior consent of TDI.

25% discounts are applicable to all transit cargoes..

*Vessel dues*

Pilotage is compulsory for foreign vessels larger than 250 GT. For Turkish vessels pilotage is compulsory for vessels larger than 1,000 GT. For vessels with a size between 2,000 and 5,000 GT usually one tug is used. For vessels between 5,000 and 15,000 GT 2 tugs are used and for vessels over 15,000 GT 3 tugs are used.

**Table 0-4 Vessel Dues in the Port of Trabzon (USD)**

<b>Pilotage</b>	<b>Up to 1,000 GT</b>	<b>Above 1,000 GT Per 1,000 GT</b>		
	200	82		
<b>Towage</b>	<b>Up to 3,000 GT</b>	<b>Above 3,000 GT Per 1,000 GT</b>		
	340	62		
<b>Quay dues</b>	<b>Per 100 GT per day</b>			
	Quay	Buouy	anchor	
	1.50	1.20	1.00	
<b>Fresh water</b>	<b>On shore</b>		<b>Off shore</b>	
	6.0		9.30	
<b>Waste collection</b>	<b>Liquid</b>		<b>Solid</b>	
	On shore	Off shore	On shore	Off shore
Per 1,000 GT	45	90	60	120

Source: Port of Trabzon, March 2003

For pilotage a discount of 30 % is applied to Turkish flagged vessels up to 3,000 GT. All vessels calling at the port of Trabzon with a regular frequency are subject to discounts of between 15 and 50 %. For a detailed overview of discounts provided, reference is made to annex 3.

*Cargo handling tariffs*

**Table 0-5 Overview cargo handling tariffs Port of Trabzon (USD/ton – unit)**

	Direct	Indirect
<b>(USD / ton)</b>		
General cargo	5.0	8.0
Dry bulk	2.80	6.0
Liq. bulk	0.40	0.40
Iron, steel, flour, sugar, paper units, steel pipes, timber	4.0	4.0
<b>(Per unit)</b>		
Empty container	13.0	13.0
Full container	40.0	85.0
Trailer	30.0	30.0
Ro-ro	12.0	12.0
Live stock	0.40	0.90

Source: Port of Trabzon, April 2003

**Financial results**

Average exchange rates for the years 1999 to 2002 have been used to obtain the USD equivalent to the Turkish Lira.

**Table 0-6 Financial overview Port of Trabzon, 1999 – 2002 (USD)**

	1999	2000	2001	2001
Revenues	3,744,992	3,784,923	4,604,314	5,635,516
Costs	5,217,127	5,063,154	3,625,536	3,802,417
<b>Net result</b>	-	-	<b>978,779</b>	<b>1,833,099</b>
	<b>1,472,136</b>	<b>1,278,231</b>		

Source: Port of Trabzon, April 2003

**Employment in the port**

The general policy of the port is to reduce the number of staff without having to lay off people. For this reason, the number of people employed decreased by about 15 % in the period between 1999 and 2002.

**Table 0-7 Number of Staff, 1999 - 2002**

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Staff	61	52	54	53
Workers	136	129	116	115
<b>Total</b>	<b>197</b>	<b>181</b>	<b>170</b>	<b>168</b>

Source: Port of Trabzon, March 2003

### Port investment plans

There currently no port investment plans.

### TRACECA Traffic

According to the Port Management currently no TRACECA related cargo is handled but they are very interested in the TRACECA concept.

### Other issues

#### *Privatisation*

There have been plans to privatise the port for some years but these plans have been hampered mainly due to political reasons. The Port management expects that the privatisation will come into effect within the next six months. According to a number of sources there are two Turkish companies interested in buying the port.

#### *Free Zone*

For more than 10 years a free zone has been operated by a private company Transbas. They rent the area from the port.

#### *Hinterland connections*

The port has no railway connections but reasonable road connections, although only up to Baybut. Considering the type of cargo handled currently and its regional focus the hinterland connections are meeting the demand.

## PORT OF ZONGULDAK

### Introduction

The port was constructed in 1950. The port is owned by TTK, which main activity is related to the mining business. They own and operate 5 coal mines which are located in the vicinity of Zonguldak. From the mines coal is transported by rail to the port. For this reason, TTK is only involved in port activities related to the handling of coal.

The port consists of 4 quays:

- Number one is handling general cargo. There are two privately owned electrical cranes with a capacity of 5 and 15 tons respectively.  
The quay length is 250 m of which 200 can actually be used. Depth along the quay is – 8.5 m
- Number 2 is the coal loading quay. Two loading conveyors are operated at this quay, each with an hourly loading capacity of 300 tons. The length of the quay is 510 m and the depth is – 8.0 m
- Number 3 is the ro-ro pier with a length of 125 m and a depth of – 8.0 m. Two ro-ro vessels can be handled at the same time;
- Number 4 is the quay suitable for receiving passenger vessels. Quay length is 100 m and depth along the quay is - 7.5 m.

### Cargo movements

Table 0-1 Cargo handling in the Port of Zonguldak, 1999 – 2002 (tons)

	1999	2000	2001	2002
<b>Total</b>	<b>181,949</b>	<b>n.a.</b>	<b>246,909</b>	<b>294,550</b>

Source: TTK, March 2003

A small part of the cargo handled in the port is general cargo. By far the main part is coal being loaded for export purposes.

In general coal production in Turkey is diminishing as a result of government policy. Mining employees are laid off and through less production, less transportation is required.

Maximum cargo handling capacity in the port is estimated to be around 800,000 tons per annum. The port clearly operates far below its maximum at around 38 % of its total capacity.

### Vessel movements

Table 0-2 Vessel Movements at Port of Zonguldak, 1999 - 2002

	1999	2000	2001	2002
<b>Total</b>	<b>n.a.</b>	<b>281</b>	<b>277</b>	<b>546</b>

Source: TTK, April 2003



## Tariffs

When cargo is handled by other parties than TTK, USD 0.75 per ton has to be paid by those private parties to TTK.

## Financial results

For calculating the USD equivalent, yearly average exchange rates were applied.

**Table 0-3 Overview revenues for the Port of Zonguldak, 1999 - 2002**

	1999	2000	2001	2002
<b>Cargo handling</b>				
Discharging		325.138	299.756	
Loading		86.166	149.599	
Storage		22.839	6.386	
Weighing		5.082	8.395	
Coal loading		16.735	11.992	
<b>Sub-total</b>		<b>455.959</b>	<b>476.127</b>	
<b>Vessel handling</b>				
Tugs		136.849	179.830	
Pilotage		86.837	85.831	
Fresh water		29.056	17.067	
Quay dues		27.472	6.025	
<b>Sub-total</b>		<b>280.214</b>	<b>288.753</b>	
<b>Total</b>	<b>496,487</b>	<b>736.174</b>	<b>764.880</b>	<b>928.712</b>

Source: TTK, March/April 2003

The largest part of share of the income is earned by cargo handling activities, more than 60 % in the year 2000 and 2001. In addition, total revenues have increased considerably in 2002 predominantly caused by increased cargo volumes.

## Employment in the port

**Table 0-4 Employment in the Port of Zonguldak, 2002**

	2002
Management	2
Sea services	30
Workshop	14
Cargo handling	8
<b>Total</b>	<b>54</b>

Source: TTK, March 2003

Since 1<sup>st</sup> of January 2003, the workshop has been transferred to other entities in the company. For this reason there is also one manager left. As a result, from 1<sup>st</sup> of January 2003, 39 people are actually involved in port related activities.

### **Port investment plans**

There are no port investment plans. The company is considering and has already tried to sell the port since it is not their core business. However, until this moment TTK has not been able to find a potential buyer.

### **TRACECA Traffic**

The Port of Zonguldak is not handling any TRACECA related cargoes.

### **Other issues**

#### *Hinterland connections*

The port of Zonguldak has well developed railway connections to the main routes. In addition there is a railway connection to Karabuk. However the connection from Karabuk to for example Ankara is not well developed.

Road connections to the port are not good. Between the highway and Zonguldak the distance is around 120 km. Since the road goes through a mountainous area it takes around two hours by truck to reach the port.

#### *Main competitors*

Port of Bartın. This port has better loading and unloading facilities than Zonguldak. Moreover, the Port of Bartın has storage facilities available which enables it to work more efficiently in terms of planning.

Port of Ereğli. This port is situated about 60 km to the west of Zonguldak. Located next to the port is a steel and iron factory.

## SHORT OVERVIEW RAILWAY DEVELOPMENTS IN TURKEY

### **Almaty - Istanbul**

In January 2002 TCDD started operating a block train between Almaty and Istanbul, via Iran and Uzbekistan. It takes 16 days (6,700 km) and the frequency is every two weeks. As from June 2002 this regular two-weekly frequency was achieved.

### **Connection with Georgia**

TCDD is very interested to develop the connection between Kars and Tbilisi. This means that railway tracks over a distance of 124 km needs to be developed. Around 90 km is in Turkey and the remaining part in Georgia. According to TCDD, Turkey is ready and willing to further develop this transportation link. However, due to geo-political problems no agreement can be reached with Georgia for the moment.

### **Istanbul tunnel projects**

According to TCDD, the development of a tunnel link between both sides of the Bosphorous in Istanbul would very much enhance railway transport. It is expected that construction works will start in the course of 2004.

### **Istanbul - Ankara**

To improve the efficiency and capacity of the railway link between Istanbul and Ankara a Spanish financed project will start in 2003 with phase 1 covering 120 km. Phase 2 of this project is expected to commence in 2004/2005 covering the remaining part. Currently it takes 7 hours to travel by train between both cities. After the finalisation of the project, this will be about 3 hours for both passengers and freight.

### **Mersin – Samsun**

Currently, the average speed on the railway connection between Mersin and Samsun is around 400 km per 24 hrs. The target of TCDD is to increase this speed to 1,000 km per 24 hrs. There are however no investment plans at the moment to support this objective.

### **Bulgaria**

Around 200,000 trucks cross the border between Bulgaria and Turkey on a yearly basis. According to TCDD if railway connections would improve, the cargo transported by road could easily be transferred to railway transportation. There are however no investment plans to further develop this railway link.

## SUMMARY OF MAIN STATISTICS

### Cargo volumes

Table 0-1 Cargo Volumes at Turkish Ports, 1999 - 2002

	1999	2000	2001	2002
Izmir	7,184,413	8,164,470	8,426,069	9,652,714
Haydarpaşa	5,688,617	5,584,312	4,789,012	5,114,958
Samsun	2,069,954	2,537,236	2,543,935	2,610,895
Derince	756,949	700,771	548,220	1,148,975
Trabzon	499,450	973,000	568,053	997,237
Hopa	504,097	539,401	444,591	346,620
Zonguldak	181,949	n.a.	246,909	294,550

#### Notes:

1. None of the ports report handling any TRACECA cargoes at this time.
2. The port of Derince is managed by TCDD and predominantly handling general cargo for export purposes.
3. The Port of Haydarpaşa is managed by TCDD and mainly handling containerised and ro-ro cargoes which represents more than 95 % of the total volumes
4. The port Hopa is operated by a private company. One of the main types of cargo handled by the port of Hopa is coal.
5. The port of Izmir is managed by TCDD and mainly handling containerised cargo and dry bulk. Containerised cargo represented more than 50 % of the total and dry bulk more than 35 %. Dry bulk is mainly exported.
6. The port of Samsun is managed by TCDD and mainly handling dry bulk cargoes for import, local purposes;
7. The port of Trabzon is operated by TDI and mainly a dry cargo port mainly importing coal (66 % of the total in 2002) for local use.
8. The port of Zonguldak is managed by TTK, a state-owning mining company. Its primary focus was export of coal from the 5 mines which are located near the port and have a railway connection to the port. However, due to decreasing production from the mines, TTK is looking for a party to buy the port.

## Maximum capacity and Occupancy

**Table 0-2 Overview of Maximum Cargo Handling Capacities in the Turkish Ports**

	Maximum capacity
Derince	1.65 mln
Haydarpaşa	13.6-14.6 mln
Hopa	2.75 mln
Izmir	13.1 mln
Samsun	2.4 mln *
Trabzon	4 mln
Zonguldak	0.8 mln

\* in the statistics of Samsun, cargo handling by ships cranes and third parties in the port have been taken into account. This explains why volumes handled exceed maximum port capacity.

**Table 0-3 Overview of Occupancy Rates Turkish Ports, 1999 – 2002**

	1999	2000	2001	2002
Derince	45.9%	42.5%	33.2%	69.6%
Haydarpaşa	38.5%	37.8%	32.4%	34.6%
Hopa	18.3%	19.6%	16.2%	12.6%
Izmir	54.8%	62.3%	64.3%	73.7%
Samsun*	43.1%	52.9%	53.0%	54.4%
Trabzon	12.5%	14.0%	14.2%	25.0%
Zonguldak	22.7%	n.a.	30.9%	36.8%

\* only cargoes handled by the port have been taken into account

## Financial aspects

**Table 0-4 Overview of Revenues in the Turkish Ports, 1999 - 2002 (USD)**

	1999	2000	2001	2002
Derince	6,627,739	5,590,156	4,620,700	7,156,857
Haydarpaşa	55,168,487	57,785,174	35,469,808	34,398,121
Hopa		2,459,688	2,001,212	1,725,594
Izmir	46,227,945	51,827,320	47,886,370	54,358,074
Samsun				
Trabzon	3,744,992	3,784,923	4,604,314	5,635,516
Zonguldak	496,487	736,174	764,880	928,712

**Table 0-5 Overview of Costs in Turkish Ports, 1999 - 2002 (USD)**

	1999	2000	2001	2002
Derince	6,953,975	9,174,075	6,195,237	10,661,354
Haydarpaşa	21,162,800	29,545,327	15,426,794	21,311,939
Hopa	n.a.	2,936,722	2,111,080	1,901,959
Izmir	15,676,450	18,445,676	14,006,366	16,644,405
Samsun	n.a.	n.a.	n.a.	n.a.
Trabzon	5,217,127	5,063,154	3,625,536	3,802,417
Zonguldak	n.a.	n.a.	n.a.	n.a.

**Table 0-6 Overview of Revenues per ton of cargo in the Turkish Ports, 1999 – 2002 (USD/ton)**

	1999	2000	2001	2002
Derince	8.8	8.0	8.4	6.2
Haydarpaşa	9.7	10.3	7.4	6.7
Hopa	n.a.	4.6	4.5	5.0
Izmir	6.4	6.3	5.7	5.6
Samsun	n.a.	n.a.	n.a.	n.a.
Trabzon	7.5	6.8	8.1	5.6
Zonguldak	2.7	n.a.	3.1	3.2

**Table 0-7 Overview of Costs per ton of cargo in the Turkish Ports, 1999 – 2002 (USD/ton)**

	1999	2000	2001	2002
Derince	9.2	13.1	11.3	9.3
Haydarpaşa	3.7	5.3	3.2	4.2
Hopa		5.4	4.7	5.5
Izmir	2.2	2.3	1.7	1.7
Samsun				
Trabzon	10.5	9.1	6.4	3.8
Zonguldak				

**Table 0-8 Net result per ton of cargo in the Turkish Ports, 1999 – 2002 (USD/ton)**

	1999	2000	2001	2002
Derince	-0.4	-5.1	-2.9	-3.1
Haydarpaşa	6.0	5.1	4.2	2.6
Hopa	n.a.	-0.9	-0.2	-0.5
Izmir	4.3	4.1	4.0	3.9
Samsun	n.a.	n.a.	n.a.	n.a.
Trabzon	-3.0	-2.3	1.7	1.8
Zonguldak	neat.	n.a.	n.a.	n.a.

**Employment**

**Table 0-9 Overview employment in the Turkish Ports, 1999 – 2002 (number of people)**

	1999	2000	2001	2002
Derince	437	423	501	449
Haydarpaşa	n.a.	n.a.	n.a.	700
Hopa	n.a.	72	72	65
Izmir	830	938	885	823
Samsun	n.a.	n.a.	n.a.	320
Trabzon	197	181	170	168
Zonguldak	n.a.	n.a.	n.a.	54

**Annexes**



**Annex 1 Cargo handling in the Port of Derince: 1999 – 2002**
**Detailed overview cargo handling Port of Derince, 1999**

	loading			unloading			total
	export	domestic	transit	import	domestic	transit	
military goods				4,145			4,145
glass				31,364			31,364
granite				2,690			2,690
paper	169			54,370			54,539
chemicals	504			8,996			9,500
steel				3,672			3,672
timber	1,186			105,845			107,031
containers	7,760			29,825			37,585
cars	540			4,486			5,026
ro-ro	6,304		363	13,025		104	19,796
wheat	60,400			60,158	3,566		124,124
other dry bulk	24,600			41,194			65,794
chrome	11,960			0			11,960
magnazit	36,499			0			36,499
liquid cargo	3,316			58,088			61,404
other	22,554			159,266			181,820
<b>total</b>	<b>175,792</b>	<b>0</b>	<b>363</b>	<b>577,124</b>	<b>3,566</b>	<b>104</b>	<b>756,949</b>

**Detailed overview cargo handling Port of Derince, 2000**

	loading			unloading			total
	export	domestic	transit	import	domestic	transit	
military goods	5			3,866			3,871
glass	315			41,819			42,134
granite	0			4,832			4,832
paper	554			65,789			66,343
chemicals	0			8,288			8,288
steel	1,279			10,832			12,111
timber	0			115,048			115,048
containers	1,985			4,086			6,071
cars	1,436			13,409			14,845
ro-ro	3,469			7,445			10,914
wheat	0			46,238			46,238
other dry bulk	15,477	10,891		38,169	1,800		66,337
chrome	26,700			0			26,700
magnazit	48,600			0			48,600
liquid cargo	0	1,116		25,810	51		26,977
other	35,930	67		165,465			201,462
<b>total</b>	<b>135,750</b>	<b>12,074</b>	<b>0</b>	<b>551,096</b>	<b>1,851</b>	<b>0</b>	<b>700,771</b>

## Detailed overview cargo handling Port of Derince, 2001

	loading			unloading			total
	export	domestic	transit	import	domestic	transit	
military goods				1,611			1,611
glass				12,380			12,380
granite				3,083			3,083
paper				61,729			61,729
chemicals				0			0
steel	693			12,028			12,721
timber				82,911			82,911
containers	420			4,568			4,988
cars	8,870			582			9,452
wagons & ro-ro	30,339			40,771		181	71,291
wheat	5,000			0			5,000
other dry bulk	3,400	1,450		30,663			35,513
chrome	24,200			0			24,200
magnazit	63,200			0			63,200
liquid cargo	0	70	0	7,038	1,371		8,479
other	25,324			126,256		82	151,662
<b>total</b>	<b>161,446</b>	<b>1,520</b>	<b>0</b>	<b>383,620</b>	<b>1,371</b>	<b>263</b>	<b>548,220</b>

## Detailed overview cargo handling Port of Derince, 2002

	loading			unloading			total
	export	domestic	transit	import	domestic	transit	
military goods		133		2,188	34		2,355
glass				0			0
granite				4,626			4,626
paper				118,245			118,245
chemicals				0			0
steel	6,736			5,182			11,918
timber				135,274			135,274
containers	2,976			2,256			5,232
cars	14,566			13,108			27,674
wagons & ro-ro	60,246			101,353			161,599
wheat				136,848			136,848
other dry bulk		3,000		159,907	7,800		170,707
chrome	29,450						29,450
magnazit	63,037						63,037
liquid cargo				46,111	5,061		51,172
other	109,914	300		119,618	1,006		230,838
<b>total</b>	<b>286,925</b>	<b>3,433</b>	<b>0</b>	<b>844,716</b>	<b>13,901</b>	<b>0</b>	<b>1,148,975</b>

**Annex 2 Detailed overview cargo handling in the Port of Trabzon**

		2000	2001	2002
<b>Loading</b>				
Export	Liquid bulk	0	0	0
	Dry bulk wheat	4,962	5,250	5,250
	General cargo			
	containerised	3,691	1,291	6,337
	fish oil	2,040	0	
	fruits	6,476	59,465	56,004
	other	6,435	8,546	7,288
	Other			181,665
Transit	Liquid bulk	0	0	0
	Dry bulk	0	0	0
	General cargo			
	containerised	503	2,578	1,628
	other		278	250
Domestic	General cargo			
	fuel	5,489	0	0
	petrol	358	0	0
<b>Total Loading</b>		<b>29,954</b>	<b>77,408</b>	<b>258,422</b>
<b>Unloading</b>				
Import	Liquid bulk	74,527	0	0
	Dry bulk coal	433,145	430,740	656,314
	other	25,643	3,098	6,265
	General cargo timber	4,210	16,906	13,652
	other	42,502	12,621	24,057
	container		2,321	2,967
Transit	Liquid bulk	0	0	0
	Dry bulk	0	0	0
	General cargo container	3,071	3,644	5,167
	other	11	2,549	6,334
Domestic	General cargo other	329,983	18,766	24,059
<b>Total Unloading</b>		<b>913,092</b>	<b>490,645</b>	<b>738,815</b>
<b>OVERALL TOTAL</b>		<b>943,046</b>	<b>568,053</b>	<b>997,237</b>

**Annex 3 Discounts applicable in the Port of Trabzon (%)**

	<i>Pilotage</i>	<i>Towage</i>	<i>Quay dues</i>	<i>Waste collection</i>
Cabotage	45	40	50	40
Turkish flagged vessels not involved in cabotage	25	> 10,000 GT => 20	-	25
Turkish & Foreign flagged vessels with regular calls	30	30	-	30
Foreign flagged vessels with 3 calls in 3 months	25	> 10,000 GT => 20	-	30
Vessels entering the port due to environmental or weather conditions	50	50	50	50
Passenger vessels with more than 5 calls	15	15	15	-
Turkish flagged ro-ro vessels	40	40	40	40

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**B2**

**The following appendices contain detail of the data gathered during the UPTFT project in 2002 and revised to include additional and clarified figures received by July 2003. They are separated from the main report to make it easier to read. The outcome of the data is included in the main body of the report, but the reader may wish to refer later to the detail.**

**The tables are numbered in relation to each chapter.**

- Appendix I: Port Tariffs on ships in the Caspian and Black Sea**
- Appendix II: Comparison of port tariffs between TRACECA and other countries.**
- Appendix III: Cargo traffic at Caspian and Black Sea in 2000 and 2001. Known imports into TRACECA in 2001  
Link between import value and container volume leading to implied container volume into TRACECA**
- Appendix IV: Adjustments of Port Costs to cover more realistic depreciation and maintenance allowance and loan repayments.  
Comparison of cost to revenue and variable and fixed cost split in 2001, for Aktau, Turkmenbashi and Baku in 2001.**
- Appendix V: Estimated annual operating and fixed versus variable costs for old or new Caspian rail ferry and two sizes of oil tanker leading to the cost of oil transport between Aktau and Baku**
- Appendix VI: Profitability at main Caspian and Black Sea ports and changes needed to bring tariffs into line with total costs. Also variable costs as a % of total costs and total revenues.**
- Appendix VII: Ports of Moldova - detail**
- Appendix VIII: The Need to Reduce Costs – detailed argument**
- Appendix IX: Longer term Pricing Policy**
- Appendix X: Comments from Working Groups - answered**

## Appendix I

### PORT TARIFFS ON SHIPS AND CARGO in the Caspian Ports of 1. Aktau, 2. Baku and 3. Turkmenbashi and

### Black Sea Ports of 1. Bourgas, 2. Constantia, 3. Illyshevsk, 4. Poti, 5. Reni and 6 Varna.

#### Caspian Sea 1. AKTAU

#### TARIFFS ON SHIPS

Tariff	Per:	US cents
Light dues	GRT	5
Tonnage	GRT	12
Channel dues	Cubic metre of ship volume	7
Berthing dues, per day	Cubic metre of ship volume	8
Anchorage dues	Per call	2382
Ecological dues	GRT	2.4
Pilotage dues	Cubic metre of ship volume	0.6

#### CARGO HANDLING

	(\$/tonne)	
<b>PIECE CARGOES</b>		
Food (salt, sugar etc)	6	
Grain	8	
Coal	6	
Bags up to 30 kg	9-10	
Bags over 30 kg	8-9	
Metal, coloured	8-9	
Metal, black	6	
Cotton	10	
<b>CONTAINERS</b>		
20' loaded	80	
40' loaded	120	
20' empty	60	
40' empty	100	
<b>PETROLEUM</b>	<b>1.5</b>	



## 2. BAKU

### TARIFFS ON SHIPS

Tariff	Per:	US cents
Vessel dues	Cubic metre of ship volume	1.6
Channel dues	Cubic metre of ship volume	2.7
Berthing dues, per day	Cubic metre of ship volume	2.4
Anchorage dues	Cubic metre of ship volume	0.1
Ecological dues	Per call	2.4
Pilotage dues	Cubic metre of ship volume	0.6

Tariffs calculated in AZM for Azerbaijan flag and US\$ for foreign flag

### CARGO HANDLING (US\$/tonne)

	DIRECT	INDIRECT
<b>PIECE CARGOES</b>		
Bags, Boxes, Packets	3.3	4.7
Piles, bales, rolls, drums	3.9	5.9
Packed metal	2.9	4.3
Unpacked metal	3.3	4.7
Metal scrap	2.0	2.7
Cargo in big bags	3.1	4.3
<b>BULKS</b>		
Grain	3.1	0.0
Salt	2.2	2.4
Food (beans, sugar, etc)	1.4	1.8
Metal Ores	1.8	2.7
Sand, gravel	1.8	2.0
Timber packed	2.9	4.3
Timber unpacked	3.3	5.3
Cars	11.6	15.7
<b>CONTAINERS</b>		
20' loaded	36.1	49.6
40' loaded	72.4	99.2
20' empty	16.3	25.1
40' empty	32.9	50.0
<b>PETROLEUM</b>	0.36	

### 3. TURKMEMBASHI

#### TARIFFS ON SHIPS

Tariff	Per:	US cents
<b>Vessel dues</b>	<b>Cubic metre of ship volume</b>	2.4
<b>Channel dues</b>	<b>Cubic metre of ship volume</b>	4
<b>Berthing dues, per day</b>	<b>Cubic metre of ship volume</b>	3
<b>Anchorage dues</b>	<b>Cubic metre of ship volume</b>	1
<b>Pilotage dues</b>	<b>Cubic metre of ship volume</b>	2.3

#### CARGO HANDLING (US\$/tonne)

	DIRECT	INDIRECT
Food, salt, sugar, etc	2	2
Metal ore	2	2.5
Chemicals	4	
Boxes and bags	10	12
Flour in sacks	10	12
Metals, coloured	10	12
Metals, black	6	8
<b>CONTAINERS</b>		
20' loaded	40	50
40' loaded	60	70
20' empty	20	25
40' empty	30	35
<b>PETROLEUM</b>	0.13	

## Black Sea Ports

### 1. BOURGAS

#### TARIFFS ON SHIPS

Tariff	Per:	US cents
<b>Vessel Tonnage dues</b>	<b>GT</b>	<b>40-55</b>
<b>Channel dues</b>	<b>GT</b>	<b>1-10</b>
<b>Berth dues</b>	<b>Linear metre/day</b>	<b>10</b>
<b>Anchorage dues</b>	<b>Cubic metre of ship volume</b>	<b>0.1</b>
<b>Ecological dues</b>	<b>Per call</b>	<b>2.4</b>
<b>Pilotage dues</b>	<b>Per call</b>	<b>\$80-560</b>

#### CARGO HANDLING (US\$/tonne)

	<b>DIRECT</b>	<b>INDIRECT</b>
Bags, bales up to 40 kg	9.6	13.2
Bags, bales 41-82 kg	8.1	13.0
Big Bags over 1000 kg	3.1	4.0
Paper rolls up to 1000 kg	5.3	8.1
Pallets, 800-1600 kg	4.6	5.2
Scrap in bulk	2.3	3.7
Steel	2.4-3.2	2.7-4.0
Salt in bulk	1.3	1.4
Feed pellets in	1.4	3.2
Feed pellets out	2.4	2.6
Wheat	1.4	1.7
Coal	0.9	1.0
Sugar in bulk	1.2	2.0
<b>Oil via pipeline</b>	<b>1.0</b>	

Containers 20'	\$30
Containers 40'	\$40

## 2. CONSTANTIA

### TARIFFS ON SHIPS

Tariff	Per:	US \$
Channel dues	Cubic metre of ship volume	2.7
Quay tariff	Metre per day	6.0-8.0(a)
Basin tariff	Metre per day	0.15-0.28(a)

(a) Varies by ship type. Example shown is for container ships

### Cargo Handling

Containers	\$70 per 20' or 40'
Ferries:	
Containers	
20' laden	50
40' laden	20
20' empty	60
40' empty	30
TIR truck	30

### 3. ILLYCHEVSK

Tariff	Per cubic metre	US \$
Tonnage		0.190
Lighthouse		0.029
Channel		0.040
Berth		0.022
Sanitary		0.014
Pilotage: Outside the port Inside the port		0.016 0.0176
Navigational control system (VTS)		0.0188

#### CARGO HANDLING TARIFFS (a)

	(\$/tonne)	
Ore	2.1	
Raw Sugar	2.0	
Iron	5.0	
Liquid	1.5	
Grain	1.8	
Liquid chemicals	3.3	
Chemicals in bulk	2.2	
Timber	6-8	
Coal	2.0	
Paper	6-9	
Scrap	6.0	
Ferry wagons	0.6	
Equipment	6.3	
Container, 20', laden	103.50	
Container, 40', laden	124.20	
<i>Traceca containers</i>		
Container, 20', laden	51.1	
Container, 40', laden	62.0	
<i>Containers on ferries on Roro trailers</i>		
Container, 20', laden	45.0	
Container, 40', laden	47.5	

(a) The tariffs shown include discounts

#### 4 POTI, Georgia

##### TARIFFS ON SHIPS (for Liner Cargo Vessels)

Tariff	Per:	US cents
Tonnage dues	Per GT	20
Wharfage	Per GT	2
Channel dues	Per GT	12
Anchorage dues	Per GT	0.1
Mooring	Per operation	36-54
Pilotage dues	Per GT	1
Lighthouse dues	Per GRT per call	2

##### CARGO HANDLING (US\$/tonne)

	DIRECT (\$/tonne)	
<b>BULKS</b>		
Grain, by grabs	3.5	
Grain, pneumatic	5.5	
Sugar	6.0	
Ores, concentrated	4.5	
<b>BAGS</b>		
Up to 25 kg	6.5	
25-50 kg	6.0	
<b>CARGO ON PALLETS</b>	5.0	
<b>Metal products</b>	7-11	
<b>Metal scrap</b>	7-8	
<b>Timber</b>	7-9	
<b>CONTAINERS</b>		
<b>By port cranes:</b>		
20' loaded	50	
40' loaded	60	
20' empty	20	
40' empty	30	
<b>By Ships' Cranes:</b>		
20' loaded	25	
40' loaded	35	
20' empty	10	
40' empty	15	
<b>LIQUIDS ON TANKERS</b>		
Ship to tank/car, and vv	2.50	
<b>FERRY DUES</b>		
Per Wagon, loaded	60	
Per wagon, empty	10	
<b>PETROLEUM</b>	0.36	

#### 4. RENI (River port in Ukraine)

**CARGO HANDLING TARIFFS**

	<b>(\$/tonne)</b>
Ore	1.5
Pig-iron	2.9
Grain	5.0
Liquid chemicals	3.3
Chemicals in bulk	3.2
<b>Timber</b>	<b>4.9</b>
Coal	1.6
Paper	4.8
Scrap	2.9

**6 VARNA****TARIFFS ON SHIPS**

<b>Tariff</b>	<b>Per:</b>	<b>US cents</b>
<b>Vessel Tonnage dues</b>	<b>GT</b>	40-55
<b>Channel dues</b>	<b>GT</b>	1-10
<b>Berth dues</b>	<b>Linear metre/day</b>	10
<b>Anchorage dues</b>	<b>Cubic metre of ship volume</b>	0.1
<b>Ecological dues</b>	<b>Per call</b>	2.4
<b>Pilotage dues</b>	<b>Pre call</b>	\$80-560

<b>Cargo handling</b>	<b>US\$/tonne (direct)</b>
Sacks	7.4-8.1
Big bags	4
Paper, rolls	7.5
Slabs	5.4
Steel	4
Cereals	3
Coal	1.5
Sugar	4
Soda Ash	2.5
Klinker	2
Fertilizer, bulk	2.7
Cement	2
Containers 20'	54
Containers 40'	63

## Appendix II.

### COMPARISON OF PORT TARIFFS ON DRY CARGOES BETWEEN TRACECA AND OTHER COUNTRIES Table 2.1a

	CARGO HANDLING TARIFFS			PORT DUES
	Bagged Cargo	Bulk Cargo	Containers	
	(a) \$/tonne	(b) \$/tonne	(c) \$/20'	(d) \$/tonne
Varna	7.4	3.0	54	0.9
Bourgas	8.0	1.5	27	0.9
Constanza	7.5	3.1	64	0.6
Illychevsk	5.2	2.2	62-87	2.0
Odessa	5.2	2.2	62-87	3.0
Poti/Batumi	6.0	3.5	50	2.1
Baku	3.5	3.2	36	0.4
Aktau	8.0	8.0	80	1.5
Turkmenbashi	10.0	5.0	40-50	1.1
<b>Typical International Tariffs</b>	<b>6.0</b>	<b>4.0</b>	<b>100 (f)</b>	<b>0.7 (g)</b>

(a) In 50 kg bags

(b) Grains

(c) The tariff shown is for loaded containers. Typical loads are about 12 tonnes (maximum 21 tonnes)

(d) The estimate shown includes port or tonnage dues, light dues, anchorage dues, channel dues, berth dues, quarantine dues, sanitary dues, pilotage, towage, mooring/unmooring, administration fees, etc. where applicable. The cost per tonne assumes a 75% load factor on the typical 3000 tonne (8151 cubic metre) vessel on which the port dues are calculated. See next page for example of calculation.

(e) Few bags are handled by conventional methods in the ports of industrialised countries. The cargoes previously handled in bags now move by container or RoRo services.

(f) This rate is an approximate overall average. There are, of course, wide variations:

#### Examples of recent rates at major ports are as follows:

	US\$/TEU
Rotterdam	90
Felixstowe	100
Shanghai	107
Singapore	106
Hong Kong	142
Port Kelang, Malaysia	53
Karacahi	69
Yantian	100

(g) The rate shown is an approximate overall average. There are, of course, wide variations: examples of recent rates at major ports are as follows (please note that the consignment sizes over which the port dues are incurred are much greater outside the Caspian & Black Sea areas):

	US\$/ton
Tallinn	0.7
Riga	0.8
Klaipeda	0.7
St Petersburg	1.6
Ventspils	1.3
Singapore	0.4
Colombo	0.3
Bombay	0.8
Nhava Sheva	1.0
Dubai	0.1

Source of Caspian and Black Sea port rates: TRACECA Secretariat, Baku, September 2001.

Sources of international tariffs are many and various.



**Table 2.1b**  
**EXAMPLE OF CALCULATION OF PORT DUES PER TONNE OF CARGO HANDLED**

Country:	Ukraine		
Currency	US\$		
Ship capacity:			
in tonnes	3000		
in cubic metres	8151		
Load factor:	75 % (= 2250 tonnes)		
		Tariff (\$/cu. metre)	Cost per ship call (US\$)
Tonnage dues per inward and outward passage		0.190	3,097
Light dues		0.029	236
Berth dues		0.029	236
Canal dues		0.020	326
Berth dues		0.022	179
Piltoage		0.004	29
Mooring		0.043	350
Admin. dues		0.014	114
		=	4,569 \$ per call
		tonnes carried:	2,250
		\$ per tonne carried	<b>2.03</b>

## Appendix III

**Table 4.3**

**CARGO TRAFFIC AT CASPIAN AND BLACK SEA PORTS in (000 TONNES)**

**BAKU PORT TRAFFIC**

	2000	2001	
<b>Export</b>			
Alumina oxide and alumina	251	111	
Others	44	63	
<b>Total exports</b>	<b>295</b>	<b>174</b>	
<b>Imports</b>			
Salt	42	24	
Others	85	77	
<b>Total imports</b>	<b>127</b>	<b>101</b>	
<b>Transit</b>			
Oil	3,571	3,246	(plus Azpetrol)
Soybean	107	86	
Cotton	122	36	
Alumina	34	128	
Others	222	545	
<b>Total transit</b>	<b>4,056</b>	<b>4,041</b>	
<b>Total</b>	<b>4,478</b>	<b>4,562</b>	

**AKTAU PORT TRAFFIC**

Crude oil and products(a)	3385	4357	
Steel, metals	702	1060	
Grain	15	84	
Ferry	8	158	
<b>Total</b>	<b>4110</b>	<b>5659</b>	
<b>of which... Transit</b>			
Oil	2241	2621	
Dry Cargo	145	312	(b)
<b>Total</b>	<b>2386</b>	<b>2933</b>	

(a) Almost all crude oil -

(b) Mainly Russian steel to Iran, not TRACECA cargo

**TURKMENBASHI**

<b>Oil (a)</b>	<b>4117</b>	<b>5113</b>	
<b>Ferry (b)</b>	<b>1246</b>	<b>1662</b>	
- of which			
Chemicals	254		
Oil	237		
Textiles	80		
Metals	50		
Others	625		
<b>Dry Cargo</b>	<b>229</b>	<b>204</b>	
- of which			
Salt	41	17	
Metals	69	24	
Chemicals	31	119	
Machinery	62	25	
<b>Total</b>	<b>6838</b>	<b>6979</b>	

**BOURGAS PORT TRAFFIC**

	<b>2000</b>	<b>2001</b>
crude oil & oil products	6,468	7,387
Bulk cargoes	3,624	3,053
general cargoes	2,155	2,004
liquid cargoes- Port East	96	68
<b>TOTAL</b>	<b>12,343</b>	<b>12,512</b>

**Varna port traffic**

	<b>2000</b>	<b>2001</b>
Dry bulk cargo	4,074	4,355
Liquid cargo	550	479
General cargo	521	490
Containerised cargo	415	501
<b>TOTAL</b>	<b>5,560</b>	<b>5,825</b>

**CONSTANTIA PORT TRAFFIC**

	<b>2000</b>	<b>2001</b>
cereals	1,012	2,784
fresh fruits & vegetables	45	58
live stock	48	15
foodstuff, drinks, tobacco	738	680
seeds, vegetal oils, fats	201	204
wood & timber	752	709
natural & chemical fertilizers	1,527	1,531
raw mineral products	188	414
ferrous ore, scrap	9,564	6,613
non ferrous ore	3,556	2,265
various textiles	3	1
paper pulp & waste	8	1
coal, coke	2,198	1,650
crude oil	2,612	5,077
coal & natural gas tars	10	6
oil products & natural gas	2,897	4,185
cement	2,897	2,449
chemical products	1,259	1,050
ferrous & non ferrous metals	1,973	2,300
glass, ceramics products	23	61
metal manufactured products	475	491
machine tools, transport equipment	34	35
manufactured goods	77	0
other	1,004	1,180
<b>TOTAL</b>	<b>33,104</b>	<b>33,762</b>

<b>(mln tonnes)</b>	<b>2000</b>	<b>2001</b>
maritime transport	23.6	26.0
river transport	9.5	7.8
<b>Total</b>	<b>33.1</b>	<b>33.8</b>

Import	11.5	13.3
Export	10.5	11.5
maritime transit	1.6	1.2
river transit	1.1	1.2

**ODESSA PORT TRAFFIC**

	<b>2000</b>	<b>2001</b>
bulk & dry bulk	1,570	2,158
general cargo	7,982	6,436
liquid cargo	18,232	19,532
<b>TOTAL</b>	<b>27,784</b>	<b>29,340</b>

<i>containers (no. TEU)</i>	<b>69,487</b>	<b>75,606</b>
* own estimation		

**ILLYCHEVSK PORT TRAFFIC**

	<b>2000</b>	<b>2001</b>
General cargo	8,942	7,802
Liquid	399	327
Bulk and dry bulk	3,294	5,206
Ferry terminal	740	899
<b>TOTAL</b>	<b>12,635</b>	<b>13,335</b>

<i>containers (no. TEU)</i>	<b>70,000</b>	<b>78,800.</b>
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**BATUMI PORT TRAFFIC**

	<b>2000</b>	<b>2001</b>
crude oil & oil products	6,019	7,644
- of which crude oil	(3,618)	(4,606)
dry bulk	255	205
general cargo	649	515
<b>TOTAL</b>	<b>6,923</b>	<b>8,395</b>

*main general and dry cargoes*

bauxite and other ores	152	147
sugar	242	254
grain	64	56
flour	44	12
metal / metal construction	185	24
dry chemicals	133	84
scrap	0	85

## Transit volumes

<b>transit destination / origin</b>	<b>2000</b>	<b>2001</b>
Georgia	272	310
Armenia	63	65
Azerbaijan	496	277
Turkmenistan	1	0
Uzbekistan	61	73
Kazakhstan	2	0
Kyrgystan	1	0
Tadjikistan	0	0
Total	897	724

**direction of traffic**  
to Georgia (50%)  
to Armenia (100 %)  
to Azerbaijan (90 %)  
to Turkmenistan (100 %)  
to Uzbekistan (80 %)  
to Kazakhstan (100 %)  
to Kyrgystan (100 %)  
to Tadjikistan (100 %)

\* Figures do not include crude and oil products' transit volumes

**POTI PORT TRAFFIC**

	<b>2000</b>	<b>2001</b>
<i>oil products</i>	<b>582</b>	<b>843</b>
- of which petrol	(216)	(225)
- of which diesel fuel	(307)	(582)
dry bulk	1,826	1,327
general cargo	1,212	1,270
<b>TOTAL</b>	<b>3,620</b>	<b>3,441</b>
<i>no. of 20' containers (TEU)</i>	<b>9,065</b>	<b>12,638</b>
<i>no. of 40' containers (TEU)</i>	<b>27,094</b>	<b>28,422</b>
<b>TOTAL IN TEU</b>	<b>36,159</b>	<b>41,060</b>
<b>TOTAL IN TONNES</b>	<b>391,298</b>	<b>421,777</b>

	<b>2000</b>	<b>2001</b>
<b>main dry cargoes handled</b>		
bauxite / alumina	470/0	0/186
copper concentrate	35	32
manganese ore & alloys	48	77
perlite	51	10
sugar	47	67
grain	536	348
flour	72	78
tubes / metals construction	31	46
dry chemicals	104	23
scrap	615	547
provision cargo (?)	115	104

<b>Transit volumes</b>	<b>2000</b>	<b>2001</b>
<b>transit destination / origin</b>		
Azerbaijan	1,064	747
Armenia	807	801
Central Asia	72	317
<b>Total transit</b>	<b>2,943</b>	<b>1,865</b>

**Table 4.4 (part one)****IMPORTS FROM EUROPE AND OTHER COUNTRIES INTO TRACECA COUNTRIES, 2001 (US\$ Million)**

	Kazakhstan	Uzbekistan	Turkm'stan	Azerbaijan	Georgia	Armenia	Kyrgyzstan	Tajikistan	Total
<b>Total</b>	<b>6363</b>	<b>3325</b>	<b>1582</b>	<b>1430</b>	<b>1002</b>	<b>874</b>	<b>468</b>	<b>688</b>	<b>15732</b>
<i>From:</i>									
Austria	37	13	10	20	14	5	1	1	101
Belgium	60	12	9	20	10	52	8	3	174
Denmark	18	10	1	6	10	3	2		50
Finland	96	21	2	5	11	2	4		141
France	143	119	51	26	26	12	3		380
Germany	540	227	141	73	81	38	26	4	1130
Greece	52	1		8	9	11		7	88
Ireland	3	1		2					6
Italy	261	45	16	24	44	33	4	20	447
Luxemb'g	5				3				8
Netherl's	127	15	6	13	14	7	5		187
Norway	3	2		4			3		12
Portugal				3	3				6
Spain	19	15	2	3	6	8	1	3	57
Sweden	28	11		14	10	2	3		68
Switzerl'd	60	15	6	18	24	25	2	2	152
UK	146	32	11	54	31	11	3	3	291
<b>BY REGION</b>									<b>0</b>
<b>Europe</b>	<b>1598</b>	<b>539</b>	<b>255</b>	<b>293</b>	<b>296</b>	<b>209</b>	<b>65</b>	<b>43</b>	<b>3298</b>
(a)									
(%)	25%	16%	16%	20%	30%	24%	14%	6%	21%
US	179	162	273		118	55	29	3	819
(%)	3%	5%	17%	0%	12%	6%	6%	0%	5%
Asia	566	501	67	93	15	16	85	39	1382
(%)	9%	15%	4%	7%	1%	2%	18%	6%	9%
Turkey	132	99	116	148	159		17	9	680
(%)	2%	3%	7%	10%	16%		4%	1%	4%

Continued.....

**Table 4.4. (part two)**

	Kazakhstan	Uzbekistan	Turkm'stan	Azerbaijan	Georgia	Armenia	Kyrgyzstan	Tajikistan	Total
<b>FSU and Eastern Europe</b>									
Belarus		18		5	3	1	7		34
Czech Rep		24	2	2	3	2	2		35
Kazakstan		169	22	100	10	1	64	89	455
Kyrgyz Republic	38	82	3	1				6	130
Poland	65	40	13	12	4	2	6	5	147
Russia	2798	400	153	153	64	66	87	129	3850
Tajikistan	4	96	11	1			2		114
Turkmenistan	49	7		135	11	1	18	62	283
Ukraine	88	138	236	39	42	14	5	64	626
Uzbek'tan	81		39	6	7	1	84	150	368
Azerbaijan			13		114			34	161
<b>Total FSU 3123 and E Europe</b>		<b>974</b>	<b>492</b>	<b>454</b>	<b>258</b>	<b>88</b>	<b>275</b>	<b>539</b>	<b>6203</b>
(%)	49%	29%	31%	32%	26%	10%	59%	78%	39%

(a) Excluding Russia, and other FSU and East European countries

Source: IMF Statistics

**SUMMARY**

From:

<b>Europe</b>	25%	16%	16%	20%	30%	24%	14%	6%	21%
<b>FSU + E Europe</b>	49%	29%	31%	32%	26%	10%	59%	78%	39%
<b>Europe</b>									
<b>US</b>	3%	5%	17%	0%	12%	6%	6%	0%	5%
<b>Asia</b>	9%	15%	4%	7%	1%	2%	18%	6%	9%
<b>Turkey</b>	2%	3%	7%	10%	16%		4%	1%	4%
<b>Others</b>	14%	35%	31%	41%	31%	58%	3%	9%	26%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

(a) Excluding Russia, and other FSU and East European countries

Source: IMF Statistics

**Table 4.5****RELATIONSHIP BETWEEN IMPORT VALUE AND CONTAINER TRAFFIC****(a)**

	<b>Imports (US\$ billion)</b>	<b>Total Container Traffic (Mn TEU)</b>	<b>Import Container Traffic (Mn TEU)</b>	<b>Import Value Per TEU (US\$)</b>
Japan	342	13.6	6.8	50,294
Australia	61	3.5	1.75	34,857
Thailand	58	3.3	1.65	35,152
Brazil	56	2.3	1.15	48,696
India	55	2.3	1.15	47,826
Israel	34	1.4	0.70	48,571
Argentina	24	1.4	0.70	34,286
New Zealand	13	1.1	0.55	23,636
Pakistan	10	0.35	0.18	57,143
Kenya (b)	3	0.25	0.12	24,341
Dar es Salaam (b)	1.4	0.10	0.05	26,923
<b>Total</b>	<b>657.4</b>	<b>29.6</b>	<b>14.8</b>	<b>44,418</b>

(a) Countries shown are selected by the method described in the text.

(b) Container traffic excludes estimated transit traffic to/from other countries.

Sources: container statistics from Containerisation International, 2002; trade statistics from IMF 2002

**Table 4.6****CONTAINER TRAFFIC (TEU) IMPLIED BY TRACECA COUNTRY IMPORT VALUES, 2001**

	<b>Imports from Europe (US\$m, 2000)</b>	<b>Import Container Trade (@\$44,000 per TEU)</b>	<b>Total Container Traffic (Export containers mainly empty)</b>
Kazakhstan	1598	35,976	71,953
Uzbekistan	539	12,135	24,269
Turkmenistan	255	5,741	11,482
Azerbaijan	293	6,596	13,193
Georgia	296	6,664	13,328
Armenia	209	4,705	9,411
Kyrgyzstan	65	1,463	2,927
Tajikistan	43	968	1,936
<b>TOTAL</b>	<b>3298</b>	<b>74,249</b>	<b>148,498</b>



## Appendix IV

**Table 5.16**

### ADJUSTMENT OF PORT COSTS TO COVER MORE REALISTIC DEPRECIATION ALLOWANCES AND MAINTENANCE, AND FUTURE LOAN REPAYMENTS (US\$ million)

	Costs as Shown in in Accounts, 2001	Costs as Shown in In Accounts, 2001 PLUS a. Future Loan Repayments b. More Realistic Depreciation c. More Realistic Maintenance
<b>TURKMENBASHI</b>		
Wages	1.42	1.42
Social Insurance, etc	0.28	0.28
Depreciation	0.13	0.60
Loan Repayments, Interest		3.00
Repairs	0.39	0.39
Fuel	0.10	0.10
Others	0.63	0.63
<b>Total</b>	<b>2.95</b>	<b>6.42</b>
<b>BAKU</b>		
Wages	0.83	0.83
Social Insurance, etc	0.26	0.26
Depreciation	0.36	0.60
Loan Repayments, Interest		1.40
Repairs	0.13	0.23
Fuel	0.05	0.05
Others	0.72	0.72
<b>Total</b>	<b>2.35</b>	<b>4.08</b>
<b>AKTAU</b>		
Wages	2.27	2.27
Social Insurance, etc	0.44	0.44
Depreciation	1.79	0.90
Loan Repayments, Interest	2.46	2.46
Repairs	0.84	0.84
Fuel	0.94	0.94
Others	2.39	2.39
<b>Total</b>	<b>11.13</b>	<b>10.23</b>



**BATUMI**

Costs as Shown in Accounts, 2001	Costs as Shown in Accounts, 2001 PLU S a. Future Loan Repayments b. More Realistic Depreciation c. More Realistic Maintenance
-------------------------------------	---

Wages	0.14	
Social Insurance, etc	0.04	
Depreciation	0.05	
Loan Repayments, Interest		
Maintenance	0.02	To be completed.
Fuel	0.03	
thers	0.22	
<b>Total</b>	<b>0.51</b>	

**POTI**

Costs as Shown in Accounts, 2001	Costs as Shown in Accounts, 2001 PLU S a. Future Loan Repayments b. More Realistic Depreciation c. More Realistic Maintenance
-------------------------------------	---

Wages	0.81	
Social Insurance, etc	0.23	
Depreciation	0.97	
Loan Repayments, Interest		To be completed.
Maintenance	0.22	
uel	0.29	
Others	1.29	
<b>Total</b>	<b>3.82</b>	

**Table 5.18**  
**COMPARISON OF AKTAU COSTS AND REVENUES 2001**

	Revenue (US\$ 000)	Costs (US\$ 000)	Cargo Handled (000 t)	Revenue Per tonne (US\$)
<b>Cargo Dues</b>				
Oil	6,507	2,014	4329	1.5
Grain	75	41	84	0.9
Ferries	205	89	191	1.1
<b>Cargo Handling Charges</b>				
Metal	6,322	4,507	1,041	6.1
Ferry, almost all metals	137	103	22	6.2
Others, incl. Grain	192	103		
<b>Total, cargo dues and cargo handling</b>	<b>13,438</b>	<b>6,856</b>	<b>5,659</b>	<b>2.4</b>
<b>Port Dues</b>	<b>7,137</b>	<b>3,500</b>	<b>5,659</b>	<b>1.3</b>
Tonnage dues	1,274	589		
Berthing	425	192		
Alongside	4,192	2,116		
Light dues	267	130		
Environmental dues	123	75		
Other	856	397		
<b>Other</b>	<b>2,144</b>	<b>788</b>		<b>0.4</b>
<b>Total</b>	<b>22,733</b>	<b>11,130</b>	<b>5,659</b>	<b>3.9</b>

Source: Port of Aktau

**Table 5.19**  
**TURKMENBASHI COSTS AND REVENUES 2001**

	(US\$ 000)		Cargo Handled (000 Tonnes)	Revenue Per tonne (US\$)
	Revenue	Costs		
Navigation	1,977	956	6,979	0.3
Port and Berth Dues	4,029	1,365	6,979	0.6
Cargo Handling	888	538	6,979	0.1
- of which				
PPK 1, Dry Cargo ..		540	204	
PPK 2, Ferry ..		85	1,662	
PPK 3 ..		0		
PPK 4, oil , ..		33	5,113	
Okarem				
Ferry Services	4	0	1,662	
Others (a)	452	452		
	=====	=====		
<b>Total Port, excluding ship charter</b>	<b>7,336</b>	<b>2,950</b>	6,979	1.1
	=====	=====		
[Ship Charter (excluded)	1,460	1,062		

(a) Mainly workshops

**Source: Port of Turkmenbashi**

**Table 5.20  
BAKU COSTS AND  
REVENUES 2001**

	Revenue (US\$ 000)	Costs (US\$ 000)	Cargo Handled (000 Tonnes)	Revenue per tonne (US\$)
<b>Cargo Dues by Terminal</b>				
Oil terminal	750	475	2,619	0.29
Ferry terminal	815	85	1,877	0.43
General Cargo	145	620	64	2.26
<b>Total Cargo Dues</b>	<b>1,710</b>	<b>1,181</b>	<b>4,562</b>	<b>0.38</b>
<b>Ships Dues and Others</b>	<b>1,190</b>	<b>1,119</b>	<b>4,562</b>	<b>0.26</b>
<b>Total</b>	<b>2,900</b>	<b>2,300</b>	<b>4,562</b>	<b>0.64</b>

Source: Port of Baku

**Table 5.21  
PORT OF AKTAU: VARIABLE AND FIXED COSTS, 2001  
(including 2001 loan repayments)**

	(US\$ million)	
<b>Fixed Costs</b>		
Wages (75%)	1.7	
Social Insurance (75%)	0.3	
Depreciation	1.8	
Loan repayments	2.5	
Others	2.4	
<b>Total Fixed Costs</b>	<b>8.7</b>	<b>(78%)</b>
<b>Variable</b>		
Wages (25%)	0.6	
Social Insurance (25%)	0.1	
Repairs	0.8	
Fuel	0.9	
<b>Total Variable Costs</b>	<b>2.4</b>	<b>(22%)</b>
<b>Total Costs</b>	<b>11.1</b>	<b>(100%)</b>

The figure shown is based on the 2001 accounts.

**Table 5.22**  
**PORT OF TURKMENBASHI: VARIABLE AND FIXED COSTS, 2001**  
**(excluding imminent loan repayments)**

	(US\$ million)	
<b>Fixed Costs</b>		
Wages (75%)	1.07	
Social Insurance (75%)	0.21	
Depreciation	0.13	
Loan repayments (a)		
Others	0.63	
<b>Total Fixed Costs</b>	<b>2.04</b>	<b>69%</b>
<b>Variable</b>		
Wages (25%)	0.36	
Social Insurance (25%)	0.07	
Repairs	0.39	
Fuel	0.10	
<b>Total Variable Costs</b>	<b>0.91</b>	<b>31%</b>
<b>Total Costs (plus imminent loan costs)</b>	<b>2.95</b>	<b>100%</b>

NB. Loan repayments had not started in 2001. The figure shown is based on the 2001 accounts.

**Table 5.23**  
**PORT OF BAKU: VARIABLE AND FIXED COSTS, 2001**  
**(excluding imminent loan repayments)**

	(US\$ million)	
<b>Fixed Costs</b>		
Wages (75%)	0.62	
Social Insurance (75%)	0.20	
Depreciation	0.36	
Loan repayments (a)		
Others	0.72	
<b>Total Fixed Costs</b>	<b>1.90</b>	<b>(81%)</b>
<b>Variable</b>		
Wages (25%)	0.21	
Social Insurance (25%)	0.06	
Repairs	0.13	
Fuel	0.04	
<b>Total Variable Costs</b>	<b>0.44</b>	<b>(19%)</b>
<b>Total Costs (plus imminent loan costs)</b>	<b>2.34</b>	<b>(100%)</b>

The figure shown is based on the 2001 accounts.

**Table 5.25 PORT OF VARNA: VARIABLE AND FIXED COSTS, 2001**

	\$ per tonne of cargo	
<b>Fixed Costs</b>		
Wages (75%)	0.42	
Social Insurance (75%)	0.38	
Depreciation	0.20	
Loan repayments (a)		
Others	0.42	
<b>Total Fixed Costs</b>	<b>1.42</b>	<b>84 %</b>
<b>Variable</b>		
Wages (25%)	0.14	
Social Insurance (25%)	0.13	
Repairs		
Fuel		
<b>Total Variable Costs</b>	<b>0.27</b>	<b>16 %</b>
<b>Total Costs (excl. imminent loan costs)</b>	<b>1.69</b>	<b>100 %</b>

The figure shown is based on the 2001 accounts.

**Table 5.26 PORT OF CONSTANTZA: VARIABLE AND FIXED COSTS, 2001**

	\$ per tonne of cargo	
<b>Fixed Costs</b>		
Wages (75%)	0.0975	
Social Insurance (75%)	0.125	
Depreciation	0.13	
Loan repayments (a)		
Others	0.19	
<b>Total Fixed Costs</b>	<b>0.43</b>	<b>73 %</b>
<b>Variable</b>		
Wages (25%)	0.0325	
Social Insurance (25%)	0.0375	
Repairs	0.07	
Fuel	0.014	
<b>Total Variable Costs</b>	<b>0.16</b>	<b>27 %</b>
<b>Total Costs (excl. imminent loan costs)</b>	<b>0.59</b>	<b>100 %</b>

The figure shown is based on the 2001 accounts.



**Table 5.27 PORT OF BATUMI: VARIABLE AND FIXED COSTS, 2001**

	\$ per tonne of cargo	
<b>Fixed Costs</b>		
Wages (75%)	0.105	
Social Insurance (75%)	0.033	
Depreciation	0.053	
Loan repayments (a)		
Others	0.22	
<b>Total Fixed Costs</b>	<b>0.41</b>	<b>80 %</b>
<b>Variable</b>		
Wages (25%)	0.035	
Social Insurance (25%)	0.011	
Repairs	0.02	
Fuel	0.03	
<b>Total Variable Costs</b>	<b>0.10</b>	<b>20 %</b>
<b>Total Costs (excl. imminent loan costs)</b>	<b>0.51</b>	<b>100 %</b>

The figure shown is based on the 2001 accounts.

**Table 5.28 PORT OF POTI: VARIABLE AND FIXED COSTS, 2001**

	\$ per tonne of cargo	
<b>Fixed Costs</b>		
Wages (75%)	0.61	
Social Insurance (75%)	0.17	
Depreciation	0.97	
Loan repayments (a)		
Others	1.29	
<b>Total Fixed Costs</b>	<b>3.04</b>	<b>80 %</b>
<b>Variable</b>		
Wages (25%)	0.20	
Social Insurance (25%)	0.06	
Repairs	0.22	
Fuel	0.29	
<b>Total Variable Costs</b>	<b>0.77</b>	<b>20 %</b>
<b>Total Costs (excl. imminent loan costs)</b>	<b>3.82</b>	<b>100 %</b>

The figure shown is based on the 2001 accounts.

## Appendix V

**Table 10.5 ESTIMATED ANNUAL OPERATING COSTS FOR A CASPIAN RAIL FERRY (FREIGHT OPERATIONS ONLY)**

<b>(Based on Dagestan type ferry) (US\$)</b>	<b>New Ship</b>	<b>Old Ship (15 years)</b>
Purchase Price (\$ million) (a)	12	4
Ship life (years)	25	25
Required rate of return	12%	12%
Capacity (rail wagons)	28	28
Crew (actual) (a)	40	40
Number of crews (b)	2	2
Average salary, \$ p.a	1000	1000
Fuel consumption, tonnes per hour at sea, 1.25 normal		1.5
Fuel consumption, tonnes per hour at sea, 0.8 actual (d)		1
Fuel oil price (\$/per tonne) (e)	100	100
<b>OPERATING COSTS p.a.</b>		
Capital (interest and repayment)	1,530,000	382,500
Crew	80,000	80,000
Crew subsistence	40,000	40,000
Insurance (2% of value)	240,000	60,000
Maintenance and Repair (1.5% of new price)	180,000	216,000
Fuel (f)	197,120	221,760
Administration	100,000	100,000
<b>Total</b>	<b>2,367,120</b>	<b>1,100,260</b>
- \$/day in port	6,576	2,662
- \$/day at sea	8,496	4,822

- (a) The replacement prices for the Dagestan ferries are largely theoretical. There are relatively few similar rail wagon-based services in the world; and rail wagon traffic tends to be low on those that exist. Also passenger traffic is falling. It is likely that if another similar ferry were built it would be mainly freight oriented, and much smaller. The actual carrying capacity of the Dagestan ferries in practice is only 1680 tonnes, plus a few road trucks. The price of US\$ 12 million assumed for replacement cost is a compromise between the cost of building a new Dagestan ferry and the price for building a ferry with about 2000 tonnes capacity (28 x 60 tonne rail wagons, plus a few trucks)
- (b) The CSC ferries have crews of at least 40. They could operate with smaller crews
- (c) Two crews per vessel. This is compromise between international practice of 2-3 crews per ship for short distance ferries which are effectively in operation for 24 hours a day and the current employment practice of CSC, which employs well under 2 crews per ship.
- (d) In practice ships run at lower speeds than their design speeds, to save costs.
- (e) The ships were designed to run on diesel but now use fuel oil, which is cheaper.
- (f) In 2001 the 8 ferries completed an average of 88 round trips (average trip time including idle time, 4.1 days). The annual fuel cost per vessel is therefore based on 14 hours sailing in both directions at slow speed for 88 round trips per year.

NB Port charges and minor costs such as fuel in port are not included in this table

**Table 10.6**  
**ESTIMATED FIXED VERSUS VARIABLE COSTS FOR CASPIAN RAIL**  
**FERRY (Dagestan)**  
**(US\$)**

	New Ship	Old Ship (15 years)	
<b>FIXED COSTS</b>			
Capital (interest and repayment)	1,530,000	382,500	
Crew	80,000	80,000	
Crew subsistence	40,000	40,000	
Insurance (2% of value)	240,000	60,000	
Maintenance and Repair	54,000	64,800	(a)
Fuel	0	0	
Administration			(b)
(b)	30,000	30,000	
<b>Total</b>	<b>1,974,000</b>	<b>657,300</b>	
- \$/day including fuel	5,982	1,992	
<b>VARIABLE COSTS</b>			
Capital (interest and repayment)	0	0	
Crew	0	0	
Crew subsistence	0	0	
Insurance (2% of value)	0	0	
Maintenance and Repair	126,000	151,200	(a)
Fuel	197,120	221,760	
Administration	70,000	70,000	(b)
<b>Total</b>	<b>393,120</b>	<b>442,960</b>	
- \$/day including fuel	1,191	1,342	
<b>TOTAL FIXED + VARIABLE</b>	<b>2,367,120</b>	<b>1,100,260</b>	
<i>Variable as % of total costs</i>	17%	40%	

(a) 70% of maintenance assumed variable

(b) 70% of administration assumed variable

NB: Port charges are not included in this table

**Table 10.7**  
**ESTIMATED OPERATING COSTS FOR CASPIAN OIL TANKERS**

(US\$)

Capacity, DWT	<b>5,000</b>	<b>10,000</b>
Speed, knots	11	13
Purchase Price, new (\$ million)	6.0	9.1
Ship life (years)	25	25
Required rate of return	12%	12%
Crew per vessel	15	18
Number of crews	3	3
Average salary, \$ p.a	1000	1000
Fuel consumption, tonnes per hour at sea	0.30	0.64
Fuel oil price (gasoil, \$/per tonne)	180	180
<b>OPERATING COSTS p.a.</b>		
Capital (interest and repayment)	765,000	1,159,523
Crew	45,000	54,000
Crew subsistence		
Insurance (2% of value)	120,000	181,886
Maintenance and Repair (1.5% of new ship price)	90,000	136,414
Fuel (a)	194,400	411,543
Administration	50,000	50,000
<b>Total p.a.</b>	<b>1,264,400</b>	<b>1,993,367</b>
- \$/day in port	3,242	6,041
- \$/day at sea	4,538	8,784

(a) Assumes 300 operating days per years, with half of total time at sea and half in port.

NB Port charges are not included in this table

**Table 10.8**  
**ESTIMATED FIXED AND VARIABLE COSTS FOR CASPIAN OIL**  
**TANKERS**  
**(US\$)**

<b>FIXED COSTS</b>			
Capital (interest and repayment)	765,000	1,159,523	
Crew	45,000	54,000	
Crew subsistence			
Insurance (2% of value)	120,000	181,886	
Maintenance and Repair (1.5% of 27,000 new price)		40,924	(a)
Fuel	0	0	
Administration	15,000	15,000	(b)
<b>Total p.a.</b>	<b>972,000</b>	<b>1,451,333</b>	
- \$/day in port	2,945	4,398	
<b>VARIABLE COSTS</b>			
Capital (interest and repayment)	0	0	
Crew	0	0	
Crew subsistence			
Insurance (2% of value)	0	0	
Maintenance and Repair (1.5% of 63,000 new price)		95,490	(a)
Fuel	194,400	411,543	
Administration	35,000	35,000	(b)
<b>Total p.a.</b>	<b>292,400</b>	<b>542,033</b>	
- \$/day in port	886	1,643	
<b>TOTAL</b>	<b>FIXED</b>	<b>PLUS 1,264,400</b>	<b>1,993,367</b>
<b>VARIABLE</b>			
<i>Variable as % of total costs</i>	<b>23%</b>		<b>27%</b>

(a) 70% of maintenance assumed to be variable

(b) 70% of administration assumed to be variable

**Table 10.10**  
**COSTS OF OIL TRANSPORT BETWEEN KAZAKHSTAN AND**  
**BAKU**  
**(US\$)**

<b>Ship Capacity, DWT</b>	<b>5,000</b>	<b>10,000</b>
<b>Aktau-Baku</b>		
Distance, nautical miles	250	250
Ship speed, knots	11	13
<b>Cost of Ship Time (\$/day)</b>		
In Port (a)	3,242	6,041
At Sea (b)	4,538	8,784
<b>ROUND VOYAGE TIME</b>		
Days at sea, including return	1.89	1.60
Idle time	0.11	0.40
Days in port (one for loading, one for unloading)	2	2
<b>Total Round Voyage, Days</b>	<b>4</b>	<b>4</b>
<b>COSTS OF ROUND VOYAGE</b>		
Ship time at sea	8,595	14,077
Ship time in port	6,829	14,482
<b>Total Round Voyage Cost</b>	<b>15,424</b>	<b>28,559</b>
Tonnes transported	5,000	10,000
<b>Cost, \$ per tonne</b>	<b>3.1</b>	<b>2.9</b>

(a) See Table 10.7

(b) See Table 10.7

**Appendix VI**  
**PROFITABILITY AND CHANGES NECESSARY TO BRING TARIFFS IN LINE**  
**WITH TOTAL COSTS**

**Table 11.1**  
**PROFITABILITY AT MAIN CASPIAN AND BLACK SEA PORTS, 2001**  
**(US\$ million)**

*Caspian*

	Aktau	Turkmenbashi	Baku
Revenues	22.7	7.3	2.9
Expenditure	11.1	2.9	2.3
<b>Surplus</b>	<b>11.6</b>	<b>4.4</b>	<b>0.6</b>

*Black Sea*

	Varna	Consta ntza	Odessa	Illyche vsk	Batumi	Poti	
Revenues	15.6	27.2	107.4	68.0.	12.3	16.2	
Expenditures	9.9	19.8	54.5	68.0.	4.3	13.2	
Surplus	5.7	7.4	52.9	0	8.0	3.0	

Source: Ports' Accounts

The overall tariff reductions which would be necessary to bring in line with *average* or *total* costs - are shown in Table 11.2. It shows, first, the percentage by which tariffs would have to fall to bring them in line with costs as shown in the 2001 accounts (*without any surplus*). And secondly, and more realistically, how far tariffs would have to fall to bring them in line with the same costs *with additions* to cover:

- more realistic depreciation allowances
- more realistic maintenance costs; and
- repayments and interest on EBRD loans.

It will be seen that almost the all ports could reduce their tariffs if they only had to cover the *average* costs shown in their 2001 accounts. But, of the Caspian ports, only Aktau would be in a position to reduce tariffs if more realistic assumptions on depreciation, loan repayments and maintenance are taken into account.

**Table 11.2**  
**CHANGES NECESSARY TO BRING TARIFFS INTO LINE WITH AVERAGE/TOTAL COSTS, 2001**

	Based on Costs as Shown in In Accounts, 2001, without Profits	Based on 2001 Costs PLUS a. Future Loan Repayments b. More Realistic Depreciation Allowances c. More Realistic Maintenance - Plus 20% growth in cargo
		(a)
Turkmenbashi	-60%	-9%
Aktau	-51%	-58%
Baku	-21%	+42%
Varna	-37%	n.a
Constantza	-27%	n.a
Odessa	-49%	n.a
Illychevsk	-0%	n.a
Poti	-19%	n.a
Batumi	-65%	n.a

(a) All three of the above items are estimated in approximate terms.<sup>1</sup>

The foundation for transit tariffs, however, should not be the *average* costs, but the *variable cost* of handling an additional tonne of cargo, plus a reasonable profit.

*The variable costs consist mainly of energy/fuel, supplies and a minor part of the wages.* These costs will be incurred for each additional tonne of cargo.

*In contrast, the fixed costs at the port consist mainly of the majority of the wages bill, repayments of loans, insurance and depreciation.* These fixed costs remain the same whether or not additional cargoes are handled.

Analysis of the Caspian ports' accounts show that the *variable* costs account for only 19-31% of total costs in 2001 (see Table 11.3). The fixed costs account for the remaining 69-81%. The variable costs shown in the accounts, moreover, account for only *10-15% of total revenues.*

<sup>1</sup> It is emphasised that the costs shown in this summary are approximate. It is not the objective of this project to carry out a detailed cost-based tariff study for each of the TRACECA ports. The objective is to reach clear conclusions about the scope for discounting tariffs throughout the TRACECA region in broad terms.



**Table 11.3**  
**VARIABLE COSTS AS A PERCENTAGE OF TOTAL COSTS AND TOTAL REVENUES AT CASPIAN PORTS & BLACK SEA PORTS**

	<b>Based on 2001 Accounts</b>	<b>Based on 2001 Accounts With Adjustments (a)</b>
<b>VARIABLE COSTS AS % OF TOTAL COSTS</b>		
Aktau	22%	23%
Turk'bashi	31%	14%
Baku	19%	13 %
Varna	16 %	n.a.
Constantza	27 %	n.a.
Odeŝsa	n.a.	n.a.
Illychevsk	n.a.	n.a.
Batumi	20 %	n.a.
Poti	20 %	n.a.

**VARIABLE COSTS AS % OF TOTAL REVENUES**

Aktau	11%	10%
Turk'bashi	12%	12%
Baku	15%	15%
Bourgas	n.a.	
Varna	10 %	n.a.
Constantza	20 %	n.a.
Odessa	n.a.	n.a.
Illychevsk	n.a.	n.a.
Batumi	7%	n.a.
Poti	16 %	n.a..

(a) With

- more realistic depreciation allowances
- more realistic maintenance costs; and
- the inclusion of repayments and interest on EBRD loans.

## **APPENDIX VII**

### **PORTS OF MOLDOVA**

#### **RENI**

The Port of Reni in Moldova handled 1.3 million tonnes of cargo in 2002, but its occupancy was only 8.5% as the design capacity is 15 million tonnes.

Its revenues amounted to US\$3.8 million in 2001, equivalent to US\$3 per tonne, but the costs totalled US\$5.1 million, equivalent to US\$4 per tonne.

The level of over manning, at 1,900 people, is the highest of all the ports examined (Poti and Illychevsk are over manned but at Reni it is twice as high)

#### **GIURGIULESTI**

The port of Giurgiulesti has an oil terminal with a capacity of 2.1 million tonnes, a freight passenger terminal with a capacity rated at 500,000 tonnes of containerised cargo, but at present it is not handling any cargo

## Appendix VIII

### THE NEED TO REDUCE COSTS

This Appendix comments on the levels of costs at TRACECA ports and the need for reductions.

#### 1 CURRENT COSTS

Existing costs at the Caspian ports are relatively low by international standards. They ranged between US\$0.5 and US\$1.9 per tonne of cargo handled in 2001. On the Black Sea, however, they were rather higher, especially at Illychevsk and Poti. The average costs per tonne of cargo handled in 2001 were as follows:

(Costs, US\$/tonne, including depreciation)

Baku	0.5
Turkmenbashi	0.4
Aktau	1.9 (a)
Varna	1.7
Odessa	1.9
Batumi	0.5
Poti	3.8
Illychevsk	5.1
Reni (Moldova)	4.0
Constanza	0.6 (b)

(a) Aktau, unlike the other ports, has already started repaying EBRD loans

(b) Constantia does not include cargo handling costs, as the cargo handling is private

These costs are well below typical charges at efficient ports elsewhere in the world - which tend to be around US\$10 per tonne for container cargoes, US\$3 to US\$5 for dry bulks and US\$1 to US\$2 for liquid bulks.

The three main costs at most of the TRACECA ports are Salaries, Depreciation and Loan repayments (and interest).

#### (a) Salaries.

Salary costs at most TRACECA ports are low by international standards. The main reason is that, although staff numbers are on the high side at most of the ports, wage levels are low. They range from \$1,000 to \$7,000 p.a., with most towards the lower end of this range. Consequently wage costs per tonne of cargo handled are low - mainly in the range US\$0.20 to US\$0.50 per tonne of cargo handled (see Table AII.1). The ports with significantly higher wage cost per tonne are Illychevsk, Odessa and Poti, where over-manning is particularly high.

The scope for reducing employment levels is illustrated by UK statistics. In the 1960s, before mechanisation (through containerisation and bulk handling) gathered

momentum, the UK had 65,000 dockworkers. By the early 1990s this had fallen to under 10,000, despite a vast increase in cargo. In 2001, Illychevsk alone employed more than 10,000 staff.

**Table AII.1**

**EMPLOYMENT AND WAGE COSTS AT TRACECA PORTS, 2001**

	Staff (Number)	Salaries 2001 (\$mn)	Average Salary (000 \$)	Cargo Handled 2001 (000 tonnes)	Salary Cost per Tonne (\$)	Staff Numbers Per Mn tonnes
Baku	850	1.1	1.29	4,562	0.24	186
Turkmenbashi	930	2.4	2.58	6,979	0.34	133
Aktau	400	2.7	6.75	5,659	0.48	71
Varna	1,719	3.2	1.86	7,429	0.43	231
Constanza (a)	1,100	4.2	3.82	33,762	0.12	33(a)
Batumi	1,400	1.8	1.29	8,395	0.21	167
Poti	2,754	2.8	1.02	3,441	0.81	800
Illychevsk	10,500	23.5	2,238	13,335	1.76	787
Odessa	6,278	25.6	4,077	29,340	0.88	214
Reni (Moldova)	1,900			1,276		1,490

(a) Employment and total salary levels are particularly low at Constantia because the port staff does not include cargo handling staff, which are employed by private companies. Almost all the cargo handling staff at the other ports are employees of the port.

Source: Ports' accounts

**(b) Depreciation**

Depreciation allowances are low at most of the ports. The main reason is that the assets are undervalued. The only Caspian port at which they are at realistic levels is Aktau. But even there the depreciation allowance is not excessive, amounting to only US\$0.32 per tonne of cargo handled. It is well below this level at most of the ports, as shown in Table AII.2.

**Table AII.2**

**DEPRECIATION PER TONNE HANDLED AT TRACECA PORTS**

	Depreciation Shown in Accounts (\$ mn)	Cargo Handled 2001 (mn tonnes)	Depreciation Per Tonne (\$)
Baku	0.36	4,562	0.08
Turkmenbashi	0.13	6,979	0.02
Aktau	1.79	5,659	0.32
Varna	1.19	7,429	0.16
Constanza	4.58	33,762	0.14
Batumi	0.45	8,395	0.05
Poti	3.36	3,441	0.98

Illychevsk	<b>4.72</b>	13,335	<b>0.35</b>
Odessa	<b>2.72</b>	29,340	<b>0.09</b>

Source: Ports' accounts

In any case, depreciation is not a real cost. It has two purposes:

1. To build up a fund for the future replacement of existing assets when they come to the ends of their economic lives. In practice the most expensive assets at ports, the berths, dredged channels and breakwaters, are rarely replaced. Consequently, as it is argued in Chapter 5 only (say) half of the depreciation allowance for port's assets should be regarded as a true cost.
2. Depreciation is an accounting tool for reducing tax liability.

In neither role is it an actual cost.

### *(c) Loan Interest and Repayments*

Interest and repayments of loans for investment are still relatively limited at TRACECA ports. Most of the ports received their assets free of cost when they separated from the Former Soviet Union. Furthermore, they have not had to invest much since then, as the decline in traffic has resulted in their having surplus capacity. However, loan interest and repayments will rise to account for a large part of total costs at some of the TRACECA ports - particularly those in the Caspian - over the next ten years (see below).

### *(d) Conclusions*

It is concluded that current costs at most of the TRACECA ports are low. This applies to all of the three main costs of labour, depreciation and interest including repayments. Labour costs are low because salary levels are far below international levels; depreciation is low because the assets are generally undervalued; and debt service because most of the ports received their assets free of cost from the FSU and have not had to invest much in the last ten years

The main exceptions are the Black Sea ports of Illychevsk, Poti and Reni, where staff numbers are far too high.

## **2 FUTURE COSTS.**

In the future, however, costs are likely to become more problematic. As described in Chapter 5 the ports' current accounts tend to understate some of the main costs. If the accounts are reworked to include more realistic depreciation allowances, more realistic maintenance costs and repayments and interest on EBRD loans, then total costs would rise (see Section 5 for details):

The problem of increasing costs is likely to be compounded because revenues may fall at the same time as costs rise. The reasons are that (see Chapter 5):

- a large part of the ports' revenues, especially on the Caspian, come from oil traffic, which is new and may be lost to pipelines; and
- the Russian government has started to protect its own ports in the last two years. The worst affected ports are Aktau and Illychevsk, which has seen its Russian steel transit trade diverted to Russian ports, as a result of manipulation of Russian rail tariffs.

Consequently, profitability may fall. But if it does, the reaction should not be to concentrate on cutting costs, which are already low. The immediate priorities of ports should be, first, the improvement of services and more flexible pricing and secondly, in the medium term, port sector reform (see below)

### *Strategy for the Future Development of the TRACECA Ports.*

If the Caspian and Black Sea ports are to achieve international levels of efficiency, reform will eventually be necessary.

The TRACECA ports have yet to introduce port reforms of the type that have been highly successful in other countries. Almost all the TRACECA ports are still government owned and operated and as such their services are relatively inefficient, and their approach to their customers is generally regarded as inflexible and un-commercial.

The current "world" thinking in port administration favours the abolition of government monopolies and the introduction of competition wherever possible. This generally entails privatisation and the deregulation of restrictions on entry, investment and tariffs along with government measures to tackle the labour problems of overmanning and restrictive work practices. There is a view that it is desirable that port authorities should be seen to be "landlords" only, with all operations carried out by private companies in a competitive environment. Constantia, amongst the TRACECA ports, has done this.

The TRACECA ports, however, are probably not yet ready for such reforms - for at least three main reasons.

1. The ability of the ports to win traffic by their own efforts is limited. The railways, which transport cargo to and from the ports, are state owned and inefficient and road transport, which is privately operated, more commercial and much more important than rail in most western countries, is not well developed in TRACECA. It is also more expensive than rail.
2. Transport in the region faces considerable obstacles in the form of difficulties and delays at border crossings slow and corrupt customs, transit fees and unofficial payments.
3. The economies of the TRACECA countries, especially those around and to the east of the Caspian, have not yet taken off. Very little industry has developed outside the oil sector.

Against this background it would probably be premature to attempt any significant degree of privatisation at present. In particular, the current traffic volumes are still

insufficient to allow more than one terminal for each type of cargo. In these circumstances the competition necessary for the most successful types of privatisation would not be practicable.

However, while state monopoly and the absence of competition would generally be regarded as undesirable, it has the advantage of allowing the ports to introduce promotional tariffs.

### **Conclusion**

The cost levels at most of the TRACECA ports do not present significant problems at present. The immediate priority for the ports should not be cost reduction but the improvement of services and more flexible pricing. In the medium term the principal need will be for sector reform (privatisation where possible, introduction of competition and the withdrawal of the port authorities to landlord role).

Such a move would seem to be premature at present.

## APPENDIX IX

### LONGER TERM PRICING POLICY

This project focuses on pricing of maritime services for TRACECA *transit traffic*. The main aim of the Terms of Reference was to propose tariff modifications for the purpose of making the TRACECA transit routes commercially competitive. The tariff modifications recommended are based on the actual costs of handling additional cargo. These costs are the Short Run Marginal Costs (SRVCs).

The SRVCs on which the recommended discounts are based are low - because the ports have a large amount of surplus capacity. This means that the costs of handling additional cargo will be limited to marginal operating costs for the next few years. As long as TRACECA tariffs are greater than SRVCs a profit will be made on additional transit cargo.

In the longer term, however, the surplus capacity will eventually be used up. This will mean that additional investment and additional staff will be required to handle additional cargo. At that point, tariffs will have to be increased to cover and make a return on the necessary investment and additional staff. That is to say, they will have to be raised to cover at least LRVCs.

If tariffs were revised to reflect the LRVCs *shown in today's accounts* they would have to be reduced at most ports.. This is because revenues are well above the costs shown in the accounts at most of the ports. The profits earned at the ports are shown below.

**Table AIII.1**  
**PROFITS AT TRACECA PORTS, 2001**

	(US\$ million)		
	Revenues	Costs including depreciation	Profit
Aktau	22.7	11.1	11.6
Turkmenbashi	7.3	2.9	4.4
Baku	2.9	2.3	0.6
Varna	15.6	9.9	5.7
Constanza	27.2	19.8	7.4
Batumi	12.3	4.3	8.0
Poti	16.2	13.2	3.0
Odessa	107.4	54.5	52.9
Illychevsk	68.0	68.0	0

Source: Ports' accounts

The general picture of all-round profitability applies for specific services as well as the overall totals.



The tariff reductions necessary to bring tariffs in line with costs *as shown in the 2001 accounts* are as follows:

**Table AIII.2**  
**TARIFF REDUCTION NECESSARY TO BRING TARIFFS INTO LINE WITH COSTS**

***A: ON THE BASIS OF EXISTING ACCOUNTS***

	<b>Costs as a % of Revenues</b>	<b>Reduction Necessary to Bring Tariffs into Line with Costs</b>
Aktau	49%	51%
Turkmenbashi	40%	60%
Baku	79%	21%
Varna	63%	37%
Constanza	73%	27%
Batumi	35%	65%
Poti	81%	19%
Odessa	95%	5%

The existing accounts, however, underestimate costs (see Section 5 for details). If they were reworked to reflect more realistic depreciation and maintenance cost levels, plus future debt service, they would be significantly higher. Table AIII.3 shows an illustration of the order of magnitude of tariff reductions which might be necessary to bring tariffs in line with costs *after adjusting to more realistic levels than shown in the 2001 accounts*:

As shown tariffs would have to fall in some cases and rise in others.

**Table AIII.3**  
**TARIFF REDUCTION NECESSARY TO BRING TARIFFS IN LINE WITH COSTS**

***B: ON THE BASIS OF MORE REALISTIC COSTS THAN SHOWN IN THE EXISTING ACCOUNTS***

*To be completed...*

Several tariff revision studies have been carried out in TRACECA countries in recent years. A list is given in Section 2.2. Not all, however, have been implemented.

It would be outside the scope of this study to carry out cost-based tariff studies for all the ports of the TRACECA countries. To do so would be a major undertaking. Two key pre-conditions would be:

- A detailed revaluation of assets at all ports. Ports today are more capital intensive than labour intensive; and consequently investment costs are often dominant. .
- Reliable traffic forecasts. This is crucial because it is necessary because the a key step in the calculation of optimal tariffs is dividing the identified costs by the forecast traffic. But traffic levels are very difficult to forecast at present in view of (a) the uncertainty surrounding oil traffic and (b) Russian protectionism in its port sector.

There would be two further problems in initiating a move towards pricing based on long run marginal cost at this stage. First, such a recommendation would in practice entail large reductions in tariffs, as revenues at most ports were well above costs in 2001. And, secondly, it would only make sense if it were applied to all traffic, not just transit traffic. There is not in our Terms of Reference. This point was anticipated in the proposal (section III.3.2.2) ... "Transit traffic will often account for only a small part of total traffic. The ports may therefore have reservations about changing their whole pricing system to suit a small part of their business." Hence the emphasis on *discounts* from existing tariffs for transit traffic.

### **Conclusions**

- In the short to medium terms, TRACECA transit tariffs should be based on SRVCs - taking advantage of the surplus capacity which can be used at no significant cost
- In the long term, however, port tariffs for TRACECA transit as well as the import and export cargoes should be based on LRVC plus a normal profit
- It is not within the scope of this study to set up long term tariff policies for all cargoes. But it is useful to look ahead.
- If cost-based tariffs were applied today, on the basis of current accounts, they would be reduced
- But existing accounts understate true costs
- Several cost-based studies have already been, or are being, carried out at TRACECA ports (see section 2 for references).
- Few of the recommendation, however, seem to have been implemented. There are good reasons for this. Although there are no major theoretical problems in drawing up cost-based tariffs there are practical problems. They are the need (a) to carry out a detailed asset valuation and (b) to prepare traffic forecasts in which there could be a reasonable degree of confidence. But an asset valuation would be time consuming and traffic forecasts are difficult present. In particular, it is difficult to forecast oil traffic which is vulnerable to competition from pipelines, and other cargoes which are vulnerable to Russian government policies to protect their national ports
- Given these uncertainties, a strict shift to cost-based pricing policies would be premature

## Appendix X

### Comments from the Working Groups, with answers

Several arguments against the recommendations contained in this document were raised during the Working Group meetings. Some of these objections were valid, but others were less relevant or to some extent missed the key point of the project. The arguments and our responses are summarised in the following paragraphs:

*1. It was argued that that lower tariffs are less important than solving border/customs/corruption problems. More specifically, it was stated that tariff concessions may have no impact unless border/customs/corruption problems are solved first.*

This is correct, but those subjects are being dealt with in a parallel TRACECA project. The current project focuses only on tariffs and transit fees.

*2. It was argued that that the project would take over national port tariff policies.*

This is incorrect. We are focusing entirely on special treatment for TRACECA transit cargoes. We are not recommending changes to the tariffs applied to national imports and exports which account for the vast majority of port traffic and revenues.

*3. It was argued that some countries (e.g. Ukraine and Georgia) plan to change their tariffs during 2003 and that the implementation of our recommendations should be delayed until then.*

This misses the main point of our recommendations. *All* ports change their tariffs, and do so regularly. Our recommendations are not about tariff levels for the imports and exports that account for most of the ports' traffic. They are about conceding discounts from the normal tariffs, whatever their levels, to attract more of the transit traffic that are currently avoiding the TRACECA ports and using other routes

*4. It was argued that that rail and sea and ports should discount by the same percentages*

The economic case for this suggestion is not strong. Our proposed discounts are based on short run variable costs (marginal costs) in the separate transport industries, and they account for a different percentage of the totals in ports, shipping line and railways.

*5. It was argued that all ports should charge the same for each service.*

The objective of our project is to introduce tariffs for TRACECA transit cargoes that reflect costs, and costs differ widely by port. They have different *investment* costs (resulting from differing ground conditions, needs for dredging and breakwater protection), different *operating* costs, because of differing staff numbers and average wage costs (e.g. Aktau are 4 times as high as Turkmenbashi) and different *traffic volumes* over which the cost have to be recovered. The traffic volumes per berth would have been more in line if the ports had been designed for current traffic. But in fact they were designed for different types of traffic under the FSU, thereby making the relationship between berth costs and actual traffic levels partly a matter of chance.

6. *One Traceca country delegation argued that although a common approach was acceptable, it should not be based on a standard discount from existing tariffs.*

They argued that all ports and shipping lines have different costs, and that some lines would make losses if they all had to discount by the same percentage. They argued that the best approach would be for each line to calculate a promotional tariff or discount on the basis of their own individual accounts.

There might appear to be some logic behind this approach - at first sight. But it would not work as a *common* approach. The recommendation of discounts off existing tariffs which is contained in this report is backed up by a clear and simple argument, based on a large amount of data. Its foundations are the well-documented facts that:

- 1) very little Traceca traffic is being handled at present
- 2) there is a large amount of surplus capacity in the ports; and
- 3) the costs of handling additional cargo are far below average costs

This gives a clear foundation for discounts. There would be several exceptions. For example,

- most of Baku's traffic is classified as transit already and their profit levels are low;
- some countries claim to have no surplus capacity. If so (this seems very unlikely; as all countries which have submitted information were found to have considerable surplus capacity) variable costs would *not* be low, and they would not be obliged to discount their tariffs.

These, and other, exceptions would relieve a minority of the ports and shipping lines which would inevitably suffer financially by offering Traceca discounts from the obligation to offer Traceca discounts.

But despite these exceptions the justification for a common approach is sound.

The problem with the approach whereby each country was allowed to work out its own discounts/tariffs from its own accounts is that there would be no commonality in the approach, and each country would produce its tariff out of a black box. Furthermore, the separate black boxes would not be very reliable, given the failure of the ports to adopt cost-based tariffs so far.. Although cost-based tariff studies have been undertaken at many ports, none of these ports have in fact adopted cost-based tariffs. It is extremely unlikely that if each country were left to its own devices to introduce its own promotional tariff that anything would happen. .

### *7 No surplus capacity*

One port (Illychevsk) maintained that it does not have surplus capacity to handle Traceca cargoes. Their argument appears to be that their surplus capacity is mainly at conventional general cargo berths, and the Traceca cargo has now moved into containers. Consequently handling these containers would require reconstructing the existing berths. This does not seem very convincing. The port already has container and ro-ro/ferry berths at which the containers could be handled; and even if they were not handled there is no obvious reason why containers could not be handled at their

multi-purpose berths - as is the case in other countries. Furthermore, the Ukrainian delegation informed us that they had 18 ports working below full capacity

**B(2)**

# **Cost Based Tariffs for Ports and Shipping**

## **Analysis and Recommendations**

**TABLE OF CONTENTS**

**INTRODUCTION..... 3**

**1. EXECUTIVE SUMMARY AND RECOMMENDATIONS..... 4**

    1.1 PORTS ..... 4

    1.2 SHIPPING..... 6

**2. PORTS TARIFFS – CURENT PRACTICE ..... 7**

    2.1 EXISTING TARIFFS ..... 7

    2.2 APPROACHES TO SETTING TARIFFS..... 7

    2.3 STRUCTURE OF EXISTING TARIFFS AT TRACECA PORTS..... 8

    2.4 COMPARISON OF TRACECA AND INTERNATIONAL TARIFF LEVELS..... 9

**3. INSTITUTIONAL AND REGULATORY ASPECTS..... 10**

    3.1 ROLE OF PUBLIC AND PRIVATE SECTORS ..... 10

    3.2 REGULATION OF TARIFFS ..... 10

    3.3 DISCOUNTS..... 11

**4. PORT TRAFFIC LEVELS ..... 13**

    4.1 TOTAL TRAFFIC ..... 13

    4.2 EXISTING TRANSIT TRAFFIC ..... 15

    4.3 NON-TRACECA ROUTES USED BY TRANSIT CARGOES..... 17

    4.4 POTENTIAL TRANSIT TRAFFIC ..... 18

**5. COSTS AND REVENUES ..... 20**

    5.1 PORT REVENUES..... 20

    5.2 COSTS OF PORT SERVICES ..... 22

    5.3 PROFITABILITY ..... 24

    5.4 BREAKDOWN OF COSTS BY MAIN ITEM..... 25

    5.5 ADJUSTMENT OF COSTS TO COVER MORE REALISTIC DEPRECIATION MAINTENANCE AND LOAN REPAYMENTS..... 28

    5.6 REDUCTIONS NECESSARY TO BRING TARIFFS INTO LINE WITH AVERAGE/TOTAL COSTS..... 29

    5.8 VARIABLE COSTS OF THE MAIN SERVICES ..... 30

**6. PROMOTIONAL PORT PRICING – THE WORLD VIEW ..... 31**

**7. SURPLUS CAPACITY IDENTIFIED LEADING TO PORT RECOMMENDATIONS..... 32**

**8. NON-TARIFF BARRIERS TO TRACECA TRANSIT TRADE ..... 36**

**9. SHIPPING ..... 38**

    9.1 CASPIAN SHIPPING COMPANY (CSC)..... 38

    9.2 TML (TURKMENISTAN) ..... 47

    9.3 UKRFERRIES ..... 49

APPENDICES I TO X ARE LISTED AT THE FRONT OF THE APPENDIX SECTION



## Introduction

This is a working paper based on information collected by the end of 2002.

It is an expanded version of the "Preliminary Analysis and Recommendations" circulated in the UPTFT project in September 2002.

This paper incorporates views and comments received from representatives of the TRACECA countries, particularly the international working group meeting held in Baku in October 2002, with further refinement of the analysis.

It includes additional information received from Black Sea Ports after the initial draft of the paper was circulated prior to the Baku meeting.

Some gaps remain and during the remainder of the project time the consultant (with the help of the National Working Groups) will try to complete all aspects of this review. However, it is considered that there is already sufficient detail to draw conclusions on the scope for introducing cost-based tariffs to promote TRACECA transit traffic.

This paper is now being circulated to all the TRACECA National Working Groups operating under the chairmanship of the National Secretary in each country for debate and for any constructive comments to be included before the final version is published.

UPTFT Project January 2003.

## 1. Executive Summary and Recommendations

### 1.1 Ports

Tariffs at all of the TRACECA ports are considered by the consultant to be reasonably in line international tariff levels, with very few exceptions, but most of the ports are handling relatively little TRACECA transit cargo, except for oil. It is felt that promotional discounts could help to stimulate new transit business given the example shown in other countries.

The analysis has confirmed that two key conditions for introducing cost-based tariffs are fulfilled:

- There is some surplus capacity in the key TRACECA ports. They were designed to handle much higher volumes of traffic and in former times many of them have handled more than twice the current throughput.
- The variable costs of handling additional cargoes are low.

There is therefore little to lose but a lot to gain by the ports by offering preferential transit tariffs for new TRACECA traffic. This is true for most of the ports.

The ports are currently in a good financial position to experiment with preferential tariffs as all three of the main Caspian ports make profits, after a period of losses in the early-mid 1990s. Furthermore, almost all the individual services within the ports make profits and traffic volumes have been increasing. At present some 10 million tonnes of oil use TRACECA rail transit routes across the Caspian to Batumi, Georgia.

The financial positions of the Caspian ports, however, may not remain as buoyant in the future as they are now, as much of their additional income has come from oil. This oil traffic is vulnerable to the development of pipelines within the next few years. In particular the 30 million tonne (CPC) Tengiz-Novorossysik pipeline and the 60 million tonne Baku-Tbilisi-Ceyhan (BTC) pipeline. Timing of completion of these pipelines is uncertain but the shipping lines and rail operating companies cannot ignore the economic benefits for the oil companies to use pipelines in preference to sea and rail transport.

The ports revenues are also threatened by the fact that Russia has started to protect traffic volumes at its own ports in a non-commercial manner the last few years. The worst affected of the Caspian ports is Aktau, which has seen its Russian steel transit trade diverted to Russian ports, as a result of deliberate manipulation of Russian rail tariffs.

It has also to be remembered that all the Caspian ports will have to pay back their loans to EBRD for recent port developments and this will happen over the next decade. The financial position of the ports could be adversely affected over the next few years.

Therefore there is no better time to build up additional transit cargo business to increase revenue to provide some protection against these inevitable changes.

It must be remembered that variable costs would inevitably increase with salary increases, especially if the ports were to introduce inbuilt incentives to attracting transit traffic, but even if salaries were doubled it would add only US Cents 25 per tonne at Baku, US Cents 40 per tonne at Turkmenistan and US Cents 50 per tonne at Aktau, at current cost and traffic levels.

Some thought should also be given to price elasticity of certain products, but this is complicated in that to attract new traffic the rate for the complete journey will have to be considered rather than any specific element.

It can be concluded from the ports' accounts that tariffs for new transit traffic could be reduced by two thirds and still retain profitability, but the consultant would recommend that a 50% reduction in tariffs would lead to a more comfortable surplus.

It is emphasised that:

Any tariff reduction would be expected to increase profits rather than reduce them, as existing transit traffic volumes are low. There is therefore much to gain from offering preferential tariffs for most routes. There are, however some exceptions. In particular, 75% of dry cargo and almost all the oil cargoes at Baku were reportedly TRACECA transit cargoes in 2001. Also, Baku's profit margins are not as high as at other ports. Accordingly they would have to be confident that price elasticity would be greater than 1.0 before discounting tariffs. Otherwise, if price elasticity proved to be below 1.0, revenues would be likely to fall below total costs, especially after the loan repayments to EBRD.

- Reductions in non-transit tariffs are not recommended.
- Identical transit tariffs at the different ports are not recommended. There are major differences in national salary levels, port infrastructure and equipment investment (partly due to different volumes), dredging costs and breakwater costs.

Any preferential transit tariffs that are offered should be introduced for a trial period of at least one year.

It should also be noted that:

- Lower port tariffs may not, in themselves, be a decisive factor in attracting transit cargoes. The discounts would have to be part of a chain of promotional tariffs offered by ports, shipping lines and railways.
- Other non-tariff problems will have to be solved if transit traffic is to be attracted. The ports would also have to provide a faster service through the port and Customs would need to review their procedures for sealed containers.

## 1.2 Shipping

The Caspian Shipping Company (CSC) dominates TRACECA transit movements over the Caspian Sea. There is no effective competition on the main routes across the Caspian, linking Baku with Turkmenbashi or Aktau.

CSC's revenues in 2001 were 50 times as high as those of the second shipping line operating on the Caspian, TML who operate mostly to the non-TRACECA routes, to Iranian and Russia.

The ferries carried 1.2 million tonnes of cargo in 2001. Of the total about 70-80% was reportedly petroleum. Dry cargo movements were minimal.

As with the ports, the analysis confirms that

- There is considerable surplus capacity on the ferries across the Caspian. Fifteen years ago the same fleet of ferries was carrying more than three times as much cargo.
- The variable costs<sup>1</sup> of handling additional cargoes are well below total costs. Even if the new cargo required additional sailings, the extra cost, including port dues, is estimated to amount to only about 40% of the cost of a service using a old ship (which would have low fixed capital costs) and about 17% of the cost with a new ship (which would have high fixed capital costs).

The arguments for and against tariff discounts for the ferries are as follows.

The two main arguments against lower tariffs are:

- that the Caspian ferries are to some extent in a similar position to the port of Baku. That is to say, a large part of the ferry cargo is already TRACECA cargo.
- consequently, to avoid a fall in profitability, it would be necessary to be confident that price elasticity of demand is greater than 1.0 to justify tariff discounts.

There are, however, strong arguments in favour of lower tariffs for transit cargoes:

- Transport users have identified ferry tariffs as one of the main deterrents to the use of TRACECA routes.
- The sea freight rates across the Caspian are above international levels, especially for containers. The high freight rates on the Caspian are partly explained by the use of the Dagestan ferries for containers and rail wagons. The ships are far too large for the current traffic.

<sup>1</sup> Variable costs consist mainly of fuel, most of the maintenance/repair, and part of the administration costs. These costs will be incurred for significant additional tonnages of cargo. The fixed costs of the shipping services consist mainly of depreciation, wages and insurance.

- A comparison of estimated revenues and costs on the Caspian ferry operations<sup>2</sup> suggests that profitability is low. Our estimates suggest that total costs may be only slightly below revenues for an old ferry but for a new ferry, with high capital costs total costs would be well above revenues. Additional cargo would therefore increase profitability.
- Although most of the ferry cargoes are TRACECA cargoes, oil accounts for the majority; and oil cargo is specifically excluded from the proposed TRACECA discounts.
- The ferry tariffs account for a much higher percentage of total transport cost on TRACECA routes than the port tariffs. Discounts of ferry traffic are therefore more important than discounts of port tariffs.

It is concluded that tariff discounts for new transit dry cargoes, excluding some existing cargoes, would be likely to increase TRACECA transit cargo volumes and increase profitability.

## 2. Ports Tariffs – Current Practice

### 2.1 Existing Tariffs

The tariffs for the main Caspian and Black Sea ports are shown in Appendix I.

### 2.2 Approaches to Setting Tariffs

#### *Current Practice*

TRACECA countries generally apply the same approach to tariffs that operated in Soviet times when they were calculated by formulae administered by the Ministry of the Maritime Fleet (Sovmorflot) in Moscow.

The basis on which tariffs have been revised in recent years is generally to be by comparison with tariffs in neighbouring countries, thereby losing any relevance to actual operating costs.

Since independence, most tariffs have been fixed by the ports themselves, who have mostly remained state-owned and state-operated (See Chapter 3), but because most of the ports have monopoly powers their rates have to be approved by the central government, often via the anti-monopoly commissions.

For several years after the collapse of the Soviet Union revenues at the Caspian ports did not cover costs, but this was because traffic levels, rather than tariffs, were low.

The pressure to increase tariffs, however, has been weakened in recent years because of a revival of traffic (mostly oil in tank wagons) at all the main Caspian ports. The traffic

<sup>2</sup> Estimates by TRACECA only as only limited information on actual costs and revenues has been obtained.

increase has brought all except one of the Caspian and Black Sea ports into surplus (see Chapter 5)

The tariffs for general cargoes have mostly been increased at all the main Caspian ports in recent years and in some cases this has followed pressure from international Banks (such as the EBRD who have demanded rate increases in Turkmenbashi) to help recover the cost of the loan.

### *Cost-Based Tariffs*

One of the key project objectives is to help in identifying actual costs, so that realistic rates based on actual costs can be estimated, to enhance the competitiveness of the TRACECA transit routes. This cost-based approach to rates and tariffs is generally accepted as good international practice – although actual tariffs/rates are often a compromise between cost based and value based (also known as demand-based, or "what the market will bear") approach.

Cost-based principles are often applied to cover long-term variable costs. But the TRACECA ports are currently in a transitional phase, and the evidence points to quite large amounts of surplus capacity in most of them. This should allow the ports to charge tariffs based on short run variable costs (or marginal costs) and still make a profit on the traffic generated.

In practice only limited attempts have been made so far in TRACECA countries to base tariffs on costs, despite various port pricing projects/studies which focused at least to some extent on a cost-based approach<sup>2</sup>.

### *2.3 Structure of Existing Tariffs at TRACECA Ports*

The TRACECA country port tariffs consist of a range of items listed in the tariff schedule and these items are those commonly used everywhere. The main tariff items applied internationally are:

Port entry dues, pilotage, tugs, berth occupancy, cargo handling and storage

These tariff items are used in most TRACECA ports (see Appendix I). The only significant difference is that some of the TRACECA countries still base tariffs on the former Soviet used, cubic measurements of the ship (length overall x beam x draft) rather than Gross Registered Tonnage (GRT), the standard international measure.

<sup>2</sup> For example, there have been studies in Aktau by Scott Wilson (Business Plan for Aktau, 1998); in Turkmenbashi by Corporate Solutions (Tariff Study Report, 1999); in Baku by PWC/Tebodin/Port of Rotterdam Institutional Development and Financial Management at Baku Port, Business Plan, 2001); in Georgia by a Canadian consultant working with the Georgian Maritime Transport Administration (current, 2002); and in Constantia with assistance from GTZ, Germany (current, 2002)

## 2.4 Comparison of TRACECA and International Tariff Levels

A comparison of TRACECA country and international tariff levels is shown in Appendix II (Table 2.1). It is based on typical ships used in the Caspian and the Black Sea.

There are two main sets of dues for:

- (a) ships and
- (b) cargo handling.

The charges on cargo handling usually dominate in Caspian and Black Sea ports, as they do elsewhere in the world.

The comparison shows that TRACECA country port tariffs are reasonably well in line with international tariffs. The few exceptions include the port dues applied to ships at Black Sea ports. Although they are high, they are much less important than cargo handling tariffs. The total port dues paid by ships range from US Cents 40 to US\$3.0 per tonne of cargo handled (see last column in Table 2.1).

These comparisons use only official tariffs. It has been claimed that unofficial payments are also necessary to expedite movement at some of the ports and that these increase the total cost of using the ports. But initial investigations, focusing on interviews with freight forwarders, agents, etc, suggest that although such payments undoubtedly exist, especially to persuade dockworkers to speed up cargo handling, they are not a major concern (exceptions include sanitary dues on rail wagons at Georgian ports which are said to be very high).

Port tariffs for handling oil, the main TRACECA route cargo, are also low by international standards. They are only US Cents 36 per tonne at the key oil port of Dubendi (Baku) and US Cents 13 per tonne, at Turkmenbashi. Only at Aktau, where they charge US\$1.50 per tonne, are the rates seen to be more in line with international charges.

Port tariffs for handling rail wagons are not in practice charged on the Baku Turkmenbashi or Baku Aktau ferries. The only payment currently made by the shipping line is a lump sum payment of US\$800 per call at Baku and \$2,800 per call at Turkmenbashi and Aktau. These lump sum payments appear to be based on discounted port dues rather than cargo handling charges. No cargo handling charges are applied at the Port of Baku who would perhaps benefit from revenues per wagon, in order to help service the EBRD loan for the ferry terminal rehabilitation.

Information on handling rail wagons in Varna and Constantia will be included later.

In conclusion it can be seen that:

- The tariffs for cargoes which *are* being handled are low by international standards, but for those cargoes which are *not yet* being handled, they are slightly high
- There is considerable scope for tariff reductions for transit traffic, because the marginal costs of handling additional traffic is low.

### 3. Institutional and Regulatory Aspects

#### 3.1 *Role of Public and Private Sectors*

Almost all the TRACECA ports are owned and operated by the state. There is relatively little private participation as yet. The situation at the main ports is as follows:

Azerbaijan:	state monopoly (exceptions include private oil berths)
Turkmenistan:	state monopoly at all terminals
Kazakhstan:	state monopoly (exceptions include private oil berths)
Bulgaria	state monopoly, but concessions under discussion.
Romania:	state owned landlord port with private operations at Constantia.
Georgia:	state monopoly, but privatisation of operations has been discussed. There are already a few private operations, including terminals for scrap and oil.
Moldova	state monopoly
Turkey	state monopolies owned by railways
Ukraine:	state monopoly, with some joint ventures at petroleum, metal and other terminals. At Odessa the container terminal is operated by HPC (of Germany) under a management contract. Other joint ventures include Novolog (German/Austrian, steel handling); Metalsrussia (steel); Ironimpex (Goldwater, Omnia and Westhall Holdings, handling metals, equipment and bulk cargo); Brooklyn Kiev (handling sugar, grains and metal); Olympex (handling steel, grain and fertilisers); Petex (handling general cargo, grain, sugar and chemicals); and Baltic Trading Company (oils). At Illychevsk, there are joint ventures at the grain terminal (with US and Swiss companies), and an LPG terminal (with a Turkish partner).

The main exception to the dominance of the state sector is Constantia where all cargo handling is privatised

Although the public sector is dominant and state monopolies have many disadvantages, they can be considered useful in that they have control over tariffs.

#### 3.2 *Regulation of Tariffs*

Almost all the port tariffs are regulated by central governments. In most cases the regulation is via the anti-monopoly commission. This is reasonable, as the Caspian and Black Sea ports tend to have monopoly powers. There is neither inter-port nor intra-port competition in most TRACECA countries. (However, government regulation is normally necessary only to control the private sector, not other ministries within the same government.)

The regulatory authorities in the Caspian and some Black Sea countries are:

- Azerbaijan: the anti-monopoly committee.



- **Turkmenistan:** the Cabinet of Ministers who have to approve the tariff proposals of the Ministry of Transport, which owns the port of Turkmenbashi and the TML shipping line.
- **Kazakhstan:** the anti-monopoly committee for the main tariffs. However, charges for tugs, storage and some other services are not fixed by government.
- **Bulgaria;** the Ministry of Transport regulates port tariffs.
- **Romania:** the Ministry of Public Works, Transport and Housing has to approve the tariffs levied by the Port of Constantia. But private stevedoring companies set their own cargo handling tariffs
- **Georgia:** the Georgian Maritime Transport Administration, under the Ministry of Transport.
- **Ukraine:** the state-owned research institute Yuzniite determines the level and structure of port tariffs. A new system of tariffs was planned for January 2003. It is expected that the general level of tariffs will decrease, and that there will be a more detailed breakdown of cargo-related tariffs. It was planned that discounts would be discontinued because of the reduction in the general level of tariffs and that the government would allocate cargo to ports on the basis of quotas, with higher tariffs where cargo volumes exceed the limits. Detail has not yet been seen.

### 3.3 *Discounts*

#### *General Regulation of Discounting*

The ability to negotiate tariffs to attract business is limited in the Caspian ports. Each government fixes all tariffs and discounting would often be breaking the law. The situation, however, varies by port, as follows:

- **Turkmenbashi:** discounts not permitted
- **Baku:** discounts up to 30% are allowed.
- **Aktau:** government fixes tariffs. Discounts have to be approved. Furthermore, the port guaranteed the EBRD that it would not cut tariffs during the negotiations over their loan.

#### *For some Black sea ports*

- **Ukraine:** Until 1995 the Ukrainian ports were permitted to offer discounts of up to 30% without permission from the Ministry of Transport (MoT). But since 1995, discounts have been limited to 10%. Higher discounts have to be approved by the MoT. The ability to discount is expected to be withdrawn when a new schedule of lower tariffs is introduced in January 2003.
- **Bulgaria:** discounts can reportedly be negotiated for high volumes at Bourgas.

### *Discounts at the TRACECA Ports*

Minor concessions have already been made. In February 2002 the TRACECA Working Group for railways, seaports and shipping companies agreed the following:

- Baku and Batumi conceded discounts of 20% on containerised shipment to Afghanistan.
- Caspian Shipping Company (CSC) conceded a 50% discount on empty wagons taking aid cargoes or construction materials to Afghanistan.
- Ukrferry conceded a 30% discount on empty wagons taking humanitarian aid or construction materials to Afghanistan.

These are considered as only minor concessions, and Afghan aid cargoes are not yet flowing in large volumes.

Port tariffs for CSC, the dominant shipping line on the Caspian Sea, have already been discounted at all three ports. The size of the ferries would make the normal tariffs very high, but special rates have been agreed at Turkmenbashi and Aktau (about US\$2,800 per ferry call), and Baku (US\$800 a call). It might therefore be concluded that there is not much scope for further reductions. However, the variable cost of RoRo operations at the port are extremely low as little labour is involved and the largest cost will be that of the loan repayments for reconstruction of the ferry terminals at all three ports.

The discounts to CSC are for their ferry operations as a whole. They are not being limited to TRACECA transit cargoes

Aktau is negotiating with its own and other governments for special discounts for two new trades, (a) they are trying to attract Chinese transit trade and (b) they are trying to persuade the Kazakh government to reduce steel port tariffs to retain/recover Russian transit traffic to Iran. None of this is TRACECA transit cargo.

Finally, the rail ferry<sup>3</sup> operated between Constantia and Batumi enjoys discounts on port tariffs, determined as follows:

- Batumi levies tonnage dues once a year instead of for each call. Assuming a monthly frequency and a level of tonnage dues of up to US\$ 12,000 per call savings are approximately US\$ 130,000 per annum
- In Constantia discounts are obtained of about US\$ 10,000 per each voyage through tax reductions and other discounts

<sup>3</sup> The ferry service started in the year 1997 calling at Constantia, Poti and Batumi. After three calls at Poti, it was decided to not include this port in the itinerary. The service between Constantia and Batumi was continued with a monthly frequency. Because lack of cargo the service has now been limited to bi-monthly frequency. It was decided to continue the cooperation between Constantia and Batumi until the end of 2002, after which a new decision will be taken. It should be noted that communication between Constantia and Batumi about this agreement is not going smoothly.

## 4. Port Traffic Levels

### 4.1 Total Traffic

#### (a) Caspian Ports

Traffic volumes (including national imports and exports as well as transit traffic) are currently low at the Caspian ports. When oil tonnage is excluded, the three countries, with a combined population of 30 million, had only 4 million tonnes of non-oil port traffic in 2001. The vast majority of their international trade is travelling by all-land routes via Russia or Iran/Turkey.

In the late 1980s the Caspian ports were handling much more cargo, as follows:

	(million tonnes)
Turkmenbashi	8 (a)
Baku	16 (b)
Aktau	detail not known

(a) Mainly ferry cargo.

(b) Consisting of approximately 9-10 million tonnes of oil, plus 5 million tonnes of ferry traffic and 1.5 million tonnes of general cargo.

The most important shipping service across the Caspian at that time was the Baku - Turkmenbashi rail ferry. In 1987 it handled 5.8 million tonnes, but by 1994 its throughput had fallen to 0.7 million tonnes and although it has now revived to 1.6 million tonnes (in 2001), traffic levels are still well below those of the 1980s.

Nevertheless, the Caspian traffic is increasing, as shown in the following table:

**Table 4.1 Cargo traffic at Caspian ports 1995-2001 (000 tonnes)**

	1995	1999	2000	2001
Baku	1,290	3,214	4,478	4,562
Aktau	361	3,000?	4,110	5,659
Turkmen bashi	990	5,848	5,592	6,979
	Ex oil			
<b>Total</b>	<b>2,641</b>	<b>9,062</b>	<b>14,180</b>	<b>17,200</b>

The main identified existing cargoes are shown in Table 4.3 (Appendix III) where they are dominated by oil, metals, chemicals and other miscellaneous ferry traffic.

By far the most important cargo in the TRACECA countries is petroleum. About 65 million tonnes are being produced and over 40 million tonnes are being exported from the Caspian region, according to the latest data available from the EIA.

The Russian monopoly of outlets to international petroleum consumer areas, which was almost 100% in the later 1990s, is now weakening. About 10 million tonnes were moving by rail over the Caucasus from Azerbaijan to Batumi in 2001, and further volumes of so-called "early oil" have been moving via the Supsa pipelines to Georgia

since 1999. Between them, these TRACECA routes have already attracted about one third of Caspian region oil exports, with about two thirds still exported through Russian territory and in particular Russia's Druzhba pipeline network and CPC's new Tengiz-Novorossysk pipeline. The latter, however, despite moving over Russian territory and involving shipment via the Russian port of Novorossyisk, is controlled mainly by non-Russians. The Russian government has only a minority interest of 24%. The routing via TRACECA of about a third of the regions exports within a short period can be considered a good achievement, given that much of the Kazak oil is located relatively close to the Russian Druzhba pipeline system that is its obvious outlet, as it was in Soviet times. The TRACECA route cargoes consist mainly of Kazak oil shipped by tanker to Azerbaijan and then railed over to Batumi.

*(b) Black Sea ports*

Table 4.2 shows an overview of cargo handled by the main Black Sea ports in the period between 1996 and 2001.

Over the years, the Port of Constantia has been the largest of the Black Sea ports in terms of volumes of cargo handled. In the year 1996, the port handled more than 44 million tons of cargo.

**Table 4.2 Cargo traffic at Black Sea ports 1996 - 2001 (000 tonnes)**

	1996	1999	2000	2001
Bourgas	15,611	10,994	12,343	12,512
Varna	6,812	6,089	6,853	7,429
Constantia	44,200	32,484	33,104	33,762
Odessa	18,455	27,142	27,784	29,340
Illychevsk	8,298	12,444	12,635	13,335
Batumi	1,350	5,922	6,923	8,395
Poti	1,692	2,298	3,620	3,441
Total	96,418	97,646	101,777	106,033

The total volumes of cargo handled by the main Black Sea ports increased by approximately 10 % between 1996 and 2001.

The main types of cargo handled at the Black Ports vary from predominantly dry bulk in Constantia to primarily oil in Batumi and Odessa.

Cargo volumes handled in the Port of Constantia suffered because of the war the in the Former Yugoslav Republic. As a result of this war traffic on one of the most important hinterland connections, the Danube was severely hampered. It is expected, however, that as soon as the bottlenecks, especially at Novi Sad, are cleared, river traffic will increase significantly to and from Constantia.

Cargo volumes handled at Batumi port increased by almost 500 % in the past 6 years. This increase was predominantly due to growth in handling of oil.

## 4.2 Existing Transit Traffic

All long-distance TRACECA transit cargo has to pass over the Black Sea and almost all of it has to pass through Baku (which also owns the Dubendi oil port) and fortunately Baku Port statistics identify transit traffic.

In 2001 transit traffic was:

- 3.2 million tonnes of oil, almost all from Kazakhstan to Baku/Dubendi, from where it is railed to Batumi. (Another 3 million tonnes of oil are being routed via a private *Azpetrol* terminal close to Baku)
- 128,000 tonnes of alumina from Greece and other countries to the aluminium refinery in Tadjikistan. There is also some refined aluminium ingot traffic in the opposite direction.
- 36,000 tonnes of cotton from Uzbekistan, and to a limited extent neighbouring countries, to European destinations.
- 86,000 tonnes of soybean from South America to an edible oil plant in Uzbekistan.
- 534,000 tonnes of other transit cargoes, consisting mainly of pipes, other oil industry equipment, and (frozen) chicken to Aktau.

The total was 4 million tonnes, of which dry cargo accounted for 0.8 million tonnes:

Baku Transit Traffic, 2001	(000 tonnes)	
	2000	2001
Oil	3,571	3,246
Dry Cargoes		
Soybean	107	86
Cotton	122	36
Alumina	34	128
Others	222	545
<b>Total transit, Baku</b>	<b>4,056</b>	<b>4,041</b>
Plus Azpetrol oil terminal	3,200	
Total, approx.	7,200	

The figures obtained from Turkmenbashi are generally consistent with this detail. They show some textile exports, some alumina materials going to the Tajikistan refinery and some aluminium ingots (included under "other products"); and also some oil from Uzbekistan. In addition, some textiles from Ashgabat are exported via Turkmenbashi.

Aktau has been more successful than the other two ports, having attracted over 1 million tonnes of dry cargo - mostly steel. But this cargo is not TRACECA transit cargo. Most of it goes from Russia to Iran.

### On the Black Sea:

- **Poti** (Georgia) reported 1.8 million tonnes of transit cargoes (including oil) in 2001 with only 317,000 tonnes recorded as going to/from Central Asia. The remainder of the trade was with Armenia (801,000 tonnes) and Azerbaijan (747,000 tonnes). Poti's traffic included a number of containers recorded as 41,000 Twenty-foot Equivalent Units (TEU) in 2001, but no breakdown between transit and national cargoes was available. For local transit traffic Poti specialises in Georgian and Azeri traffic and Batumi specialises in Armenian traffic.
- **Batumi** recorded 7.6 million tonnes of petroleum and 414,000 tonnes of dry transit cargoes in 2001. Only a small part of the dry cargo, however went, or came from, Central Asia (this was 73,000 tonnes from Uzbekistan). The rest did not go to/come from beyond Armenia and Azerbaijan. The dry transit cargo is carried on (a) a RoRo ferry (capacity 40 trucks) from Constantia, every 2-3 weeks, which reported only 2,288 tonnes of cargo in 2001 and (b) a weekly rail ferry from Illychevsk. The rail ferry is said to be fully booked in recent months.
- **Bulgarian** ports report very little transit traffic. The small volumes that are reported are carried mainly by (a) SOMAT, owned by Willy Betz, which operates a RoRo service between Bourgas and Poti/Novorossyisk and (b) a rail ferry linking Varna and Illychevsk with Poti and Batumi. The latter carried only 23,000 tonnes from Varna to Georgia in 2001.
- **Constantia** reports very little transit traffic. Favourable tariffs are offered by the port to rail ferries; but the rail ferry service started by Romanian National Railways in 1998 linking Constantia and Poti was terminated after 3 calls because of lack of cargo. The rail ferry connection between Constantia and Batumi is still in operation though at irregular intervals.
- **Odessa** reported about 3 million tonnes of transit traffic in 2001, but it included no significant TRACECA transit traffic.
- **Illychevsk** reports just over 1.0 million tonnes of TRACECA transit traffic in 2001. Its total transit traffic amounted to 2.8 million tonnes, but the majority of it was Russian and Kazak cargoes to/from non-TRACECA countries.

It can be inferred from Table 4.3 (Appendix III) that the majority of the potential transit cargoes are bypassing the ports, and therefore moving on non-TRACECA routes. This is not entirely surprising, because (for example) a TRACECA journey from Europe via Poti to Ashgabat, crosses 4 borders and is handled 3 times, incurring unofficial payments as well as official tariffs, plus delays.

The negative consequences of this can be illustrated by the following:

- The new container facilities at Baku have handled less than 1,000 TEU since they opened in 2000.
- The cotton exports, which were the subject of an inter-governmental agreement to use the TRACECA corridor, have diverted to other routes. In 2001 Baku reported

cotton traffic was only 36,000 tonnes. This is a small fraction of the total, which is well over 1 million tonnes, mostly produced in Uzbekistan. Most Uzbek cotton used to go via the port of Riga in Latvia in Soviet times or Illychevsk in Ukraine. In the mid 1990s an intergovernmental agreement was signed to divert much of this cargo to the TRACECA Route via Poti, with rail tariffs discounted to 40% of their normal levels. But Poti had major problems with security, restrictive practices and poor shipping services with no Liner Ships able to reach the Port. It was not even used by Azerbaijan's own cotton exports. Today much of the cotton is exported via the port of Bandar Abbas in Iran but it is said that there are plans to return some of this traffic to Poti for some European destinations in 2003.

- The Aktau- Baku ferry was carrying only about 5-6 trucks per voyage in normal months at the end of 2000.

#### 4.3 *Non-TRACECA Routes Used by Transit Cargoes*

The main routes currently by the potential TRACECA corridor cargoes include:

- **The Volga-Don Canal.** This route is favoured particularly by the oil and construction industries, which bring in large volumes of equipment, pipes, machinery, etc. The canal suffers from several serious handicaps:
  - 1. Its use is ruled out by ice for at least four months per year, and the users regard the effective season as even shorter.
  - 2. Its depth limits ships' loads to around 2,300 DWT, which imposes serious diseconomies of size.
  - 3. The transit duties imposed on non-Russian ships are extremely high; and are increased by "special fees".
  - 4. The Russian authorities require non-Russian vessels to apply for permits on a case-by-case basis.
  - 5. Even the non-Russian shipping services in the Caspian suffer from limited competition, being dominated by the Caspian Shipping Company.

However, despite these handicaps a large part of the supplies for the key oil and construction industries appear to be using this route. Also, some cotton goes out via the Volga-Don canal.

- **Via Turkey and Iran by road.** This route is favoured particularly by importers of construction materials and capital goods who place a premium on timed deliveries. The port of Baku reports that much of the transit traffic that they have tried to attract has continued to be routed via Turkish/Iranian roads. Despite the poor roads, building materials and other goods use this route where the sort of delays that occur in Baku and Turkmenbashi, are not experienced. Currently a lot of Project cargo for building projects is delivered by road to Ashgabat.

- **Via Russia by rail.** For example, about 95% of Kazakhstan's imports and exports are reportedly transported by rail. They include 600,000 tonnes of ferrochrome from Aktybinsk and Pavlodar which goes out via Baltic (and also Black Sea) ports. And even for imports from Northern Europe some TRACECA country transport companies find the direct rail route via Russia more reliable and cheaper than TRACECA routes. One example being shipments of butter from Western Turkey to Kazakhstan via Illychevsk.
- **Routes from the Middle East, via Iran.** The United Arab Emirates (UAE) is increasingly important as a source of supplies and a major trading partner for Azerbaijan and Turkmenistan. This will reduce trade with Europe.

It is concluded that a reasonably clear picture of current movements by sea in the TRACECA corridor can be assembled. But with only about 0.8 million tonnes of TRACECA dry cargoes moving across the Caspian, it is clear that a large part of the potential traffic is moving by road (especially from Turkey, Iran and Europe), by rail (especially via Russia), by ship through the Volga-Don Canal during the summer months, and by various pipelines.

#### 4.4 *Potential Transit Traffic*

The marketing departments of the ports visited did not have very specific lists of potential transit traffics but some that were identified included:

- Possible oil shipments from Uzbekistan via Turkmenbashi. It is possible that this traffic could reach large volumes but is not the "new" traffic we are seeking.
- Grains exports from Kazakhstan, which has traditionally been a major producer of cereals.
- Containers, contents unspecified
- Construction materials
- Sulphur

This short list, however, undoubtedly underestimates the potential. The TRACECA countries have relatively large populations, totalling over 70 million. Potentially, they should generate reasonably large volumes of trade. Even if TRACECA trade continues to be dominated by Russia, Turkey, Iran and the Far East, reasonable volumes should still come from/go to Europe, but as yet the trade volumes are still very low for countries of this size. There is a strong focus on oil development.

In contrast, other industries have not yet developed - not even the oil based industries in which many other countries with plentiful supplies of oil have been investing.

The typical investment programs of oil-rich countries which are trying to diversify to avoid over-dependence of oil exports include petrochemicals, ammonia production, fertilisers, sponge iron plants and aluminium plants, but as yet there is little activity, existing or planned, of this type in the TRACECA region.

Another type of industry which could have good prospects is light industry. The Caspian countries in particular constitute quite a large market, with a significant degree



of effective protection in the form of high transport costs from other sources of supply. If either type of industry developed it would raise imports in the initial stages through increased requirements for capital goods and raw materials; and later through increased purchasing power.

#### **Estimate Of Potential Container Traffic Volumes Between Europe and TRACECA Countries**

A broad estimate of potential container traffic on TRACECA routes can be built up from a combination of IMF statistics on trade between TRACECA countries and Europe and the relationship between import values and container traffic in other countries. The calculations are shown in Tables 4.4 (Appendix III).

The estimate concentrates on imports, as exports are mainly of non-containerised oil and gas. Exports, where they have been developed, are loaded into containers, but at the moment most containers are returned empty.

Table 4.4 shows that US\$1,382 million of trade was sent from European to TRACECA countries in 2001.

Table 4.5 (Appendix III) shows the relationship between import values and container traffic, based on statistics in selected countries in 2000. They are countries for which the vast majority of general cargo imports are handled by sea borne containers. They exclude the many countries whose container trade patterns are complicated by various factors such as countries:

- which receive a significant proportion of their imports by land (e.g. Germany, the Netherlands); or
- which handle large amounts of transshipment traffic for other countries (e.g. Singapore, Sri Lanka); or
- which handle large amounts of transit traffic for other countries (e.g. Netherlands, via Rotterdam); or
- whose container traffic is dominated by exports rather than imports (e.g. Hong Kong); or
- which receive a significant proportion of imports by RoRo rather than container ships (e.g. UK)

The average cargo value per TEU for the selected countries is estimated in Table 4.5 (Appendix III) at US\$44,000. Alternatively expressed, each million dollars of import trade generates about 23 TEU of inbound container traffic. This is equivalent to 46 TEU in total, as the inbound containers have to be shipped out. Most of the outbound containers would be empty, as stated earlier.

On this basis the implied potential container traffic in both directions between Europe and TRACECA countries is estimated at 149,000 TEU. See Table 4.6 (Appendix III).

## 5. Costs and Revenues

### 5.1 Port Revenues

The revenues at Caspian ports are low. In 2001, they averaged only US\$1 per tonne at Turkmenbashi and Baku, and US\$4 per tonne of cargo at Aktau and these figures include cargo handling as well as port dues. Port dues alone amounted to only US\$ 0.6 per tonne at Turkmenbashi, less than US\$0.5 at Baku and \$1.3 per tonne at Aktau and in 2001.

Revenues on the Black Sea were also low in most cases. Batumi Port revenues averaged US\$1.5 per tonne and Odessa Port averaged US\$1.8 per tonne in 2001. However, there are exceptions, including the ports of Poti, Illychevsk and Odessa. Constantia's revenues seem very low, but this is because it is the only port not earning cargo related revenues. Because of its landlord character, the revenues generated are limited mainly to port dues from vessel movements.

**Table 5.1 Revenues per tonne at Caspian and Black Sea ports, 2001**

	Revenues (US\$ mn) (a)	Cargo Handled (mn tonnes)	Revenues, (\$ per tonne)
Baku	2.9	4.3	0.7
Turkmenbashi	7.3	7.0	1.0
Aktau	22.7	5.6	3.9
Batumi	12.3	8.4	1.5
Varna	15.6	5.8	2.7
Odessa	107.4	29.3	3.7
Illychevsk	68.2	13.3	5.1
Poti	16.2	3.4	4.7
Constantia	27.2	33.8	0.8

(a) see Tables 5.8-5.10 below, for details.

The revenues are low for several specific reasons, including the following:

- The port traffic, particularly that in the Caspian, is dominated by oil, which never generates high revenues per tonne in any country. Oil is a high volume cargo, and handling is fully mechanised. This enables costs to be low.
- Ferry and other traffic enjoy large discounts. For example, the CSC ferries receive a discount of 50% off official port dues at Turkmenbashi and pay only US\$800 per call at Baku, their home port, for their ferries and \$1200 for other liquid and dry bulk ships. These amounts include all vessel and cargo charges.
- Most of the small volume of "other" cargoes, particularly in the Caspian, consists of low-value cargoes with low cargo handling charges. For example, at Turkmenbashi the main cargoes are salt, for which the cargo handling charge is only US\$2/tonne, metals US\$2 and chemicals US\$4. Aktau is an exception, handling over a million tonnes of steel in 2001, for which revenues were US\$6 per tonne. Also, it earned higher cargo handling charges from oil than the other ports.

The ports of Poti and Illychevsk mainly handle general cargo, which explains the high revenues per tonne of cargo handled.

Furthermore, there are no charges between shipping and ports owned by the same organisation: e.g. TML ships do not pay port dues to the Port of Turkmenbashi.

There are, however, a few very high specific charges. For example Iranian ships pay very high charges at Turkmenbashi.

It can be expected that if the ports were handling more mixed general cargo or containers, their average revenues would be higher. The cargo handling tariffs for key cargoes are shown in Table 5.2. It will be seen that the tariffs for most cargoes are well above the average revenues per tonne shown in the last column of Table 5.1.

**Table 5.2 Cargo handling charges for the main cargoes (US\$/tonne)**

***Caspian and International***

	Aktau	Turkmenbashi	Baku	Baltic Countries	International
Oil	1.5 (a)	0.13	0.36	1-5 (g)	1-2
Steel	6	4	4.5	4	5
Grain	8 (e)	3	3	4(c)	4 (c)
Containers(f)	80/120	40/60	50/100	60/90 (b)	100/150(d)

***Black Sea***

	Bourgas	Varna	Constantia	Odessa	Illychevsk	Batumi	Poti
Oil				1.5	1.5		2.5
Steel	2.4 – 4	4					7 – 8
Grain		2.7 (h)		1.6	1.6		5.5
Containers	30 / 40	54 / 63	70				50 / 60

- (a) Aktau, however, recently lost much of its oil revenues when ownership of two of its three oil terminals were transferred to the local petroleum shipping company.
- (b) The Baltic ports have full container terminals and moderately fast handling speeds. This is in contrast with the Caspian countries, which have very little container traffic and no specialised berths.
- (c) For large volumes in bulk
- (d) There is a wide variation
- (e) But the port receives only US\$0.9 in practice, as the grain is handled at a private silo.
- (f) For 20' and 40' containers
- (g) The low end of the range is for crude oil arriving in pipelines. The high end is for products from rail cars with difficult handling characteristics, e.g. a need for heating.
- (h) Tariff for fertilizer handling in bulk

## 5.2 *Costs of Port Services*

### **Caspian**

The total costs of operation are significantly below revenues at all three of the Caspian ports (see Table 5.3).

**Table 5.3 Total Costs Compared with Revenues at Caspian Ports, 2001**

(US\$ million)	Revenues	Costs	Costs excluding depreciation (a)
Aktau	22.7	11.1	9.4
Turkmenbashi (b)	7.3	4.0	3.8
Baku	2.9	2.3	2.0

(a) Depreciation is not a real cost, and its justification is questionable for many of the main assets at ports (see section 5.3 (b) for discussion)

The ratios of total costs to total revenues in the 2001 accounts were as follows:

Aktau	50%
Turkmenbashi	55%
Baku	79%

The costs at the ports are very low when expressed per tonne of cargo handled. The average costs are as follows:

(Costs, US\$/tonne, including depreciation)

Baku	0.5
Turkmenbashi	0.4
Aktau	1.9 (a)

(a) Aktau, unlike the other ports, has already started repaying EBRD loans

However, it is emphasised that the costs are understated. In particular depreciation is too low, maintenance expenditure is insufficient to keep the ports in good order and EBRD loan repayments have not yet started at two of the ports. The costs are adjusted to take these deficiencies into account in section 5.4.

## Black Sea

Similar patterns are seen in the Black Sea. The total costs of operation are significantly below revenues at most ports, with the exception of Illychevsk.

**Table 5.4 Total Costs Compared with Revenues at Black Sea Ports, 2001 (US\$ million)**

	Revenues	Costs	Costs depreciation excl.
Varna	15.6	9.9	5.7
Constantza	27.2	19.8	7.4
Odessa	107.4	54.5	51.8
Illychevsk	68.0.	68.0.	63.3.
Batumi	12.3	4.3	8.0
Poti	16.2	13.2	3.0

The ratios of total costs to total revenues in the 2001 accounts were as follows:

**Table 5.5 Costs as a % of Revenues**

	total costs as % of revenues
Varna	63 %
Constantia	73 %
Odessa	51 %
Illychevsk	100%.
Batumi	35 %
Poti	81 %

The average cost per tonne of cargo handled at the Black Sea ports was as follows:

**Table 5.6 Average Costs per Tonne of Cargo**

	cost per tonne, incl. depreciation(US\$)
Varna	1.7
Constantia	0.6 *
Odessa	3.7
Illychevsk	5.1.
Batumi	0.5
Poti	3.8

\* Constantia cargo handling is undertaken by the private sector and not included here.

### 5.3 Profitability

#### *Caspian Sea ports*

All the Caspian ports are currently making a profit (see Table 5.7 below), after a period of losses in the early-mid 1990s. Furthermore, almost all the individual services make profits and traffic volumes are increasing.

**Table 5.7 Profitability at main Caspian Ports, 2001 (US\$ million)**

	Aktau	Turkmenbashi	Baku
Revenues	22.7	7.3	2.9
Expenditure	11.1	2.9	2.3
<b>Surplus</b>	<b>11.6</b>	<b>4.4</b>	<b>0.6</b>

Source: Ports' Accounts

However, the financial positions of the Caspian ports may not be as stable in the future. First, it should be recognised that much of the additional income at the ports has come from oil. About 10 million tonnes of oil used TRACECA transit routes across the Caspian and via the railway to Batumi, Georgia in 2001. But the oil is vulnerable to the development of pipelines - particularly the 30 million tonne CPC Tengiz-Novorossysik pipeline and the planned 60 million tonne Baku-Tbilisi-Ceyhan (BTC) pipeline.

In addition the Russian government has started to protect its own ports in the last two years. The worst hit of the Caspian ports is Aktau, which has seen its Russian steel transit trade diverted to Russian ports, as a result of manipulation of rail tariffs by the Russian government.

Finally, all the ports will have to pay back loans to EBRD for port development over the next decade. The financial position of Caspian ports could therefore deteriorate over the next few years

#### *Black Sea Ports*

In general, the profitability of the Black Sea ports is good. As shown in Table 5.8 below, all the ports apart from Illychevsk made a profit in 2001.

**Table 5.8 Profitability at main Black Sea ports, 2001**

	Varna	Constantia	Odessa	Illychevsk	Batumi	Poti
Revenues	15.6	27.2	107.4	68.0	12.3	16.2
Expenditures	9.9	19.8	54.5	68.0	4.3	13.2
Surplus	5.7	7.4	52.9	0.	8.0	3.0

Furthermore, the Black Sea Ports are may be less vulnerable to the problems threatening the Caspian ports. In particular, the Port of Constantia is expected to handle more cargo in the near future amongst others because of increased cargo transport on the Danube River.

#### 5.4 Breakdown of Costs by Main Item

##### Caspian

The main costs are wages, depreciation, loan repayments and interest. The shares accounted for by each of these items are summarised in the following table.

**Table 5.9 Costs at the Caspian ports, broken down by item**

% of total	Baku	Turkmenbashi	Aktau
Wages	35%	48%	26%?
Social Insurance	11%	9%	5%?
Depreciation	15%	5%	21%
Repair	6%	13%	10%
Fuel	2%	3%	11%
Others (specify)	31%?	21%?	28%?
	100%	100%	100%?

The main costs, listed above, are discussed below:

##### (a) Wages

The numbers of staff, wage bills and average salaries at Caspian ports are shown in Table 5.10. There is a large variation, but none of ports has wage costs amounting to more than US 50 cents per tonne of cargo handled.

**Table 5.10 Employment and average salaries, 2001**

Port	Number of Staff	Salaries (US\$million)	Average Salary (US\$ p.a.)
Baku	850 (a)	1.1	1300
Turkmenbashi	930	2.4	2600
Aktau	400	2.7	6800

(a) Staff numbers have declined from about 1,000 five years ago and 1,500 in Soviet times.

**(b) Depreciation**

The depreciation charges shown in the Caspian ports' accounts are low. They are shown in Table 5.11. Only at Aktau are they calculated at realistic levels. At Turkmenbashi and Baku, however, they are estimated on the basis of general government rules, which assign values to assets which are far below their replacement costs.

**Table 5.11 Depreciation charges shown in ports' accounts, 2001**

	(US\$ 000)
Baku	363
Turk	160
Aktau	1,790 (a)

(a) The assets were last revalued in 1997. Their current value, US\$47 million, is considered realistic.

The under valuation of depreciation allowances is a major defect in the accounts, but not quite as important as might appear at first sight. Depreciation is not, of course, a real cost. It has two main uses in practice - first to reduce tax obligations; and, secondly to build up a fund for replacement. In practice, however, the main assets - berths - are rarely replaced, and even when they are, it is common practice internationally to fund the investment from loans rather than internal surpluses. On the other hand, replacement of the second main asset, handling equipment, is normally funded internally from accumulated depreciation allowances. Accordingly, it may be more realistic to include depreciation at only about 50% of the replacement value of total assets.

**(c) Loan Repayments**

At present only Aktau is paying back loans for development in 2001. But by 2003 all three ports will be doing so.

The loans were as follows:

Aktau loan US\$54 million from EBRD,



Turkmenistan US\$30 million from EBRD (a)  
 Baku US\$16 million  
 (a) plus \$11 million to be passed on to an oil company

The repayments and interest on these loans will considerably increase the cost base over the next few years. Future loan repayments at the Caspian ports were calculated by each port as follows:

**Table 5.12 Interest and loan repayments schedule for Caspian ports (us\$ million)**

	2002	2005	2010
Baku	1.4	1.4	1.4
Turkmenbashi	2.4	4.4	3.4
Aktau	3.8	3.8	3.8

Source: Based on information from the ports

#### (d) Maintenance

The maintenance expenditures shown in the accounts are too low to keep the ports assets in good working order.

#### Black Sea

The main costs items in Black Sea ports, as in the Caspian, are wages, maintenance and other. As far as known, none of the ports except for Poti have any heavy loan commitments. The Port of Poti recently obtained a loan from the EBRD.

**Table 5.13 Cost division in Black Sea port (%)**

% of total	Varna*	Constantia	Odessa	Illychevsk	Batumi	Poti
Wages	33	21.3	47.	26	27.3	21.2
Social Insurance	30	8.4	n.a.	8	8.7	6.1
Depreciation	12	23	n.a.	7	10.4	25.5
Repair		12.3	n.a.	16	3.8	5.8
Fuel		2.4	n.a.	9	5.8	7.5
Other	25	32.6	n.a.	34	44	33.9
Total	100	100	100	100	100	100

\* consultant estimation

#### (a) Wages

All the Black Sea port are over-staffed, and the problem is particularly acute at the Ukrainian and Georgian ports (see Appendix VIII for further discussion) but, as in the Caspian, the low salaries prevent the high staff levels raising tariffs above international levels. As shown, the salary levels range from only US \$1,000 pa to US\$ 4,000 pa.

**Table 5.14 Number of Employees and Cost of Salaries**

	no. of staff	Salaries (US\$ million)	Average salary (US\$ per annum)
Varna	1,719	3.2	1,876
Constantia	1,100	4.2	3,836
Odessa	6,278	25.6	4,077
Illychevsk	10,500	23.5	2,238
Batumi	1,400	1.8	1,287
Poti	2,754	2.8	1,013

**(b) Depreciation**

Depreciation charges in Black Sea ports are shown below.

**Table 5.15 Depreciation Charges shown in the Port accounts for 2001**

	Cost of depreciation (US\$ 000)
Varna	1,188*
Constantia	4,577
Odessa	2,750**
Illychevsk	4,735
Batumi	446
Poti	3,356

\* Estimated

\*\* Includes repairs

**(c) Loan repayments**

No information was provided on loans obtained by the Black Sea ports, with one exception. The port of Poti obtained a loan from the EBRD for the construction of an oil products terminal

**(d) Maintenance**

As in the Caspian Sea ports, the costs of maintenance shown in the current Black Sea ports' accounts are too low to keep the port's assets in good working order.

**5.5 Adjustment of Costs to Cover More Realistic Depreciation Maintenance and Loan Repayments**

The last section concluded that the current accounts tend to understate the costs of maintenance, depreciation and debt service. Table 5.16 (Appendix IV) therefore adjusts the costs shown in the 2001 accounts to include more realistic depreciation allowances, more realistic maintenance costs and repayments and interest on EBRD loans.

The calculations shown are illustrative only. They are in very approximate terms, based on international working rules. They assume that:

- annual maintenance costs average about 1.5% of approximate asset replacement costs; and
- depreciation allowances are based on average asset lives are around 25 years, for 50% of asset replacement values (see previous page).

Loan repayments and interest for the next few years are based on actual data supplied by the ports.

### 5.6 Reductions Necessary to Bring Tariffs into Line with Average/Total Costs

The overall reductions that would be necessary to bring tariffs in line with average or total costs are shown in Table 5.17, below.

It shows the percentage by which tariffs would have to fall to bring them in line with costs as shown in the 2001 accounts (without any surplus) and, more realistically, how far tariffs would have to fall to bring them in line with these same costs, but with an allowance to allow for more realistic depreciation allowances, more realistic maintenance costs and repayments and interest on EBRD loans.

As it can be seen, all ports could reduce their tariffs if they only had to cover the total costs shown in their 2001 accounts. But only Aktau would be in a position to reduce tariffs if the more realistic assumptions on depreciation, loan repayments and maintenance described in section 5.4 are taken into account.

*Table 5.17 (see Appendix IV for Table 5.16)*

#### Reductions Necessary to Bring Tariffs into Line with Average/Total Costs

	Based on Costs as Shown in In Accounts, 2001, without Profits	Based on 2001 Costs PLUS a. Future Loan Repayments b. More Realistic Depreciation Allowances c. More Realistic Maintenance - Plus 20% growth in cargo
		(a)
Turkmenbashi	-60%	-9%
Aktau	-51%	-58%
Baku	-21%	+42%
Varna	-37%	n.a
Constantia	-27%	n.a
Odessa	-49%	n.a
Illychevsk	-0%	n.a
Poti	-19%	n.a
Batumi	-65%	n.a

(a) All three of the above items are estimated in approximate terms.<sup>4</sup>

<sup>4</sup> It is emphasised that the costs shown in this summary are approximate as it is not the objective of this project to carry out a detailed cost-based tariff study for each of the TRACECA ports. The objective is to reach clear conclusions about the scope for discounting tariffs throughout the TRACECA region in broad terms.

### 5.8 Variable Costs of the Main Services

The key to the scope for discounting tariffs for TRACECA transit cargoes, however, is not total costs, but variable costs.

The tables below confirm that majority of the Caspian and Black Sea port costs are fixed, rather than variable. That is to say, they will remain the same whether more transit cargo is handled or not.

The main *fixed costs* are loan repayments, depreciation, social insurance and the majority of salaries; while the main *variable* costs are fuel, supplies, maintenance, materials, operating expenses.

#### *Caspian Sea ports*

Detailed analysis of the port of Aktau, undertaken by Scott Wilson in 1998, came to the conclusion that variable costs accounted for less than 15% of total costs.

Analysis of the 2001 accounts of the Caspian ports gave similar results. They showed that variable costs accounted for approximately 19-31% of total costs:

#### **Variable costs as a % of Total Costs, 2001**

Baku	19%
Turkmenbashi	31%
Aktau	22%

Details of these calculations are shown in Tables 5.21-23 in Appendix IV

Furthermore, variable costs account for only 11-15% of revenues:-

#### **Variable costs as a % of Total Revenues, 2001**

Baku	15%
Turkmenbashi	12%
Aktau	11%

#### *Black Sea Ports*

Analysis of the 2001 accounts of the Black Sea ports came to similar conclusions. Variable costs accounted for only 16-27% of total costs and 7-20% of total revenues (see Table 5.24)

**Table 5.24 Variable Costs as a Percentage of Total Costs and Revenues at Black Sea ports**

	Variable costs as % of total costs, 2001	Variable costs as % of total revenues 2001
Varna	16%	10%
Constantia	27%	20%
Odessa	n.a.	n.a.
Illychevsk	n.a.	n.a.
Batumi	20%	7%
Poti	20%	16%

For details of the above calculations reference is made to Tables 5.25. to 5.28. in Appendix IV.

## 6. Promotional Port pricing – The World View

It is common practice in ports throughout the world to lower their tariffs/prices to attract traffic.

A good example is the discounts offered by international container terminals to attract transshipment of containers with both origins and destinations in third countries. This type of transshipment traffic is very similar to TRACECA transit traffic, in that the shipping line has more than one option for the route, and this compels the prospective hub ports to compete on price and service standards. Typical examples at key container transshipment ports in Asia are given in Table 6.1. As shown, Singapore, Colombo and Port Kelang all offer much lower rates per lift for transshipment compared with national containers.

**Table 6.1 Comparison of tariffs for national and transshipment traffic at major transshipment ports, 2002 (us\$)**

	Imports/Exports		Transshipment (per move)	
	20'	40'	20'	40'
Colombo	148	228	36	72
Singapore	82	117	70	70
Port Kelang	61	61	27	41

NB: For comparison, Baku charge US\$36 per 20' container, Turkmenbashi US\$40 and Aktau US\$80.

Source: Major container shipping line, 2002

As an example: One of the most publicised recent reductions in port charges was at Singapore. After years as the top container port in the world (first equal with Hong

Kong) it lost its two main customers to a neighbouring port in 2001/2. Its response was to cut port dues by 10% and charges for empty containers by 50%.

The Baltic ports have also reduced tariffs in recent years as they have had to face strong competition between each other to win Russian transit traffic.

## 7. Surplus Capacity identified leading to Port Recommendations

### *Caspian Sea Ports*

The Caspian ports' traffic levels are all well below those for which they were designed and the volumes handled in the late 1980s.

Table 7.1 compares current with peak traffic levels.

**Table 7.1 Comparison of peak and current traffic levels at main Caspian ports**  
(Million tonnes, *excluding oil*)

	Peak Traffic, late 1980s	Current Traffic
Aktau	n.a.	1.3
Turkmenbashi	8 (1987)	2
Baku	7 (late 1980s)	2

There is therefore surplus capacity at most of the berths at the three main Caspian ports. Data from the respective ports suggests that they have (approximately) the following surplus capacity:

### Surplus Capacity, 2001

#### **Baku**

General cargo berths	90%
Ferry terminal (a)	70%
Oil berths	50%

#### **Turkmenbashi**

General cargo berths	60%
Bulk/aggregates	90%
Ferry terminal (a)	70%
Oil berths	n/a ..

#### **Aktau**

General cargo berths	30%
Ferry terminal (a)	>90%
Oil berths	40%

(a) The figures for the ferry terminals reflect the surplus capacity of the ferry fleet as well as the terminals.

### *Black Sea Ports*

Table 7.2 compares total cargo volumes handled compared to the total cargo handling capacities estimated by the respective Black Sea ports.

**Table 7.2 Surplus Capacity at Black Sea Ports**

	Current Traffic, 2001 (000 tonnes)	Maximum capacity (000 tonnes)	Surplus Capacity
Burgas	12,512	27,000	54 %
Varna	5,825	7,950*	27 %
Constantia	33,762	85,000	60 %
Odessa	28,550	38,000	25 %
Illychevsk	13,335	24,000	44 %
Batumi	8,395	15,000	44 %
Poti	3,441	6,500	47 %

\* Estimate: covering Varna East, West and Balchik port

This surplus capacity as described would allow the ports to handle much more traffic without incurring further investment costs. Furthermore, as staffing levels are high relative to existing requirements, only modest additional labour costs would be necessary to handle additional cargo. These factors should allow the ports to cut tariffs and still make a profit on any cargo attracted.

*The above review leads to the following recommendations for Port Tariffs*

There are two key points that should allow significant reductions in port tariffs for transit cargo:

- First, there is a large amount of surplus capacity in the ports. Traffic levels are now well below those for which the ports were built.
- Secondly, as ports costs are largely fixed and the marginal cost of handling additional transit cargo is low, there should be little to lose by large reductions in transit tariffs - at least temporarily, until traffic picks up and further investment and employment becomes necessary.

These circumstances should allow the ports to discount tariffs for transit and still make a profit on the traffic attracted. The tariff approach recommended would be expected to add to profits of the port concerned.

The focus of this project is on TRACECA transit traffic. It is not the objective of the project to propose reductions in tariffs for local imports and exports, although it is hoped that our work will clarify the cost basis for tariffs that could lead to cheaper transport charges in the region.

The Caspian ports' accounts show that the variable costs account for only about 19-31% of total costs. The fixed costs account for the remaining 69-81%. Similar patterns are seen in the Black Sea, where variable costs account for about 16-20% of total costs in the ports examined.

On the Caspian Sea the variable costs account for an even lower proportion - about 10-15% of total revenues and in Black Sea Ports between 7-20%.

The fixed cost share will increase for two reasons. Loan repayments to EBRD will rise to higher levels in the next decade and maintenance costs will have to be raised if the ports are to be kept in good working order.

Some aspects of the variable costs may also have to rise in the future. If Ports were to introduce incentives to attract transit traffic the salary cost would rise. Port salary bills already vary to some extent depending on the cargo handled. It may be possible to build on this and offer bonuses related to transit traffic handled (dry cargo only). The formula would have to be worked out for each port. If bonuses or other incentives were adopted this would increase variable costs, but not to a large extent. Even if salaries were doubled it would add only US Cents 25 per tonne at Baku, US Cents 40 per tonne at Turkmenistan and US Cents 50 per tonne at Aktau, at current cost and traffic levels.

In addition, price elasticity should be taken into account when setting tariffs. However, this may be difficult in practice.

There is a logical case for reducing tariffs for transit by about two thirds and still make modest profits on additional transit cargo but to generate more comfortable surpluses a discount of 50% may be preferable.

#### PRICE ELASTICITY

Price elasticity measures the responsiveness of demand to price. More specifically, it measures the ratio of the percentage change in cargo volume to the percentage change in price.

For example, if cargo volume increases by 80% in response to a price reduction of 40%, the price elasticity is 2.0. But if a reduction of 20% in price results in cargo increase of only 20%, price elasticity is only 1.0.

It will be clear that price elasticity must be greater than 1.0 for a price reduction to be worthwhile. In practice, price elasticity should be well above 1.0 for most TRACECA transit cargoes, as the transit cargo volumes are minimal at present at most ports.

The analysis of price elasticity is complicated in that to attract new traffic depends on the overall rate charged for the journey and other non-tariff aspects mentioned before.



***Incorporation of Port Tariffs into Through Tariffs***

Port tariffs reductions alone would be unlikely to attract transit traffic. They would help, but would not be critical, as they are not notably high at present. They would have to be part of a series of discounts through throughout the transport chain (covering rail, sea, port, shipping and road tariffs).

Table 7.3. shows an example, *to be completed*.....

**Table 7.3**

<b>Example of through transport cost, Kazakhstan-Mediterranean. (US\$/TEU)</b>	
Inland, Kazakhstan to Aktau (say, 1000 km)	
Lift from rail	
Aktau port	
Caspian Sea Freight Rate	
Baku Port	
Rail, 1000 km	<b>TO BE COMPLETED</b>
Lift from rail	
Poti Port	
Lift from rail	
Black Sea Freight Rate	
Varna port	
Rail to destination	
Local delivery	
<b>Total</b>	

This through tariff will be compared with the costs of: Road via Turkey/Iran, Rail via Russia, Road via Russia.

## 8. Non-Tariff barriers to TRACECA transit Trade

Tariffs are by no means the only barriers to the use of TRACECA routes. There are also major non-tariff barriers, and they need to be borne in mind if a programme of tariff concessions is to be successful. Forwarders and other representatives of the transport industry who were interviewed in their capacity as users of the ports and shipping services reported several non-tariff barriers. The following comments are a reflection of their views.

### *Customs and Border Difficulties*

Customs practices in the TRACECA countries include arbitrary and unpredictable interpretation of the regulations, unnecessary delays, slow and bureaucratic procedures, high import duties and unofficial payments. These are regarded as the most important non-tariff barrier to the development of TRACECA transit trade. The transport organisations interviewed stated that the Customs problems have made Baku a difficult place in which to do business. They have also prevented Azerbaijan emerging as the main trading centre for the region and feel that without this constraint it could have become the “Dubai Port” of the Caspian.

Major problems with Customs were also reported in Georgia and the Ukraine, and singled out as the main barrier by freight forwarders at Turkmenbashi Port. The freight forwarders were particularly concerned that the interpretations of the rules were constantly changed and they emphasised the need for greater transparency of all charges.

There are borders at which this has been achieved. For example, customs procedures at the Iran-Azerbaijan border, where the truck traffic is heavy, are reported to be reasonably fast. The transit trucks are issued with transit documents that are faxed to the exit border crossing and have to be followed up within two days. An E-mail system is being installed and there is little inspection except for anti-drug dogs. The main procedure is the adding of an extra seal to the truck as it crosses the border. Customs only clear cargo at the final destination.

### *Caspian Shipping Company (CSC)*

The Caspian Shipping Company is a semi-monopoly, handling the majority of dry cargo crossing the Caspian on TRACECA routes. It accounted for almost 90% of the ships calling at Baku in 2001. The volumes of non-CSC dry cargo at Baku are low. The operation of services by CSC was unfavourably commented on in the feasibility study for the upgrading of the ferry terminal in 1998 for unscheduled departure and arrival times due to CSC waiting until their vessels were full, and for some unofficial payments. Round trip voyage times could be completed faster (in two days) if ships sailed at design speeds and cargo handling in port was efficient but current turn round times average just over 4 days.

CSC freight rates are also rather high (see section Chapter 9 for details). In 2002, transport users continued to cite CSC as one of the main hurdles to the development of transit traffic. The main criticisms are that the services are expensive, and can be inflexible and unresponsive to customers' needs. This is a significant problem, as a

high proportion of potential TRACECA transit traffic would be likely to use CSC ferries.

### ***Poor Rail Services***

Rail services throughout TRACECA are perceived to be relatively inexpensive, but extremely inefficient. For example, in Turkmenistan key forwarders stated that they would not even consider rail because of its poor service. They used only road services, despite its high cost and this is a cause for concern. If the long-distance transport chain remains road-sea rather than rail-sea the economics of using TRACECA will be less competitive (see below).

### ***High Road Haulage Costs***

Road haulage charges in the region are high for several reasons. First is road trucking costs are inevitably well above rail costs, as in all countries. The operating costs are about US\$1 per km for 38 tonne GVW trucks, compared with rail rates of about a quarter of this level.

Secondly, road costs are subject to high transit fees (justified by the claim that heavy trucks cause most road damage – this is not strictly true but is commonly believed) and this can almost double the basic charge.

Thirdly, the number of free permits available to transit TRACECA are limited, so additional permits have to be purchased at high prices.

Fourthly, visas for drivers are often both expensive and take a long time to obtain.

Fifthly, extra payments are required for oversize or overweight trucks (particularly project cargo for the oil industry). An example from Turkmenistan reported a fee of \$4,000 for one load with additional payments to several different ministries for special surveys needed for each routing.

### ***Port Efficiency***

The quality of all services at the ports is generally considered to be poor but in comparison, tariffs are considered reasonable by most users except for the heavy lift crane in Turkmenbashi, which is extremely expensive.

### ***Other issues.***

- The Russians authorities are actively trying to divert cargoes to their own ports. The main example in the Caspian is the manipulation of rail tariffs to divert steel exports which were being shipping via Aktau in 2001 to Mahachkala and Astrakhan. The Ukraine ports are also suffering from Russian government intervention. Similar policies are being implemented in the Baltic.
- Inter-modal transfer costs at Baku can be high. For example, at Baku the cost of moving a 40' trailer between the railway and the port is reported to be US\$100.
- Documentation is much more complicated than in Europe.

- The Ukraine has extremely expensive, slow and complicated procedures for transit cargoes, aggravated by unofficial payments. Failure to pay can result in major problems, including delays, without explanation, which can be disastrous for perishable and valuable cargoes.
- In Georgia, there are also particularly obstructive practices, including:
  - The need for each container to be escorted by customs
  - Prohibition of night time driving for containers
  - Absence of harmonised documents, and excessive document control at random locations
  - Excessive processing of documents and permits
  - 'Road tax' for trucks in Azerbaijan of US\$200

Also, for containers arriving in Baku by rail from Georgia, it is compulsory to use Kishley terminal, where the Customs are said to be sufficiently difficult to deter shippers from using rail.

All these issues and more are being addressed by other TRACECA projects.

## 9. Shipping

The main shipping lines of particularly important for TRACECA are:

- Caspian Shipping Company (CSC), based in Baku, Caspian Sea
- TML, based in Turkmenbashi working on the Caspian Sea
- Ukrferries, based in the Ukraine working on the Black Sea in conjunction with Bulgarian operators.

### 9.1 Caspian Shipping Company (CSC)

#### 9.1.1. CSC Fleet

The key shipping line for the development of TRACECA transit traffic is Caspian Shipping Company (CSC). Almost all of the potential TRACECA transit traffic would necessarily have to cross the Caspian on the routes between Baku and Turkmenbashi or Aktau, and CSC has a semi-monopoly on this route. There are other small shipping lines in the Caspian but in practice they do not compete much with CSC. This is confirmed by the fact that Baku handles very little cargo at the general cargo berths where the non-CSC ships call. There are also large numbers of Russian ships operating in the Caspian. But few operate on TRACECA routes. Baku port statistics show that almost all of the ships calling in 2001 were Azeri, with only a few Russian and Iranian ships.

CSC is state owned. Its fleet consists mainly of vessels operating in the Caspian at the time of the break-up of the FSU. The fleet comprises 70 ships - 34 tankers, 26 dry cargo, 8 large "Dagestan" RoRo rail/passenger ferries and 2 non-rail RoRo vessels.

The majority of the fleet is reportedly now operating in the Caspian. Most of the ships are employed transporting oil from Turkmenbashi and Aktau to Iran, and, to a lesser extent, Azerbaijan. Most of the TRACECA oil movements are by 60 tonne rail tank wagons that dominate the ferry traffic. There are few passengers.

Some 20 dry cargo ships are operating in the Mediterranean, Black Sea and the Sea of Azov. The 2 RoRo (non-rail) ferries have also been operating outside the Caspian in the past; but at present one is said to be operating outside and one on the Caspian. Profitability outside the Caspian is reportedly lower than on the Caspian.

### **Traffic**

CSC handled 10 million tonnes of cargo in 2001. Of this about 80% was on TRACECA routes.

The majority of the cargo was oil, carried in tankers and ferries. The two main destinations were Iran and Azerbaijan, Baku (for onward movement to Georgia, Batumi)

The rail ferries serving Turkmenbashi and Aktau handled 1.8 million tonnes in 2001 of which 70% was oil. The remainder is dry cargo, according to Baku port statistics.

The inward and outward cargo volumes are fairly well balanced and almost all the ferry cargo was handled in rail wagons. Road truck traffic is minimal.

The ferry traffic fell from a peak of over 6.0 million tonnes in 1986 to only 0.6 million tonnes in 1993. Since then it has gradually revived, although much of the inbound cargo is oil.

Passenger numbers fell from over 300,000 in 1989 to 93,000 in 1993, and are now at very low levels. This was partly because of problems obtaining visas to visit Turkmenistan and partly due to a change in the law concerning trade in fruit and vegetables between Azerbaijan and Turkmenistan.

### **Total Revenues and Expenditures**

The CSC income for 2001 was US\$ 77 million.

Their shipping services account for a large part of total maritime transport costs in the Caspian, with CSC income more than twice that of the three ports of Aktau, Turkmenbashi and Baku combined. However, a large part of CSC's income is from petroleum and non-Caspian trades.

Their accounts show a healthy profit in 2001 (see Table 9.1).

**Table 9.1 CSC revenues and expenditures, 2001**

		(US\$ million)	
Revenues			77
- of which	Oil tankers	54	
	Ferries	12	
	Dry cargo	8	
	Others	4	
Costs			59
Surplus			18

CSC's revenues averaged US\$7.7 per tonne carried in 2001. But they include cargoes handled outside the Caspian. They also combine ferries, oil and other traffic.

Tankers are reported to be more profitable than the ferries.

### Tariffs

Shipping tariffs for the ferries and containers on conventional vessels are summarised below.

(Note: the figures given to the consultant from many sources were not consistent with each other so accuracy cannot be assured, but in all cases, they are above tariffs for similar services elsewhere in the world.)

Tariffs charged for containers to cross the Caspian Seas are well above international levels for a similar length journey.

For example, the rate for a 40' container (2 TEU) from Baku to Turkmenbashi, about 165 nautical miles, is reported (there are no published tariffs) to be about US\$450, plus the charge for the return of the container empty, which is normal. The addition of the charge for the empty return would double the charge to US\$900, without discounts. Discounts, however, are reported to be possible but even with a discount of 50% on the return trip; the cost would still amount to US\$675 per 40'. By comparison, international container feeder rates are much lower.

For example, feeder rates from the main hub European hub ports to the Baltic ports are lower and cover much longer distances. Tariffs for the 500n mile distance from Hamburg/Bremerhaven to Lithuania and the 700n mile distance to Estonia and Finland, are only about US\$500-550 per 40'.

There are relatively few comparable rail ferries elsewhere in the world so comparisons are difficult to find. One of the few services using the same type and size of ship is the rail ferry from Klaipeda, Lithuania to Scandinavian and German destinations, and it costs more than CSC. The tariff from Klaipeda, to Aarhus, Denmark (400 n miles) is US\$ 839 per 40' plus US\$ 427 for the empty return. This gives a total cost greater than

the Baku-Turkmenbashi route; but as the distance is over twice as long the rate per nautical mile is less.

The high freight rates charged by CSC are partly explained by the use of the Dagestan ferries for containers and rail wagons. They are too large for the cargo volumes they handle. Their capacity for containers is effectively only 56 TEU. In other countries these volumes would be handled in ships with less than one fifth of the size in terms of GRT. They would also have lower design speeds and block coefficients, and much lower fuel consumption than the Dagestan ferries.

This excessive capacity of the Dagestan ferries stems from their design as passenger ferries and now few passengers are carried. A freight-only vessel designed for a 165 n mile sea voyage for (say) 100TEU could be chartered at about \$2,000 per day and complete round voyages at total costs far lower than those of the Dagestan ferries.

As CSC revenues have to cover the costs of operating all the ferries (despite the sharp fall in traffic volumes) it seems likely that some economies could be obtained by laying up some of the ships.

**Table 9.2**

**FERRY FREIGHT RATES ON THE CASPIAN**

**1. CARGO ON RAIL WAGONS (15 metre)**

	\$ per lane-metre	\$ PER 15 m RAIL WAGON		Distance (km)	\$ per tonne-km (a)
		Single Journey	Including Return Empty		
Baku-Aktau	35	525	1150	468	0.025
Baku-Turk'shi	30	450	900	305	0.030

**2. RAIL WAGONS CARRYING CONTAINERS (2 per 18 metre wagon)**

	\$ per lane-metre	\$ PER 20' CONTAINER (2 per wagon)			\$ per tonne-km (b)
		Single Journey	Including Return Empty (c)	Distance (km)	
Baku-Aktau	35	262	525	468	0.093
Baku-Turkm'l	30	225	450	305	0.12

(a) Assuming a load of 50 tonnes

(b) Assuming load of 12 tonnes per 20' container

(c) Returning empty is normal

NB Tariffs reported by various transport users and operators varied to some extent. There are also reported to some discounts for empty returns on some routes.

**Table 9.3**  
**SHIPPING FREIGHT RATES FOR CONTAINERS ON MULTI-PURPOSE SHIPS (with empty return)**

	20' Trip (full empty back)	Round Distance out, (km)	\$ per Tonne Km
	US\$		(a)
Baku-Aktau	400	468	0.071
Baku-Turkmenbashi	400	305	0.109

Source: BCEOM/Uniconsult (July 2001)

(a) Assuming 12 tonnes per container.

Oil tariffs on the Caspian have been reported at US\$5 to US\$5.5 per tonne in 1998 and US\$6.5 to US\$8.0 per tonne in 2001. These rates are considered to be high by international standards. The main reason is relatively small capacity tankers used, because of the short distances, shallow drafts in the main ports and severe limits on drafts in the Volga-Don canal. However, the shipping tariffs on the Caspian appear higher than would be expected even for such small ships.

Tariffs for ship charter also seem slightly high by international standards. Charter rates in 2002 were reportedly around US\$2,500 per day for small (3,000 DWT) dry cargo ships and \$4,500 per day for 5,000 DWT tankers.

### Surplus Capacity

CSC has a large amount of surplus capacity on its ferries. Total volumes transported amounted to only 1.8 million tonnes, compared with 6 million tonnes in the mid 1980s. The theoretical maximum capacity of 8 ferries would be about 8 million tonnes including both directions, but the predominance of oil on the westbound routes would reduce this total due to empty returns.

CSC reportedly had a moderate amount of surplus capacity for tankers of about 10 to 20% in 2001.

### Costs of Operation

The operating costs for the ferries and oil tankers are estimated<sup>5</sup> in Tables 9.4 to 9.7. in Appendix V. They show:

- Total operating costs and daily operating costs for the Dagestan ferries (both old and new). (Table 9.4). A problem is the value to be taken for the capital cost of the

<sup>5</sup> CSC could not provide actual details of revenues and expenditures, but have indicated that the estimated totals shown here are of the right order of magnitude.



vessels as they were inherited from the FSU at "no cost". The historic price is also not very meaningful as the original prices were expressed in roubles at a time when the official rouble to US\$ exchange rate was artificial (Note: the ships were built in Yugoslavia in the 1980s). The cost at the time is reported to have been over US\$40 million, which is far more expensive than the equivalent vessel today.

- In 2002, US\$40 million would be sufficient to build a 4,000 TEU deep-sea container ship with a draft of 13 metres and a length of 280 metres. A feeder ship of (say) 200 TEU would cost less than US\$ 5 million
- In any case it is unlikely that similar ships would be built again as any new ships would be to a different design. The assumptions made are detailed in the footnotes to the table.
- Variable and fixed operating costs for the Dagestan ferries (Table 9.5). The costs that are more or less fixed are capital cost for the ships, which are "sunk costs", plus insurance, crew and administration. This leaves only fuel, supplies and the majority of maintenance and repair as variable costs
- Total operating costs for oil tankers of 5,000 DWT and 10,000 DWT (Table 9.6). The capital costs in this case are included at replacement costs. This reflects the reality that CSC and other lines in the Caspian intend to acquire new tankers.
- Variable and fixed operating costs for the oil tankers (Table 9.7) as with the ferries, the costs that are more or less fixed are capital cost for the ships, which are "sunk costs", plus insurance, crew and administration. This leaves only fuel, supplies and the majority of maintenance and repair as variable costs.

The main conclusions to be drawn from the costs shown in Tables 9.4 to 9.7 are as follows:

**(a) Ferries**

- Variable costs for the ferries are estimated at only 17-40% of total costs, depending on whether the ship is new or old.
- The daily operating cost of the Dagestan ferry are well above the daily charter costs of a small container vessel capable of carrying the same tonnage

	(Daily Ship Costs)	
	In Port	At Sea
<b>Dagestan ferry,</b>		
capacity, 28 rail wagons or 56 TEU (a)		
New Ship	\$6,576	\$8,496
Old Ship	\$2,662	\$4,822
<b>Container feeder, 100 TEU, Charter Cost</b>	\$2,000 (b)	\$2,750

(a) It is possible to load three TEU on an 18metre rail wagon, but it is rare in practice, in the Caspian or elsewhere.

(b) On world charter market (during "high" periods)

**(b) Tankers**

- Variable costs for the oil tankers are estimated at only 23-27% of total costs (excluding port dues), depending on whether the ship is new or old. However, this is of limited significance as the oil tankers are reported to be reasonably well employed, so that there is little surplus capacity to exploit.

**9.1.7 Comparison of Revenues and Costs**

**(a) Ferries**

The revenues and costs of the ferries in 2001 are estimated in illustrative terms in Table 9.8. The figures cover freight operations only (passenger numbers are now small).

It will be seen that the surplus over costs appears to be very low on the basis of old ships (with low capital costs), and would be negative with new ships (which have high capital costs).

**Table 9.8 (see Appendix V for Table 9.4 to 9.7)  
Estimates of revenues and costs of ferries, freight operations only in 2001**

(US\$ million)

	With New Ship	With Old Ship (15 years)
<b>REVENUES (a)</b>	<b>11.8</b>	<b>11.8</b>
<b>COSTS OF FERRY FLEET</b>		
8 vessels at \$1.1-\$2.4 million p.a. (see Table 10.5)	18.9	8.8
Port Dues (b)	2.6	2.6
<b>Total Costs</b>	<b>21.5</b>	<b>11.4</b>
<b>SURPLUS/ DEFICIT</b>	<b>-9.7</b>	<b>0.4</b>

**ASSUMPTIONS**

**(a) The estimated revenues are based on:**

- Traffic, 2001:	1.2	million tonnes, excluding tare of wagons
- Wagon load assumed, average	55	Tonnes
- Wagon length, average	13.5	Metres
- Average tariff assumed	<b>\$40</b>	per linear metre, including empty returns

**(b) Port costs:** mainly \$800 per call at Baku and \$2800 per call at Turkmenbashi, for 709 round voyages in 2001 (source: Port of Baku statistics).

**(b) Tankers**

The costs of transporting oil across the Caspian between Kazakhstan and Azerbaijan are estimated in table 9.9 at about US\$3 per tonne. This is well below the reported tariffs (see section 9.1.4). However, the tankers reportedly have to pay high port tariffs for ports other than Baku, and also have to cover other costs, including some dredging to accommodate their deeper draft.

**Table 9.9**
**Cost of oil transport between Aktau and Baku (US\$)**

Ship Capacity, DWT	5,000	10,000
<b>Aktau-Baku</b>		
Distance, nautical miles	250	250
Ship speed, knots	11	13
<b>Cost of Ship Time (\$/day)</b>		
In Port (a)	3,242	6,041
At Sea (b)	4,538	8,784
<b>ROUND VOYAGE TIME</b>		
Days at sea, including return	1.89	1.60
Idle time	0.11	0.40
Days in port (one for loading, one for unloading)	2	2
<b>Total Round Voyage, Days</b>	<b>4</b>	<b>4</b>
<b>COSTS OF ROUND VOYAGE</b>		
Ship time at sea	8,595	14,077
Ship time in port	6,829	14,482
<b>Total Round Voyage Cost</b>	<b>15,424</b>	<b>28,559</b>
Tonnes transported	5,000	10,000
<b>Cost, \$ per tonne</b>	<b>3.1</b>	<b>2.9</b>

(a) See Table 9.6

(b) See Table 9.6

**9.1.8 Views of the Transport Industry**

The operation of the Caspian Shipping Company was unfavourably commented on by several of their customers for poor overall service but they have little choice as it has more or less a monopoly of the dry cargo crossing the Caspian, accounting for almost 90% of the ships calling at the key port of Baku in 2001. The volume of non-CSC dry cargo at Baku is very low.

Their operations were also criticised in the Ramboll/EBRD feasibility study for the rehabilitation of the ferry terminals in 1997. The main criticisms were “arbitrary scheduling of the departure times combined with reported extensive unofficial pricing and additional fares to reduce the waiting time for users of the ferry service. The total unofficial fares are reported to amount to more than 100% of the official fare, and the average waiting time for trucks was five days”. Opinions on the extent to which this has changed over the last five years varied, but interviewees still regarded CSC as one of

the main hurdles to the development of transit traffic. The main criticisms are that, as a monopoly, it is inflexible, un-commercial and expensive.

This is a significant problem, as their services would be the obvious first choice for a large part of potential TRACECA transit traffic.

### Scope for Preferential Tariffs for TRACECA Transit Traffic

It is concluded that

- There is a large amount of *surplus capacity* on the ferries across the Caspian. Fifteen years ago the same fleet of ferries was carrying more than three times as much cargo - about 6 million tonnes.
- The *variable costs*<sup>6</sup> of handling additional cargoes are well below total costs. Even if the new cargo required additional sailings, the extra cost, including port dues, is estimated to amount to only about 16% of the cost of a service using a new ship (which would have high fixed capital costs) - and about 36% of the cost with a second hand ship (which would have lower fixed capital costs).

There are, however, arguments both for and against tariff discounts for the ferries. They are summarised as follows.

The main argument *against* lower tariffs is that the Caspian ferries are to some extent in a similar position to the port of Baku. That is to say, a large part of the ferry cargo is TRACECA cargo. Consequently, to avoid a fall in profitability, it would be necessary to be confident that price elasticity of demand is greater than one to justify tariff discounts. But, as mentioned earlier, the elasticity is complicated by being dependent on rail and port tariffs as well as sea tariffs, and being affected by non-tariff barriers especially customs problems.

There are, however, strong arguments *in favour* of sea freight rate discounts for transit cargoes – in addition to the low variable costs and surplus capacity described on the last page. They are summarised as follows,

- Transport users have identified ferry tariffs as one of the main deterrents to the use of TRACECA routes.
- The sea freight rates across the Caspian are above international levels, especially for containers.
- Although most of the ferry cargoes are TRACECA cargoes, oil accounts for the majority; and oil could well be excluded from TRACECA discounts.
- The ferry tariffs account for a much higher percentage of total transport cost on TRACECA routes than the port tariffs. Discounts of ferry traffic are therefore more important than discounts of port tariffs.

It is concluded that tariff discounts for dry cargoes, possibly excluding some existing cargoes, would be likely to increase TRACECA transit cargo volumes. They might, however, be restricted to "new" transit cargoes, as distinct from the main existing transit cargoes.

### Conclusions and Recommendations on Caspian Sea Shipping

There is scope for preferential tariffs for TRACECA transit traffic.

It has been concluded that:

- There is a large amount of surplus capacity on the ferries across the Caspian.
- The variable cost<sup>8</sup> of gangling additional cargoes are well below total costs

While the main arguments both for and against tariff discounts for the ferries.

The main argument *against* lower tariffs is that a large part of the ferry cargo is already TRACECA cargo, and to avoid a fall in profitability, it would be necessary to be confident that price elasticity of demand is greater than 1.0 to justify tariff discounts.

While the main arguments *in favour* of freight rate discounts.

- Transport users have identified ferry tariffs as one of the main deterrents to the use of TRACECA routes.
- The freight rates across the Caspian are above international levels.
- Although most of the ferry cargoes are TRACECA cargoes, oil accounts for the majority; and oil could well be excluded from TRACECA discounts.
- The ferry tariffs account for a much higher percentage of total transport cost on TRACECA routes than the port tariffs. Discounts of ferry traffic are therefore more important than discounts of port tariffs.

It is felt that tariff discounts for dry cargoes, possibly excluding some existing cargoes, would be likely to increase TRACECA transit cargo volumes. They might, however, be restricted to "new" transit cargoes, as distinct from the main existing transit cargoes.

#### 9.2 TML (Turkmenistan)

TML is the state-owned shipping line of Turkmenistan. It is currently part of the same organisation that owns and operates the port of Turkmenbashi. But the port, shipping and regulatory functions are said to be separating under different organisations.

<sup>8</sup> *Variable costs* consist mainly of fuel, most of the maintenance/repair, and part of the administration costs. These costs will be incurred for significant additional tonnages of cargo. The *fixed costs* of the shipping services consist mainly of depreciation, wages and insurance.

The line owns four small dry cargo vessels, each with capacities of 2,500-3,000 DWT, built around 1992. They are usually chartered out for single voyages. There are no liner services. TML uses agencies to find some of their cargoes, but find other cargoes themselves.

All the TML ships trade inside the Caspian. In the mid 1990s they operated outside, with regular voyages to the Mediterranean (some handling cotton). But the increasing costs and other problems involved in using the Volga Don Canal have resulted in their withdrawal from Black Sea/Mediterranean trades. This has been a favourable development for them, as cargo is plentiful in the Caspian and fuel costs are lower than outside.

### *Traffic*

TML handled 171,000 tonnes of cargo in 2001. This is far below the traffic handled by CSC, which totalled about 10 million tonnes in 2001.

Furthermore, TML does not trade on TRACECA routes. Its main routes are to Iran and the Russian ports of Mahachkala and Astrakhan.

### *Revenues and Expenditures in 2001*

The TML revenue and expenditure in 2001 was relatively low, at US\$1.5 million but it is understood that they are making a profit at present

**Table 9.11 TML revenues and expenditures on shipping, 2001**

	(US\$ 000)
<b>REVENUES</b>	<b>1,459</b>
<b>COSTS</b>	
Wages (a)	310
Social	63
Depreciation	13
Repairs	63
Fuel	101
Others(b)	512
Total	<b>1,061</b>
Surplus	<b>398</b>

(a) The shipping operations employ 225 staff that are also involved in tug operations at the port.

(b) "Others" is reported to consist mainly of port dues.

### *Tariffs*

The freight rates charged by TML are low. They amount to only US\$1,100 per ship per day on the assumptions of 330 working days per year for the 4 ships. This is well below the normal charter rate for ships of this size, which should be close to US\$2,000 per day in favourable markets (this would give a return of about 12%). However,

TML are allowed to operate ships that are only ten years old with no obligation to cover capital costs (as the ships were inherited from the Soviet Union at no cost) and they have not been properly revalued.

As shown in Table 9.11, the depreciation allowance included in the accounts was only US\$13,000 in 2001. Realistically, it should be around US\$600,000 to US\$700,000, on the basis of 4 vessels costing about \$4 million each and working lives of 25 years. Furthermore, a 12% return on capital for the ships would require revues of almost US\$2 million in excess of operating expenses, while actual revues were only US\$410,000 in excess of operating expenses.

Their main routes and voyage charter rates at present are:

#### Charter Rate per Round Voyage

Turkmenbashi- Iran	US\$16,000 plus Iranian port dues
Turkmenbashi- Mahachkala	US\$15,000 plus port dues
Turkmenbashi-Astrakhan	US\$18,000 plus port dues

TML rarely calls at Baku, where almost all the transit cargo is carried on CSC ferries and tankers. TML does not compete with CSC to any significant extent (ships calling at Baku are almost all Azeri flag, plus a few Russian ships).

TML's main cargoes include polypropylene raw material granules from production in Turkmenbashi, chemicals, coke, salt and project cargo.

### 9.3 Ukrferries

Ukrferries (Ukraine) was founded in 1995 and currently runs ferry services linking Ukraine and Bulgaria with Georgia with 300 staff. The service deploys four large rail ferries, built during soviet times of which 2 are owned by Ukraine and 2 by Bulgaria. They were built in 1978, and have capacities of 108 rail wagons or 900 Euro size cars. Their capacity is about four times as great as Caspian rail ferries.

#### Traffic

The ferry services carried about 800,000 tonnes in 2001 and the company reports that their ships are full but with little TRACECA transit traffic. Almost all the cargo consists of trade with Georgia and Armenia. Only about 10% is reported to be transit. The main reason for the low volumes are border and Customs problems.

#### Port Charges

These ferries are exempted from the main port dues, (ships, channel, lighthouse and berth dues) at Illychevsk, Varna, Batumi and Poti. This concession is based on inter-governmental agreements.

The only payments are for ship traffic control and port inspection. For Ukrainian ships this amounts to US\$485 per ship call, but they pay about US\$40 per full wagon (based on a tariff of US\$0.60 per tonne). Ukrferries, receive a retrospective discount of 39%.

In Poti the current charge is US\$60 per full wagon and at Batumi the charge is US\$125 per wagon.

***Sea Freight Rates***

Rail wagons pay US\$840 for the Bulgaria-Georgia and Ukraine-Georgia routes. Tariffs for containers (on rail) are almost the same, at US\$800 for a 40' and US\$400 for a 20' container, of which two can be carried on a 15 metre wagon (empties being charged at half these tariffs)

***Profitability.***

Ukrferries reports breaking even in 2001.

Their accounts show that their largest cost is fuel, accounting for 34% of total costs followed by port dues and agency fees (16%) and wages and salaries 14%. These accounts do not include capital costs apart from depreciation (8%).