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SUPPORT TO THE PREPARATION OF A TRANSPORT SECTOR STRATEGY FOR THE REPUBLIC OF MOLDOVA

Main Report I

Present Situation Analysis Of The Transport Sector in Moldova

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TABLE OF CONTENTS

FOREWORD

1. INTRODUCTION 7
1.1 CONTRIBUTION OF THE TRANSPORT SECTOR TO THE DEVELOPMENT OF MOLDOVA 7
1.2 STRATEGY FOR ECONOMIC GROWTH AND POVERTY REDUCTION (EGPRS / SCERS) 8
1.3 RECOMMENDED RELATED STRATEGIC PRIORITIES FOR THE TRANSPORT AND INFRASTRUCTURE SECTOR 9
1.3.1 Contribution of the transport sector to social cohesion. 14
1.3.2 Contribution of the transport sector to economic development 15
1.3.3 The Contribution of the transport sector to the strategic integration of the Moldovan territory 16
1.3.3.1 Trans European Networks 18
1.3.3.2 Pan European Corridors 18
1.3.3.3 Euro-Asian transport routes. 22
1.3.3.4 UNECE TEM-TER master plan. 22
1.3.3.5 Conclusions 28
2. ROAD TRANSPORT 30
2.1 INFRASTRUCTURE 30
2.1.1 Physical description 31
2.1.1.1 Road network 31
2.1.1.2 Pavement 31
2.1.1.3 Cross section 32
2.1.1.4 Road network condition 32
2.1.1.5 Results of the visual survey of the network 33
2.1.2 Financial approach to the issues 36
2.1.2.1 Appraisal of infrastructure recovery costs 36
2.1.2.2 The road maintenance issue 39
2.1.3 Road Administration and state road industry 40
2.1.4 Diagnosis on road infrastructure 42
2.2 ROAD OPERATIONS 44
2.2.1 Vehicle fleet 44
2.2.2 Road traffic 45
2.3 ROAD USERS 48
2.3.1 Passenger transport operations 48
2.3.1.1 Road public transport 48
2.3.1.2 Individual users 52
2.3.1.3 Diagnosis on road passenger transport 52
2.3.2 Road Freight transport operations 53
2.3.2.1 Characteristics of road freight transport 53
2.3.2.2 Vehicle fleet for freight transport 56
2.3.2.3 Companies operating under the TIR convention 57
2.3.2.4 Border crossing issues 59
2.3.2.5 Logistics 60
2.3.2.6 Diagnosis on road freight transport 61
2.4 ENVIRONMENTAL ISSUES 61
2.4.1 Assessment of capacities 62
2.4.2 Assessment of adequacy of National EA requirements 63

2.5 TRENDS FOR THE DEVELOPMENT OF ROAD INFRASTRUCTURE 63
2.5.1 Works of rehabilitation undertaken by the Government with the support of IFIs. 63
2.5.2 Budgetary trend for 2007 65
2.5.3 Strategic planning for the global recovery of the network 65
2.6 TRENDS FOR THE DEVELOPMENT OF ROAD OPERATIONS. 66
2.6.1 Diagnosis 66
2.7 SWOT ANALYSIS OF THE ROAD TRANSPORT SECTOR 70
3. RAIL TRANSPORT 71
3.1 INFRASTRUCTURE 72
3.1.1 Description 73
3.1.1.1 Railway network 73
3.1.1.2 Technical parameters 74
3.1.2 Diagnosis 74
3.2 ROLLING STOCK 75
3.2.1 Description 75
3.2.2 Diagnosis 75
3.3 PRODUCTION 76
3.3.1 Description 76
3.3.2 Diagnosis 76
3.4 STAFF 77
3.4.1 Description 77
3.4.1.1 Staff level 77
3.4.1.2 Productivity 77
3.4.2 Diagnosis 78
3.5 RAIL FREIGHT TRANSPORT 78
3.5.1 Description 78
3.5.1.1 Traffic volume 78
3.5.1.2 Traffic evolution 79
3.5.1.3 Modal share 79
3.5.2 Diagnosis 79
3.6 RAIL PASSENGER TRANSPORT 80
3.6.1 Description 80
3.6.1.1 Traffic volume 80
3.6.1.2 Traffic evolution 81
3.6.1.3 Modal share 81
3.6.2 Diagnosis 81
3.7 FINANCIAL 82
3.7.1 Description 82
3.7.1.1 Freight revenues 82
3.7.1.2 Passenger revenues 82
3.7.1.3 Costs 83
3.7.1.4 Profitability 84
3.7.2 Diagnosis 84
3.8 INSTITUTIONAL 85
3.8.1 Description 85
3.8.2 Diagnosis 85
3.9 STRUCTURAL 85
3.9.1 Description 85
3.9.2 Diagnosis 87

3.10 TRANSPORT SAFETY AND SECURITY 87
3.10.1 Description 87
3.10.2 Diagnosis 87
3.11 ENVIRONMENTAL PROTECTION 87
3.11.1 Description 87
3.11.2 Diagnosis 87
3.12 OPERATOR 88
3.12.1 Description 88
3.12.2 Diagnosis 89
3.13 CONCLUDING DIAGNOSIS OF THE RAILWAY INFRASTRUCTURE AND THE CURRENT SITUATION 90
3.14 TRENDS FOR THE IMPROVEMENT OF THE RAILWAY INFRASTRUCTURE AND DEVELOPMENT OF RAIL TRANSPORT SERVICES 90
3.14.1 General objectives and on-going policy 90
3.14.2 Trends for the development of railway infrastructure 91
3.14.3 Trends in the development of railways transport services. 94
3.14.3.1 Strategy for the development of passenger services 94
3.14.3.2 Strategy for the development of freight transport services 95
3.14.3.3 Improvement of rolling stock 96
3.14.4 Trends in the development of railway restructuring 99
3.15 ANALYSIS OF THE STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS 101
4. URBAN TRANSPORT 102
4.1 INFRASTRUCTURES 102
4.1.1 Description 102
4.1.2 Diagnosis 103
4.2 PUBLIC AUTHORITIES 103
4.2.1 Description 103
4.2.2 Diagnosis 104
4.3 OPERATORS 104
4.3.1 Description 104
4.3.2 Diagnosis 106
4.4 FINANCIAL SITUATION 106
4.4.1 Description 106
4.4.2 Diagnosis 107
4.5 TRENDS FOR IMPROVEMENT 108
4.6 SWOT ANALYSIS OF THE URBAN PUBLIC TRANSPORT 110
4.7 URBAN TRANSPORT STRATEGY 111
5. TRANSVERSAL ISSUES 112
5.1 TRAFFIC FORECAST 112
5.1.1 Transport evolution in Moldova 112
5.1.2 The need of a benchmark 114
5.1.3 Forecasts for Moldova 114
Macro-economic forecast 114
Transport demand forecast 115
5.2 LEGAL ISSUES RELATED TO TRANSPORT 116
5.2.1 Public procurement framework 116
5.2.2 Public private partnerships 118
5.2.2.1 Origins 118
5.2.2.2 Early problems 119

5.2.2.3 Theoretical Modalities 119
5.2.2.4 Suggestions for Moldovan Theoretical Modalities 122
5.2.3 Environmental legal framework 123
6. SWOT ANALYSIS OF THE MOLDOVAN TRANSPORT SYSTEM 125

ANNEX 1. ANALYTICAL AND GRAPHICAL INFORMATION. RAIL TRANSPORT
ANNEX 2. MAJOR STRATEGIC PROJECTS ACCORDING TO THE MUNICIPALITY COUNCIL OF CHISINAU
ANNEX 3. SOCIO-ECONOMIC FRAMEWORK
ANNEX 4. TRANSPORT EVOLUTION BENCHMARK

FOREWORD

This report presents an overview of the land transport system in Moldova. It focuses on road, rail and public transport, with special emphasis on the condition of the infrastructure and recommendations for desirable infrastructure recovery actions.

The following analyses were delivered in accordance with the terms of reference of the World Bank Project "Support to the Preparation of a Transport Sector Strategy". The intention of the project is to support the Government of Moldova in establishing a renewed transport strategy and to provide guidelines to the Bank for focusing its support to the transport sector on critical projects.

Facts and recommendations introduced in the following text should be used as a basis for the development of a transport strategy fully endorsed by the Moldovan Government. However, the recommendations contained in the present working paper do not reflect any positions adopted by the Government of the Republic of Moldova nor of the World Bank.

The main elements contained in the report were collected from existing publications updated with the latest information available, mostly provided by the Moldovan administration, the National Institute of Statistics and specialised international bodies (IRU, UIC…). However, for road condition analyses and diagnosis, the Consultant provided a more detailed analysis based on data collected in the field. This included a visual survey of the entire Moldovan main road network and some selected secondary roads, covering an itinerary of more than 4.500 kilometres.

Beyond the overview of the three selected areas (road, rail and urban transport), both in terms of transport activity analysis and infrastructure condition analysis, the report also describes on-going or planned public policies in each sector **(projects** in the pipeline), private investment trends, the purpose of which is to deliver a dynamic vision of each sector and of the Moldovan land transport system as a whole.

1. INTRODUCTION

The Republic of Moldova is an inland country in Eastern Europe. It borders on Romania at its West and on Ukraine at its East. It was a part of the Soviet Union until 1991. The largest part of the country lies between two rivers, the Nistru and the Prut. Moldova's rich soil and temperate continental climate have made the country one of the most productive agricultural regions and a major supplier of agricultural products in the region. The western border of Moldova is formed by the Prut river, which joins the Danube before flowing into the Black Sea. In the north-east, the Dniester is the main river, flowing through the country from north to south. The country is landlocked, even though it is very close to the Black Sea. While the northern part of the country is hilly, elevations never exceed 430 metres (1,411 ft)—the highest point being the Dealul Bălăneşti. Moldova has a temperate continental climate, with warm summers, but mild winters. The country's main cities are the capital Chişinău, in the centre of the country, Tiraspol (in Transnistria), Bălți and Bender.

Total population is 3.4 million; more than 700,000 lives in the capital city of Chisinau.

Along with Albania, the Republic of Moldova is one of the poorest nations in Europe. Agriculture used to be the driving force for the economy of the country, though it gradually lost weight due to a rapid industrialisation process. More than half the working population is involved in agricultural work.

The Moldovan economy suffered a serious recession after becoming independent from the Soviet Union, which has been worsened still more by the conflict with Transnitria.

Although the economy experienced a constant economic growth after 2000, one can observe that these latest developments hardly reach the level of 1994, with almost 40% of the GDP registered in 1990. Thus, during the last decade little has been done to reduce the country's vulnerability. After a severe economic decline, social and economic challenges, energy uprooted dependencies; Moldova continues to occupy one of the last places among the European countries according to the income per capita. In 2004, about 40% of population were under the absolute poverty line and registered an income lower than US $ 2.15 per day.

1.1 CONTRIBUTION OF THE TRANSPORT SECTOR TO THE DEVELOPMENT OF MOLDOVA

The first step in analysing a transport system is to characterise which aims are set for the transport sector in order to contribute to the development of the country and the well-being of its population. Any transport strategy should be in compliance with the main political, economic and social goals of Moldovan policy. It should provide a realistic basis for the implementation of projects in accordance with the global macro-economic and socio-economic orientations of the country.

The first step in the analysis should describe and analyse such a framework, which is the basis of the reasoning for the determination of project priority and the related allocation of resources.

In terms of global strategic orientation, strategic papers and programs had already been discussed and adopted by the Moldovan Government in order to develop a vision of the country's future and of the progressive stages to be reached in the main economic sectors. Transport and Infrastructure development policies were introduced as a part of the general policy aimed at the development of the country's economy and, furthermore, as a condition for public welfare and the development of regional integration (see table 1).

The main strategies envisaged and included in the Government General Program, 'Modernisation of the Country and Population Welfare', closely implementing the general strategic framework of the 'Strategy for Economic Growth and Poverty Reduction' (SCRES[1]) considered by the Government of Moldova as the 'supreme strategic framework' for the sustainable development of the country.

In terms of foreign relations, the Consultant incorporated the provisions contained in the EU / Moldovan action plan to this global framework, which develops a guideline integrating Moldovan socio-economic policies and regulations into the EU environment, and more specifically, the terms for the integration of infrastructure networks, regional co-operation, trade relations and good business practice. It also establishes a shared global vision of the future in terms of public action transparency, fundamental rights and social protection.

All official documents provided by the Moldovan administration at this level of economic planning are consistent and in accordance, with each other.

1.2 STRATEGY FOR ECONOMIC GROWTH AND POVERTY REDUCTION (EGPRS / SCERS)

The Economic Growth and Poverty Reduction Strategy (EGPRS / SCERS) consist of a global policy framework for the sustainable development of the Republic of Moldova in the medium term (2004-2006, extended to 2007)

According to its analysis, the need for a strategic approach to economic growth and poverty reduction was determined by the recent experience of the country itself. During the first ten years of independence (1991-2000), the GDP dropped to a third, the real income of the population contracted by 72% and the average pension in terms of purchasing power felled by 75%. During the period 2001-2003, a significant improvement in economic and social indicators was registered, but in 2002, over 40% of the population was still living below the absolute poverty line.

This situation occurred mainly due to: (a) the lack of a coherent, long term and comprehensive vision among the political class during the 1990s regarding the future of the country and of its economy; (b) the ineffectiveness of the economic and social policies adopted, and especially of the tools used for their implementation; (c) the rapid pace of economic reforms compared with the rate of institutional change and changes in social protection mechanisms; (d) the divergence

[1] Strategia de Creştere Economică şi Reducere a Sărăciei, 2004

between the economic priorities of the governing bodies of the ’90s and the social priorities of the majority of the population.

The need for this Strategy was also imposed by the need to consolidate the society around a set of transparent objectives shared by the society as a whole, as well as by groups with a direct interest in accomplishing these objectives – the poor, the business community and the public administration.

EGPRS was elaborated via a participatory process, drawing on the commitment of all Stakeholders to reach EGPRSP objectives, both at a national and local level and involving the public administration, international bodies and the private and social sectors.

The long term objectives of SCERS were introduced as follows:

- Sustainable socially-oriented development;
- The reintegration of the country;
- European integration.

The medium term objectives of SCERS were introduced as follows:

- Sustainable and inclusive economic growth;
- Poverty and inequality reduction, and increased participation of the poor in economic development
- Human resources development.

Due to the constraints imposed by the scarcity of public financial resources, some priority policies were identified where limited resources can be used most efficiently for growth and poverty reduction. Infrastructure and transport development are included in the set of those priority measures.

1.3 RECOMMENDED STRATEGIC PRIORITIES FOR THE TRANSPORT AND INFRASTRUCTURE SECTOR

The importance given to transport development in this framework is understandable. Through the development of the transport system, more general goals for economic development could be targeted.

- a reliable transport system could contribute to economic development and competitiveness, especially regarding foreign trade which is of strategic importance in a country with limited internal resources and limited territory;

- a satisfactory density of transport networks (secondary roads, public transport services) could contribute to the integration of rural areas and small towns with the overall national economic growth, thus enhancing the attractiveness of the whole Moldovan territory;

- a policy for infrastructure development and public works at once creates business and employment for the construction industry while contributing to the appearance of entrepreneurs in the sector;

- the development of transport services provides activity for both public and private transport companies, similarly contributing to the development of entrepreneurial opportunities in the sector.

According to EGPRSP / SCERS general objectives, the following priorities were set for the transport sector:

- To improve access to economic and social services
- To raise the efficiency and quality of transportation services
- To improve security and safety in transport activities and ensure environment protection
- To facilitate international trade and economic activities

These priorities focus on the contribution of the transport sector towards:

- ***social cohesion***,
- ***economic development***
- ***strategic integration*** of the Moldovan territory within a consistent framework of relationships with neighbouring countries,

It is also desirable that these objectives should be promoted with regard to constant criteria aiming at producing ***limited externalities, meaning that safety and environmental criteria need to be addressed.***

In 2004, SCERS programmed several priority actions, and some of them are in the process of implementation, as presented in the table below.

Sector /Policy Area	**Objectives**	**Priority Actions** (Figures indicate ranking)	**Lead agency**	**Indication of Additional Budget Funding**	**Timing**
Roads and Transport	To improve access to services through road and railway rehabilitation To raise the efficiency and quality of transportation services through development and modernization of infrastructure To improve transport security and safety and ensure environmental protection To facilitate	**Roads** 1. Design and implementation of roads rehabilitation program envisaging growth of the light, periodic maintenance 2. Study for the creation of a sustainable and transparent roads financing system 3. Design and implementation of regional roads projects 4. Implementation of modern systems of roads condition evaluation and maintenance and repairs prioritization 5. Implementation of the Chisinau - Giurgiulesti road rehabilitation project 6. Negotiations with international financial organizations on the rehabilitation of national European roads **Rail** 1. Rehabilitation of the railroad network to the projected level of safety parameters for trains circulation; 2. implementation of the conditions of the Memorandum Agreement between the Council of Creditors and CFM; 3. Implementation of the existing CFM Restructuring Plan, by separating the management of rail infrastructure from the management of transport services; 4. Divestment of the socio-cultural and communal possessions and ancillary enterprises from the CFM structure; 5. Renovation of the passenger rail carriages and diesel trains fleet.	Ministry of Transport CFM	Minimum Minimum Maximum Minimum Maximum Maximum Maximum Minimum Medium Nil Maximum	2004-5 2004-5 2005-6 2005-6 2005-6 2004-6 2004-6 2005-6 2004-5 2005-6 2004-6

Sector /Policy Area	Objectives	Priority Actions (Figures indicate ranking)	Lead agency	Indication of Additional Budget Funding	Timing
	international trade				

However, this set of measures in 2007 seems rather limited, hence the Moldovan Government requires a more global and developed medium term strategy.

Table 1 : strategic goals to be achieved by Moldovan transport activities and transport infrastructure policy according to general strategic plans endorsed by the Moldovan Government.

A distinction between general goals and specific goals is made by the Consultant, observing a logical point of view and which does not appear in the further mentioned texts.

Origin	Overall goals of the considered policy	General goals for transport policy	Specific Goal 1	Specific Goal 2
Strategy for economic growth and poverty reduction	Long term i) Sustainable socially-oriented development; ii) The reintegration of the country; iii) European integration. Medium term i) Sustainable and inclusive economic growth; ii) Poverty and inequality reduction, and increased participation of the poor in economic development; iii) The development of Human Resources.	To improve access to economic and social services To raise the efficiency and quality of transportation services To improve security and safety in transport activities and ensure environment protection To facilitate international trade and economic activities	The rehabilitation of roads and railways The development and modernisation of transport infrastructure Integrating arterial roads and railways into the European system and into international transport corridor systems	To extend the national and local road network To capitalize on opportunities offered by membership of the Stability Pact for south-eastern Europe and cross-border co-operation within euro-regions
EU/MOLDOVA Action Plan	To develop an increasingly close relationship between Moldova & EU, going beyond co-operation, to involve a significant measure of economic integration and a deepening of political co-operation.	To elaborate and start implementing a national transport strategy, including transport infrastructure development To initiate the development a national sustainable transport policy To develop an infrastructure policy Long-term and transparent system of road financing To address issues of infrastructure financing Active participation in the development of the Pan-European Corridors Active participation in TRACECA programme.	Legislative and regulatory frameworks with European and international standards Identifying capacity constraints, lack of inter-modal equipment and missing link infrastructure Continued maintenance of the existing public road network. Public/Private Partnerships, tolls, shadow-tolling, user charges	To identify the priority infrastructure projects in various sectors.

Origin	Overall goals of the considered policy	General goals for transport policy	Specific Goal 1	Specific Goal 2
Action programme of the Government of Moldova 2005-2009 'Modernisation of the Country and Popular Welfare'	Principles of action of the government : i) Sustainable socially-oriented development; ii) The reintegration of the country; iii) European integration.	Elaborate and start implementing a national transport strategy, including transport infrastructure development To develop a national sustainable transport policy Long-term and transparent system of road financing Start up of the rehabilitation program for the national main road network Rehabilitate and modernise the public railway network Safety and sustainable development of civil airline services To develop and amplify relationships with Western European states (especially with Germany, France, Holland, Italy, Great Britain, Spain and Portugal) and with CIS countries To implement the commitments of the Republic of Moldova towards the EU / Moldova action plan	Continued maintenance of the existing public road network Attraction of foreign investors Priority given to the corridors and tracks of international importance Strengthen equipment and technical background to ensure air safety and safety conditions for travellers	Electrification of the railway line: Ukrainian border- Bender-Chisinau-Ungheni-Romanian Border

1.3.1 Contribution of the transport sector to social cohesion.

The first objective of any transport system is to provide an extensive, reliable and closely inter-connected network of links between all the populated areas of a country for individual mobility, communication and for the social and economic integration of each community and the population as a whole. However, the extremely limited capacity of the Moldovan public budget over the past fifteen years and insufficient maintenance has led to the present degraded condition of the infrastructure. T*his basic requirement should remain at the heart of any strategic approach to the Moldovan transport system*.

Emergency action is needed in Moldova to maintain the transport network at the proper level of usability and in appropriate condition, with special reference to the road network. The past economic crises of the 90s, the slow rate of economic recovery and economic growth together with the low level of public funding for road maintenance and repairs created a preoccupying situation throughout a very significant part of the total road network of the country. According to the visual survey conducted by the Consultant in October-November 2006, 67.58 % of the main road network needs urgent repairs and probably more than 80 % of the secondary network. **These conclusions are of far greater concern than the previous figures available.** The roads not in need of repair in the short term and classifiable as being in good condition are very few, less that 2% of the main network and less than 0.1 % of the secondary network.

According to these figures, the direct consequences of the situation are measurable in terms of financial and social difficulties. The direct cost for each road user was calculated as corresponding to an increase of 30% in Vehicle operation Costs. As a further example, the Moldovan freight transport association, IATA, calculated an additional cost of 1 $US per kilometre within the territory of Moldova, obviously hindering the competitiveness of goods and services. When negative weather conditions occur, some of the populated areas are isolated within the territory; the severely reduced mobility inhibiting normal movement between outlying and urban areas. The consequences can be easily calculated in terms of the loss of external investment in some rural areas of the country and the lack of easy access to city services for rural populations, such as health services, education, vocational training, jobs and culture.

Medium and long term consequences are of far greater concern. An important part of the Moldovan road network is close to the end of its viable life and therefore unable to ensure normal conditions of mobility, but the rehabilitation of such a vital asset is beyond the capacity of the country. This means that the present situation, if allowed to deteriorate further, would represent an unbearable financial burden for future Moldovan generations.

In this context, railway services have to contribute to counterbalancing the defective condition of roads. They should enable cheap, regular and reliable public transport between the main populated areas of the country and support the development of the Moldovan economy and the modernisation of its society. Unfortunately, passenger railway transport is on the verge of disappearing from the Moldovan transport system. Over the past ten years, the Moldovan Railway Company (CFM) lacked the capacity to upgrade and adapt its organisation to the post-Soviet Union environment and was cut off from market trends. Railway passenger traffic, measured in passenger-km, was reduced to a fifth from 1992 to 2005. Although around 355 million passenger-km were still handled at this time, railway passenger transport

has remained marginal in Moldova, between 5 and 10 times less usage than in neighbouring countries, such as Romania or Ukraine where restructuring processes have been implemented.

Most of the inter-city passenger transport is carried out today by private individual vehicles together with the substantial development of private bus companies. Although flexible and offering moderate rates, the development of such services does not constitute a sustainable solution to inter-urban and even urban mobility:

- The increased competition between private bus operators creates a saturation of services on the most demanded itineraries but with low economic returns. This has negative consequences in terms of service comfort and irregular services for less attractive destinations.
- Safety conditions are worrying. Major risks are evident for passengers' safety due to road conditions, deficient road signs and marking, adverse climate in winter and to inexperienced bus drivers.
- The uncontrolled situation on main lines and the lack of compensation for public service obligations does not facilitate the promotion of better rail services by CFM.

It is thus considered by the Consultant that the transport system in Moldova has reached the critical point where social integration could be at stake if urgent action for road infrastructure and recovery is not planned and implemented at the same time as more balanced passenger transport systems between both public and private road and railway transport modalities.

1.3.2 Contribution of the transport sector to economic development

The transport sector contributes to economic development in providing support for most trade operations and activities. In this respect, transport operators should propose adapted and competitive transportation services to economic operators. Key aspects of the transport policy are:

- to ensure that the technical means are available to transport operators and are adapted to transport demand in terms of punctuality, price, safety and quality of service
- to ensure that public policies support the development of such a transport market by providing adapted infrastructure, adapted regulations, appropriate safety and quality controls and level of taxes
- to ensure that the system is sustainable and does not produce undesired effects in the medium term, such as road congestion, pollution or unacceptable social conditions of work.
- Furthermore, to ensure that private transport companies themselves develop and provide qualifications and jobs for all categories of people.

According to these priorities, the Moldovan transport policy has strong commitments to the following orientations and some specific problem to be addressed:

1. Main economic partnership is more and more balanced between CIS countries (especially Russia and Ukraine) and European Union countries. This means that

infrastructure development and trade agreement policies should be maintained and /or strengthened in both directions. (See chapter Socio-Economic).

2. The Moldovan freight transport system is dominated by road transport. The modal share in 2006 was 61.3 % for road transport, 38.33% for railway transport (airways are only 0.02 % of the freight transport and fluvial is at 0.27%). Road transport provides an efficient and relatively secure means of transportation adapted to the internal demand of a small territory and trading with main CIS neighbouring countries. However, this system is limited by some external and internal constraints; several barriers exist for export operations to EU countries. For example, visas for drivers to the EU are difficult to obtain (41 documents for an export operation to Italy) and the CEMT system of licences limits overall activity. Notwithstanding the foregoing, that direction of trade should be developed. In 2005 Moldovan TIR trucks loaded more cargo from the EU 25 (16650 units) than from CIS countries (9197 units).

3. Rail freight transport still provides an important level of services, but rolling stock and infrastructure are in a very adverse condition; there being some serious concerns for the future of the sector if renewed material is not made available.

4. Due to the increasing weight of international exchanges, cross border processes should be as easy as possible and Moldovan policies should reflect this objective. Special attention should be paid to the condition of transit in and out of the Transnistria area, which could hamper the East - West flow and become a source of concern for international operators and shippers.

5. Inter-modal transport is not considered by the shippers as a priority service. The container traffic is concentrated in the port of Odessa which is a developed inter-modal area and whose predominant activities will remain those for long distance sea and rail traffic.

6. The core commercial transport activity remains internal and distribution activities will become predominant as the economy of Moldova develops.

7. Transport workers' qualifications will be increasingly crucial in the coming years for the competitiveness of the sector (mainly due to the harmonisation of legislation **with EU states**). Special attention should be directed to providing vocational training to operators to develop the sector and enhance the quality of the services.

1.3.3 The Contribution of the transport sector to the strategic integration of the Moldovan territory

The deep integration of Moldovan territory with the transport systems of neighbouring countries is a policy of commitment. Moldova is a landlocked country, with the exception of limited access to sea transport through one port connected to the Danube. The territory as a whole is a gateway between CIS countries; its longest border neighbouring Ukraine and is the shortest neighbouring the European Union since the adhesion of Romania to the EU on January 1st, 2007.

The Governmental policies are clearly intended, not only to enter the European Union, but also to take full advantage and facilitate the present and past cultural and business orientation of the country towards CIS countries. This balanced position is realistic: a large part of trade activity is maintained with Ukraine and Russia, although the predicted economic future sees the development of the country coming from the development of the relationship with the European Union and the adoption of the European business standards in order to facilitate foreign investment.

The geographic position of Moldova is also of international interest as Moldovan territory could be one of the main land transit platforms between Western Europe and eastern destinations.

At the present time, the Moldovan transport infrastructure network is integrated at an international level to several transport planning agreements and policies. Moldovan infrastructure development should follow this framework as closely as possible. This would guarantee an optimum socio-economic ratio of return of infrastructure projects and guarantee the highest involvement of financial institutions for their execution. This would also prepare the future of the country, with a transport system highly integrated into the main international ways of exchange.

This favourable position should not be a point of discussion if Moldovan policy is in compliance with the following basic considerations:

- Programming should be consistent with the neighbouring countries' order of priorities and main international routes selected in order to provide reliable itineraries throughout Moldovan territory
- Internal policies to facilitate transit procedures
- The present secession situation of the Transnistria region does not create unavoidable bottlenecks on transit routes to Ukraine.

In the event of non compliance, international transport routes could be set up by all Stakeholders in order to avoid the Moldovan territory.

Several transport programming frameworks should be taken into consideration in order to establish the general shape of the international integration of Moldovan territory to a larger international space.

- Trans-European networks
- Pan European corridors
- Euro- Asian transport routes
- UNECE TER-TEM master plan
- AGR-AGC-AGTC network

None of these aforementioned frameworks guarantee the full implementation of the programmed works, but they establish a common set of hypothesis of programming for the states involved. Furthermore, most of the master plans adopted in these areas refer to preliminary international agreements and / or Memorandum of Understanding, each with varied but existing degrees of commitment. Recently most of those initiatives take into account the situation of the others in their programming, thus their main differences relate to the scope of the initiatives, not their contents.

1.3.3.1 Trans European Networks

At the end of 2005, the High Level Group II chaired by Ms Loyola de Palacio, EU DG TREN presented their report on the extension of the major Trans-European transport axes to neighbouring countries and regions. One of the five transport axes, identified in the report, connect the territory of Moldova to the TEN-T network – the South Eastern Axis, which links the EU through the Balkans and Turkey to the Caucasus and the Caspian Sea, as well as to Egypt and the Red Sea.

The main priority project for Moldova is identified as n°18, programming enhancement of the Danube River as a key transport route for the European Union and connected countries (Chart 1)

On a less direct basis, Moldova is also adjacent to the network of the Northern and Central axis, with a main translational axis touching its northern border. This project is, however, not classified in priority projects by the High level group.

1.3.3.2 Pan European Corridors

The Transport Corridors include cross-border road and rail traffic routes between the EU and the Central and Eastern European countries as well as airport, sea and river ports along the routes serving as inter-modal nodes.

On the basis of the results of the Pan-European Transport Conferences of Crete in 1994 and of Helsinki in 1997, the concept of the Pan-European Transport Corridors and Transport Areas has generally been accepted as an emerging priority for transport infrastructure development throughout Europe. For the majority of Corridors and Areas a Memorandum of Understanding has been signed between the Ministers of Transport of the respective governments and the European Commission (Chart 2).

Moldova is crossed by **Corridor n°9** defined as Road and Rail connection between Helsinki – St. Petersburg –Pskov/Moscow – Kiev – Ljubasevka – Chisinau – Bucharest – Dimitrovgrad –Alexandroupolis (Chart 3).

Following the enlargement of the EU in 2004 and 2007, most of the Corridors are now part of the TEN network. This was the case of Corridor **n°7** (Danube river) which was integrated as part of the TEN-T network as described above.

Memoranda of Understanding were approved by the Government of Moldova for both corridors.

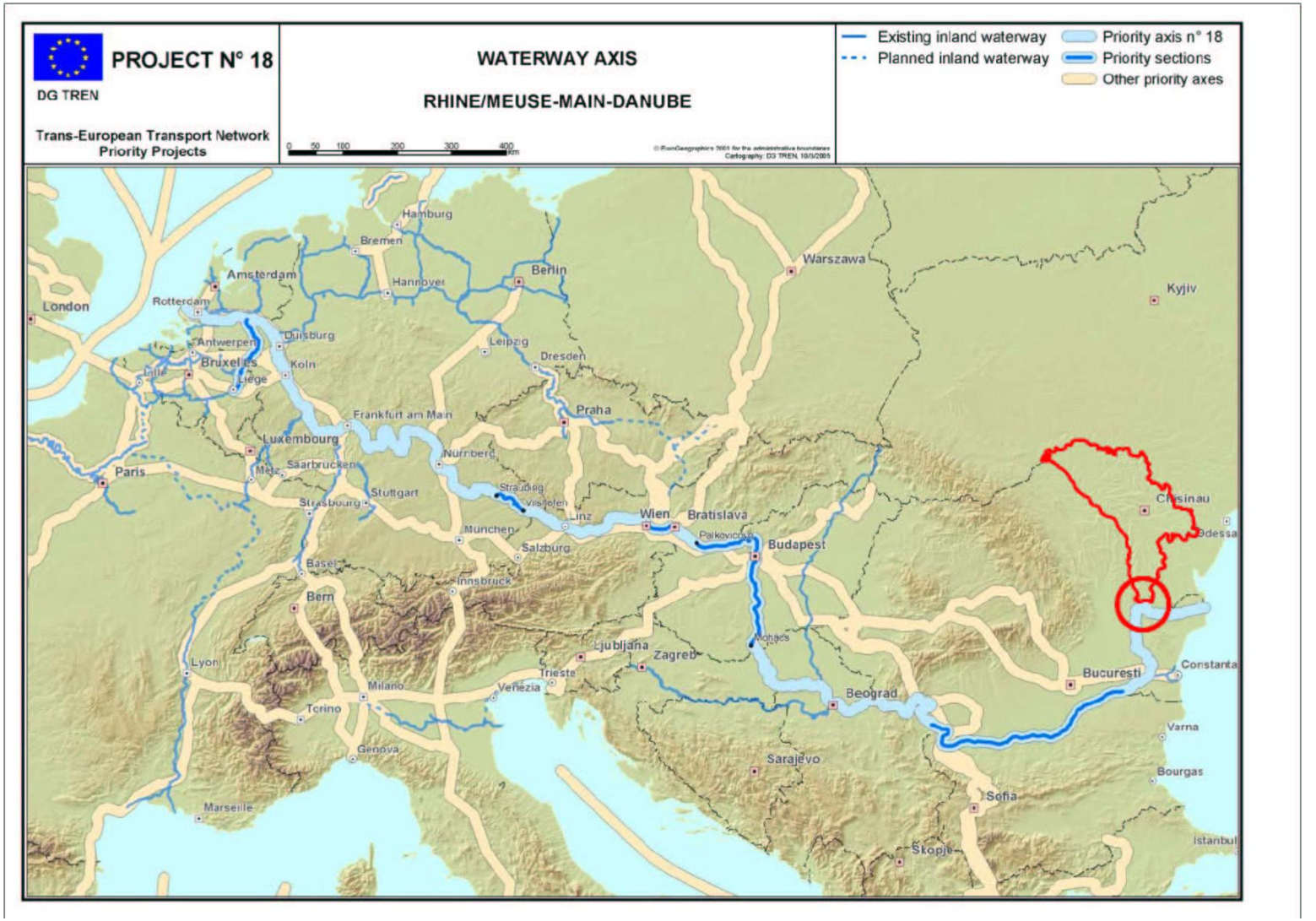


Chart 1. TEN Project nº 18

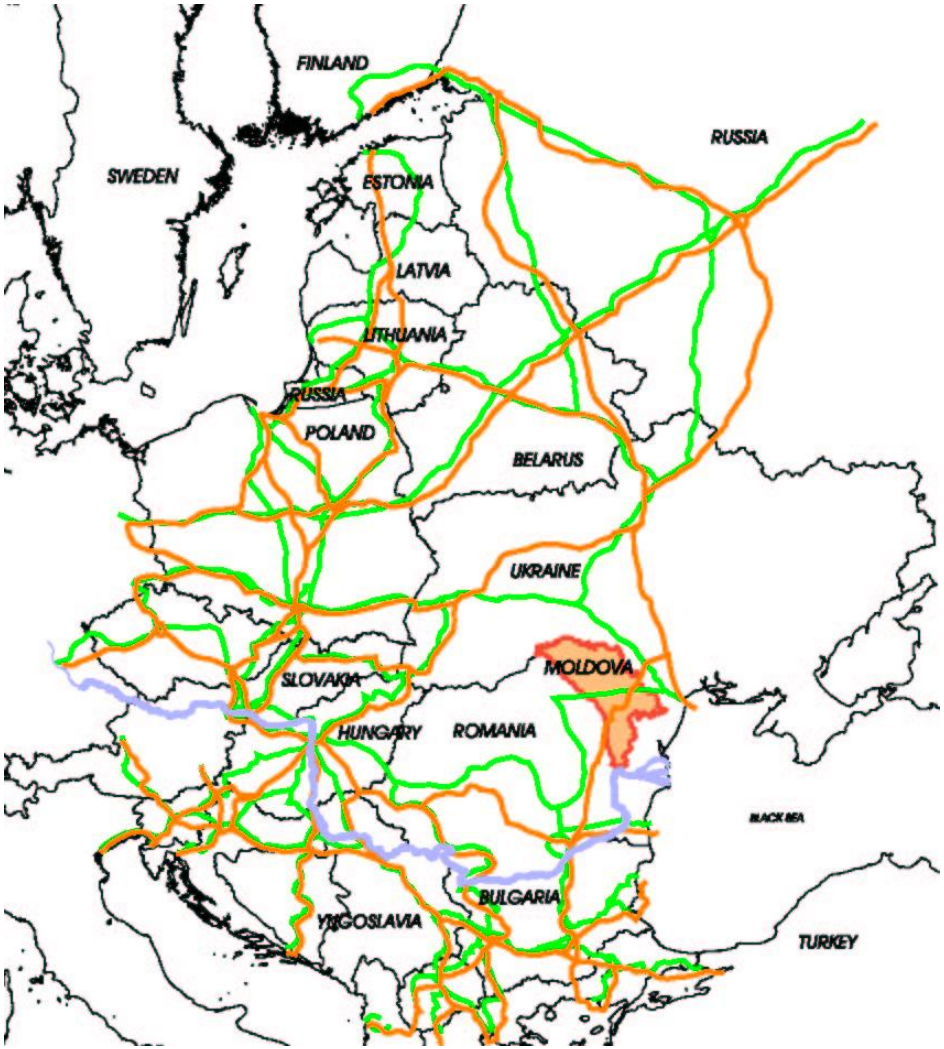


Chart 2. Pan European Corridors

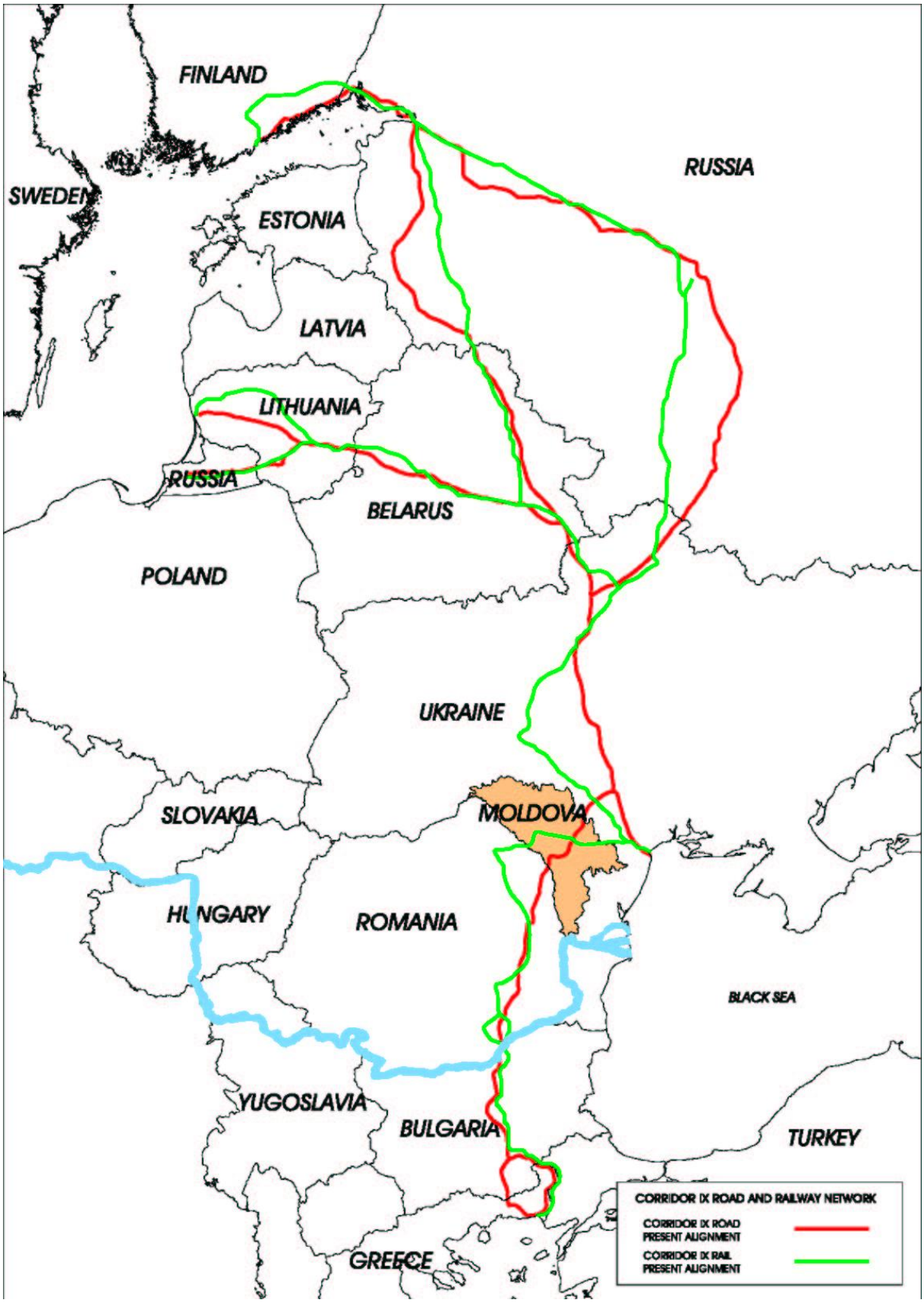


Chart 3. Corridor IX

1.3.3.3 Euro-Asian transport routes.

The Euro-Asian Transport Linkages (Chart 4), as nominated and agreed by the countries involved, and analysed under ONU-UNECE supervision, are expected to form the basis of an integrated inter-modal transport network linking Europe and Asia. For the time being, large proportions of the considered routes do not meet international standards and remain indicative.

Main linkage with Euro-Asian land transport in Moldova is carried out by the following routes (corresponding to the AGTC programming E 95) :

TRACECA project : branch 3g, Chisinau – Tighina – Kuchurgan - Rozdil'na – Odessa (Port) – Poti (Port)

Additional routes : 6.a. Chisinau – Tighina – Rozdil'na- Zhmerynka

1.3.3.4 UNECE TEM-TER master plan.

The UN/ECE TEM-TER Projects are a sub-regional co-operation accord established in 1977 by the Governments of the Central, Eastern and South Eastern European countries with the initial financial support of UNDP and the co-ordination and support of UN/ECE acting as the executing agency for the project.

Moldova is not a participating country of the TEM network, but is an observer country for the TER project.

1.3.3.4.1 TER Network

The UNECE TER Project is a sub-regional co-operation action established in 1990 by the Governments of the Central, Eastern and South Eastern European countries with the initial financial support of UNDP and the co-ordination and support of UNECE acting as the executing agency.

The main objectives of the project are the improvement of the quality and efficiency of transport operations, assistance for the integration process of European Transport Infrastructure systems and the development of coherent and efficient international railway and combined transport systems in the region, in accordance with the UNECE Pan-European infrastructure agreements:

- European Agreement on Main International Railway Lines (AGC - May 1985) and
- European Agreement on Important International Combined Transport Lines and Related Installations (AGTC - Feb. 1991)

17 countries from CE&SE Europe are full members of TER and in addition, a total of 6 observer countries participate in certain activities of the project, among them the study of Moldova.

1.3.3.4.2 TEM/TER Master plan.

The countries participating in the TEM /TER network proposed their national projects aiming at the identification of bottlenecks, missing links and other priority infrastructure needs in

their road, rail and combined transport networks, in accordance with a realistic global strategy to meet those needs. Moldova was invited to participate in such a project.

A backbone network was set up, integrating all above mentioned networks (TEN-T, Crete Corridors, Euro-Asians routes) and completed with national priority projects.

Additional components and finally missing link should complete the Network.

For the TEM backbone network (Chart 5), the following Moldovan roads were chosen to take their place in the network:

- *Leuseni – Chisinau - Dubasari- Border MO-UA*
- *Cishinau – Tiraspol - Border MO-UA*

For the TER Backbone network (Chart 6), the following Moldovan railway line was chosen:

- *Border RO/MO, Ungheni, Chisinau, Thigana, Bender*

The Master Plan identified one TER missing link for Moldova: Odessa-Kukurhan-Tiraspol-Thighina.

Moldova presented 1 TEM project (*Improvement of traffic conditions along the Leuseni-Chisinau-Dubasari- road, the border with Ukraine on the section of the Chisinau Bypass*) and 2 TER projects (*Rehabilitation and electrification of the Railway Line Ukrainian border – Bender-Chisinau-Ungheni –Romanian Border & Construction (Restoration) of the Railway Line Revaca-Cainari*).

1.3.3.4.3 AGTC scheme.

AGTC is the co-ordinated international plan for the development and operation of a network of important international combined transport lines and related installations.

All parties intended to include this framework within the framework of their national programmes.

Moldova acceded to this agreement in 2002.

Scheme in chart 7 shows the Moldovan network as part of the AGTC network.

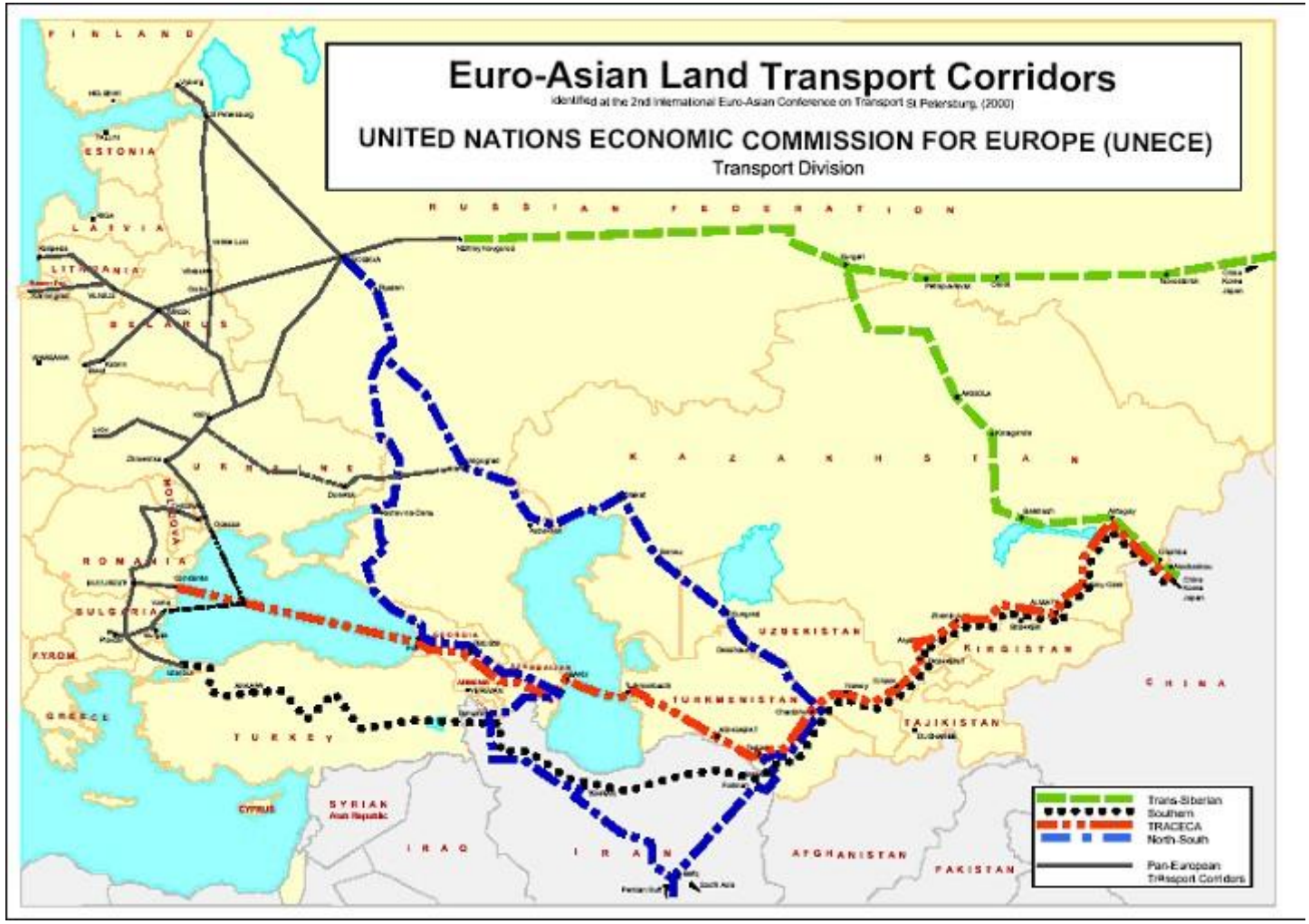


Chart 4. Euro Asian Transport Corridors

Chart 5. TEM backbone network

Chart 6. TER backbone network

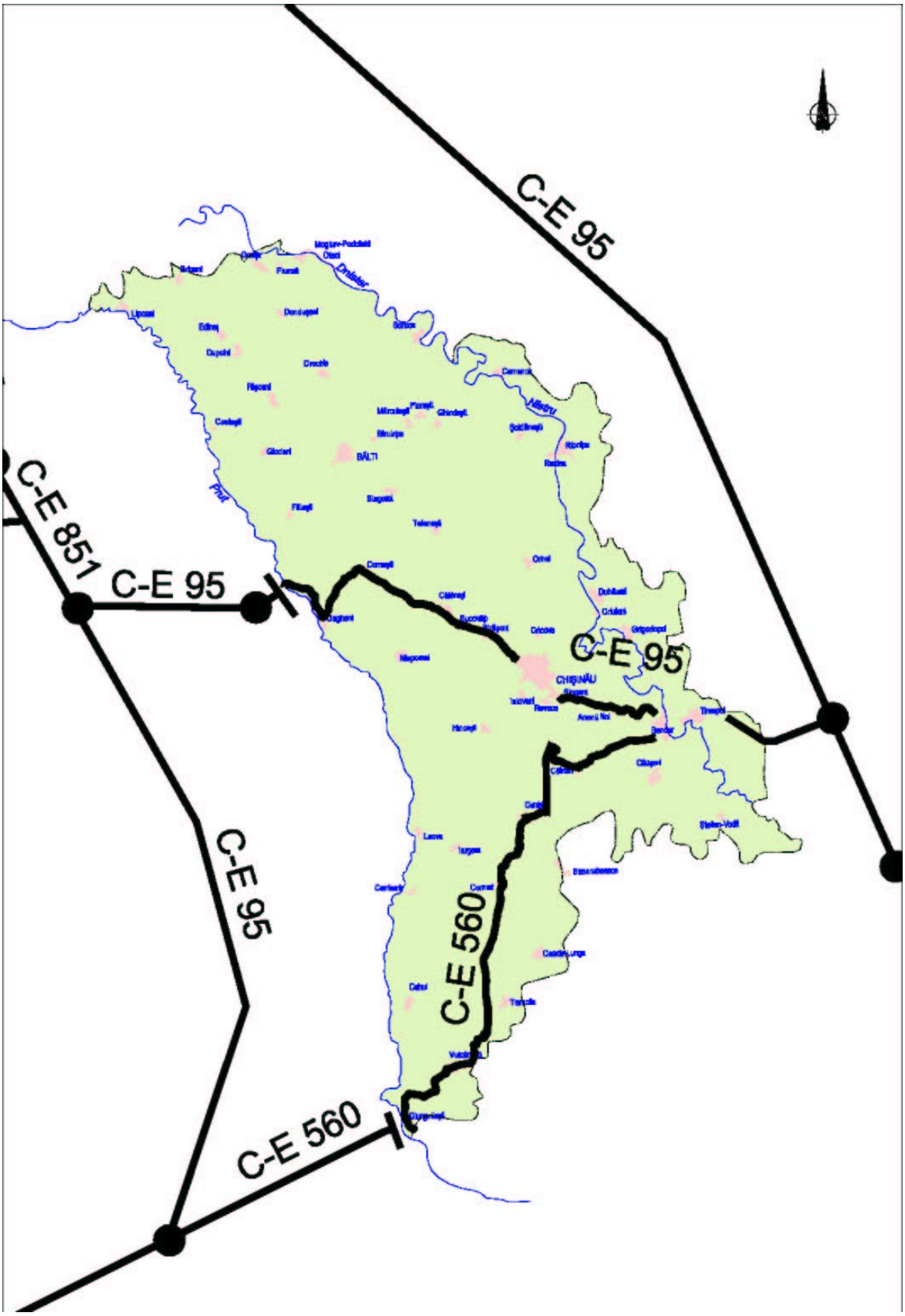


Chart 7. Moldova in AGTC network

1.3.3.5 Conclusions

Moldova should determine priority projects in order to be included and integrated in a pan-European and pan Asian European network.

Furthermore, the renovation of the main international traffic routes will provide opportunities to develop, with international funding, the internal network which will support most of the economic development of Moldova. Attention should be paid, according to this question, to the main inter-city axes foreseen as carrying the highest traffic in the coming years.

Itineraries should integrate technical constraints of the projected operations, especially in the Railway sector.

Strategic choices should be made at Governmental level in order to develop and add different levels of priority to the projects of improvement / rehabilitation of the infrastructure network on the four main following interior and external axes (Chart 8):

- *Western access to Moldova/Romanian border – Western central axis in Moldovan territory.* This axis is the chosen entrance of rail and road corridors via the Ungheni area (Iasi) and the Hîncesti area (Bucharest) and directs the traffic flows to the main national roads around Chisinau.

- *Eastern Access to Moldova – Central South East axis from Chisinau to Odessa*. This axis is the natural and chosen gateway to Ukraine along some existing itineraries via Bender (south) and Stefan Voda to Odessa and via Dubasari to Kiev. Some itineraries are located in Transnistria which is today the subject of territorial and administrative dispute, although traffic is still circulating.

- *Northern Axis Moldova / Ukraine. Northern central axis via Balti*. This axis is one of the main national axes to Balti, the second city of the Country, and leads to the corridor n°9 to Jitomir and Kiev via the North –Eastern border.
- *Southern axis to Romania and access to the Danube via the Prut river*. This axis is far less developed although the connection with the Danube area is attractive.

The main arbitration to be carried out by the strategy in this domain is:

- to comply with the international expectation for transnational axes, with projects connected to a consistent national policy for the rehabilitation of the main national network
- to contribute to the national integration of all populated area
- to reach a balance between eastern and western connections
- to determine the easiest border crossing locations
- to ensure realistic planning for the funding of the projects, integrating maintenance issues

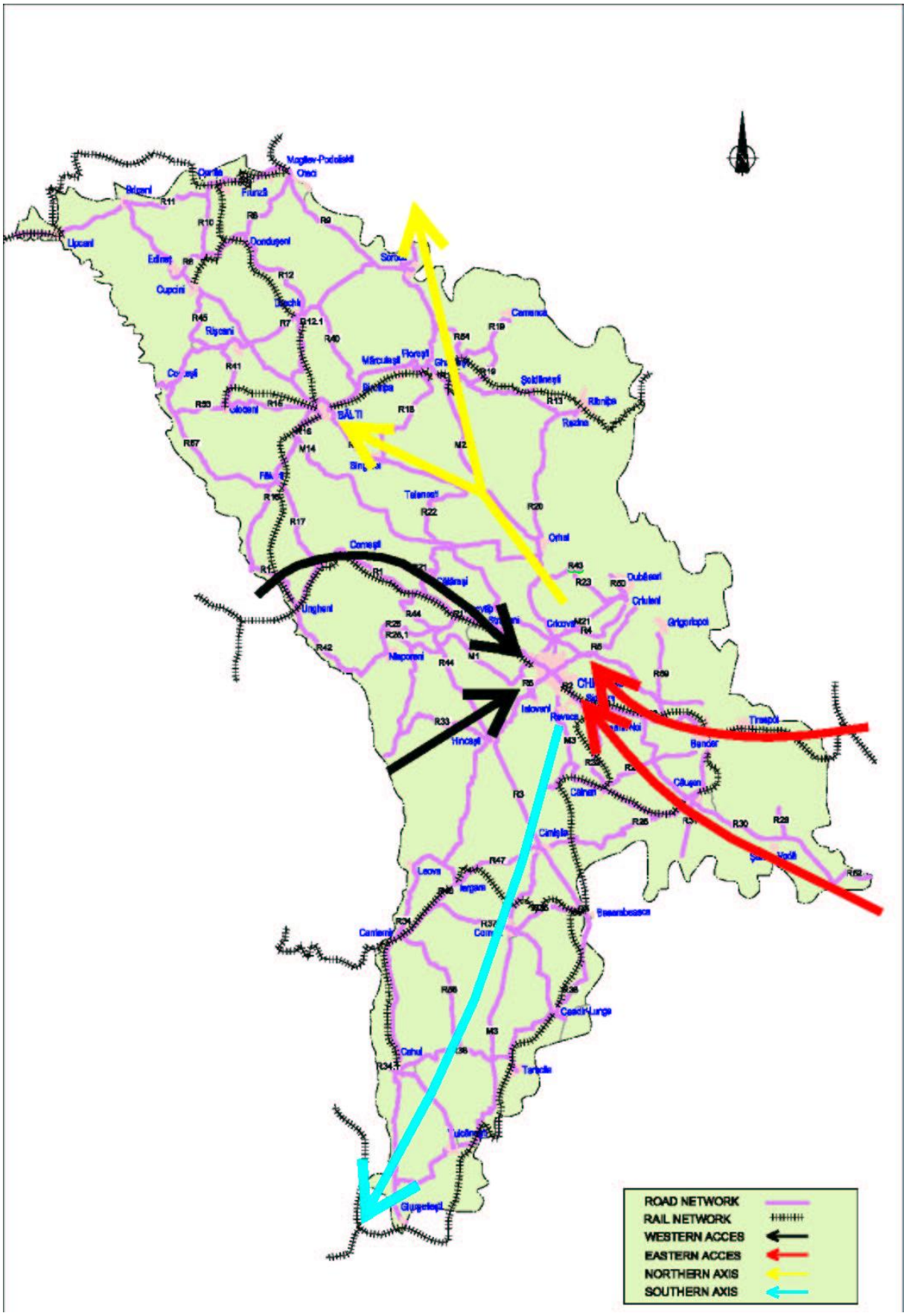


Chart 8. Priority axis

2. ROAD TRANSPORT

2.1 INFRASTRUCTURE

Chart 9. Road Network

2.1.1 Physical description

2.1.1.1 Road network

Moldova has a public road network totalling about 16.800 km, of which 3.665 km are classified as National Roads and the remaining 13,134 km as Local Roads. The Ministry of Transport and Road Management is responsible for 10,531 km of roads: 3,665 km of national roads and 6,865 km of local roads.

If the territory of Transnistria is not integrated in the total, this length is reduced to 2,814 km of National Network, and 6,588 km of local Roads (see table below).

After some rationalisation in road classification during the last few years, the length of national road network in 2006 was established at 3,350 km.

The lengths of the roads measured by the Consultant on the occasion of its visual survey at the end of 2006 were: 832 Km of Magistrale and 2.502 Km of Republicane, obtaining a final result of 3.333 Km of national roads.

The National Network is integrated by "Magistrale" and "Republicane" roads.

- "Magistrale" Roads(M-xx) were the primary links between the various republics of the former Soviet Union.

- "Republicane" Roads(R-xx) are the principal links between the various districts of Moldova.

With the independence of Moldova, the distinction became only indicative, the nomenclature no longer implying a significant difference in importance between the roads and both are now considered as national roads.

2.1.1.2 Pavement

National network pavements are mainly asphalt concrete, but there are also some of cement concrete, mainly on the Soviet Magistral roads. Surface dressing and even macadam pavements can be found in small sections of the national network, as R29 or R36.The following table shows the State network pavement structure, not comprising Transnistrian roads, as it is provided by the SRA (State Road Administration).

Moldovan Road Network					
Pavement structure	**National Roads**			**Local Roads**	**Total Roads**
	Magistrale*	**Republicane***	**Total**		
	Km	Km	km	km	km
Total Network	**816**	**1998**	**2814**	**6588**	**9402**
Concrete	424	--	424	--	**424**
Asphalt Concrete	365	1678	2043	2741	**4784**
Surface Treatment	18	167	185	426	**611**
Macadam	9	153	162	2935	**3097**
Earth/Gravel Roads	--	--	--	486	**486**

In the road visual survey, cement concrete pavement has also been located in Republican roads. Some of these findings are indicated in the following table:

Road	M14	M21	M3	R12	R3
cement concrete pavement (Km)	184	27	36	65	6

2.1.1.3 Cross section

In general, national road have one carriageway section, even when the number of lanes is four or six. The number of lanes is usually two, but in some sections of main roads, three lanes are typical. Six lanes can be found mainly in the Chisinau urban sections of the main roads. Four lanes are usual in Chisinau urban sections and in the proximity of Chisinau.

Shoulders are not paved. The width goes from 1 to 2.5 m in the national network.

Local roads have a "one carriageway, two lanes" cross section. Carriageway width is usually 6 m. The shoulders, where existing, are narrow.

2.1.1.4 Road network condition

When Moldova became an independent State, it inherited a well developed network with an acceptable level of maintenance and condition. This was the result of the previous level of State spending and constant subsidies from USSR, enabling the authorities to do precisely that; to develop the network and to maintain the roads in good condition. However, the continuous lack of public funding since that time has held the financial outlay on roads at a very low level.

Furthermore, although Moldova expressed its interest in joining the European Union, the integration process did not accelerate, Moldova being thus unable to obtain the benefit from alternative subsidies for road infrastructure, such as those Romania obtained during the same period.

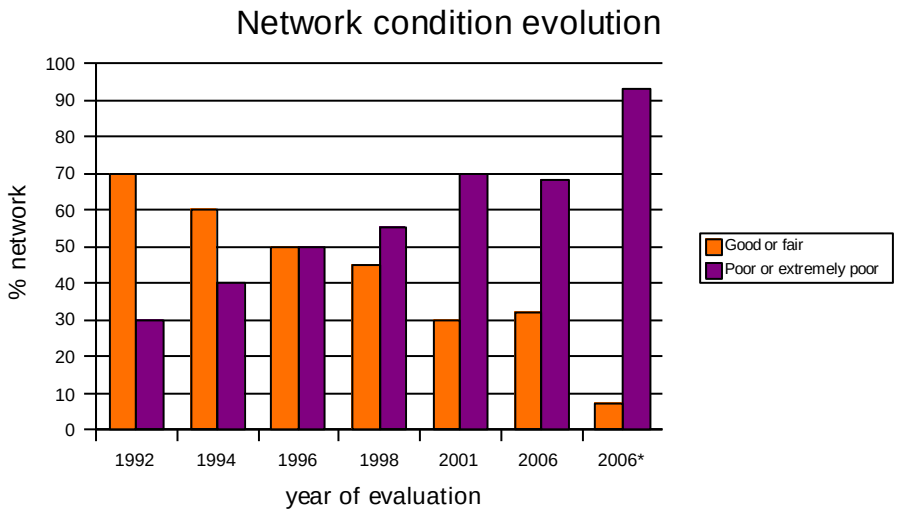
Since this period, the country's road network has seriously deteriorated and now requires a major repair policy.

The following table shows the evolution of road network conditions.

%	1992	1994	1996	1998	2001	2006	2006*
Good or fair	70	60	50	45	30	32	7
Poor or extremely poor	30	40	50	55	70	68	93

Condition reports from 1992 to 1998 are quoted from previous World Bank reports. The condition in 2001 is extrapolated from a sample of about 2.000 Km of national roads measured by the SRA.

Condition reports from 2006 are the result of the 3.333 Km of national roads surveyed by the Consultant at the end of 2006. Column "2006 (1)" qualifies the road sections needing short or medium term reconstruction as they are in "poor or very poor condition*". Only the roads needing short term reconstruction are considered to be in "poor or very poor condition" in column"2006 (2)".*



2.1.1.5 Results of the visual survey of the network

At the end of year 2006 the Consultant carried out a visual survey of the entire main road network (3.333 km) plus a sample of local roads (1.229 Km), focusing on the verification the existing road conditions.

From the beginning, it was decided that the appraisal should focus on two types of roads: concrete and asphalt. However, due to the fact that some sections of macadam roads were detected in concrete and asphalt roads, they were also recorded and added to the analysis. The roads of the separatist Transnistrian region were excluded.

Usually, a visual road survey is carried out by a group of observers performing a quantitative estimation of the weight of damaged road surface by types of deterioration. These estimations are made by homogeneous portions, with the length depending on variety and level of deterioration and also by measurement of the damaged surface by the types of deterioration observed. This method is particularly slow and, taking into account the volume of work and time restrictions**,** it was inconvenient to carry it out in this assignment.

For this work, the visual inspection methodology had to be modified and carried out from a vehicle on the basis of a digital recording of the carriageways, shoulders, drainage conditions and road information, marking and security system. Those records were analysed and processed afterwards, at the office. This system allowed to obtain a higher and faster output and to repeat the visualisation, the information analysis and the treatment as many times as needed.

The records provided basic information for future inventories to study the evolution of the deterioration of a road, to verify the enhancements obtained in rehabilitated sections, etc.

It was necessary to determine the technical condition of roads in order to make a sound estimation of the measures needed for repair and rehabilitation works. Once the technical conditions of roads were known, the selection of the rehabilitation works was able to begin, taking into account the deterioration levels, the traffic density, and the importance of road.

The overall results were the following:

	Road surveyed		Rehabilitation & Maintenance priorities			
	Number	Length Km	Short term Km / %	Medium term Km / %	Long term Km / %	Just repaired Km / %
National	60	3.333	2.253 68%	838 25%	177 5%	66 2%
Local	54	1.229	1.001 81%	176 14%	52 4%	1 0%
Total surveyed	114	4.562	3.253 71%	1.014 22%	228 5%	67 1%

More detailed information per itinerary surveyed can be found in the following listings:

List of the examined national roads

Names of the roads		Province	TRAFFIC	LENGTH (Km)	LENGTH OF THE ROAD % THAT NEED ACTUATION IN A SHORT TIME BECAUSE IT IS IN BAD CONDITIONS	LENGTH OF THE ROAD % THAT NEED ACTUATION IN A MEDIUM TIME BECAUSE IT IS IN REGULAR CONDITIONS	LENGTH OF THE ROAD % THAT NEED ACTUATION IN A LONG TIME
M1	Chişinău-Leuşeni-frontiera cu România	Ialoveni - Straseni - Nisporeni - Hancesti	1000-3000	92,5	52,69	10,75	2,15
M14	Brest-Briceni-Chişinău-Tiraspol-Odesa*	Briceni Edinet Riscani Falesti Telenesti Calaras Straseni Anenii-Noi	1500(0-38km) 2500(38-66) 3000(66-132) 1000(132-274) 5000(274-278) 1000(278-318km)	318,8	55,03	38,36	6,61
M2	Chişinău-Soroca-frontiera cu Ucraina	Straseni Orhei	11500(6km-42km) 10400(42km-71km) 3000(71km-119km) 2000(119km-167km)	167,5	49,70	35,51	14,79
M2.1	Drum de acces spre s.Cosăuţi						
M21	Chişinău-Dubăsari-Poltava	Criuleni Dubasari	1000-3000	35,6	75,68	5,40	18,92
M3	Chişinău-Cimişlia-Vulcăneşti-Giurgiuleşti-frontiera cu România	Ialoveni - Cimislia – Gagauzia - Taraclia - Cahul	<1000(0-34km) - 2500(63-82km) - <1000(82-217km)	217	47,40	38,02	14,58
R1	Chişinău-Ungheni-Sculeni-frontiera cu România	Straseni Calaras Ungheni	9000 (5-20 km) 6500 (22-34) 5000 (34-51) 2000 (51-128)	127,5	90,55	8,66	0,79
R10	Ocniţa-Ruseni	Ocnita	<1000	19,4	60,00	35,00	5,00
R11	Ocniţa-Briceni	Briceni	1000 - 3000	34,9	62,86	31,43	5,71
R12	Donduşeni-Drochia-Pelinia-M14	Donduseni Drochia	1000-3000	65,2	61,54	38,46	
R12.1	Drum de ocolire a or. Drochia	Drochia	<1000	4	25,00	75,00	
R13	Bălţi-Soldăneşti-Rîbniţa	Singerei Floresti Soldanesti	<3000	104,2	75,24	24,76	
R14	Bălţi-Sărăteni-M2	Singerei	2500	66,4	78,78	19,70	1,52
R15	Bălţi-Glodeni	Glodeni	1000 - 3000	32	42,42	42,43	15,15
R16	Bălţi-Făleşti-Sculeni	Falesti	1000 - 3000	60,7	54,84	35,48	9,68
R17	Făleşti-Pîrliţa	Ungheni	3000 - 5000	32,3	74,19	19,35	6,46
R18	Floreşti-Nicolaevca-Singerei	Floresti	<1000	43	95,12	4,88	
R19	R13-Cunicea-Camenca	Floresti	<1000	30,2	46,66	46,67	6,67
R2	Chişinău-Bender	Anenii - Noi	8000(17-35) 5000 (35-58)	58	75,44	24,56	
R20	Rezina-Orhei-Călăraşi						
	R20a	Orhei - Rezina	1.200	45,2	71,11	28,89	
	R20b	Orhei - Calaras	1.200	60,5	68,33	23,33	8,34
R21	R20 - sanatoriul "Codru"	Calaras	<500	12,8	83,33		16,67
R22	M14-Teleneşti-Ratuş	Telenesti	1000 - 3000	29	80,00	20,00	
R23	Criuleni-Brăneşti-Ivancea-M2	Criuleni Orhei	<1000	34,1	82,86	17,14	
R25	Bucovăţ-Nisporeni-Bărboeni	Nisporeni Straseni	1000 - 3000	47,5	95,74	4,26	
R25.1	R 25 — drum de acces spre drumul M1	Nisporeni	<1000	11,7	58,33	41,67	
R26	Tiraspol-Căuşeni-Cimişlia	Cimislia Causeni	<1000	79,2	85,00	15,00	
R28	Răscăieţii Noi-Hînaia	Causeni	<500	7	71,42	14,29	
R29	Bender-Căinari-Răzeni	Causeni Laloveni	<500	48,8	91,67	8,33	
R3	Chişinău-Hînceşti-Cimişlia-Basarabeasca	Laloveni - Hancesti - Cimislia - Basarabeasca		99	80,00	20,00	
R30	Anenii-Noi-Căuşeni-Ştefan Vodă-frontiera cu Ucraina	Anenii-Noi Causeni-Stefan-Voda	3500(0-36)-1800(36-95)	95	69,48	21,05	1,05
R31	Căuşeni-Tarutino (Ucraina)*	Causeni	<1000	15	80,00	20,00	
R32	R2-Puhoi-Căinari-Sălcuţa	Causeni	<1000	51	58,00	26,00	14,00
R33	Hînceşti-Lăpuşna-M1	Hancesti	1000 - 3000	37,2	68,42	31,58	
R34	Hînceşti-Leova-Cahul-Slobozia Mare	Hancesti Leova Cantemir Cahul	Hancesti - Cahul: 3200 Cahul - Slobozia Mare: 2200	167,3	65,48	28,57	5,95
R34.1	Cahul - frontiera cu România	Cahul	<500	5	80,00	20,00	
R35	Basarabeasca-Comrat	Gagauzia	<1000	26	69,23	26,92	3,85
R36	Basarabeasca-Ciadîr-Lunga-Taraclia	Taraclia Gagauzia	<1000	61,89	86,88	11,48	1,64
R37	Ciadîr-Lunga-Comrat-Cantemir	Gagauzia Cantemir	1000 - 2000	81,2	46,34	31,71	21,95
R38	Vulcăneşti-Cahul-Taraclia	Gagauzia	1000 - 2000	82,2	53,66	42,68	3,66
R4	Chişinău-Criuleni	Criuleni	3000-5000	31	77,42	22,58	
R40	Chetrosu - Moara de Piatra - Cubolta - R13	Singerei - Drocha	<1000	31,1	80,65	19,35	
R41	R7-Lupăria-Glodeni	Glodeni	<1000	19,2	100,00		
R42	Ungheni-Măcăreşti-Bărboieni	Ungheni Nisporeni	<500	30	93,33	6,67	
R43	Brăneşti - complexul istorico-cultural "Orheiul Vechi"	Orhei	<500	4,2			100,00
R44	Călăraşi - Lozova - Hînceşti	Hancesti Singerei	<1000	64,6	84,37	6,25	9,38
R45	Brătuşeni — Zăicani — Pîrîţota	Riscani	<1000	24,7	80,00	16,00	4,00
R46	Pleşeni - Iargara	Cantemir	1000 - 2000	10	100,00		
R47	Cimişlia — Iargara — Sărata Nouă	Cimislia Liova	<1000	39,9	92,50	7,50	
R49	Basarabeasca — frontiera cu Ucraina						
R5	Chişinău-Budeşti-Vadul lui Vodă - M4	Criuleni	3000 - 5000	31,3	68,96	24,14	6,90
R50	Criuleni - zona de odihnă din Holercani	Criuleni	<500	10	60,00	40,00	
R51	Otaci-Ocniţa	Ocnita	1000 - 3000	22,4	80,77	15,38	3,85
R52	R30 - Tudora - Palanca - frontiera cu Ucraina	Stefan-Voda	<1000	14,5	40,00	60,00	
R53	Glodeni - Cobani - R57	Glodeni	<1000	22,7	100,00		
R54	M 2 — Soloneţ — Unchiteşti — R19	Floresti	<1000	30,2	63,33	26,67	10,00
R56	Cania — Baimaclia — Taraclia de Salcie — R38	Cahul Cantemir	<1000	48,8	78,00	10,00	12,00
R57	R7 - Braniştе - Călineşti - Făleşti	Riscani Falesti	<1000	55,8	74,55	25,45	
R59	R2 - Bulboaca - Delacău	Anenii - Noi	<1000	26	68,00	32,00	

List of the examined local roads

Names of the roads		Province	TRAFFIC	LENGTH (Km)	LENGTH OF THE ROAD % THAT NEED ACTUATION IN A SHORT TIME BECAUSE IT IS IN BAD CONDITIONS	LENGTH OF THE ROAD % THAT NEED ACTUATION IN A MEDIUM TIME BECAUSE IT IS IN REGULAR CONDITIONS	LENGTH OF THE ROAD % THAT NEED ACTUATION IN A LONG TIME
L9	Bîrnova – Gîrbova – L4	Briceni	<500	17,4	100,00		
L23	Corestăuţi – Halahora de Sus – Tîrnova – L51	Briceni	<500	10,6	81,82	18,18	
L30 L37 L23 L51	Chilavăţ – Balasineşti - Pererîta/Lipcani –Balasineşti – Corjeuţi - Tîrnova/Corestăuţi – Halahora de Sus – Tîrnova – L51	Briceni - Edineţ	<500	38	73,68	26,32	
L36	Lipcani – Duruitoarea Nouă (ind)	Briceni -Edineţ-Rîşcani	<500	70,4	59,15	38,03	2,82
L68	Donduşeni – Sudarca – R9 (ind.)	Donduşeni	<500	26,2	85,19	14,81	
L69		Donduşeni	1.000 – 3.000	4,7	100,00		
L74	Tîrnova - Cupcini	Donduşeni - Edineţ	<500	25	80,00	20,00	
L75	Tîrnova – Baraboi – Rîşcani (ind.)	Donduşeni	<500	19	63,16	15,79	21,05
L77	Mîndîc – Zgurița – Căinarii Veci – Mărculeşti (ind.)	Drochia - Floreşti	<500	60,2	81,67	16,67	1,66
L91	Mihăileni-Nicoreni (ind.)	Drochia	<500	10	90,00	10,00	
L107	Soroca – Căinarii Vechi	Soroca	<500	19,4	60,00	20,00	20,00
L161	Rezina – Saharna Nouă – Cînişeuţi - Gordineşti	Rezina	<500	19,4	95,45	4,55	
L172	Şoldăneşti – Şestaci - Japca	Şoldăneşti	<500	29	96,55	3,45	
L178	Olişcani – Peciște – Chiştelnița – Codru Nou	Şoldăneşti - Teleneşti	<500	38,1	100,00		
L186	Floreşti – Vădeni – L107 (ind)	Floreşti - Soroca	<500	25,5	57,69	23,08	19,23
L217		Rîscani	<500	14,4	80,00	20,00	
L219	Costeşti – Petruşeni– Camenca (ind)	Rîşcani	<500	15	68,75	18,75	12,50
L232	Hîjdieni - Cajba	Glodeni	<500	8,2	77,78	22,22	
L233	Glodeni – Moara Domnească	Glodeni	<500	19,3	70,00	15,00	15,00
L245	Egorovca - Glodeni	Fălești - Glodeni	<1000	26,2	92,59	7,41	
L265 L272	L265 sector R13-Alexandreni(0km-2km)/L272 sector Alexandreni-Singerei-Noi (indirect 2km-14km)	Sîngerei	<500	13,9	92,86	7,14	
L273	R14–Mîndreştii Noi – Rădoaia (ind)	Sîngerei	<500	7,5	57,14		42,86
L276	Bilicenii Vechi – Chişcăreni (ind.)	Sîngerei	<500	14,2	85,72	7,14	7,14
L289	Teleneşti – Bănești – R14 (ind)	Teleneşti	<500	8,2	100,00		
L305	R20 – Chipeceni – Pohrebeni - Izvoare	Orhei	<500	25,3	96,00	4,00	
L307	Orhei – Susleni – Jora de Sus - Lopatna	Orhei	<500	32,9	84,38	15,62	
L307.2	Drum de acces spre s. Vişcăuţi	Orhei	<500	7,1	100,00		
L314		Orhei - Criuleni	<500	23,4	91,67	8,33	
L341	L339 – Vişcăuţi (ind)	Dubăsari	<500	4,7	100,00		
L339	Ustia – Molovata (ind.)	Dubăsari	<500	26,24	68,97	31,03	
L376	Cornești – Boghenii Noi-Rădeni –Hogineşti (ind.)	Ungheni	<500	25	84,00	16,00	
L390	Pîrîța - Nisporeni	Ungheni - Nisporeni	<500	41,4	92,86	7,14	
L416	Călăraş – Peticeni - Vălcineț	Călăraş	<500	12,3	61,54	30,77	7,69
L439	M2 – Rădeni - Drăguşeni	Străşeni	<500	5		100,00	
L441	Rădeni - Grebleşti	Străşeni	<500	7,2	12,50		87,50
L443	M14 – Străşeni (ind)	Străşeni	<500	6,9	85,71	14,29	
L463	R3–Dănceni–Malcoci–Condrița(ind)	Laloveni	<500	19,2	60,00	25,00	15,00
L464	R3 – Ruseştii Noi – Ulmu – M1	Laloveni	<500	23,2	81,82	13,63	4,55
L465	Pojăreni – Ţipala – R32	Laloveni	<500	36,3	76,47	20,59	2,94
L474	Bulboaca – Chirca . Merenii Noi - Floreni	Anenii Noi	<500	26,56	96,15		
L526	Bender – Chircăieşti – Ursoaia Nouă – Fîrlădenii Noi – R29	Căuşeni	<500	33,8	90,91	9,09	
L530	Căuşeni – Plop Ştiubei – Talmaza – Tudora (ind)	Şt.Vodă - Căuşeni	<500	71,6	88,57	11,43	
L567	Lăpuşna – Paşcani - Secăreni	Hînceşti	<500	21	76,19	9,52	14,29
L568	Lăpuşna – Cărpineni - Voinescu	Hînceşti	<500	29	76,67	13,33	10,00
L574	Leuşeni – Leova (ind)	Hînceşti - Leova	<500	42,2	93,02	6,98	
L578	Albina – Fetița – Lipoveni – Munteni – Porumbrei (ind.)	Cimişlia	<500	15,3	80,00	20,00	
L606	Vişniovca – Baimaclia (ind)	Cantemir	<500	22,1	95,45	4,55	
L619	Goteşti - Tartaul	Cantemir	<500	14,9	93,33	6,67	
L627		Basarabeasca	<500	8,5	100,00		
L649	Cladîr Lunga - Congaz	Găgăuzia	<500	17,5	44,44	27,78	27,78
L669	Roşița – Sofievca – Hagichioi (ind)	Taraclia	<500	15,5	75,00	6,25	18,75
L671	Ciumai – Moscovei . Tătărăşti	Taraclia - Cahul	<500	37,6	86,49	13,51	
L701	Vulcănești – Colebaş (ind)	Cahul - Găgăuzia	<500	20	80,00	15,00	5,00

2.1.2 Financial approach to the issues

2.1.2.1 Appraisal of infrastructure recovery costs

A specific methodology was set up to set the priorities for the rehabilitation works. As result, road sections have been classified as needing rehabilitation in the short, medium or long term.

The Consultant has made a preliminary global estimation of the cost of a recovery programme. The estimated cost of the rehabilitation of the surveyed network is US$1.558 million, with priority repairs estimated at US$ 291 million.

This cost was calculated using the unit prices provided by SRA for observed recovery costs of the roads in Moldova. The degree of deterioration of the pavement observed in the visual survey is the key to estimate the volume of the pavement rehabilitation works. A more accurate estimation will be done in future studies considering the foreseen heavy traffic demands and other design criteria.

The following tables show the details of the recovery programme.

As a whole, a complete recovery plan for the whole network should be programmed as follows:

In 10 years	US$ 1600 million : the price of the total recovery of the network
Of which	US$ 250 million : major repairs
	US$ 400 million spot repairs and light rehabilitation pending works (backlog)
	US$ 950 million: routine maintenance

It is clear that the resources of the sector will not cover this level of spending. Some tax increase and the support of international borrowers will be necessary.

National roads							Costs (US$)			
	Names of the roads	LENGTH (Km)	% THAT NEED ACTUATION IN A SHORT TIME	% THAT NEED ACTUATION IN A MEDIUM TIME	% THAT NEED ACTUATION IN A LONG TIME	% THAT DO NOT NEED ACTUATION	Sh. Time	Sh. Time	Me. Time	Me. Time
M1	Chişinău-Leuşeni-frontiera cu România	92,5	52,69	10,75	2,15	34,41	17.148.048		2.190.565	
M14	Brest-Briceni-Chişinău-Tiraspol-Odesa*	318,8	55,03	38,36	6,61		61.725.213		26.940.324	
M2	Chişinău-Soroca-frontiera cu Ucraina	167,5	49,70	35,51	14,79		29.289.771		13.103.020	
M2.1	Drum de acces spre s.Cosăuţi							0		0
M21	Chişinău-Dubăsari-Poltava	35,6	75,68	5,40	18,92			9.479.292		423.496
M3	Chişinău-Cimişlia-Vulcăneşti-Giurgiuleşti-frontiera cu România	217	42,13	33,80	12,96	11,11	32.165.919		16.157.804	
R1	Chişinău-Ungheni-Sculeni-frontiera cu România	127,5	90,55	8,66	0,79		40.620.326		2.432.394	
R10	Ocniţa-Ruseni	19,4	60,00	35,00	5,00			4.095.413		1.495.807
R11	Ocniţa-Briceni	34,9	62,86	31,43	5,71			7.718.707		2.416.438
R12	Donduşeni-Drochia-Pelinia-M14	65,2	61,54	38,46				14.117.242		5.524.116
R12.1	Drum de ocolire a or. Drochia	4	25,00	75,00				351.840		660.887
R13	Bălţi-Şoldăneşti-Rîbniţa	104,2	75,24	24,76				27.584.256		5.683.610
R14	Bălţi-Sărăteni-M2	66,4	78,78	19,70	1,52			18.404.704		2.881.643
R15	Bălţi-Glodeni	32	42,42	42,43	15,15			4.776.012		2.991.086
R16	Bălţi-Făleşti-Sculeni	60,7	54,84	35,48	9,68			11.711.996		4.744.366
R17	Făleşti-Pîrliţa	32,3	74,19	19,35	6,46			8.431.264		1.376.859
R18	Floreşti-Nicolaevca-Sîngerei	43	95,12	4,88				14.390.804		462.268
R19	R13-Cunicea-Camenca	30,2	46,66	46,67	6,67			4.957.885		3.104.922
R2	Chişinău-Bender	58	75,44	24,56			15.394.814		3.138.067	
R20	Rezina-Orhei-Călăraşi							0		0
	R20a	45,2	71,11	28,89				11.308.731		2.876.682
	R20b	60,5	68,33	23,33	8,34			14.544.928		3.109.396
R21	R20 - sanatoriul "Codru"	12,8	83,33		16,67			3.752.806		0
R22	M14-Teleneşti-Ratuş	29	80,00	20,00				8.162.680		1.277.715
R23	Criuleni-Brăneşti-Ivancea-M2	34,1	82,86	17,14				9.941.321		1.287.571
R25	Bucovăţ-Nisporeni-Bărboeni	47,5	95,74	4,26				16.000.435		445.768
R25.1	R 25 — drum de acces spre drumul M1	11,7	58,33	41,67				2.401.168		1.074.027
R26	Tiraspol-Căuşeni-Cimişlia	79,2	85,00	15,00				23.685.845		2.617.112
R28	Răscăieţii Noi-Hînaia	7	71,42	14,29		14,29		1.758.987		220.362
R29	Bender-Căinari-Răzeni	48,8	91,67	8,33				15.739.532		895.511
R3	Chişinău-Hînceşti-Cimişlia-Basarabeasca	99	80,00	20,00			27.865.700		4.361.854	
R30	Anenii-Noi-Căuşeni-Ştefan Vodă-frontiera cu Ucraina	95	69,48	21,05	1,05	8,42		23.223.527		4.405.362
R31	Căuşeni-Tarutino (Ucraina)*	15	80,00	20,00				4.222.076		660.887
R32	R2-Puhoi-Căinari-Sălcuţa	51	58,00	26,00	14,00	2,00		10.407.417		2.921.120
R33	Hînceşti-Lăpuşna-M1	37,2	68,42	31,58				8.955.107		2.587.980
R34	Hînceşti-Leova-Cahul-Slobozia Mare	167,3	65,48	28,57	5,95			38.543.343		10.529.605
R34.1	Cahul - frontiera cu România	5	80,00	20,00				1.407.359		220.296
R35	Basarabeasca-Comrat	26	69,23	26,92	3,85			6.333.043		1.541.893
R36	Basarabeasca-Ciadîr-Lunga-Taraclia	61,89	86,88	11,48	1,64			18.918.429		1.565.194
R37	Ciadîr-Lunga-Comrat-Cantemir	81,2	46,34	31,71	21,95			13.239.050		5.672.287
R38	Vulcăneşti-Cahul-Taraclia	82,2	53,66	42,68	3,66			15.519.126		7.728.623
R4	Chişinău-Criuleni	31	77,42	22,58			8.444.222		1.542.025	
R40	Chetrosu - Moara de Piatra - Cubolta - R13	31,1	80,65	19,35				8.824.895		1.325.706
R41	R7-Lupăria-Glodeni	19,2	100,00					6.755.321		0
R42	Ungheni-Măcăreşti-Bărboieni	30	93,33	6,67				9.851.158		440.812
R43	Brăneşti - complexul istorico-cultural "Orheiul Vechi"	4,2			100,00			0		0
R44	Călăraşi - Lozova - Hînceşti	64,6	84,37	6,25	9,38			19.176.323		889.444
R45	Brătuşeni — Zăicani — Pîrjota	24,7	80,00	16,00	4,00			6.952.351		870.608
R46	Pleşeni - Iargara	10	100,00					3.518.396		0
R47	Cimişlia — Iargara — Sărata Nouă	39,9	92,50	7,50				12.985.522		659.235
R49	Basarabeasca — frontiera cu Ucraina							0		0
R5	Chişinău-Budeşti-Vadul lui Vodă - M4	31,3	68,96	24,14	6,90		7.594.276		1.664.514	
R50	Criuleni - zona de odihnă din Holercani	10	60,00	40,00				2.111.038		881.183
R51	Otaci-Ocniţa	22,4	80,77	15,38	3,85			6.365.652		758.945
R52	R30 - Tudora - Palanca - frontiera cu Ucraina	14,5	40,00	60,00				2.040.670		1.916.572
R53	Glodeni - Cobani - R57	22,7	100,00					7.986.760		0
R54	M 2 — Soloneţ — Unchiteşti — R19	30,2	63,33	26,67	10,00			6.729.165		1.774.336
R56	Cania — Baimaclia — Taraclia de Salcie — R38	48,8	78,00	10,00	12,00			13.392.424		1.075.043
R57	R7 - Braniştе - Călineşti - Făleşti	55,8	74,55	25,45				14.636.142		3.128.440
R59	R2 - Bulboaca - Delacău	26	68,00	32,00				6.220.525		1.832.860
R6	M1-Ialoveni	13,5	57,14	42,86			2.714.056		1.274.653	
R7	Soroca-Drochia-Costeşti-frontiera cu România	101,8	65,69	34,31			23.528.368		7.694.394	
R8	Otaci-Edineţ	53,4	56,60	37,74	5,66		10.634.142		4.439.653	
R9	Soroca-Arioneşti-Moghilîov Podolski	42,3	92,86	7,14			13.820.184		665.341	
Local roads		6.600	81,20%	13,92%	4,79%	0,08%		512.776.671		87.914.366
	SUMAS	**3.333,19**					**290.945.038**	**1.014.407.337**	**85.604.609**	**186.870.439**
	COSTES		**351.840**	**220.296**		**95.682**			**TOTAL**	**1.577.827.423**

2.1.2.2 The road maintenance issue

The low level of maintenance also remains as the main weakness of the road infrastructure sector and one of the matters of most concern is to implement a successful policy of road renovation. The *World Bank Public Expenditure Review* followed up the maintenance sector issue in Moldova and produced an evaluation, which is summarised in the following key questions.

What should the adequate level of expenditure be for Moldovan road maintenance?

It is estimated that around **US$ 95 million** would need to be allocated every year to this task just to avoid further deterioration of the road network.

What level of expenditure was really devoted to the maintenance sector?

Moldova's total annual road sector spending varied between a low US$ 6.45 million in 2001 and a maximum of about US$ 23 million in 1997. In 2005, the latest year for which actual figures are available, the Government spent an amount of **US$ 14.44 million** in the road sector.
Furthermore, this level of expenditure is supposed to cover not only maintenance, but all repair activities. First, there is spending through the Road Fund which is entirely used for the maintenance and repair of the network of National roads. Second, there are allocations for the maintenance of local roads. Finally, there are allocations for road investment, although in actual practice these have been almost non-existent over recent years.

What is the origin of the problem?

It is considered that the sector was itself providing almost enough resources for an adequate level of spending. The Government's total revenues in 2005 from the road sector amounted to 960 million Lei (**US$ 76.2 million** or 2.6% of GDP). The two main sources where the fuel excise tax that was 415.2 million Lei (US$ 32.95 million) and *Import duties for road vehicles*, which have risen sharply over the last few years because of the increase in the number of vehicles imported, in particular of automobiles. The amount collected in 2005 reached 426.8 million Lei (US$ 33.87 million). Other Government revenues from the road sector, and allocated to the road sector through the Road Fund, amount to 118 million Lei (US$ 9.36 million).

However, the revenue generated by road tax collection is not automatically devoted to the road transport sector, nor is a fixed amount devoted to road development and maintenance. This would be the most effective budgetary mechanism, being directly linked to the volume of traffic and the number of vehicle circulating on the network and, approximately, to the number of road users.

As a matter of fact, **in 2005, only 15 % of fuel excise tax was directed towards the road sector but no contribution was allocated from Import duties.**

This policy dates back to an extremely critical situation in the early 90s when all long term spending was redirected to short term priorities, but the slow recovery of the economy favored this budget, a situation which has now given rise to consequences of major import.

What are the financial consequences of such a situation?

The loss of the road infrastructure assets was extremely high, and from the 'saved' resources (the total amount "redirected" during the period 1991 – 2006 amounted to about US$ 1.47 billion) there is the additional cost of the road asset value deterioration between 1991 and 2006, estimated to US$ 3.63 billion. The Net Loss to Moldova was in the order of US$ 2.16 billion, which is equivalent to about 72 percent of the Moldova's yearly GDP. This constitutes a significant burden for future generations.

Some additional costs are imposed on road users, a consequence of deteriorating road conditions as shown in Table 3.2. Due to deficient road maintenance, road users in Moldova have spent about US$ 1.8 billion or 30 percent more than necessary if the road network had been maintained adequately. This amount is equivalent to about 60 percent of the Moldova GDP for 2005.

What is the estimation for the reintegration of losses?

A sustained spending level of approximately US$ 135 million per year would be necessary to fully stop the degradation of the Moldova road network and to carry out backlog maintenance works (Backlog Maintenance works are those works carried out to offset the lack of maintenance in earlier years. Backlog Maintenance mostly consists of spot repairs and light rehabilitation works. If Backlog maintenance is not carried out within a reasonable time, road conditions deteriorate so much that heavy rehabilitation becomes necessary).

To achieve a clear improvement in the road network within a 10-year period, it is estimated that some $160 million a year will need to be spent.

What are the conditions to implement this policy?

- The separation of financing for road maintenance from those for new road investments (through the general budget)
- The introduction of competitive bidding, tendering, for all road maintenance contracts
- New road fund management with :
  - dedication of the Road fund to the maintenance sector and small repairs
  - regular, dedicated and fixed revenue equivalent to a percentage of the road tax collection
  - extra budgetary autonomy, administration shared with road users, contract of objectives with SRA

2.1.3 Road Administration and state road industry

Under the former system, the Government was both a policy maker and an operator. The Ministry of Transport was responsible for the planning of new road and the organisation of the maintenance of roads, for executing the works and assuming quality control of the works executed.

Although most of the entities act today under a corporate structure, part of the road sector industry (including maintenance operators and public works companies) is still controlled by the State, even through for a short time in 2001, the road administration existed as an autonomous and financially independent public road authority.

Today, the Ministry of transport and Road Administration is in charge of the general overseeing of roads that are delegated to a Road Department within the Ministry. This department is understaffed (as are most of the Department of the Ministry of Transport) but still has total responsibility of the whole sector.

The Ministry controls the State Road Administration, which is a corporate road agency responsible for the day to day management and maintenance of the entire road network. It holds the title of ownership of the roads and their right of way. It is in charge of all road construction, maintenance and rehabilitation and of road safety. The State Road Administration is also responsible for all decisions concerning the use of funds for roads, both from the State Budget and from the Road Fund.

Contractors for road construction and road rehabilitation are totally or partially privatised. Those which were partially privatised have been transformed into joint stock companies. The State owns 22% of Magistrala, the biggest national road construction company in the country. In three other construction companies, the State owns more than 60%.of the shares. There are two road construction contractors 100% owned by private capital.

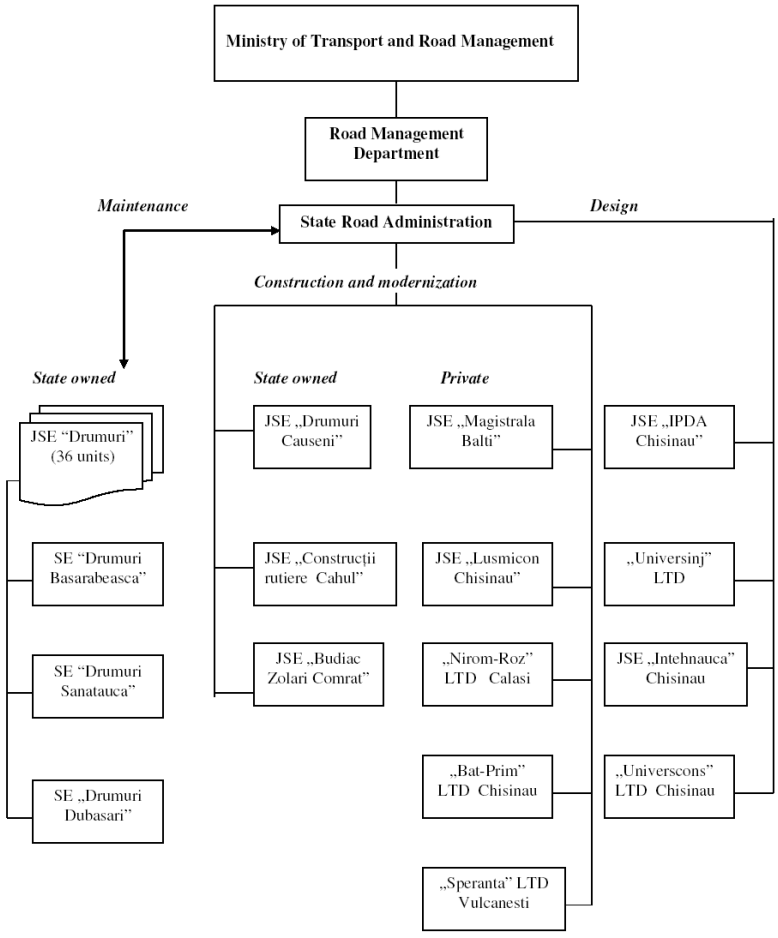
The State owns 70-90% of the shares of the 38 road maintenance contractors.

With the Government expenditures for roads being as low as they are (about US $ 6.0 million per year), turnover figures of the construction industry are low (about US $ 1.0 million for Magistrala, although its capacity is reportedly more than ten times this amount).

In search of revenues, many of the contractors have turned to other construction activities, such as building apartments or manufacturing tiles. At a time when so little is spent on the Moldovan roads, no proficient road construction industry can develop with the support of the national budget.

Many contractors complain about the loss of their most competent staff to contractors in the neighbouring countries.

The organisations involved in road management, road planning, construction and maintenance are shown in the following chart:



The Road Department is responsible for setting policies and regulations and road development planning.

UNIVERSINJ and IPDA are the road design consultants in Moldova. They work together with foreign consultants whenever necessary and co-operate with Druminvest in the development of a pavement management system (PMS) and a Maintenance Management System (MMS) under projects funded by EBRD or TACIS.

The State Enterprise "Road State Administration" is responsible for the planning and assignment of construction and maintenance works. It prepares tender documents for new construction and major rehabilitation works.

Druminvest was created under the EBRD Road Rehabilitation Project as a Project Implementation Unit (PIU). After the cancellation of the EBRD loan, Druminvest continued to handle foreign funded projects.

The Routine Maintenance Units are regional joint-venture **stock** companies (about 20% private capital). They operate mostly within their assigned districts and follow the instructions of the Road State Administration.

There are four Road Construction Enterprises with a mixed form of ownership. The biggest is S.A.Magistrala with 633 employees. Government ownership is 22%, 78% belonging to private owners. There are also two fully privatised enterprises with a total of about one thousand staff. Finally there are

The Road Industry Enterprises are joint-venture companies, which provide ancillary services to the road administration, such as quarry exploitation, and CB radio communication.

2.1.4 Diagnosis on road infrastructure

The following points should be noted:

The design of the network is well adapted to the location of the population and activities.

Considering the size of the country and its population, the Moldova road network size is adequate, with little or no need for a general expansion.

Unfortunately, the condition of national roads is poor, undergoing significant deterioration since the independence of the country and creating a situation necessarily limiting to economic activities throughout the country. If the degree of deterioration has not reached a higher level, it is only because of the low level of traffic in recent years.

Since 1991 there has been almost no investment made in infrastructure. This lack of investment in addition to the lack of maintenance concurs with the results obtained in the road visual survey carried out by the Consultant. The condition of the national road network is poor and will deteriorate further if there is no large investment in rehabilitation to bring the roads back to an adequate condition.

Two objectives have to guide the national network: rehabilitation program

- reconstruction of the most degraded parts of the main network and
- to avoid the further deterioration of the parts of the network in fair and good condition.

To achieve both objectives two rehabilitation programs have to be carried out:

- an extraordinary rehabilitation program. Main works are related to pavement reinforcement: asphalt concrete courses and new base courses in some cases, shoulder reconstruction, drainage rehabilitation and safety works
- a periodic maintenance program, that has not been carried out in recent years. This program consists mainly in carriageway strengthening with a single course of asphalt concrete.

Of course the entire network, whatever its condition, would need ordinary maintenance in order to avoid further deterioration of the sections that have a fair condition at present.

About 50% of the total budget allocations go to the maintenance of rural roads. However, surveys showed that Moldovan farmers (particularly in the Central and Southern regions) are unable to commercialise around half of their products due to their incapacity to reach the market places, or due to the lack of road access for wholesalers to access the settlements of farmers.

Furthermore, due to the inadequate condition of the road network, about 40 % of the settlements have no access to the national road network at all and are isolated during the rainy and winter seasons. Local networks also need more ordinary and extraordinary maintenance resources.

It is essential that the rehabilitation of the road network remains one of the priorities of policy in Moldova and be established as one of the main directives for the future strategy of the transport sector.

2.2 ROAD OPERATIONS

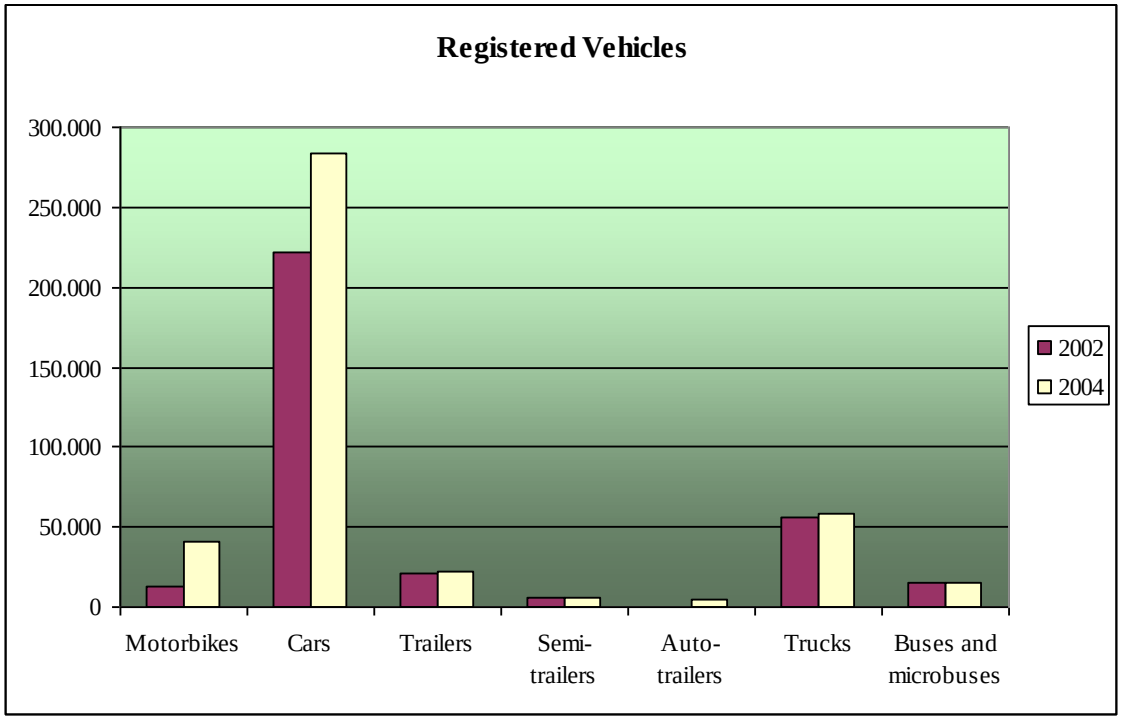
2.2.1 Vehicle fleet

In 2004, the total vehicle fleet registered in Moldova for the main categories was composed of 280.075 cars and 47.171 trucks and van.

Cars and motorbikes show a moderate increase in the period 2002-2004, whilst the rest of vehicles have remained almost unchanged.

In 2005, the first registrations of brand new vehicles for personal use increased to 22.668, and goods transport vehicles to 8.269. In the first half of 2006, the same rhythm of registration is observed (CEMT).

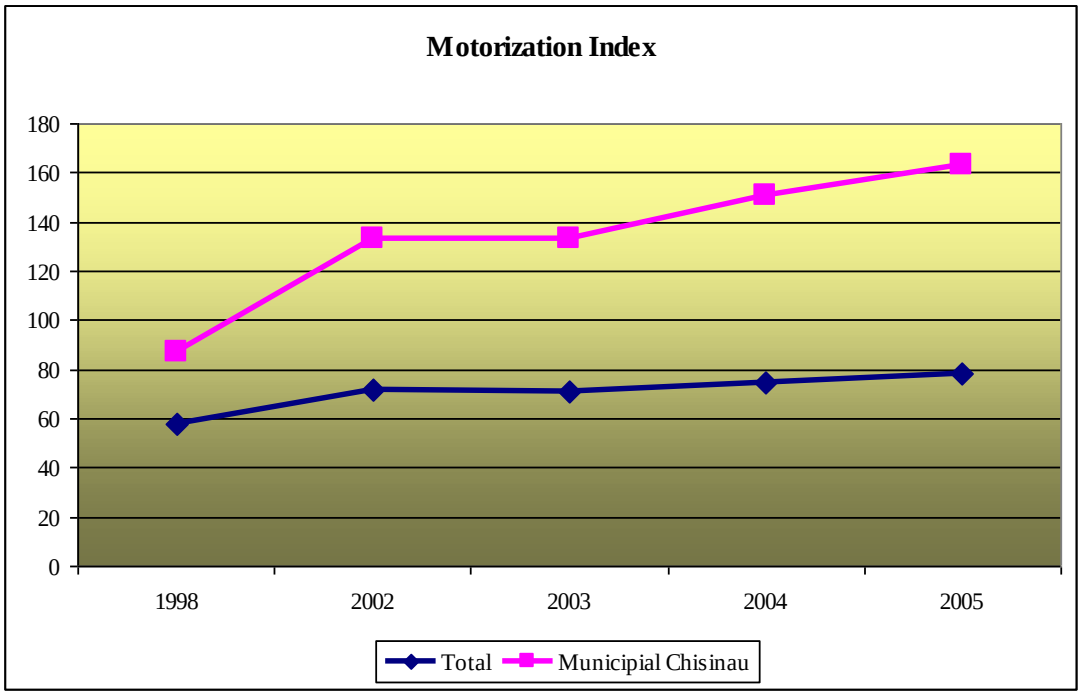
Number of Registered Vehicles



The total number of cars per 1.000 inhabitants (Motorization Index) is above 80. It has shown a slight increase in recent years, mainly due to the capital city, Chisinau, where this increase has had a greater weight, particularly since 2003.

This index is way below the normal values found in more developed countries throughout Europe and the rest of the world (for example, in Spain this index is close to 500).

Motorization Index



2.2.2 Road traffic

The following chart shows the evolution of traffic on the main roads of the Republic of Moldova.

There is a sharp generalised decrease until the year 1995. From that moment on, there is a clear stagnation in the traffic flow on all roads.

There are clearly three main roads in the country, according to the traffic volumes registered:

- Chisinau – Hincesti (R3)
- Chisinau – Balti
- Balti – Briceni

Higher traffic is also registered between the main cities or counties according to their population size.

The biggest cities in Moldova, as of January 1, 2005, thousand persons

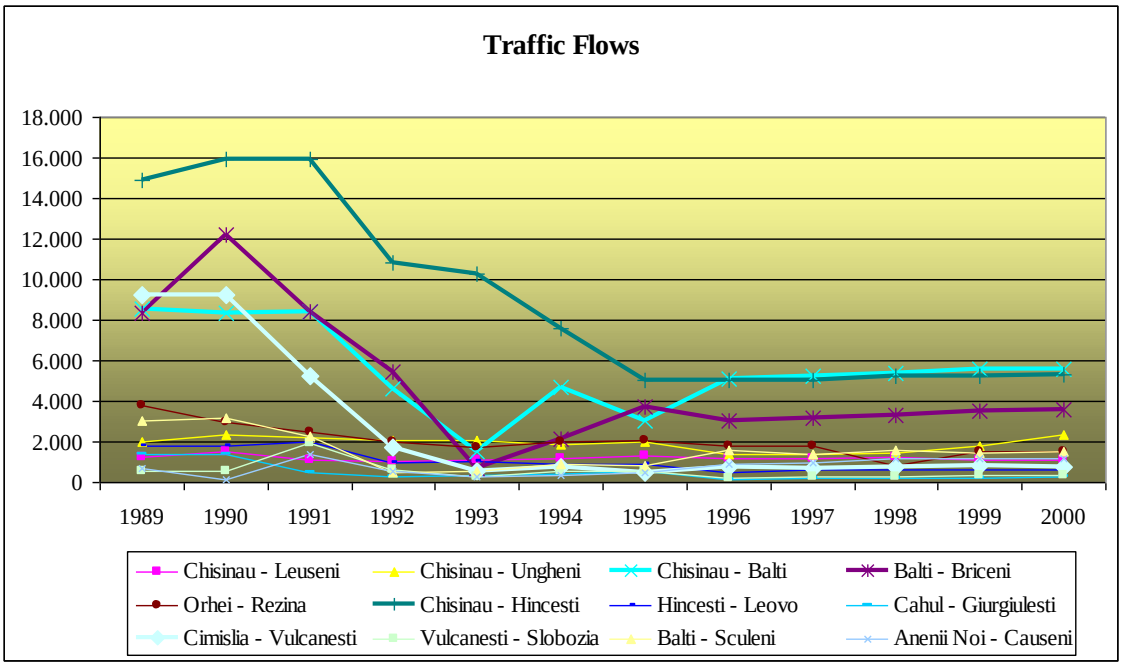
		din care: */of which:*		In % față de total In % of the total	
	Total populație/ *Total population*	Urbană/ *urban*	rurală *rural*	urbană *urban*	rurală *rural*
Total[1] /*Total*[1]	**3386,0**	**1308,8**	**2077,2**	**38,7**	**61,3**
1. Municipiul Chişinău	716,7	647,7	69,0	90,4	9,6
2. Municipiul Bălți	127,6	122,7	4,9	96,2	3,8
Raioanele: ***Counties*:**					

	Total populație/ *Total population*	din care: */of which:*		In % față de total In % of the total	
		Urbană/ *urban*	rurală *rural*	urbană *urban*	rurală *rural*
3. Hînceşti	119,8	15,3	104,5	12,8	87,2
4. Cahul	119,2	35,5	83,7	29,8	70,2
5. Orhei	116,2	25,7	90,5	22,1	77,9
6. Ungheni	110,8	35,2	75,6	31,8	68,2
7. Ialoveni	97,8	15,1	82,7	15,4	84,6
8. Soroca	94,8	28,4	66,4	30,0	70,0
9. Căuşeni	90,6	21,9	68,7	24,2	75,8
10. Făleşti	89,8	14,8	75,0	16,5	83,5
UTA Găgăuzia	155,7	58,3	97,4	37,4	62,6

1. Without the left side of the river Nistru and municipality Bender

Moldova is divided into 32 raions, or raioane, 2 municipalities (Chișinău and Bălți), one (non-contiguous) autonomous territorial unit (Gagauzia), and the breakaway region of Transnistria, the status of which is disputed. The cities of Comrat, Tiraspol and Tighina/Bender also have municipality status, but are not among first-tier units, i.e. are counted inside Gagauzia, respectively Transnistria.
NB : Bender Municipality is 97 000, Tiraspol 158 000

Traffic flows on main roads



There is available data for Road R3, provided by automatic counters, for the years 2004, 2005 and the first half of 2006.

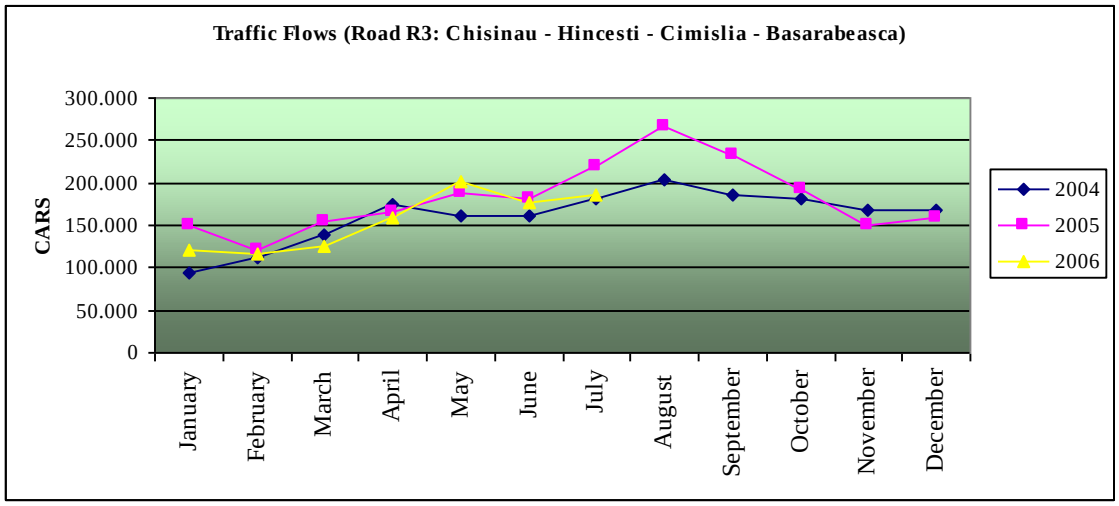
The three charts below show the monthly evolution of the traffic flows on this road according to the type of vehicles (light, heavy and total), for the three years mentioned above.

Both light and heavy vehicles show the same trends:

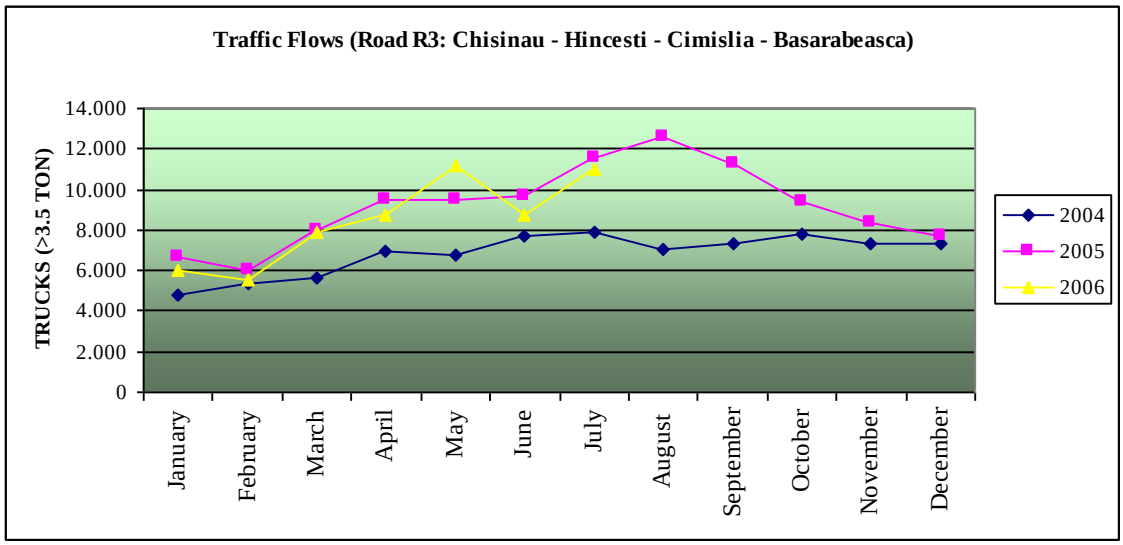
- Summer months register the highest values of traffic.
- Winter months register the lowest values of traffic, due to extreme weather conditions.

- 2005 registered an increase of traffic, mainly in summer and particularly for heavy vehicles.
- 2006 seems to follow the same trend as the previous year.

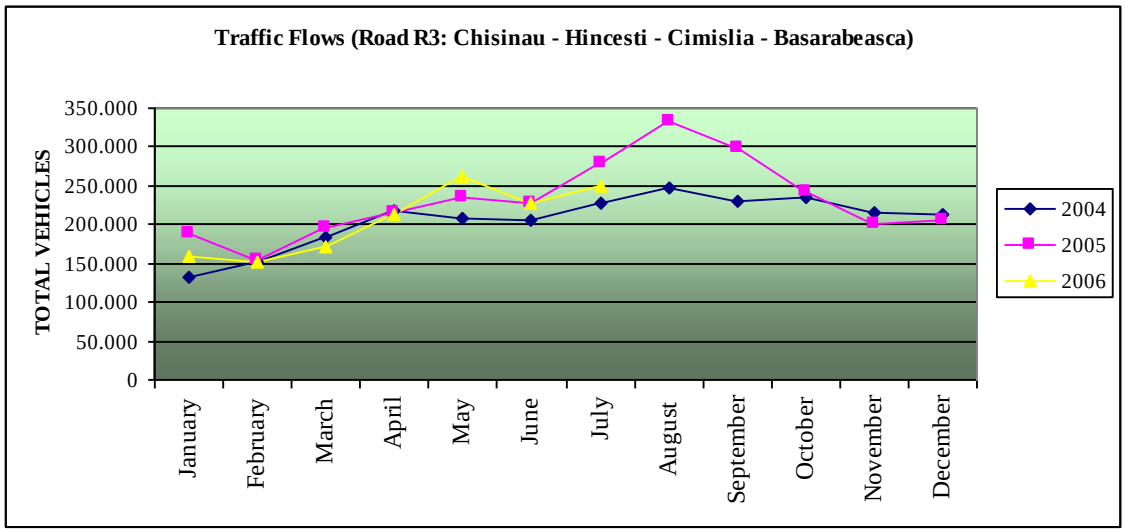
Evolution of light traffic on Road R3



Evolution of heavy traffic on Road R3



Evolution of total traffic on Road R3



2.3 ROAD USERS

2.3.1 Passenger transport operations

The available statistical documentation on road passenger transport focuses on urban public transport. There is little data available on inter-city connections.

2.3.1.1 Road public transport

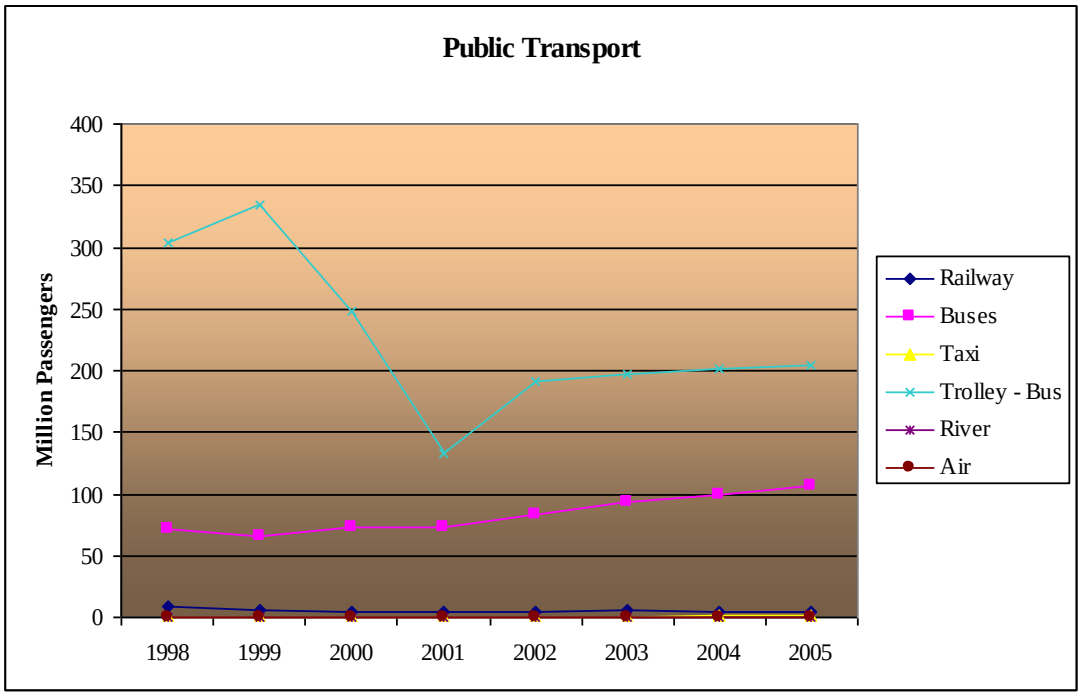
It is estimated that most of the road passenger transport is produced in Chisinau. According to available data, the number of cities with public transport has decreased since 1998 from 25 to 16. Trolley buses in Chisinau carry most of the passengers with short distance transport (less than 10km); buses and minibuses, on average, distances around 20 km, with a maximum density of companies in Chisinau.

Buses and trolley-buses are the only means of transport that have shown significant evolution lately. These figures should be compared with Railway passenger transport which shows permanent stagnation.

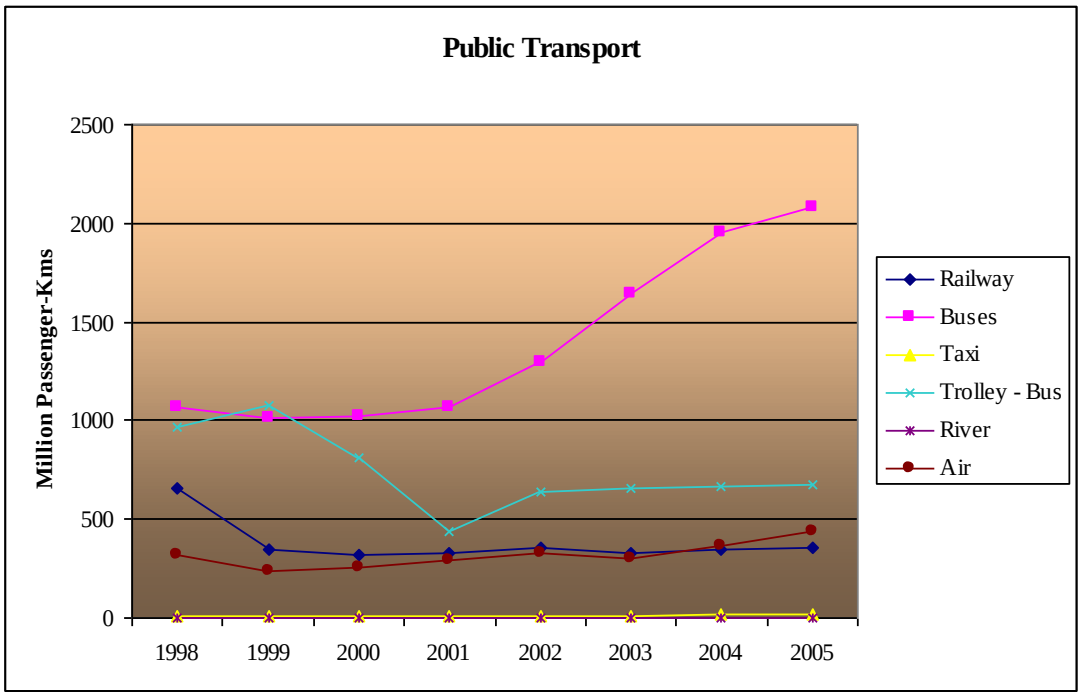
Though the total number of passengers by trolley-bus is higher than by bus, looking at passenger-km the ratio is reversed. This is so because trolley-buses are mainly used in urban areas, thus the average travel distance is lower than for buses.

The number of passenger-km by bus began soaring in 2001 whilst the other modes of transport kept more or less stable. This trend has remained the same to date, according to the figures from January – September 2006.

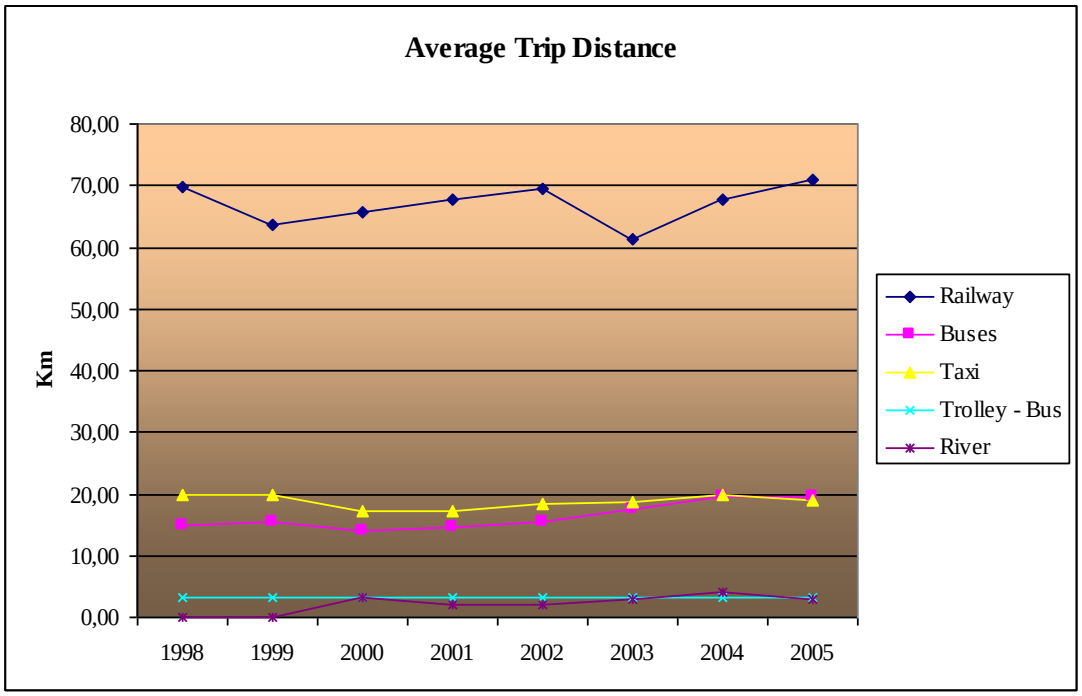
Evolution of Passengers



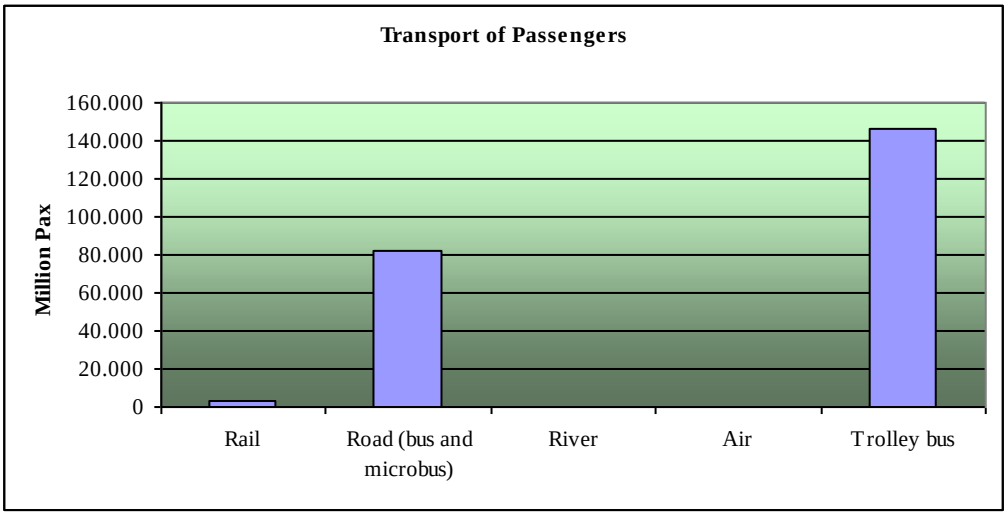
Evolution of Pax-Km



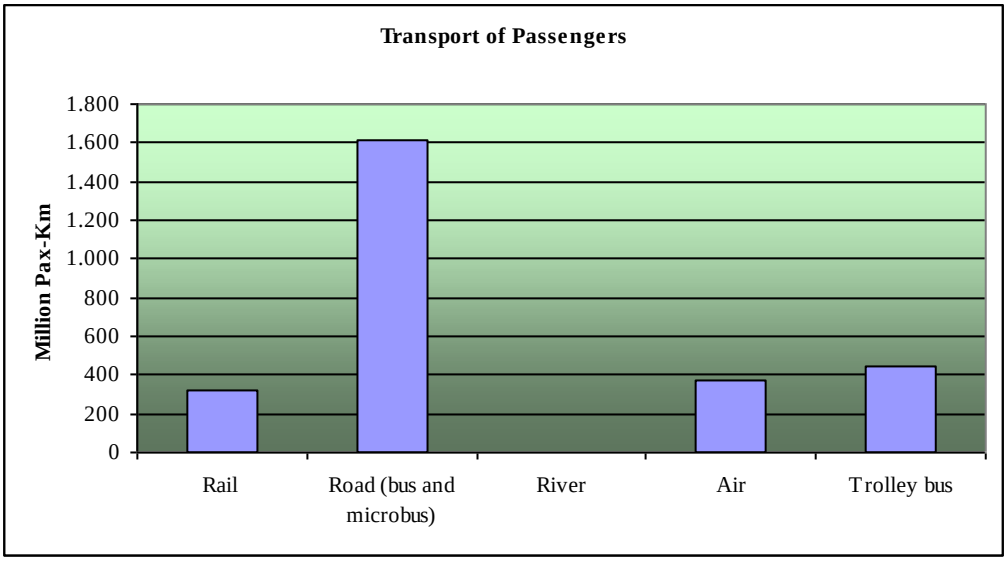
Evolution of the Average Travel Distance



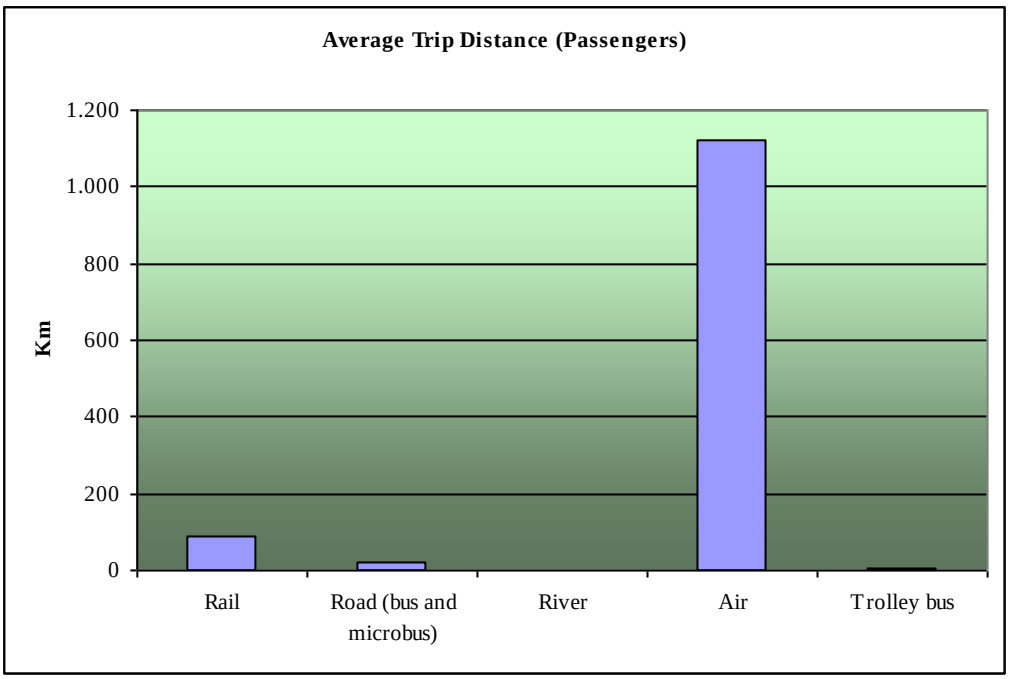
Passengers Jan-Sept 2006



Passenger-Km Jan-Sept 2006



Average Travel Distance (Jan-Sept 06)



Unofficial figures from surveys estimate that around 200 million passengers per year are transported by minibuses.

The present reports provide a detailed analysis of the urban transport issues in Chisinau (see chapter III).

On a national scale, it is obvious that the road public transport system fails to meet the population's mobility needs.

- Two thirds of the population is located in rural areas where the public transport networks are the weakest and where infrastructure is in poor condition

- There is no obvious public service framework, at a national level, for a relevant multi-modal network for public transport, co-ordinating rail & road passenger services, nor even public and private companies' services

- The companies' management is short term oriented, with low quality services and opportunity pricing

A practical example can be observed every day in the main intercity bus stations of Chisinau.

There are several lines of buses and mini-buses offering varied destinations around the country, but the provision of services is irregular and not adapted to the demand. There is no organised ticketing; passengers have to be at the bus stop at least one hour in advance in order to ensure getting a place in the 12 - 20 seat vehicles.

Besides these services, an important parallel market of collective transport is organised (by cars or van), but with few guarantees to reach any exact destinations. Price are freely negotiated.

The final segment of the journey remains highly problematic if it is located in rural areas. Taxi or individual car owners often do not accept travelling out to localities not connected to the main network by roads with a paved surface. In case of bad weather or during the night, a large part of the population is cut off from any collective (public or private) transport network.

These observations are corroborated by all analysts. A household survey carried out in 2003 in rural communities in Moldova by ECORYS already showed that poor roads and transportation was considered the worst problem faced by communities and villages.

2.3.1.2 Individual users

If it is assumed that the average distance travelled per individual vehicle is 12 000 km per year, and taking into account only the driver, the individuals users, with a fleet of around 270 000 private cars produced 3.240 million passenger kilometres, more than twice the capacity of the public transport system. However, there is no existing estimation of the use of individual vehicles, the average quantity of passengers, the purpose of the trips, the household habits of mobility, of the usage resulting from the possession of an individual vehicle, of the mobility of workers, of the consumption of public transport per household or of regional approaches of the issues…

As a result of the enquiry, the Consultant has not identified any study on the habit of mobility and the mobility requirements of the people in the country. This lack of socio-economic background data hampers any conception of transport strategy directed at satisfying the users of the system. The Consultant recommends the planning of such sociological studies to improve the quality of programming. For easy financing, and taking into account the existence of some high school departments specialised in transport, this could be done through a policy of individual grants for students and scientists in the framework of a scientific programme.

2.3.1.3 Diagnosis on road passenger transport

Due to the low index of individual vehicle possession, the lack of an organised network of public transport in the country and the weight of the rural population (in the areas where the

network is in the worst condition), the access to transport can be considered as a discriminating factor among the population of Moldova. The difference is considerable between the population of Chisinau where almost all the public transport network (private and state owned) is concentrated and the infrastructure, although in bad condition, enables normal traffic, and a large population located in rural areas, connected to the main road network by non paved roads and with scarce bus services to limited destinations.

2.3.2 Road Freight transport operations

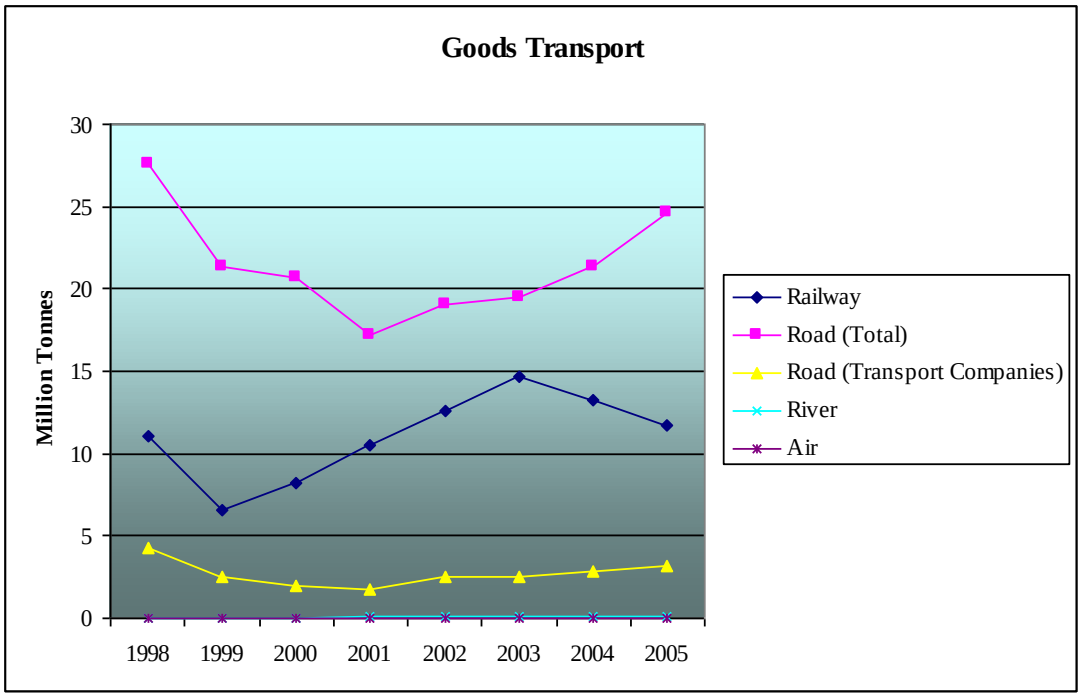
2.3.2.1 Characteristics of road freight transport

The domestic transport of goods is the dominant activity in Moldova in terms of tons of goods transported. Domestic transport vehicles carried 23.2 million tons in 2005 and international road transport 1.4 million tons. In the domestic market, 18.3 million tons were carried on own account and 4.9 million tons by transport companies.

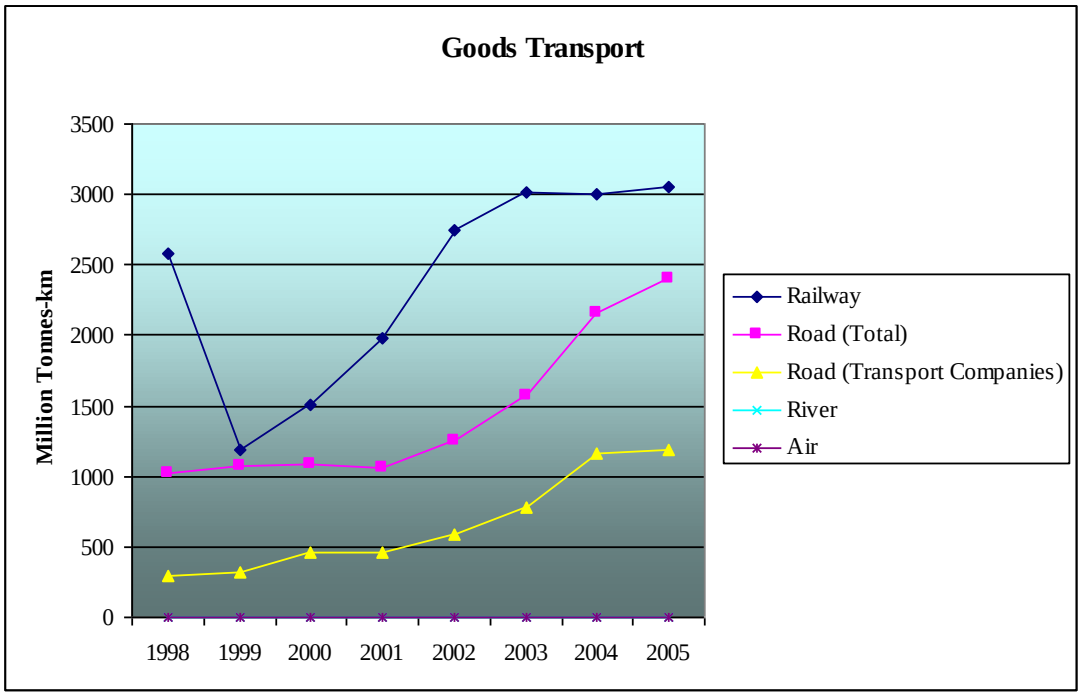
However, transport companies dominate the international transport operations with 1,16 million tons carried in 2005, whilst only 0,27 were carried on own account transport.

The figures in tons-.km reflect the small size of the country and the weight of export of agricultural products in the trade and transport activities. In 2004, the average trip distance for transport companies was 400 km. Expressed in ton-.km, the productivity of the transport companies is around 1,415 million tons-.km for international transport (privately owned transport: 57 million tons-.km) and of 134 million tons-.km for the domestic market (privately owned : 385 million tons-.km).

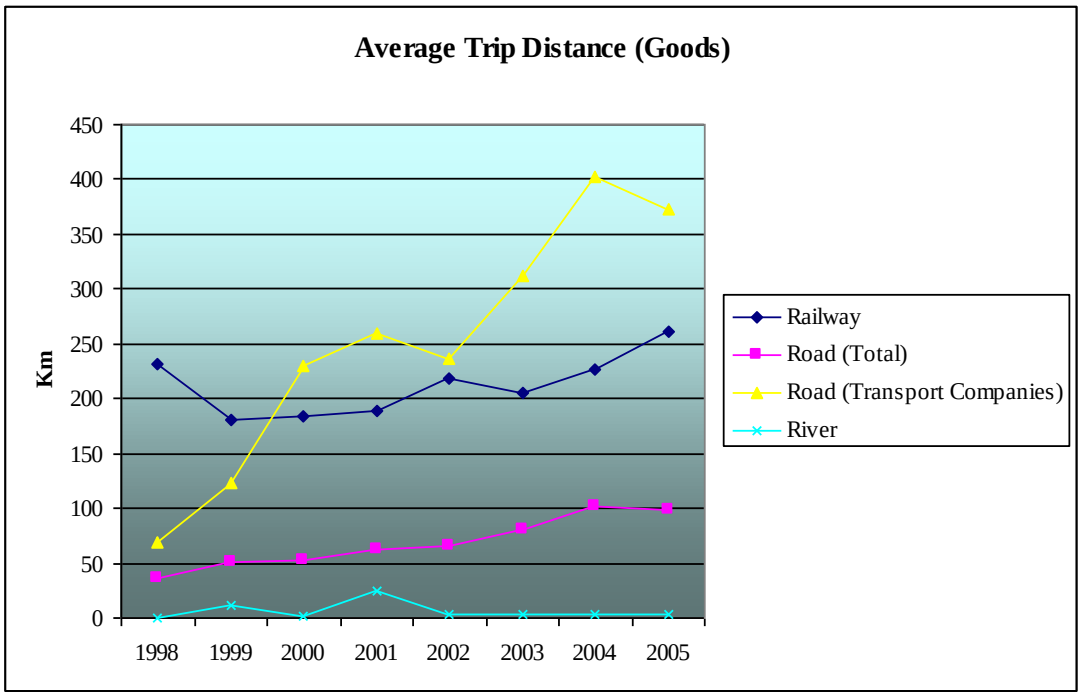
Evolution of Freight Transport (tons carried)



Evolution of Freight Transport (tons-km carried)

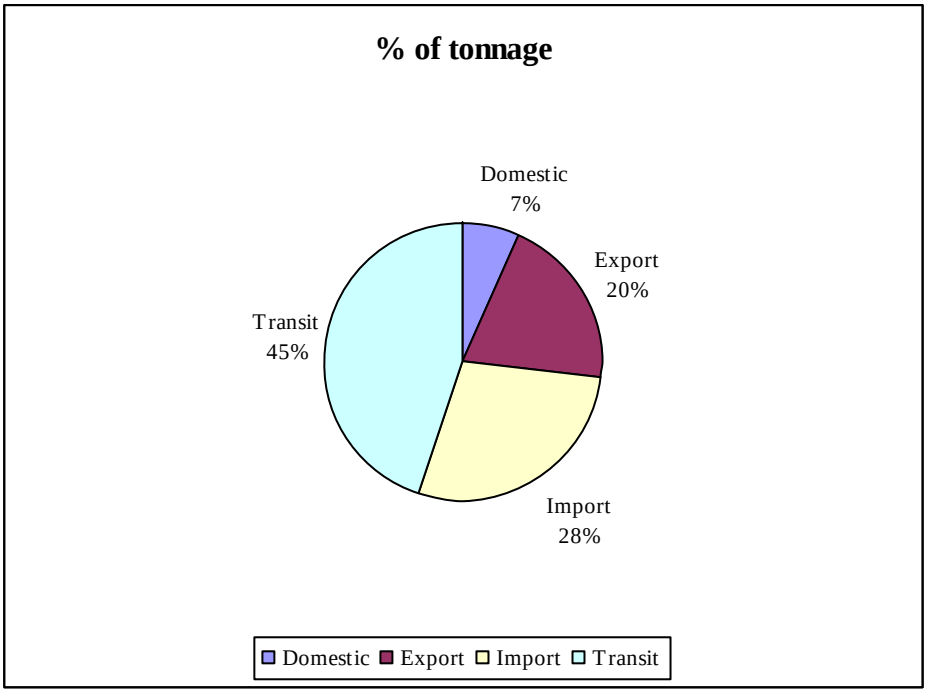


Freight Transport Average Travel Distance

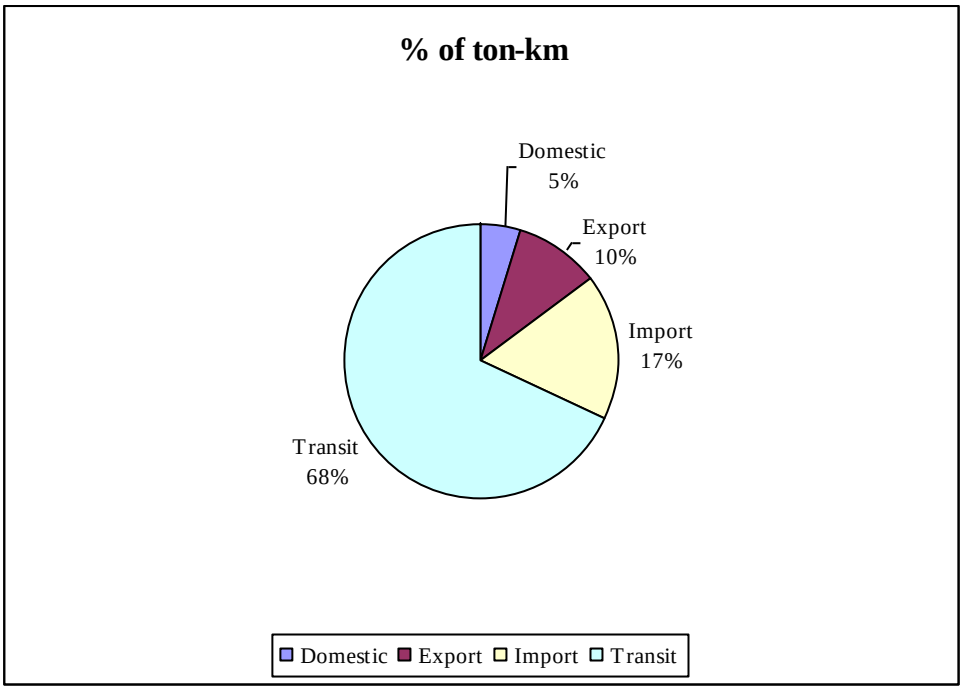


Commercial activity for freight transport (comprising all modes of transport) is mainly related to transit and external trade, while the domestic market is dominated by privately owned transportation. This is evidence of a lack of activity in terms of internal distribution and logistics and a subsequent massive loss of business for the transport industry, which is in a weak position on the domestic market.

Freight Transport Sectors (Tons)

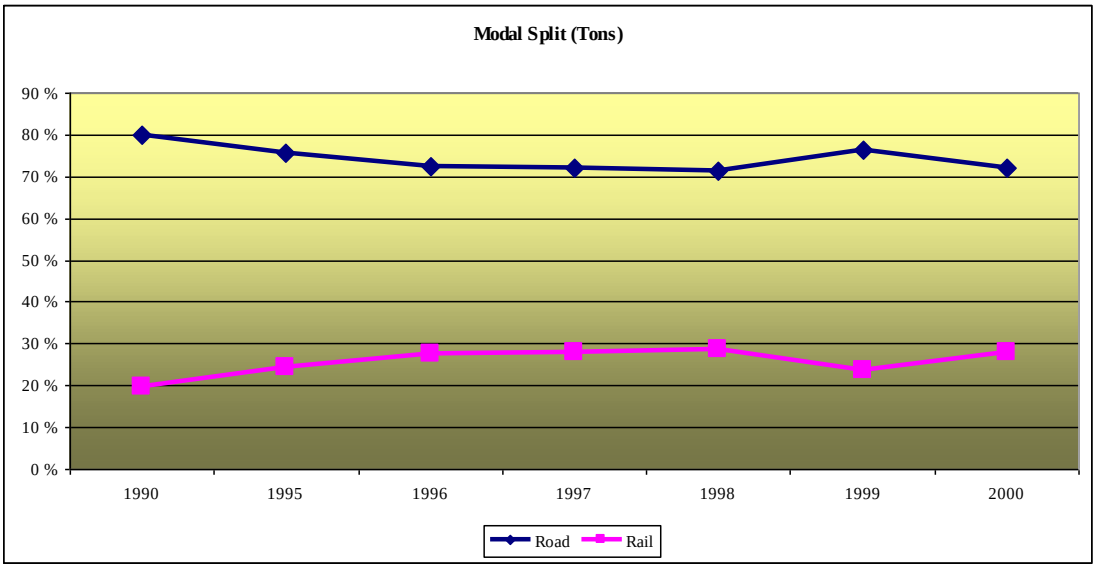


Freight Transport Sectors (Ton-km)

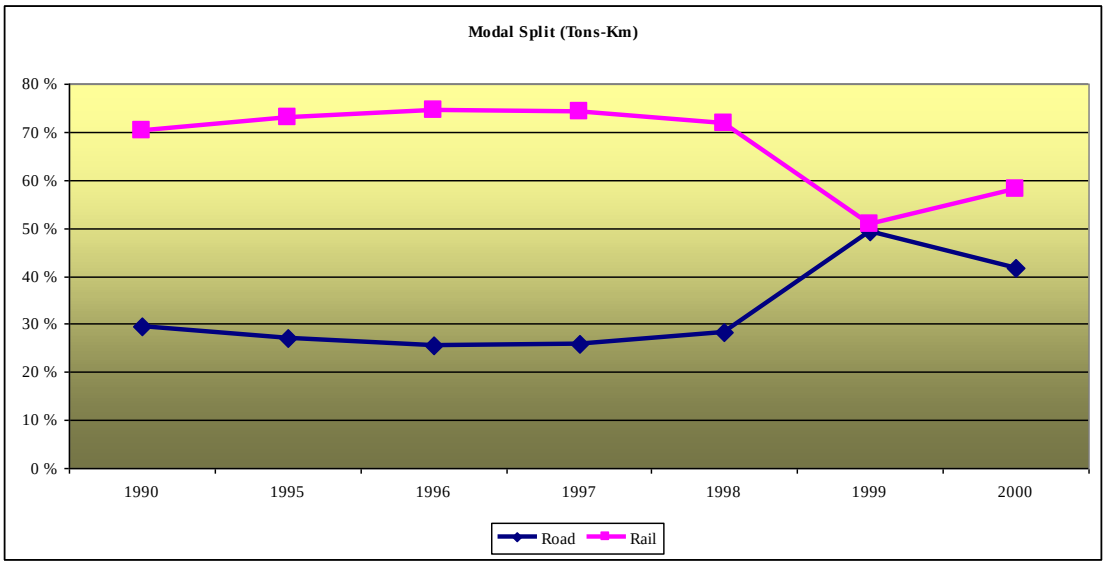


The modal split between road freight transport and rail freight transport shows a bigger share for road than rail in tons carried, but the position is inverted in terms of tons-.km.

Freight Transport Modal Split (Tons)



Freight Transport Modal Split (Tons-km)



The picture that is emerging from the above mentioned figures is a little developed market of road freight transport, still dominated by privately owned transport and challenged on long distance transport by rail services. The development of own-private transport is symptomatic of the failure of the market to provide the services that manufacturers and retailers need, except in the case of heavy industry areas, which is not the case in Moldova.

2.3.2.2 Vehicle fleet for freight transport

In 2004 there were around 47 000 vehicles for all types of freight services (trucks, vans, pick-ups) out of which 25 000 were the property of private citizens. In 2002, from the 4 200 trucks registered in transport companies, none of them were compliant with Euro 3 standards; 8% with Euro 2; 3% with Euro 1 and 89 % with Euro 0. The situation improved with an enlarged Euro 2 fleet. However, there are, in 2007, only 35 truck complying with Euro 3 standards out of the 4 500 registered vehicles.

For international transport, this is a major barrier to face for transport companies as in 2007 the decision was taken at CEMT level that multi side authorisations (operations with origins and destinations abroad) will be delivered from 1st of January 2007 only to vehicles meeting Euro 3 standards. The present fleet of 2000 Euro 2 trucks will only get the benefit of **two-way** authorisations.

In 2006, a quantity of 756 multilateral authorisations was attributed to 196 Moldovan transport companies enabling international operations between the 38 "ECTM countries".

2.3.2.3 Companies operating under the TIR convention

Companies operating under TIR convention are members of AITA, the Moldovan Association of Road Transport; (Asociației Internaționale a Transportatorilor Auto) which is responsible for the implementation of the TIR convention in Moldova. It numbered 280 members in 2006, and represents 3000 drivers. In 2000 it was managing operations based on 19.600 TIR

An overview of the global destinations for deliveries, and loading of all Moldovan trucks working in the TIR system is presented in the following tables.

The country (place) of loading of the freight in Moldovan carriers' trucks (by TIR system)

Number of loadings

Country of loading	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Austria	**7**	**71**	**224**	**347**	**351**	**354**	**435**	**372**	**344**
Armenia	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**6**
Azerbaijan	**0**	**0**	**1**	**0**	**0**		**0**	**0**	**8**
Albania	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**
Great Britain	**21**	**30**	**56**	**42**	**45**	**37**	**44**	**40**	**32**
Belarus	**73**	**82**	**118**	**129**	**198**	**323**	**582**	**967**	**900**
Belgium	**138**	**229**	**360**	**383**	**277**	**337**	**324**	**350**	**300**
Bulgaria	**2346**	**1275**	**791**	**658**	**701**	**1036**	**1196**	**1399**	**1546**
Germany	**1339**	**1582**	**1260**	**1411**	**1284**	**1245**	**1300**	**1201**	**1375**
Greece	**291**	**276**	**693**	**814**	**1226**	**1286**	**842**	**1748**	**2994**
Georgia	**1**	**1**	**1**	**0**	**2**	**1**	**0**	**5**	**10**
Denmark	**0**	**2**	**5**	**0**	**7**	**14**	**10**	**12**	**13**
Israel	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**10**	**1**
Spain	**208**	**120**	**90**	**131**	**94**	**130**	**158**	**114**	**77**
Italy	**267**	**413**	**613**	**895**	**1321**	**1579**	**2169**	**2923**	**2876**
Kazakhstan	**0**	**18**	**6**	**1**	**2**	**25**	**13**	**16**	**13**
Kirgizia	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**10**	**2**
Latvia	**15**	**29**	**30**	**38**	**86**	**131**	**300**	**229**	**254**
Lithuania	**83**	**18**	**35**	**137**	**225**	**508**	**695**	**949**	**1078**
Macedonia	**13**	**18**	**8**	**3**	**0**	**3**	**4**	**3**	**5**
Moldova	**3567**	**3381**	**5638**	**6315**	**5795**	**6187**	**13362**	**17059**	**14606**
Holland	**210**	**321**	**482**	**474**	**298**	**283**	**268**	**234**	**268**
Poland	**1111**	**1550**	**621**	**732**	**755**	**607**	**1917**	**2572**	**4704**
Portugal	**0**	**0**	**0**	**1**	**3**	**3**	**0**	**0**	**5**
Russia	**944**	**1100**	**1287**	**1538**	**1804**	**1654**	**2318**	**3366**	**4580**
Romania	**1089**	**931**	**1200**	**1528**	**2512**	**3058**	**4048**	**5265**	**6527**
Syria	**0**	**0**	**1**	**2**	**4**	**5**	**11**	**2**	**5**
Slovakia	**115**	**48**	**39**	**31**	**35**	**63**	**78**	**187**	**119**
Slovenia	**12**	**33**	**154**	**291**	**160**	**85**	**80**	**97**	**110**

Country of loading	1997	1998	1999	2000	2001	2002	2003	2004	2005
Turkey	88	49	112	310	501	1349	3022	3963	5883
Turkmenistan	0	0	0	0	0	0	0	0	1
Tadzhikistan	0	0	0	0	0	0	0	0	1
Uzbekistan	0	1	1	2	6	15	3	2	8
Ukraine	306	512	707	1225	956	1357	1719	1770	3366
Finland	17	46	20	12	28	36	45	74	139
France	119	207	120	102	88	108	182	316	266
Czech Republic	198	242	123	154	114	170	210	218	240
Switzerland	27	24	20	21	16	17	13	23	26
Sweden	2	1	0	2	0	1	1	8	10
Estonia	30	148	106	160	187	143	113	129	200
Yugoslavia	23	44	10	25	28	37	113	100	194

The country (place) of unloading of the freight from Moldovan carriers' trucks (by TIR system)

Number of unloadings

Country of unloading	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	7	62	432	410	265	148	202	179	201
Azerbaijan	6	10	9	23	34	8	5	6	23
Albania	0	33	40	19	15	21	15	53	33
Great Britain	20	36	51	42	59	41	64	49	42
Armenia	8	6	0	3	2	1	1	23	30
Belarus	120	149	121	173	381	681	1845	2673	3849
Belgium	66	53	74	97	100	213	222	185	243
Bulgaria	475	331	782	507	445	598	667	939	1030
Hungary	72	130	237	111	46	83	114	172	217
Germany	1092	1505	1637	1744	1238	850	1159	1214	1082
Greece	113	160	377	294	396	626	823	1108	1164
Georgia	4	19	24	21	22	15	15	32	38
Denmark	0	4	1	9	6	2	5	1	1
Spain	114	76	103	89	92	129	107	104	72
Italy	159	330	532	950	1100	1400	2019	2748	2483
Kazakhstan	22	37	27	24	53	133	96	136	251
Kirgizia	0	2	3	2	4	13	11	6	6
Latvia	5	19	29	46	99	127	202	160	171
Lithuany	13	31	76	168	229	345	358	295	229
Macedonia	15	49	57	29	17	36	21	14	61
Moldova	5139	5240	4371	6580	7162	7691	10940	13055	17725
Holland	79	71	146	148	112	66	77	89	78
Poland	108	139	375	254	233	198	272	350	441
Portugal	61	24	1	1	8	30	10	0	3
Russia	4572	3547	3503	4452	4650	5341	11837	16633	16529
Romania	362	866	1356	1457	1403	1905	2703	3258	3485
Syria	0	0	6	16	23	14	6	6	4
Slovakia	13	9	31	13	21	31	32	80	43
Slovenia	3	20	45	48	50	68	79	47	51
Turkey	66	52	80	135	96	285	602	996	683
Turkmenistan	0	3	3	0	1	0	0	0	0
Tadzhikistan	0	0	0	0	0	1	0	1	2

Country of unloading	1997	1998	1999	2000	2001	2002	2003	2004	2005
Uzbekistan	**1**	**4**	**1**	**4**	**16**	**32**	**21**	**36**	**31**
Ukraine	**454**	**377**	**719**	**626**	**1199**	**1287**	**1069**	**1116**	**2956**
Finland	**1**	**4**	**0**	**0**	**2**	**10**	**7**	**32**	**24**
France	**84**	**113**	**94**	**135**	**211**	**168**	**300**	**426**	**334**
Croatia	**0**	**5**	**9**	**10**	**19**	**35**	**54**	**33**	**32**
Czech Republic	**34**	**46**	**66**	**96**	**45**	**72**	**139**	**114**	**145**
Switzerland	**5**	**3**	**6**	**4**	**4**	**1**	**6**	**18**	**17**
Sweden	**0**	**1**	**0**	**0**	**0**	**2**	**1**	**4**	**3**
Estonia	**1**	**15**	**81**	**59**	**68**	**56**	**57**	**61**	**55**
Yugoslavia	**4**	**8**	**19**	**13**	**24**	**53**	**61**	**87**	**135**

In 2005, Moldovan trucks loaded 9.197 times in CIS countries, 16.650 times in EU countries, 6.527 times in Romania, and 6.088 times in other countries, among which Turkey dominates with 5.883 times. The main loading place remains Moldova with 14.606 times.

Moldovan trucks unloaded cargo mostly in Moldova (17,725 times), Russia 16,529, Ukraine and Belarus (2,956 and 3,849). Romania was the destination of cargo 3,485 times, EU countries as a whole 6,868 times, Turkey 683 times.

These figures are characteristic of TIR activity. They do not match, however, the commercial exchanges of Moldova with the other countries. As a whole, there are three exporting countries using the Moldovan fleet: Romania, Turkey and Russia, and two main delivery destinations for cargo outside Moldova, the neighbouring CIS countries (Ukraine-Russia-Belarus) and some long distance transport with various Western EU Countries. National Moldovan export/import operations, however, stand as the main usage of the Moldovan fleet.

2.3.2.4 Border crossing issues

The borders of Moldova were included in the first Trade and Transport Facilitation in the Southeast Europe Program (TTFSE) which provided information about the issues raised at border crossing points. The main observation noted in the years 2002-2004 was about an excessive delay in border crossing, but the situation improved during the period of the implementation of the project (at the Leuseni border, the delay for entering the territory of Moldova has fallen from 180 to 100 minutes for 60 % of the traffic, but the remainder of the traffic was reported to be delayed between one to four days).

The programme, which intends mainly to improve the method of work and the co-operation between the different administrative officers at border points, is still under implementation with the following components:

Component	Description	Comments
a. Strengthening of MDC Institutional Capacity ***US$1.4 million***	Includes technical assistance and training to: (i) improve operations at pilot sites by collecting and refining performance indicators data, facilitating inter-agency local project teams, cooperation and awareness; and, (ii) re-engineer procedures by introducing selectivity and targeting, and strengthening valuation and post-release activities.	(i) started in February 2004 with U.S. Customs assistance; Legislative and Procedural revisions undertaken.
b. Development of Integrated Customs Clearance and Information System (ICCIS) ***US$6.0 million***	Includes provision of technical assistance, equipment, and training to: (i) install and implement the ASYCUDA comprehensive system for Customs clearance assisted by UNCTAD; and, (ii) ensure the computerization of MDC through an integrated package including equipment, software, acquisition and installation of telecommunication, and services.	(i) started in April, 2004, training of staff, roll-out in 2005; (ii) procurement under preparation.
c. Implementation of a Transit and Inland Control System ***US$0.3 million***	Includes acquisition and operation of mobile intervention equipment to strengthen the preventive and enforcement capacity of MDC along major transit routes and the border line. The system requires the establishment and training of a preventive and enforcement unit, and issuance of guidelines for the unit's activity.	Under analysis; specifications and justifications needed.
d. Improvement of Border Crossing Facilities ***US$0.9 million***	Includes minor works, repairs, and vehicle inspection equipment to (i) reorganize the traffic flows and work stations at selected border locations; and, (ii) enhance Customs' control and processing capacity.	Procurement completed; two contracts for canopies.
e. Trade Facilitation Development ***US$0.4 million***	Includes: (i) participation in the regional TTFSE website to ensure full transparency of procedures and requirements of border agencies, and to provide travel information; (ii) provision of conventional and distance learning training to participants in trade, logistics, and international freight transport through the Chamber of Commerce; (iii) distance learning programs for road transport operators and freight forwarders; and, (iv) annual survey of trade and international transport environment.	Component contracted May 2004; (ii) 5 seminars have trained 111 participants.
f. Project Implementation ***US$0.6 million***	Includes the services and office equipment required to support the implementation of the project consisting of the Project Implementation Team (PIT), procurement and information technology advisors, external auditors, the establishment of a financial management system, and training for the PIT staff.	PIT restructured, new project manager May 2004, procurement staff to be contracted.

Moldovan drivers also encounter difficulties to cross the borders of the neighbouring countries. Besides general legal problems mentioned above about traffic limitation and admission of vehicles, some specific barriers are reported to Ukraine (unofficial payments for Ukraine transit, unofficial payment on the road to Ukraine in the Transnistria area) and to Romania, mostly related to the new visa regulation for non-EU members. The situation seemed to improve at the end of the first quarter of 2007, but Moldovan drivers still face major limitations of mobility within Europe.

2.3.2.5 Logistics

The logistic sector is underdeveloped in Moldova. Actual logistic activities can be assimilated to some storage and shipping activity related to dominant sectors such as the export of agricultural produce. For the time being, the shippers (especially retailers) are supposed to manage their own import, storage and distribution activities. Except in the sector of small

parcels activities, which remains limited, there is no international operator able to organise third party services (the outsourcing of logistics) on a large scale in the country.

For national container freight transport (import and export) the obvious connection for the short term is to develop strategies complementary to the port of Odessa, which is the best hub for shipping or collecting bulk goods in /out of Moldova (Odessa port is within half a day's road travel from main cities in Moldova).

However, some projects are foreseen by the Freight Forwarder Association of Moldova.

a) A common initiative by the main shippers and road hauliers for the development of a logistic area in the periphery of Chisinau is possible. This could occur with the development of the economy, with the arrival or the development of large retailers.

b) The development of the freight port of Giurgulesti for container transit from the Black Sea to the Danube corridor. However, this project is a specific activity, not fully connected with the local economy, but which could be profitable in the medium term for the operators. Some approaches were made for a connection with the port of Azov. Freight transiting through the port of Azov could be taken in charge in Giurgulesti by hauliers able to penetrate the Danube Corridor. This project or an equivalent agreement is fully supported by the Government.

In parallel, there is a project for the renovation of the whole itinerary from Chisinau to Giurgulesti. (M3 renovation project). The global cost of this project would be **US$ 82,6m** in its lower variant. Although some studies are planned with the support of EU regional TACIS budget, this project could be delayed due to obvious priority repairs in the core network.

2.3.2.6 Diagnosis on road freight transport

As a whole, the picture emerging of the sector is an organised network of small private companies, growing according to transport demand, but with a limited array of services. There is an obvious need of direct investment in the sector to reach the point where companies will be able to provide all types services, from national daily support of activities to larger international trips. Stronger support is desirable from the public entities to prepare projects in the field of logistic infrastructure.

2.4 ENVIRONMENTAL ISSUES

2.4.1 Organization

The competent authority in the sphere of environmental protection and management is the Ministry of Ecology and Natural Resources (MENR), which includes State Ecological Inspectorate, also dealing at the raioane level.

The competent EA authority in Moldova is the network of different organization which has function of SEE. The network is formally subdivided to the MENR itself and to the State Ecological Inspectorate, which again is subordinated agency of the MENR. The MENR includes Division on Environmental Pollution Prevention which is responsible for checking and approval of full EIA studies. The State Ecological Inspectorate have central headquarter office in Chisinau, including Department of Ecological Expertise and Environmental Authorizations, which is responsible for SEE and Local Environmental Inspectorate for 32

Raioane and Territorial Administrative Units Gagauz Yeri, and for urban municipalities Chisinau, Balti, Comrat and Bender (also responsible for the SEE, but in regard to projects with local territorial importance and small scale environmental impacts).

The ministry is represented by a group of permanently employed state experts of the Division for Environmental Pollution Prevention and may ask additional support from the State Ecological Inspectorate central headquarter or, if necessary for revision of EA documents for complex and dangerous objects, from any other resource experts and specialized institutes (as example – Academy of Science, University, State Designing Institutes, etc.). By this two agencies all aspects of the environment are represented, e.g., atmosphere, soil, flora and fauna, etc. According to the Law on Environmental Expertise and Environment Impact Assessment, 1996, these experts should be highly trained professionals with at least 10 years of experience in the field and five years as planners.

At the same time there are no environment departments or responsible staff within the MTRI and State Road Administration. The lack of environmental specialists had been also identified within the permanent staff of the State Road Design Institute, which is actually in the process of reorganization towards several small private designing companies.

2.4.2 Assessment of capacities

While Moldova made impressive progress in developing legislation on environmental protection and EA, more effective environmental management requires progress with: (i) promoting increased use of Sectoral Environmental Assessments to mitigate any serious unanticipated environmental consequences and incorporation of findings for feasibility studies of sub-projects; (ii) creating institutional capacity within the MTRI for performing Strategic Environmental Assessment (SEA) for the whole sector development plans and application of the Environmental Impact Assessment (EIA) for the road under new construction or heavily rehabilitation; and (iii) further strengthening of the capacity of the SRA and of the State Ecological Inspectorate to supervise the implementation of environmental monitoring plans (EMPs), (iv) increase capacity of designing institutes (including the private ones) for environmental consideration.

As mentioned at the national level, EA policy development, review, and enforcement rests with the MENR and the SEE of the Ecological Inspectorate. The MENR has a mandate to develop the regulatory framework for environmental assessment as well as for the national environmental policy planning regulation and for coordinating environmental matters with the line ministries. The actual intention of the MENR is to introduce the Strategic Environmental Assessment (SEA) procedures to be incorporated into in-line ministries as a planning tool. The MENR is actually finalizing preparation of Implementation Strategy of EECUN Protocol on SEA under Convention for EIA in the trasboundary context. As a general guideline the Introductive Resource Kit on SEA for Republic of Moldova had been prepared in 2006.

At the same time within the MTRI as well as the State Road Administration there are no special unit and/or especially designated staff responsible for environmental issues. Furthermore, both institutions lack the relevant subdivisions that work in this area as well as any analytical laboratories that might assist in ensuring compliance with the existing legislation, regulations and ecological norms.

In this regard it highly recommended that a full-time environmental engineer will be appointed in the SRA to assist with project screening, evaluation of environmental risks of proposed sub-projects, and coordinate EA documentation preparation, including conducting of EIA study or preparation of chapters "Environment Protection" and "Environmental Protection during Construction" as a part of designing documentation if required. It is important also to increase capacities of MTRI for preparation of Strategic Environmental Assessments covering the whole sector development programs.

2.4.3 Assessment of adequacy of National EA requirements

Moldova has adequate laws on environmental issues as provided for under the 1994 Constitution, the Environment Protection (1993) as well as Ecological Expertise and Environmental Impact Assessment (1996) laws, and other sectoral laws on environmental pollution and natural resources management. A special analysis of the compatibility of the Moldovan EA system with the WB and EU rules and procedures was conducted by the WB in 2003. The main conclusion of the study is that many features of the Moldovan EIA system are generally compatible with corresponding World Bank procedures and the relevant EU directive. Often the existing Moldovan legal framework is more comprehensive and detailed. However, some important deficiencies need to be addressed; these are highlighted below:

- Formal provisions for Strategic Environmental Assessment required specific formal regulation (procedure);
- General and specific guidelines for SEA, EIA studies in major areas of national economy to be elaborated;
- Screening and scoping phases should be legally build with clear criteria and procedures;
- Method of coordination with other planning particularly for the SEA studies should be clarified;
- A third category of projects (those without environmental impact) to be officially established with clear criteria for assessment and simplified environmental requirements;
- Clear criteria for screening of the projects to be stipulated;
- Scoping methods should be stipulated;
- Content of EIA report should be revised for incorporation of policy; legal and administrative framework; non-technical summary; records of public hearings,;
- Clarify responsibilities for environmental monitoring and monitoring of performance after SEA and EIA findings;
- Responsibilities for enforcement and compliance to be stipulated in SEA and EIA Regulation and Law;
- Independent expertise for quality of SEA and EIA reports should be incorporated;
- Decision-making procedures and responsibilities should be clearly stipulated.

2.5 TRENDS FOR THE DEVELOPMENT OF ROAD INFRASTRUCTURE

2.5.1 Works of rehabilitation undertaken by the Government with the support of IFIs.

The World Bank approved a US$16.0 million Road Sector Program Support Project for Moldova under International Development Association credit terms.

The Road Sector Program Support Project has two components. The first component, Road Network Recovery, is focused on rehabilitation of about 400 lane-km of main roads. It consists of physical road works, consulting and other services that are directly related to the works, including feasibility studies (technical and economic), detailed engineering design, preparation of bidding documents and supervision of works. This component will absorb about 90 percent of the total project resources. The second component, Institutional Strengthening, is aimed at improving the capacity of the State Road Administration to manage effectively the road network under its responsibility, and to carry out road maintenance, rehabilitation, and investment programs in an efficient and transparent manner.

In addition to the World Bank financing of US$16.0 million, the project will be co-financed by the European Bank for Reconstruction and Development (EBRD) and the European Investment Bank (EIB). EBRD and EIB will each contribute €12.5 million.

The project will be executed over a four-year period, from mid-2007 to mid-2011. The project implementing agency is the State Road Administration, which is under the control of the Ministry of Transport and Road Industry.

MTRI/SRA has identified the road sections to be improved during the first year (2007) of the program. These are:

- Lots 1 and 2 of the Chisinau – Leuseni road, totalling 228.8 km. This is part of the Helsinki Corridor IX linking Moldova to Romania and Ukraine.
- A 12-km section of the Anenii Noi – Causeni - Tudora road (between the Tudora intersection and Olanesti intersection); this is part of the important international road from Chisinau to southern Ukraine.
- Sagaidac – Valea Perjei road (connection between M3 and R3 roads) of 15 km. This is part of the main North-South road corridor.
- A 31 km section of the M3 road from Comrat towards Cimislia. This is also part of the main North-South road corridor.

A preliminary review of those sub-projects by the World Bank team indicates that these road sections are economically important and require rehabilitation. Works to be executed on those roads would be the application of a levelling course and a wearing course of asphalt concrete, after localised repairs and strengthening have been carried out. The re-establishment of adequate drainage, and horizontal marking and vertical signing would also be included. Specific road safety features are to be included where appropriate and cost-effective, such as the supply and installation of guard-rails. The total amount to be spent per km of 2-lane road is expected to be between one and three million Lei (about US$75.000 to US$225.000 per km). Detailed technical design studies have been completed for one of those roads (Comrat – Cimislia road), and the bidding process for the design studies of the remaining road is under way.

In February 2007, a concluding declaration of a Governmental working session chaired by the President of the Moldovan Republic concluded that priority repairs for the road network for 2007 would be the following itineraries:

- Chisinau-Leuseni,

- Chisinau-Comrat
- Orhei-Rezina
- Chisinau-Balti

2.5.2 Budgetary trend for 2007

An amount of 157 million Lei (US$12.6 million), is devoted to current repairs and maintenance of the roads.
Within this budget:

- 34 million will be devoted to major repairs, especially the itineraries Anenii- Noi - Căuşeni - Ştefan Vodă - frontiera cu Ucraina; Tîrnova- Baraboi- Rîşcani; Stefan Vodă - Şăiţi ; Mihailovca- Sagaidac-Valea Perjei; Ustia - Molovata; Chişinău - Dubăsari - Poltava. Alți. 13,5 million will support the Agency for International road traffic
- 2 million for equipment,
- 16 million for winter repairs
- 14 million for servicing the debt.

An additional budget of 196 million Lei was expected from external donors and should amount to 0.5 billion Lei for roads in 2007. In March 2007 it was confirmed as described in the previous paragraph.

2.5.3 Strategic planning for the global recovery of the network

A document was drawn up by several experts (some from SRA), called ‘Moldavian Roads XXI Century’. It is also called ‘Presidential Programme’. It was intended to renew main roads in a 6 year program, in a limited budget scenario. No progress was done in this direction.

2.6 TRENDS FOR THE DEVELOPMENT OF ROAD OPERATIONS.

The Ministry of transport of Moldova established a strategy for the development of the road sector. The main measures are:

- to obtain extended consistency between the legal framework and the market economy
- to ensure effective management of the State assets in the transport sector
- to optimise the economic action of the State in some areas were decisions are needed, such as tariff management in public transport, level of professional training in the transport sector, a programme of scientific activities in the transport sector…
- to achieve higher quality and improved safety in transport operations
- to develop capacity building actions in road administration and management
- to support the modernisation of the vehicle fleet, promote leasing in the transport sector
- to promote inter-modal transport and support investment in this domain
- to improve the logistic culture of economic operators in transport

The set of measuring and orienting criteria proposed by the Government is consistent with the issues encountered in the sector, both in term of management of the situation inherited from the former regime, with a large State owned asset, and the present issues characterised by the low level of private and public financial capabilities.

2.6.1 Diagnosis

The future development of the road infrastructure has to take into account the network rehabilitation which is necessary due to delayed maintenance. Although the objective in the short term should be to achieve the reliability and good condition of the present network, the rehabilitation project ought to include at least some road safety components.

Experience has demonstrated that drivers increase speed when the paved surface is new, even when the rest of characteristics of the road have not been changed. Recent pavement rehabilitation projects near Chisinau show some safety design deficiencies. This situation could be eliminated without a high cost if the design criteria included safety or capacity improvement objectives and not adhering exclusively to the main objective of improving the pavement. For this reason, we suggest that rehabilitation designs must also be focused on other medium-long term objectives.

<u>Network classification</u>

As a suggestion, we propose to classify the national network in two or three levels or categories:

- Level I. Road included in international corridors, road linking the capital with the main borders with Romania and Ukraine and connecting the capital with the main cities of the country.
- Level II. Road linking all the provinces to the level I network.

- Level III, if separated from level II, the rest of the national network.

A parallel corridor must be in different level. For example:

- Chisinau linked to central Romanian borders: R1 and M1 options.
- Chisinau – Balti corridor: M14 and M2 + R14 options.

The local network can continue as at present, but the priorities have to be the connection to the national network the whole year, exclusive of the season.

Road design standards have to be established for each level. This way the rehabilitation projects may be aimed at adapting the road to its level standard (this may be done in stages).

As a suggestion, 'level I' must be a **high speed network**. That supposes:

- limited access to the road,
- intersections (at grade crossings) a design using left turn waiting lanes
- alternative interchanges (grade separated crossing) design
- by-passes to avoid crossing towns
- slow lanes where necessary
- Horizontal & vertical alignment parameters and cross section parameters (width of lanes and shoulders..) have to be defined.

Design speed, by terrain type is the main parameter of design. The remaining parameters, such as the number of lanes or pavement structure, have to be calculated based on measured parameters, mainly the total equivalent traffic flow (passenger car units per day) and the heavy traffic flow. As consequence, different sections of the same road may have 4 or 2 lanes depending on the requirements, but the level will be unchanged.

There are important sections of the network with 3 lanes. In these cases after rehabilitation they must be managed as 2+1 lanes, using one lane as a climbing or slow traffic lane or a one way overtaking lane.

Road classification is not only a technical or economical decision, but also a political one.

For the moment the only governmental programs are the 6 year 'Presidential Programme: Moldavian Roads XXI Century' (not developed) and in the shorter term, the four-year period (2007-2011) government program with multilateral funding.

As a first draft for discussion, a possible 'level I' network may be:

- **East-West** international corridor IX: M21 (Chisinau - Dubasari) and M1 (Chisinau - Leuseni - Romania border).
- **South-East** corridor: R2 (Chisinau - Anenii Noi) + R30 (Anenii Noi – Causeni – Stefan Voda - Ukraine border to Odessa).
- **North 'Y'** corridor:

- North shared section: M2 (Chisinau – Orhey);
- North branch: M2 (Orhey – Floresti – Soroca) + R9 (Soroca – Arionesti – Moghilov Podolski – Ukraine border).
- North Westh branch: M2 (Orhey – intersection R14) + R14 (intersection M2 – Singerei – Balti) + M14 (Balti – Riscani – Edinet – Briceni – branchs to Ukraine and-Romania Borders).

- **South** corridor: i) R3 (Chisinau – Hiscenti – Cimislia) or ii) M3 (Chisinau – Cimislia that needs a new road section) + M3 (Cimislia – Comrat – Vulcanesti – Giurgiolsti – Romania border).

Rehabilitation strategy

The rehabilitation main objective must be to conserve road network patrimony, but rehabilitation projects need to be in accordance with the strategic road network plan

As stated in a precedent World Bank document, the priority repairs to be done, from a technical point of view, should be:

- the most productive repairs (defined as works that, if executed in time, could 'save' the infrastructure and avoid major repairs and reconstruction of the sector), taking into account the obsolescence of the roads during the period of the implementation of the programme.
- the major repairs are to be done on roads of national interest, no matter how expensive, because these itineraries are considered as key segments for the mobility of people and of goods
- the definition of the segment that could be maintained or improved with little repair work and adequate maintenance levels

We still agree today with these criteria. Each criteria corresponds to a maintenance program, as shown in the following table:

	Programs		
	Extraordinary rehabilitation (mayor repairs)	**Periodic maintenance (productive repairs)**	**Ordinary maintenance**
Present road condition	poor or very poor	fair or good	any, but mainly fair and good
Priority criteria	Total traffic flow (properly escalated)	Heavy vehicles traffic flow	
Main Works	Reconstruction of the pavement: • Base in carriageway and shoulders • Two wearing asphalt concrete Drainage	Strengthening of the surface pavement : • Asphalt concrete (AC) levelling course • AC wearing course Drainage	• Cleaning • Drainage • Shoulders • Patching • Vertical signs • Horizontal

	Programs		
	Extraordinary rehabilitation (mayor repairs)	**Periodic maintenance (productive repairs)**	**Ordinary maintenance**
	Signs & markings Fences Occasional improvement of the cross section	Signs & markings Fences Occasional improvement of the cross section	markings • Fence repairs
Advantage	Reduce vehicle operation costs (VOC)	Increase the life of the pavement Reduce the total maintenance cost.	
Financial planning	high investment necessary at the beginning of the plan decreasing at the end if the two other plans are accomplished	investment will be increasing gradually, because of the obsolescence of the new road repaired	

2.7 SWOT ANALYSIS OF THE ROAD TRANSPORT SECTOR

STRENGHTS	WEAKNESSES
Well-developed road network inherited from pre-independence period, providing adequate coverage. Position of land gateway between EU, South Eastern European countries and CIS countries. Good system of education and vocational training in transport sector. Good level of education of transport sector workers.	Bad or very bad condition of the most parts of the road network Very large backlog in maintenance works, recurrent uncertainties in maintenance financing Understaffing of the transport administration (MTRI) Excessive involvement of the State, through public companies, in the road industry Too small-sized transport companies, general weakness of the private transport services sector Commercial vehicle fleet not adapted to EU standards of quality and safety. Cross border issues Low level of organization of public transport system, low level of quality of services, weak local capacity to organize coherent and integrated transport framework
OPPORTUNITIES	**THREATS:**
Availability of external sources of grants and loans to finance the recovery of transport infrastructure. Large potential domestic market for commercial transport; opportunities for development of commercial transport companies. Large potential market in long distance transport, supported by a trade oriented economy Large potential market in logistics Large potential market for public passenger transport in urban areas and on regional and local roads.	Quick and full recovery of the road network may be out of each of Moldovan economy. Delays in development of agricultural sector and rural areas hamper the development of the transport service sector Little interest by international investors in Moldovan transport sector (transport companies, logistics) due to the relative isolation of the country. Main international operators avoid transit operation through Moldova.

3. RAIL TRANSPORT

The existence of an extensive railway network, located on strategic East – West corridors between Russia / Belarus / Ukraine and Romania / Bulgaria / Greece / Serbia / Montenegro / FYROM has to be underlined. This opportunity should be seized to rebalance the railway transport mode in an enlarged Europe, including the neighbouring countries.

In particular, the EU policy intends to support stability, then growth, in the railway market share. This would imply some reforms of the railway system –mostly, but not only, through the separation of infrastructure and operation and the restructuring of railway companies, driving them towards a more market and customer oriented development. This would also imply an improvement of the railway infrastructure. Moldova, aimed at achieving the objective of European integration, has to take these elements into account and, in particular, consider the implementation of the EU – Moldova 2004-2007 Action Plan. Said Action Plan includes the implementation of selected measures and reforms in the railway transport sector and, in particular (a) improvement of the average running time of freight trains on selected corridors through an in-depth corridor analysis, identifying bottlenecks and proposing solutions as well as (b) improving safety, speed and efficiency (inter-operability) of rail transport services.

Meanwhile, it should be noted that, to date, only limited measures for the restructuring of the railway sector and for the modernisation of its legal framework have been undertaken in Moldova, which has left the railway sector somewhat in the administrative background, whereas significant changes have been carried out in Romania and Bulgaria, and also in Russia and in Ukraine (in progress).

3.1 INFRASTRUCTURE

Chart 10. Rail network

3.1.1 Description

3.1.1.1 Railway network

According to CFM, 31.12.2006, the railway length for common use of CFM was 2066.3 km, of which 1244.2 km is the length of the main railway, including 11.6 km with a gauge of 1435 mm at the international junctions in Ungheni and Giurgiulesti with the contiguous Romanian railway.

The length of the lines is 1154.2 km, including 92.7 km of double track. There are 428.9 km equipped with automatic block signal systems at the hauls, 598.66 km of railway - semi-automatic block signal systems, 80 stations and 1660 points are equipped with electrical centralisation.

By the end of 2005, the track length totalled 1.190 km, of which **1. 075** km served the operational network (table 10 in annex).

The density of the existing railway lines (32 km of railway line per 1000 sq. km) is equivalent to the relevant value for neighbouring countries (Ukraine and Romania) (table 11 in annex).

The network was re-built after World War II using wide gauge tracks (1,520 mm), and was made an integral part of the former Soviet Union's Railways. The network is a part of the CIS railway network and has the Russian gauge, except for 13.9 km with the European standard gauge of 1,435 mm on the Prut and Ungheni connection with Romania.

The Republic of Moldova has 21 railway connections, of which 18 are with Ukraine and 3 with Romania. Out of the 18 railway connections with Ukraine, 3 are located in the area of Transnistria: Kobasna – Klimentovo, Novosavitkaia – Kuciurgan, & Livada – Kuciurgan.

The CFM railway connections with Romania and Ukraine were agreed on through bilateral agreements on boundary railway traffic, signed on 19.09.95, by CFM and CFR, and on 27.04.2000 signed by CFM and UZ, for carrying out the corresponding agreements between the Government of the Republic of Moldova and the Romanian Government "About cooperation principles in the railway transport sector", on 21.02.95, and between the Moldavian and Ukrainian Governments "About rail transport activity" and "About cooperation principles and coordination in the railway transport sector" on 19.03.93.

The Moldovan railway network is part of the trans-European transport corridor IX, linking Russia / Belarus and Ukraine with Romania, Bulgaria and Greece (Map 3 in annex), and also 2 OSJD railway corridors. Their routes on the CFM railway network are established by the "Conceptions for formation and development of the national network of international transport corridors", approved by Government decree N 365 on 28.03.2002. Moreover, in the framework of the signed interdepartmental "Agreement for the creation of a highly efficient railway network in Southern-Eastern Europe" on 4.05.2006, approved by Moldovan Government decree N 1402 on 11.12.2006, one of the South-Eastern axes of the railway network will cross Moldovan territory from the Ukrainian border through Bender – Kuciurgan – Ungheni up to the Romanian border, after the effectiveness of this agreement during the present year of 2007.

3.1.1.2 Technical parameters

Compared to many European countries, the operational and technical conditions of the Moldovan railway infrastructure are poor and have even been facing deterioration since the former Soviet Union integrated railway network disappeared. Historically, a considerable part of the railway lines were constructed more than 50 years ago (some by the Romanian railways), with geometrical parameters, lower construction and facilities suitable for speeds of up to a maximum 100 km/h.

The average speed of passenger trains was 37.4 km/h in 2006, corresponding to the average network index of the CSI railways for such a type of infrastructure.

The majority of security and telecommunication facilities were put into operation in the period 1965-1985, and since 1990, minimum funds have been available for their replacement and modernisation.

However, for the period 2001-2005, CFM financed from its own funds some maintenance and repairs of track facilities, and 291.3 million lei were devoted to rehabilitating 685.2 km of track with all kinds of maintenance. The execution of maintenance works for this period allowed an increase in the local speed of trains by 6.6 %, as well as the cancellation in 2006 of 49 speed limits to 53 km.

It is important to mention that maintenance constraint is increased by the fact that Moldova has to tackle geological problems in its Western sector (earthquakes and landslides) which, in the past, have led to considerable damage to the main corridors.

Shown below are data provided by CFM for the official ECMT inquiry regarding the following amounts of capital investment in railway infrastructure for the period 1992-2005 in million lei split yearly: (1.02.2007).

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
0.24	8.02	30.77	27.16	23.77	24.45	19.70	10.00	15.10	21.50	101.00	164.00	86.10	147.10

3.1.2 Diagnosis

The following points should be noted:

- At this stage, the national railway network is considerably underdeveloped technically compared to railway networks in neighbouring countries as shown in map 2 in the annex (lack of double track, including on the East-West corridor, no electrification, limited maximum speed).
- The fact that the Moldovan network is not entirely electrified represents an exceptional case in Europe and creates problems for direct connections with Ukraine. A major electrification project (25 kV 50 Hz) of the East-West main axis (Razdelnaya, Ukraine, Bender / Tighina, Chisinau, Ungheni), reached the stage of the installation of initial equipment in 1991-93. However this project was stopped by 1996 for budgetary reasons, in spite of the efforts engaged in thereafter to find the necessary funds. By then, only the Razdelnaya – Kuchurgan section, in Ukraine, had been completed.

- In recent years, a limited percentage of regulation requirements for track rehabilitation were fixed with a threefold impact: (a) at present the rail transport infrastructure is seriously deteriorated, (b) within 20 years, 800 km of line –practically all the network- will need full rehabilitation and (c) delayed rehabilitation is much more expensive than normatively planned heavy maintenance with an impact on maximum speed which would have to be decreased for the duration..
- Since 1992 few major investments have been made in infrastructure, apart from recently, on the Revaca – Cainari link. This new railway section shortens the distance from the North to the South of the country by 70 kilometres and avoids any transit through the Transnistria territory. The new line is 44.5 kilometres long. This line had been out of operation since 1944. Rehabilitation works were finished in only 7 months, including the reconstruction of two railway stations.
- This lack of investment, as well as the lack of maintenance, will in the medium to long term cause major problems, which need to be resolved if rail transport is to survive in Moldova.

3.2 ROLLING STOCK

3.2.1 Description

When created, CFM (*Calea Ferata din Moldova*, Moldovan Railways) inherited a heterogeneous mixture of standard rolling stock and locomotives in general use on the former Soviet railway system.

Current rolling stock (2005) includes 156 (156) diesel locomotives, 31 (25) diesel railcars, 8 492 (8318) wagons and 560 (440) passenger coaches[2]. The rolling stock is detailed in table 12 in the annex.

The fleet has not been globally modernised since the creation of CFM and the average age is probably quite high, leading to out-of-service ratios that are probably very high in comparison with other European networks (41 % for locomotives, 64 % for wagons, 56 % for passenger coaches).

Rolling stock fleet evolution is detailed in table 13 in the annex. In ten years, the locomotive and wagon fleet was practically halved. This could be considered as proof of higher rolling stock productivity, but this is not the case. Specifically, there is a shortage of premium class coaches and the opportunity to re-build and upgrade stock is limited.

3.2.2 Diagnosis

The following points should be noted:

- A very high out-of-service rate (resulting in high maintenance costs) shows that, in the case of infrastructure, maintenance remains an important factor. Since a few years ago, CFM apparently has had facilities (various workshops and the relevant equipment) for a major overhaul of locomotives and other rolling stock. However, it was necessary to reconstitute skills and expertise previously provided by other railways in the former

[2] Source : UIC in order to allow international comparisons () = CFM own statistics

Soviet Union. Several workshops, despite staff devotion, are not likely to survive for much longer as work and operation standards prevailing in some of them do not match up to the conditions met elsewhere in Europe; including Ukraine, from the point of view of safety and installation equipment. Moreover, there is a lack of spare parts. The cannibalisation of certain units in order to obtain spares and maintain an adequate fleet in operational condition for service requirements is not a real and long-lasting solution. Finally, some of the locomotives still in service are incompatible with modern standards of emissions and are far from economical from the point of view of energy consumption.

- Since 1992 there have been limited investments made in rolling stock. . In 2002 CFM acquired 18 new passenger wagons. A program of modernisation of rolling stock is carried out each year, with CFM's own resources, its financial capacity being limited with no Government subsidies from the country's budget. The phenomenon of obsolescence is however accentuated day after day. The average age of the fleet is nearing the end of its economic life, which makes it necessary to consider significant modernisation investments for the next several years as well as a corresponding increase in the annual depreciation amounts. This will affect CFM's financial situation negatively. On the other hand, modernisation of the rolling stock fleet would result in a decrease in out-of-service rolling stock as well as in overall maintenance costs.

3.3 PRODUCTION

3.3.1 Description

Production statistics and indicators are summarised in the following table, which allows comparison with neighbouring railway networks (Ukraine and Romania) and presents an overview of the evolution of some ratios:

Table 1: Production statistics in Moldova and on some other European networks

		Moldova			Romania			Ukraine		
	Unit	**1993**	**1999**	**2005**	**1993**	**1999**	**2005**	**1993**	**1999**	**2005**
Network length	Km	1318	1140	1075	11400	11364	10781	22124	22473	22001
Train-km	M	9.4	3.8	5	118.2	99	96.9	337.7	232.7	281.4
Traffic density	*trains / km / day*	*19.5*	*9.1*	*12.7*	*28.4*	*23.9*	*24.6*	*41.8*	*28.4*	*35.0*
Gross Hauled Tonnes-km	M	12951	3602	6736	81579	56881	52053	593459	350929	479256
Traffic density	*T / km / day*	*26921*	*8657*	*17167*	*19606*	*13713*	*13228*	*73491*	*42782*	*59680*
Train average weight	*T*	*1378*	*948*	*1347*	*690*	*575*	*537*	*1757*	*1508*	*1703*

(Source: UIC)

3.3.2 Diagnosis

Over ten-years, the following points should be noted:

- Gross hauled tonnes-km were halved in Moldova, while only reduced by one third in Romania and remained globally at the same level in Ukraine.
- Traffic density (in trains / km / days) was slightly reduced in Ukraine, and more significantly in Moldova. Moreover, the network is used less in Moldova than in Ukraine, with around three times less trains and four times less tonnes on a railway line km, per day.

- In the three countries, average train weight remained at the same level. But whereas Romania has a significant share of passenger traffic, with lighter trains, Ukraine remains dominated by heavy trains (even for passengers) and Moldova is between Ukraine and Romania.

3.4 STAFF

3.4.1 Description

3.4.1.1 Staff level

There were 14.399 employees working in CFM on the 31st of December 2006, including general management staff – 148 people, transport operations and traffic management staff– 4,536 people, wagon and locomotive administration – 3,403 people, maintenance and rehabilitation of railway and facilities – 2,524 people, others – 3,788 people.

As compared to staff employed in 1992, there has been a significant reduction of employees from 22,000 staff to 14,400 staff. No further staff decrease is anticipated.

In 2001, the railway staff was well educated, with 1,055 persons having received a university degree, 2,564 a specialised education, 8,777 a secondary education and only 1,300 had not finished their secondary education.

The average monthly wage of CFM employees reached 1781.7 Lei (100 EUR) in 2005.

3.4.1.2 Productivity

The labour productivity basic indicator (traffic unit per staff) is shown in the following table:

Table 2: Labour productivity

	2005
Freight tonne-km (M)	2 980
Passenger-km (M)	356
Traffic units (M)	3 336
Employees in operating units	14 300
Traffic-units per employee	233 286

(Source: UIC)

The following table compares certain performance indicators of the Moldovan Railways with those of its neighbouring countries, Romania and Ukraine; it also provides estimations of productivity evolution:

Table 3: Labour productivity

		Moldova			Romania			Ukraine		
	Unit	**1993**	**1999**	**2005**	**1993**	**1999**	**2005**	**1993**	**1999**	**2005**
Tonnes-km	M	4862	1232	2980	21849	14660	16032	246356	156336	223980
Pass-km	M	1660	343	355	19402	12304	7960	75896	47600	52655
Network length	Km	1318	1140	1075	11400	11364	10781	22124	22473	22001
Staff	'000	24.7	12.6	14.3	178.8	105.5	66.6	637.3	367.9	368.2
Tonnes-km + Pass-km per employee		*264049*	*125000*	*233217*	*230710*	*255583*	*360035*	*505652*	*554325*	*751317*
Employee per km of line		*18.7*	*11.1*	*13.3*	*15.7*	*9.3*	*6.2*	*28.8*	*16.4*	*16.7*

(*Source: UIC*)

3.4.2 Diagnosis

The following points should be noted:

- Staff was reduced from 1992 to 2005, but has been increased by 15% since 2000, which is probably a rare case in Europe.
- Whereas traffic units (tonne-km + passenger-km) were halved in Moldova, staff was reduced by only 40 %. In Ukraine, staff level was reduced by 43 % for a traffic reduction of only14 % and in Romania staff level was reduced by 63 % for 42% less traffic.
- As a result, traffic units per employee decreased in Moldova, whereas they increased significantly in the neighbouring networks. Despite the fact that Romania has a sizeable passenger component, traffic units per employee are more than 50 % higher than in Moldova. In Ukraine, the same ratio is more than 3 times higher.
- As network length remained more stable than traffic, the ratio (employees / km of line) was reduced by 30 % in Moldova, but halved in Ukraine and reduced to a third in Romania. The number of employees per km of line in Moldova is close to that seen in Ukraine, but for traffic which is quite different.
- These indicators clearly show that there is still a lot of room for improvement in CFM operations. It is reasonable to consider that an employee productivity ratio of 500,000 (tkm+pkm)/km is possible. The ratio of productivity actually achieved in 2005 was 233 000.

3.5 RAIL FREIGHT TRANSPORT

3.5.1 Description

3.5.1.1 Traffic volume

Current freight traffic volumes, with a breakdown of trends by domestic and international traffic, are summarised in the following table:

Table 4: Freight traffic volumes

	2005
'000 tonnes	11704.1
domestic traffic	1131.6
international traffic	10572.5
M tonne-km	2979.9
domestic traffic	208.7
international traffic	2771.2

(Source: CFM)

This table clearly shows the importance of international traffic, which represents the majority of the total traffic. It should be noted that:

- Moldova's industrial base is low, the country is small and domestic distances short, and there is currently no seaport with hinterland, a traditional domain for railway transport, although opportunities for business from the future Giurgiulesti independent port in the south of the Country are awaited. Therefore, the majority of international traffic is related to transit activity. International traffic, essentially transit, represents 90 % of the total traffic in tonnes and 93 % in tonnes-km.

- On the new Revaca – Cainari link, in one year of operation, 2,400 trains carried 86,500 passengers and 3.5 million tonnes freight. Such a level of traffic would suggest that the new link reached an operating profit (at least for freight business).
- Such an amount of transit traffic is not a problem in itself. Switzerland is taking advantage of its position on the North – South corridor(s). But CFM's international traffic volume remains quite weak in comparison with its potential as Moldova is facing the Transniestra problem, leading to a splitting of the railway network and making it impossible to develop some border railway stations.
- Per commodity, in 2006,the main in-bulk conveyed traffic volumes, detailed in figure 1 in the annex, are the following : iron, steel and scrap iron – 26.5%, solid fuel (coal, coke, etc) – 19.7%, oil products and gas – 10.1%, cement, lime, manufactured building materials – 9.9%, and the weight of foodstuffs was only 2.3%.

3.5.1.2 Traffic evolution

Freight traffic evolution is detailed in table 15 in the annex. By 2005, rail freight volume in Moldova reached 2980 million tonnes-km compared with 7862 million tonnes-km in 1992. After the break-up of the former Soviet Union, which damaged traditional economic links and traffic characteristics in Moldova, there was a steady decline in rail traffic. However, freight volumes stabilised and then started to increase after 1999. It should be noted that 1999 marked the beginning of economic recovery in the neighbouring Ukraine, and this probably led to a positive impact on transit traffic. 2005 saw a small fall in traffic, related to the exclusion of the 8 Transnistria stations directly operated by the Transnistria railway.

3.5.1.3 Modal share

Modal share evolution of freight traffic is detailed in tables 16 and 17 in the annex. In 2005, railway modal share reached ~ 40 % for total tonnage, ~ 60 % for tons-km, with a moderate decrease (- 10 % of modal share) since the independence of the country.

3.5.2 Diagnosis

The following points should be noted:

- Reflecting the economic decline observed in Moldova, general freight traffic, measured in tonnes-km, had significantly reduced to 24% of its 1990 level by 2004.
- Rail traffic, measured in tonnes-km, followed the general trend, and represented in 2005 less than 20 % of what it was in 1990.
- Railway modal share, even if in decline (70 % of tonne-km in 1990, 58 % in 2004), remains high compared with the majority of other European networks. However, this modal share is below the 85 % owned by the Ukrainian railways for freight (pipelines excluded).
- CFM is essentially a transit network. With a correct modal share and 10.5 M tonnes in transit a year, such a network can be profitable. With less traffic, the question of profitability could arise.
- External socio- and macro-economic factors are favourable to the development of long-distance rail freight transport, as growing energy costs, road saturation as well as pro-environmental and safety policies (if such policies exist) would limit the growth of the road transport.

- Up to now, the railway operator (CFM), administrated by the State, has not clearly shown that it has developed a market-oriented policy, including tariff policies and logistical chains of transport. The market trends for the development of highly integrated logistical chains exists, and CFM has the necessary infrastructure for the treatment of ISO containers (Chisinau and Ungheni stations), and in 2006 transported 10532 containers (85278 tonnes).
- The need to transfer freight at the western border constitutes an additional difficulty for rail transit traffic, due to the change of railway gauge. But the problem is less technical than administrative: the stops at the border for the execution of customs formalities are frequently longer than times of transit through the country, in spite of low operating speeds of the freight trains.
- Commercially, the control of goods traffic is, essentially, in the hands of shippers, as CFM withdrew from the shipper association. Transit traffic is mainly managed without any direct intervention (either territorial or organisational) by the CFM, which weakens even more the position of the network compared to its principal activity. This situation is worsened by the absence of any system able to follow-up wagons apart from an obsolete manual method. At the same time, many freight forwarders (they are listed in table 22 in the annex) can act as loaders for the railway industry, which is also positive.
- Communication between Ukraine and Russia (and Belarus) on one side and South-Eastern Europe on the other is, from an operational and commercial point of view, easier through the Ukrainian – Romanian direct northern links. Ukraine even intended to build a new southern railway line (to avoid transit traffic through Moldova), which would have dealt a lethal blow to the Moldovan railways. Fortunately, in August 2006 the Ukrainian Ministry Cabinet adopted a decision, according to which all previous decisions on the building of branch line Reni-Izmail were cancelled. And since 8.09.2006, according to agreements between CFM and UZ, freight traffic transit was renewed in the territory of the Republic of Moldova through the border transit point Kuciurgan (Ukraine) – Novosavitkaia (Republic of Moldova) in the direction of the Ukrainian port, Reni.
- In the short term, the volume of rail freight transport along transit lines is expected to be maintained (~ 10.5 M tonnes a year), but infrastructure rehabilitation should contribute to maintain or enhance the quality and flexibility of the operators' offer.

3.6 RAIL PASSENGER TRANSPORT

3.6.1 Description

3.6.1.1 Traffic volume

CFM also operates some passenger services, with a level of traffic shown in the following table:

Table 5: Passenger traffic volumes

	2005
'000 Passengers	5024.1
domestic traffic	3213.5
international traffic	1810.6
M passenger-km	355.0
domestic traffic	145.2
international traffic	209.8

(Source: CFM)

3.6.1.2 Traffic evolution

Passenger traffic evolution is detailed in table 18 in the annex. By 2005, rail passenger volume in Moldova reached 355 million passenger-km compared to 1,718 million passenger-km in 1992. This is due to the decrease in mobility and solvency, on the one hand, and the increasing number of private vehicles[3] and low attractiveness of rail transport compared to other public modes (particularly minibuses, more expensive -bus fares are almost double rail fares- but more convenient), on the other. Moreover, the population of Moldova is decreasing with a drop of 100,000 inhabitants between 1992 and 2002. This statistic does not include Moldovans living abroad. However the demand for passenger transport appears to have reached certain stability since 1999.

3.6.1.3 Modal share

Passenger traffic modal share evolution is detailed in tables 19 and 20 in the annex. In 2005, railway modal share reached ~ 16 % for total passengers, ~ 25 % for the passenger-km, with a strong decrease since the independence of the country (modal share reached 40% in 1992).

3.6.2 Diagnosis

The following points should be noted:

- CFM is essentially a freight railway enterprise (72 per cent of revenues in 2005)
- The only operator providing railway passenger transport service in Moldova is CFM.
- Rail passenger traffic, measured in numbers of passengers, fell by 2 thirds from 1992 to 2005.
- Rail passenger traffic, measured in passenger-km, fell by 4 fifths from 1992 to 2005.
- This modal share is only a public transport modal share; the real railway passenger modal share is therefore lower than the calculated indicator.
- For national transport, large discrepancies can be found between the demand for mobility of travellers and the services provided: CFM lacks direct North – South connections, and modern rolling stock, but it cannot reasonably propose any service improvement without fare increases. At present, passenger market development, at a national level, seems difficult without any Public Service Obligation (PSO) compensation framework (if a cross-subsidy from freight transport is excluded). Such PSO services could include suburban short distance

[3] In neighbouring Ukraine, the increased motorisation ratio does not mean reduced use of public transport as, due to higher energy costs, consumers prefer to reserve their use of cars for week-ends or holidays only.

services from Chisinau, which could contribute to reducing congestion in the capital city.

For international long distance transport (Odessa / Kiev – Chisinau - Bucharest, Chisinau – Odessa) a market exists for a one-night / one-day trip, less expensive than by air and more comfortable than by bus, even with increased fares. In long distance international connections, CFM is currently providing passenger traffic services to Kiev, Moscow, St-Petersburg, Minsk, Bucharest, Diesel-trains between Chisinau &Odessa have however been cancelled since March 2006, due to the blocking of traffic at the Bender railway junction by separatist regional authorities.

- However, the use of the railway network for passenger transport remains totally marginal in Moldova, with 1 trip/year/inhabitant, whereas this figure reaches 4 in Bulgaria and Romania, 9 in Croatia, 11 in Ukraine (37 in Switzerland and 68 in Japan).

3.7 FINANCIAL

3.7.1 Description

3.7.1.1 Freight revenues

Current freight traffic revenues are summarised in the following table:

Table 6: Freight traffic revenues

	2001	2002	2003	2004	2005
Revenues of freight traffic, M lei	396.9	507.8	605.7	603.1	718.9
domestic traffic		13.1	19.1	23.6	28.7
international traffic		494.7	586.6	579.5	690.3

(Source: CFM)

3.7.1.2 Passenger revenues

Passenger revenues are summarised in the following table:

Table 7: Passenger traffic revenues

	2001	2002	2003	2004	2005
Revenues of passenger traffic, M lei	93.8	134.3	155.5	154.7	160.7
domestic traffic		7.2	6.7	7.2	7.9
international traffic		127.1	148.8	147.5	152.8
Revenues of baggage transport, **'000** lei	150.8	135.3	168.8	152.1	115.6

(Source: CFM)

Some categories of passengers were granted privileged and free-of-charge railway fares in 2005 ("privileged passengers"). CFM indicates that such privileges were given particularly to veteran citizens (*"Закон Республики Молдова "О ветеранах" № 190-XV года.Глава II", from* от 8*th May* 2003), who could benefit from free travel and to other categories (young travellers, students, pensioners,…), usually without any financial compensation.

According to article 13 (4) the Code of railway transport N 309-XV, 17.07.2003, Government budget subsidies are possible. The method of calculation is established by Republic of Moldova Government decree N 1053 ,16.10.1998.

Between 2004 & 2006, 10098 passengers benefited from such social measures. It seems that the contribution from CFM was 1594.5 thousand lei, covered by the Government budget at the level of only 919.6 thousand lei.

It is necessary to emphasise that, unlike Russia, Moldova is not able to afford to keep loss-making services running by cross-subsidising from freight. Moreover, resolving the government-imposed cross-subsidy from freight to passenger transport for which it does not compensate the railways will be a complex problem in Moldova. It is likely that hard choices will have to be made, including downsizing and concentrating efforts only on core businesses with potential.

3.7.1.3 Costs

CFM's costs, per train-km, can be estimated from the latest available data (2000-2001), as follows:

- Passengers: number of train-km: 2.664 M km, total expenses 136.2 M Lei; cost per train-km (passenger): 51.13 Lei (3 EUR/train-km)
- Freight: number of train-km: 1.445 M km, total expenses 213.5, cost per train-km (freight): 147.75 Lei (8.7 EUR/train-km)

The cost structure is not available.

In 2005, capital repair costs reached 151.9 M Lei (~ 9 M EUR), distributed as follows:

- Revaca – Cainari line : 88 M Lei
- Ties shop: 3.6 M Lei
- Sub-units, Bender / Tighina junction : 4.5 M Lei
- Gasification work at Causani, Calarasi, Ungheni, Etulia, Ghindesti, Beserabesca: 2 M Lei
- Repair of the railway track (107 km): 31 M Lei
- Rolling stock maintenance (53 passenger coaches, 279 freight wagons, 3 DMU -rail diesel cars-, 3 locomotives only): 22.8 M Lei

Additionally, the following capital repair costs were spent:

- block of 76 flats: 2.5
- rehabilitation of the railway hospital: 1.3

3.7.1.4 Profitability

The following table summarises CFM's financial performance since 1999:

Table 8: CFM Financial performance 1998 – 2005 (M Lei)

Indicator	1998	1999	2000	2001	2002	2003	2004	2005
Revenue from the transport **	253.7	254.5	358.3	490.7	642.1	761.2	757.8	879.6
Freight	*186.9*	*183.2*	*270.0*	396.9	*507.8*	*605.7*	*603.1*	*718.9*
Passenger	*66.8*	*71.3*	*88.3*	*93.8*	*134.3*	*155.5*	*154.7*	*160.7*
Expenses	318.4	263.7	349.7					
Freight	*177.5*	*145.5*	*213.5*	*	*	*	*	*
Passenger	*140.9*	*118.2*	*136.2*	*	*	*	*	*
Net operational result	**64.7**	**9.2**	**8.6**					
Net result	**-234.1**	**-173,4**	**45.3**	**77.5**				**53.0**

(*source : CFM * data not received ** without luggage from 2001, marginal*)

Freight services have been and remain profitable. In 2000 the revenue/expense ratio reached 126 %.

Passenger services have been and remain unprofitable. In 2000, the revenue/expense ratio reached 65 % and this bad result has probably not evolved positively in recent years.

3.7.2 Diagnosis

The following points should be noted:

- Freight revenues represent 82 % of CFM revenues. The predominance of revenues for international traffic is obvious, to the point that revenues from local traffic can be considered as almost negligible.
- Passenger revenues represent only 18 % of CFM revenues. This activity can be therefore considered as marginal in CFM activity or not fully remunerated. This is in particular due to the absence of efficient PSO compensation. The predominance of revenues for international traffic is obvious, to the point that revenues from local and suburban traffic can be considered as almost negligible. This is due to the low price of tickets for certain categories of "privileged passengers" (veterans, students, children etc.) and, moreover, to the high percentage of people travelling without any tickets at all. This is also due to the fact that local services, particularly those around Chisinau are considered as having a social vocation. It does not seem that any will or even any possibility exists to reverse this unfavourable tendency.
- The announced profits of CFM (net profit of 53.0 M Lei in 2005) have to be carefully considered. Even if amortisation/depreciation expenses are included, maintenance costs are clearly under-evaluated leading to 'artificial' positive results. In particular, CFM management considers that the passenger sector (and more particularly the suburban/regional traffic around Chisinau) can survive through cross subsidies coming from freight activity. This is not valid on a mid and long term perspective. All that is taken from freight benefits to cover the PSOs is insufficient for the freight business to invest in order to renew its rolling stock. Neither does it allow CFM to spend as much money as is needed for the track maintenance and modernisation. This delay in maintenance could lead to much higher costs.

3.8 INSTITUTIONAL

3.8.1 Description

The basic act organising the transport activity is the railway transport code ("*Codul Transportului Feroviar*", 309–XV) dated 17th July2003.

Also, a government text (Anexa nr.2 la Hotărîrea Guvernului nr.238) dated 25th February 2007 regulates the railway services in Moldova ("*Regulamentul privind prestările de servicii în traficul feroviar de călători, bagaje, mărfuri şi mesagerii în înteres propriu*").

3.8.2 Diagnosis

The following points should be noted in the railway transport code:

- Article 4(2) indicates that : "*Activitatea transportului feroviar este reglementată şi controlată de stat.*". CFM do not have any management autonomy ;
- Article 7 underlines the central function of the Transport Ministry in the railway administration. CFM is a pure extension of the central administration
- Article 12 (1) indicates that "*Tarifele pentru transportul de călători, mărfuri, bagaje şi mesagerii pe calea ferată se stabilesc de către organul de specialitate al administraţiei publice centrale în baza politicii de stat a preţurilor şi tarifelor, care constituie prerogativa Guvernului. Tarifele pentru transportul în trafic internaţional se stabilesc în conformitate cu tratatele internaţionale la care Republica Moldova este parte"*. CFM does not have any freedom to fix fares.

More generally, even purely commercial topics that should be managed directly by the railway operator are described in the law. For instance, article 107 describes which passenger train categories must be operated. Three categories are identified: suburban (< 150 km), local (< 700 km), long distance (> 700 km). Is it necessary to conclude that (a) a relation with a Iasi (Romania) is a suburban one? (b) a relation with Odessa (Ukraine) a "local" one ? (c) local relations of up to 700 km exist in Moldova ? Additionally, the act indicates that "*Criteriile de determinare a categoriilor trenurilor în funcţie de viteza de circulaţie şi distanţa de parcurs se aprobă de către organul de specialitate al administraţiei publice centrale*".

It seems that such regulations are a transposition of standard norms of categories of passenger trains, routing on the CIS railway network, that facilitate the formation and the agreement of a common schedule of international traffic and a tariff procedure for the provided transport service.

3.9 STRUCTURAL

3.9.1 Description

The CFM organisation chart is presented in figure 2 in the annex, and includes 5 senior managers under the authority of the General Manager:

- Deputy General Manager, Transport and Commercial
- Deputy General Manager, Engineering and Development (Infrastructure)
- Deputy General Manager, Rolling Stock

- Chief of Operation Service
- Deputy General Manager, Financial

.

Moreover, CFM includes a techno-economic council, headed by the CFM General Manager, with the following members:

- Deputy General Manager Transport & Commercial
- Deputy General Manager Engineering and Development (Infrastructure)
- Deputy General Manager Rolling Stock
- Chief of Operation Service
- Chief of Rolling Stock Service
- Chief of Legal Service
- Chief of Financial and Economic Service
- Chief of Statistics Service
- President of the Railway Trade Union of Moldova

CFM is classically organised in services, as follows:

- Traffic Security Service
- Traffic Service
- Commercial operation Service
- Locomotive fleet Service
- Wagon fleet Service
- Freight Service
- Railway Lines Service
- Signalling and Telecommunicație Section
- Electric feed and energy Secție
- Financial & Economic Service
- Statistic Service
- Capital building Secție
- Technical Service
- Legal Service
- International Relations Service
- Special Service
- Economic Security Service
- Personnel
- Control and Audit Secție
- Fare Section
- Labour Protection Section
- First department (Secret service)
- Human Resources Secție
- Secretariat General Management CFM
- Data Processing Centre
- "Feroviarul Moldovei" review team
- CFM bookshop
- Maintenance Center "Jeldorsnab"
- Militarised Guard Service
- Medical Service
- Technological Centre

Finally, CFM includes different subdivisions, some being 'self-financed'. These subdivisions are listed in table 21 in the annex.

3.9.2 Diagnosis

The following points should be noted:

- CFM's structure remains quite classical for a monolithic railway company.
- A specific commercial department exists, but the question is: is such a department more technical (train operation) or really commercial? Is this department able to analyse the market and answer to demand, when this implies a strict co-operation with the neighbouring networks (Particularly Freight SNCFR and UZ)?
- "Self-financed" units are usual in FSU railway networks. However, in a non-profitable railway scenario, which cannot invest in itself, it is not sure that these units can really be "self-financed"

3.10 TRANSPORT SAFETY AND SECURITY

3.10.1 Description

In accordance with the railway transport code, the Chapter I, Secțion 4-a is fully dedicated to the railway transport safety and security. It is complemented by other regulations and decrees about circulation in dangerous areas, interruption of traffic, etc…

3.10.2 Diagnosis

The following points should be noted:

- Due to its high level of security, railway transport, to a large extent, meets the requirements for dangerous goods transport.
- On this specific topic, the present legal framework is exhaustive and consistent.

3.11 ENVIRONMENTAL PROTECTION

3.11.1 Description

Environmental protection is not a major concern for CFM, which has presently to tackle constraints which are considered as more crucial, in particular freight traffic through Transnistria. However, a permanent will to electrify the Ukraine – Romania corridor has to be stressed.

3.11.2 Diagnosis

The following points should be noted:

- Studies carried out in Western and Central Europe confirm that railway transport (together with river and sea transport) is the most favourable transport mode for the environment. Most of the ecological advantages of the railway transport are due to electrification, but even a diesel-hauled 2,000 tonne freight train is more environmentally friendly than a convoy of trucks on the roads.
- The quantity of liberated carbon dioxide from railway transport (electrified) is 40 times less than the same from road transport and influences global variations in

climate. Local emissions, directly and to a significant degree, harm people's health and the ecological balance. The problem in the Republic of Moldova is that rail transport continues to register a decrease in passenger transport. For freight, its assets and service quality are worsening, whereas its basic competitor and the biggest polluter of the environment – road transport - registers real growth in quality and efficiency.

- Noise pollution from rail transport exists, alongside the major corridors and it can represent a problem for populated, tourist and recreational areas.
- The present poor condition of CFM rolling stock, paradoxically, allows many possibilities for developing an environmentally more friendly railway system, with the replacement of old diesel locomotives and railcars with new, cleaner ones, or a drastic change through the electrification of a part of the network, with electric locomotives and motor-units (EMU), with no greenhouse effect.
- Any investment proposals for transport projects should be in full compliance with European requirements and include an Environmental Impact Assessment (EIA).

3.12 OPERATOR

3.12.1 Description

The Moldovan Railways (CFM) was created, as a natural monopoly, in 1992 after the split-up of the former Soviet railway network.

Both passenger and freight traffic considerably decreased and the Moldova Railways (CFM) almost fell into absolute bankruptcy.

Thus, a restructuring plan proposed by CFM and supported by the EU under TACIS was presented in August 1999. This Plan was aimed at reorienting the state enterprise towards the conditions of a market economy and to improve its operations by going from a 'production' strategy to a 'market' strategy. It was to be implemented in three phases:

- Phase I (short term 1999-2000) envisaged splitting passenger and freight services into self-contained business units, eradication of cross-subsidies, and regulation by the Government through the establishment of a special body to be created for this purpose. It also foresaw the merger of some structural units, closure of non-profitable lines, improving performance and reducing cost. To date (2006), some of the targets under Phase I have been met:
  - some uneconomical lines and stations have been closed,
  - some spur tracks have been handed over to the enterprises using them,
  - social services (for instance housing) have been handed over to local authorities,
  - a realignment of the organisational structure has taken place.
- Phase II (medium term) was to focus on commercialisation, further elimination of subsidies, introduction of access charges and acknowledgement of competition.
- Phase III then would include competition and privatisation. The infrastructure was to be shared with other providers and the passenger and freight services were to be set up as joint stock units.

CFM was assisted in this restructuring process by NEI Consortium consultants (NEI B.V., DE-Consult, ARRC, VTT), financed by the EU under TACIS.

The evaluation of the process of reform of Moldovan railways leads to several controversies. The TACIS action plan did not obtain full support, but another programme was adopted and implemented.

As mentioned by CFM representatives (English version from CFM):

(…) The decrease in traffic and the negative trade and financial result of CFM work in 1998-1999, required the drawing up of a Memorandum-Agreement between CFM and the Council of Creditors. According to this, in the period between February-June 1999 a Plan for Restructuring CFM was developed, approved by the Ministry of Transport and Road Management on 2.08.1999.

This CFM Restructuring Plan was carried out within the Memorandum-Agreement between CFM and the Council of Creditors, approved for the period 2000-2005, which was established in the Ministry report, approved by the decision of the Ministry of Transport and Road Management staff N 01/1 on31.01.2006. As was previously mentioned in the observations in the preamble of the analytical report, by decree Of the Government of the Republic of Moldova N 1236 dated 27.01.2006, it is recommended to continue the restructuring strategy of the railway transport sector by the result of implementing this specific plan.

The technical support of the TACIS program on the support for establishing the Restructuring CFM Plan, ordered through the Ministry of Economy of Republic of Moldova in September 1998, was significantly delayed, and was accorded only in 2002 by the means of additional creation of the Improved Plan for restructuring CFM. The main conditions for CFM survival in the financial sense were considered by the TACIS experts: i) Government investments in the railway, at least for infrastructure rehabilitation; ii) Government subsidising of unprofitable passenger transport, executed in the 'public interest'; iii) the payment of the Government of the historical debts of Moldavian railway. However, real government subsidising of the railway sector, the insignificant length of the railway, and the work of the principal railway transport in the Transnistria area of the country were not evaluated. Neither was an adequate financial-economical mechanism for providing future restructuring reforms in CFM proposed for that period of time. The CFM management denounced the Government for that.

3.12.2 Diagnosis

The following points should be noted:

- Despite the fact that CFM could appear as a legal entity with financial, managerial and organisational independence and a consolidated balance sheet, CFM commercialisation is purely fictitious. CFM is still a State administration and probably the only remaining case in Europe where a railway company cannot deliver any information, even that which is purely technical, without Ministry endorsement;
- No infrastructure access charge system has been implemented;
- It is not sure that the goals of the restructuring plan have been widely accepted by the staff of CFM;
- Competition exists, from other modes (essentially road) within Moldova and rail on other railway corridors (direct link between Ukraine and Romania). But no railway competition is allowed in Moldova.
- Meanwhile, up until now, CFM has survived, despite no major reforms and reorganisation taking place, whereas significant changes have been in progress, not only in the EU, but also in Russia, where RZhD (Russian Railways) were transformed into a JSC. In Moldova, no committee was set up to oversee the restructuring process, no ultimate target for the restructuring has been defined; and the Plan seems to concentrate on technical matters while avoiding the critical questions of reorganisation and financial recovery. At the same time,

the goals of the restructuring plan have apparently not been widely accepted within the staff of CFM.

- A part of this lack of reorganisation can be linked to difficulties which persist in geopolitical matters, in particular in the form of threats to blockade traffic at the borders (such as recently at the Ukrainian border or at the Transnistria limits) and pressures exerted by former allies concerning the auditing of debts for the supply of services and services of traffic. In September 2004, Transnistria's security forces seized the Bender railway station, it being the major railway junction that controls Moldova's railway links with Ukraine and Russia. Transnistria authorities announced a takeover of all Moldovan railway lines and assets in the Transnistria controlled territory. The railway was the last Moldovan economic entity operating in that part of the country. It has now become the "*Transnistria State Railway*" a structure considered as illegal by the Moldovan authority. These geopolitical constraints also explain the difficulty in implementing some investment plans to develop infrastructure alongside the European Corridor IX.

3.13 CONCLUDING DIAGNOSIS OF THE RAILWAY INFRASTRUCTURE AND THE CURRENT SITUATION

The main problems in the development of the railway transport are:

- the low speed of passenger and freight transport, far below any reasonable commercial requirements. This is the result of the poor condition of infrastructure and rolling stock. Practically all the motive power, wagons and passenger coaches were already in existence in 1990, when CFM was created;
- a limited restructuring process for CFM, despite a detailed TACIS study which listed all changes and milestones to be considered. After such a study, no legal change was launched in order to prepare any CFM evolution, while these changes were made elsewhere, not only in the EU, but also in Russia, in a much larger and more complicated context. CFM remains one of the few monolithic administrative railways in Europe.

Two other problems appear which are common to the main competitor (the road):

- the short length of transit lines between two borders, while the duration of border controls can be quite long;
- the specific Transnistria geopolitical constraint, adding, *de facto*, supplementary border checks over a short distance

3.14 TRENDS FOR THE IMPROVEMENT OF THE RAILWAY INFRASTRUCTURE AND DEVELOPMENT OF RAIL TRANSPORT SERVICES

3.14.1 General objectives and on-going policy

Present railway policy intends to maintain the role of the railway on a major East-West transit corridor. The principle of railway restructuring is accepted, as well as the need to improve railway assets (both infrastructure and rolling stock) which were suffering from lack of maintenance and absence of investment. Financially, the Republic of Moldova, which is the owner of the CFM, cannot, due to lack of funds, consider any public financing of the railway network, which has to be covered entirely by the railway operator. This is in contrast to what

is done in the neighbouring Romania, and can be justified only if such a policy applies also to road transport, in order to ensure fair competition.

3.14.2 Trends for the development of railway infrastructure

The future development of railway infrastructure has to be 'technically modest' and mainly take into account necessary network rehabilitation due to delayed maintenance. The objective should not be to improve the technical and operational parameters of the railway track in order to reach 160 km/h, but to have a reliable 80-100 km/h East-West freight corridor, with CIS standards (apart from on the standard gauge link Chisinau – Ungheni).

At border stations, the agreement for Railway Lines for Combined Transport (AGTC) can be considered. A reduction in the time spent at border crossings, according to the Geneva recommendations, is vital.

The programme for infrastructure (railways sector) presented below has been prepared by CFM. No railway projects are currently under execution, due to lack of funds.

Programme for infrastructure, railways sector, 2007-2013

No	Title	Scope of work (short description)	Indicative budget in €M
Priority: Development of railway infrastructure along the major Trans-European transport axes			
1	**Rehabilitation and electrification of the railway Kuciugan – Terispol – Bender / Tighina – Chisinau - Ungheni (along European railway corridor IX)**	The project would provide for the electrification and improvement of electric networks and the installation of signalling systems at stations. Length of the line section: 226 km. Cost per km: ~ 1 M EUR Total cost of the project 264 M EUR (of which 54 - 60 M EUR for motive power)	**210.00**
2.	**Rehabilitation of the Ungheni – Balti - Moghilev railway line (along European railway corridor IX)**	Rail track renewal aiming to reach the designated speed on all lines. The scope of work will include improvement related to signalling and telecommunications. Length of the line section: 216 km . Cost per km: ~ 0.125 M EUR. Total cost of the project : 27 M EUR A complementary improvement has to be considered on the Zmerinka – Moghilev Ukrainian section.	**40.00**
3.	**Implementation of a normal gauge track between Ungheni and Chisinau in parallel with the existing track (along European railway corridor IX)**	Normal gauge track in order to allow direct railway links between Chisinau and Bucuresti (an option is to keep the present Russian gauge double track + a supplementary normal gauge track, another option is to keep a Russian gauge single track and to replace the second track by a normal gauge one) Length of the line section: 107 km. Cost per km ~ 0.125 M EUR (replacement) to 0.2 M EUR (new third track) Total cost of the project: 13 M EUR to 21 M EUR	**13.00 to 21.00**
4	**Construction of Cahul – Giurgiulesti line (along European railway corridor IX)**	New line construction in order to allow a direct rail connection with the only Moldovan port on the Danube river (Giurgiulesti). This new link will offer a link to Galati (Romania) through a connection on the Reni – Galati line. Length of the line section: 54 km	**16.20**

		Cost per km: ~ 0.3 M EUR Total cost of the project : 16.2 M EUR	
5	**Construction of Marculesti – Soroca line (along European railway corridor IX)**		
6	**Renovation of Basarabeasca – Berezino line (along European railway corridor IX)**	Implementation of a connection between Basarabeasca (Moldova) and Berezino (Ukraine), allowing a direct connection with the seaport of Odessa. Length of the line section: ~ 20 km Cost per km: ~ 0.125 M EUR. Total cost of the project : 2.5 M EUR	**2.5**
7	**Rehabilitation of other sectors**	In relation with delayed maintenance on a major part of the network (apart from those sections previously listed in the renovation/rehabilitation/modernisation program). Length to be rehabilitated: ~ 200 - 300 km Cost per km: ~ 0.075 M EUR. Total cost of the project : 15 – 22.5 M EUR	**15.0 to 22.5**
	TOTAL COST		**296.70 to 312.20**

The location of these projects is shown on map 4, in the annex.

3.14.3 Trends in the development of railways transport services.

3.14.3.1 Strategy for the development of passenger services

In the field of passenger transport services, CFM strategy, in accordance with market trends, should include the following:

- Taking into account the volume of offered transport services to comply with market conditions and the behaviour of competitive transport modes;
- Full compensation by the State (or the requesting authority) for the non-profitable social transport services of CFM. These PSOs (Public Service Obligations) include in particular suburban services around Chisinau, local services on all railway lines (including main lines) and special fares for 'privileged' passengers;
- Priority for the development of rapid international inter-city transport between Chisinau and Odessa (day train), Chisinau and Bucharest (day train and/or night train), Chisinau and Kiev (night train), with comfortable modern rolling stock and a reduced number of stops ;
- Improvement of the productivity of rolling stock through its passenger-dedication and modernisation;

The market for passenger transport by rail shall be divided into the following segments:

1) Internal transport services

Inter-city
No segment due to the small size of Moldova.

Suburban transport services
It is in the sector of the passenger transport market in which CFM will continue to provide mass transport services between the suburbs and main centres (Chisinau and Tiraspol) particularly for workers' and students' journeys as well as for access to city-centre services.
The current level of services does not satisfy the requirements of frequency and appropriate travelling times, including connections with urban transport in Chisinau, as the railway station is not centrally located.
These services can also improve their quality where the highest part of population is located (Chisinau, Bender / Tighina, Tiraspol).
As to preserving the market share of this segment, taking into consideration the strong competition, a emphasis has to be placed on high capacity trains at peak hours, allowing a reduction of the cost per seat-km.

In conditions of economic crisis, under public pressure and the state authorities' control, CFM has preserved, up until now, the passenger transport scheme in general and has maintained a relatively low level of prices for passenger transport. The railway administration has continued to implement the State social policy towards transport, with special prices for "*privileged passengers* » as well as maintaining local rail services in remote or suburban areas, without compensations from the State or any other public authority. **Such a social policy cannot be maintained** as it is financed by a cross-subsidy system between freight and passengers, which does not allow CFM to fully allocate sufficient funds for rolling stock and infrastructure maintenance, and has a negative impact on the investment capacities of CFM.

Local transport services

In recent years this category of transport suffered strong competition from road transport (minibuses or buses). Co-operation between the two modes can be considered (for instance minibuses travelling to a suburban major railway terminal).

2) International transport

This kind of transport will develop entirely on a commercial basis in co-ordination and co-operation with neighbouring European railway operators.

Moldova to Ukraine / Belarus / Russia

- Introduction of high quality Inter-city day trains (EUROCITY) between Chisinau, Tiraspol and Odessa with modern and comfortable DMU rolling stock. The ideal is to allow CFM / UZ to freely determine their fares, in order to cover their costs, and to limit stops at border stations (and small stations). A principle of shared operation between UZ and CFM can be considered (based on the THALYS example). At present: no service in this relation.
- Introduction of high quality Inter-city night trains (EURONIGHT) between Chisinau, Tiraspol and Kiev and Moscow with modernised night rolling stock, with good quality standards. A limited number of stops at intermediate stations can significantly reduce the duration of the journey:
  Chisinau – Kiev –at present 705 km in 17h30 D+1 (40 km/h). Possible duration: 12h00 D+1 (60 km/h).
  Chisinau – Moscow –at present: 1577 km in 34h00, D+2 (46 km/h). Possible duration: 26h00 D+1 (60 km/h).
- Introduction of high quality Inter-city night trains (EURONIGHT) between Chisinau (trains can start in Tiraspol) and Vitebsk (Belarus) and Saint-Petersburg with modernised night rolling stock, with good quality standards. A limited number of stops at intermediate stations can significantly reduce the duration of the journey: Chisinau – Saint-Petersburg – at present: 1814 km in 42h27 D+2 (43 km/h). Possible duration: 30h00 D+1 (60 km/h).

Moldova to Romania

- Introduction of high quality Inter-city day trains (EUROCITY) between Chisinau, Ungheni and Bucharest with modern and comfortable DMU rolling stock. The ideal is to allow CFM / SNCFR (passengers) to freely determine their fares, in order to cover their costs, and to limit stops at border stations (and small stations). A principle of shared operation between SNCFR (passengers) and CFM can be considered (based on the THALYS example).
  Chisinau – Bucharest -at present 325 km in 12h30 D+1 (25 km/h). Possible: 325 km in 5h30 D (60 km/h).
  The night train between the two capitals is suppressed.

Moldova and Bulgaria and other CIS countries – maintaining former positions in the transport market and an increase in market share mainly on the basis of seasonal tourist journeys.

3.14.3.2 Strategy for the development of freight transport services

The special position of Moldova is that the rail freight transport market includes only ONE segment, international traffic, essentially based upon freight in transit which is mainly an East

– West traffic flow.

Moldova, with its favourable geographical situation, may attract additional transit traffic.

Up until now, the tendency has been towards stability in transit traffic, but this traffic is presently hampered by the Transniestra constraint which can detour some traffic through less direct corridors (Ukraine – Romania).

The transport of freight is carried out through wagon shipments (**isolated** wagons) and block trains.

In the field of freight transport services the strategy chosen by CFM should consider the following points:

- Carrying out its own corporate policy tightly connected to marketing strategy in the different market segments. Transport logistics companies can work in close co-operation with the railway company, but CFM must also look directly for new clients, eventually with the neighbouring networks (Romania and Ukraine);
- Maintaining and developing transport of mass goods through improvement of the quality of offered services. An increase in transport share could be envisaged by block trains from a point A to another point B, with a regular timetable.;
- Maintaining and developing international railway transport (import-export-transit);
- Development of combined transport (container, shuttle and block trains along national and international destinations) and implementation of projects and new technologies for combined transport;
- Implementation of an efficient system of freight tracking, eventually by adopting the system already used by a neighbouring network (Ukrainian railways);
- Progressive renewal and modernisation of rolling stock
- Enhancement of railway infrastructure must ensure quality services for conventional and combined freight transport along the specified corridors. It should also lead to a decrease in transport costs. Higher speed will contribute to increased competitivity of the railways compared to other transport modes.
- Improvement of border control facilities

3.14.3.3 Improvement of rolling stock

5 DMU for inter-city day trains between Chisinau and Bucharest (standard gauge) and Chisinau and Odessa (broad gauge), with supplementary bogies for gauge swapping (3 M EUR/train [DESIRO], 15 M EUR).

~ 10 EMU for suburban transport services around Chisinau and Tiraspol. Price for EPL-2T (2+4+2) [Luganskteplovoz]: 0.5 M EUR/unit, 5 M EUR).

Good quality refurbishment of 50 night coaches (20 on the Kiev route, 20 on the Petersburg route) (0.075 M EUR/coach, 3.75 M EUR)

Motive power:

- 20 electric locomotives (3 M EUR/engine, 60 M EUR)[4] for the new electrified East-West corridor

[4] 2 locomotives per train of 2,000 tonnes. Length of the East-West Kuciurgan – Ungheni electric corridor trip 226 km, duration of the trip (50 km/h): 5 hours. Preparation of a train: 1 hour. Rotation time: 12 hours, 2

- 30 diesel locomotives (2 M EUR/engine, 60 M EUR) to replace the present obsolete fleet

With regard to freight wagons, a development of privately-owned wagons has to be considered, as is the case on other networks, in order to limit investment constraint.

Moreover, approximately (to be confirmed) one-third of the present wagon fleet (2500 wagons) has to be immediately refurbished (0.015 M EUR/wagon, 37.5 M EUR).

rotations/day, 4000 tonnes per day (trains loaded in one direction only), 10.5 M tonnes to carry = 30,000 tonnes par day = 30,000/4000 = 8 rotations (16 trains per direction) = **20** locomotives (including a 15 % for maintenance and out-of-service). With these 20 locomotives, all the present transit traffic (or all the lines) can be hauled. It is possible to increase the average weight of the trains to 2,500 - , 000 tonnes (~ 16 M tonnes a year).

Programme for rolling stock, railways sector, 2007-2013

No	Title	Scope of work (short description)	Indicative budget in €M
Priority: Improvement of passenger services			
1	**INTERCITY relations (Chisinau – Bucharest and Chisinau – Odessa)**	Number of DMU: 5 (with supplementary bogies for gauge swapping) Cost per DMU: ~ 3 M EUR Total cost of the project: 15 M EUR	**15.00**
2.	**SUBURBAN relations (around Chisinau and Tiraspol)**	Number of EMU: 10 EMU EPL-2T (2+4+2) Cost per EMU: 0.5 M EUR Total cost of the project : 5 M EUR	**5.00**
3.	**EURONIGHT relations (Chisinau – Kiev/Moscow, Chisinau – Belarus – Saint-Petersburg)**	Number of coaches: 50 Cost per coach: 0.075 M EUR Total cost of the project: 3.75 M EUR * motive power : re-utilisation of freight electric or diesel units	**3.75**
	TOTAL COST (PASSENGERS)		**23.75**
Priority: Improvement of freight services			
1	**Electric Locomotives (Ukraine – Ungheni corridor)**	Number of locomotives: 20 Cost per locomotive: 3 M EUR Total cost of the project:: 60 M EUR	**60.00**
2.	**Diesel Locomotives**	Number of locomotives: 30 Cost per locomotive: 2 M EUR Total cost of the project: 60 M EUR	**60.00**
3.	**Wagons**	Number of wagons: 2500 wagons Cost per wagon: 0.015 M EUR/wagon, Total cost of the project: 37.5 M EUR	**37.50**
	TOTAL COST (FREIGHT)		**157.50**
	TOTAL COST (PASSENGER + FREIGHT)		**181.25**

3.14.4 Trends in the development of railway restructuring

CFM started this restructuring process back in 1999, with the assistance of NEI Consortium consultants. The first positive results from this restructuring process appear to be emerging in the form of apparent net operating profits for the railways in 2000 and 2001. However, as stressed, the restructuring did not go far enough as all restructuring stages were not fully developed, particularly Phase II and Phase III.

For CFM three possible strategies were therefore possible:

Table 9: Three restructuring strategies

	Status Quo	Lean Organisation	Commercialisation
Description	CFM would carry on under the present concept without any radical change		This strategy is most in line with EU directives and restructuring measures undertaken by other railways, including Russia
Network	No further line closures	CFM would be reduced to a core network with operations principally on the main transit lines. On these lines transit traffic and international passenger services would continue	
Public Service Obligations	Not considered. cross-subsidising from freight to passenger traffic will continue	Services on other lines will only be maintained on a PSO basis and supported by Government subsidies for public service obligations	
Manpower levels	Maintained	To be defined	Complete reorientation of CFM, and reduction in personnel
Infrastructure	The present level will be maintained, but with some further rationalisation of the track and reconfiguring of main lines. However the quality of infrastructure will further decline.	Government subsidies for loss-making services (passenger transport) mean that profits from core activities can be used for investments in the modernisation as quickly as possible of assets (infrastructure). Rationalisation of infrastructure equipment.	
Rolling stock	The quality of rolling stock and other capital assets will further decline.	Government subsidies for loss-making services (passenger transport) mean that profits from core activities can be used for investments in the replacement as quickly as possible of assets (rolling stock). Rationalisation of rolling stock.	
Passenger services	As at present	PSOs	PSOs and Business Unit(s)
Freight services	Upheld despite increasing competition from road transport		Business (Units)
Organisation	Remain intact	Readiness of CFM to undertake the necessary reforms	Business units for infrastructure, freight and passengers. The CFM management becomes a holding company, which owns the business units
Private Sector involvement		Third parties will be responsible for operating the branch lines and peripheral services	At a later stage would provide for private investment in the independent companies formed out of the business units
Internal Competition	No other providers will obtain access to the infrastructure		Some services may have to be given over to road transport
External competition	CFM will become less and less competitive, with the	CFM ability to compete with competitive prices on the core freight corridors	

	Status Quo	Lean Organisation	Commercialisation
	possibility that transport providers will find alternative transit routes to the one through Moldova.		

At this time, the Government has not yet taken a decision on which strategy to follow.

Railway restructuring is, however, compulsory before any investment programme can be enacted.

3.15 ANALYSIS OF THE STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

The analysis of the strengths, weaknesses, opportunities and threats (SWOT analysis) was elaborated based on the analysis of the current situation in the transport sector. The SWOT analysis includes the identified strength and weakness features of the transport system and the transport modes that are the object of the SOPT (analysis of the internal factors that can be influenced through clear policy and reasonable measures) and the opportunities and threats (external factors that we shall consider and observe carefully) following logically the structure of the current situation.

STRENGTHS:	**OPPORTUNITIES:**
Existing market for international freight transit (10.5 million tons per year) can allow CFM to be profitable. Sustained market demand for domestic transport of bulk cargo. Environmentally friendly and safer than the other transport modes.	Moldova's gradual integration into the EU, initially through EU neighbourhood policy (short-term) and eventually EU membership (medium or long-term) Provision of additional financial resources for the development of railway infrastructure through the Moldova – EU integration process. Moldova's location is suited for developing international transit traffic along the European rail transport corridor IX Better integration into the European rail system enabling interoperability, in the case of a future standard gauge link from Ungheni to Chisinau Improvement of integration in the CIS railway system enabling it to operate enhanced regional traffic Possibility of new operators entering the railway transport market, in particular for transit activities. Adoption of new technologies. Development of multi/intermodal corridors and logistic chains. Globalisation of the economy and liberalisation of the transport market
WEAKNESSES:	**THREATS:**
The majority of the national railway infrastructure is in poor technical condition. Most of the railway infrastructure does not permit reaching the design speed, even for freight trains. Unsatisfactory condition of the rolling-stock . CFO is not being compensated for PSOs which results in deferring needed maintenance of infrastructure and rolling stock, and lack of resources for investments.	Delay in the implementation of priority infrastructure projects (infrastructure and rolling stock) Traffic deviation from Republic of Moldova. Already existing in the North through a direct link from Ukraine to Moldova, could be developed southwards through a new railway link between UZ (Ukraine) and SNCFR (Romania) over a new Danube bridge. Geopolitical division of the country (Transnistria) preventing any long-term development of the network, particularly for transit activities. Delay in the introduction of the new technologies and improvement of the technical condition of the railway infrastructure

4. URBAN TRANSPORT

Chisinau holds 25% of the total population of Moldova, having more than five times the size of the next one (Balti). So, even while there are other cities in Moldova with urban transport, this chapter focuses on Chisinau, where, due to differences in size, most of Moldova's urban transport services are proposed. Conclusions reached could be applied to any other city in Moldova.

An important issue is the split in competences between the National Government and Local Authorities. It seems clear that the National Government has to provide a policy framework, while the day-to-day decisions are in the hands of the Local Authorities. At present, the lack of financial resources makes the city more dependent on the Government for its main source of this global support.

In the following paragraphs a description and diagnosis of the current urban transport situation will be developed, focusing on three key aspects: Infrastructure, Public authorities and operators.

This review is presented in the knowledge that the Chisinau Municipal Council last February approved the "Strategia De Dezvoltare A Transportului Public Urban În Municipiul Chişinău" (Strategy to develop Public Urban Transport in Chisinau) and that in the light of this Strategy, an important effort to summarise and analyse the current situation was undertaken.

4.1 INFRASTRUCTURES

4.1.1 Description

Infrastructure for urban transport is composed mainly of urban roads. Chisinau public transport also has trolleybus infrastructure (electric infrastructure: transforming stations and wire lines) together with bus & trolley stops and depots for public transport units.

In the city of Chisinau there are 690 streets with a total length of 676.7 km and a surface of 8.65 million square meters. The length of streets and roads in the neighbourhoods amounts to 481.3 km, of which 225.3 km (46.8%) are arterial roads. The linear density of the streets compared to explored territory makes up 4.27 km/km2, and of the arterial roads – 1.99 km/km2. The streets and the roads account for 11.8% of the explored territory of the city. There are also 236 pavilions at urban transport stations and 20 pedestrian passages. The average diagonal of the city is estimated at about 15 km.

Segments of National Roads inside city areas are maintained by local authorities, but some funding comes from the Ministry of Transport.

The Chisinau Public Administration states that 80% of the urban road network needs capital repairs. Lack of funding for maintenance is the main cause for this deterioration of the network.

Works on urban streets have major problems with service networks. The number and the maintenance situation of service networks cause a significant increase in costs. In addition, the need to repair service networks produces damage to the streets.

City officials estimate that 462 million lei per year (37 million US$) is needed to obtain an up-to-date street network for the city in 5 years.

Even for the maintenance of National Roads, requested funds have not been allocated in recent years. The situation seems to have changed this year, when funds have been raised.

All trolley infrastructures (poles, cables, transformers) are outdated (even 40-45 years) and needs urgent renewal. This situation means more costs due to high energy expenditure and energy losses.

Estimates from the trolley company shows that with 20 million lei per year (1,6 million US$) it will take at least 10 years to renew all infrastructures. The trolley company does not expect to receive this amount.

4.1.2 Diagnosis

Most of the urban transport infrastructure needs urgent maintenance and renewal, both specific infrastructure (trolley facilities) and general infrastructure (roads and streets).

There is no stable framework with which the city can know how much money it can use for this purpose. The lack of resources in the city means that it depends on decisions from the National Government on how much money the city can spend in this field. In recent years, little money has been available; this year there has been some more, but nobody knows what will happen in the near future

In consequence the main issues are:

- Infrastructure in bad condition
- Lack of financial resources
- Uncertainty about the availability of any resources

4.2 PUBLIC AUTHORITIES

4.2.1 Description

In the Chisinau Municipality, the organisation of Public Transport is under the authority of the Chisinau Municipal Council; direct management is carried out by the 'The General Department for Public Transport and Communication Ways of Chisinau Municipal Council'. This unit is part of the Local Administration, with the status of a legal entity. Its main tasks are to work out strategic documents, transport planning, route planning, transport operators, quality and reliability control of public transport services, observance of norms in the field, co-ordination and co-operation of transport operators among them, etc...

There is a feeling that not all of the requested actions are taken correctly. It seems that lumping together roads and transport as it happens does not work well. This result has been seen in other countries and other situations, where the huge differences between the budgets used for roads and transport mean that all efforts are concentrated on roads forgetting about transport.

One of the proposals in the municipal strategy proposes a split in the administration, having separate units for road and transport. That will help to improve Public Transport Administration.

Currently, there are important issues in public transport that show some deficiencies in the role of the Public Authorities:

- Lack of planning: there is little data and no in-depth study on public transport; there is virtually no planning at all for bus, trolley and minibus routes

- Lack of clear rules: bus and trolley companies have no contract with the city that gives details on their role to play in Urban Transport. There is no stable framework in which all players can develop their roles

- Economic instability. Tariffs did not change between 2000 & 2006. Tariff approval is related to political decisions, thus making the future of the companies uncertain.

4.2.2 Diagnosis

Lack of interest/resources applied to the Administration of Public Transport is the main item in this area. The splitting of roads and public transport can help in the right direction, but the real need is resources and a decision to manage Urban Public Transport.

4.3 OPERATORS

4.3.1 Description

Urban Public Transport in Chisinau is provided by buses, minibuses, trolleys and taxis. There are a total of 124 routes, including 26 trolleybus routes, 30 bus and 68 mini-bus routes. The city of Chisinau is served by 78 routes, (24 trolley, 8 bus and 46 mini-bus) while the connection with other cities in the municipality is made through 47 sub-urban routes (2 trolley, 23 bus and 22 mini-bus). Most routes are drawn either towards or through the urban centre. Due to the highly developed route network served by the mini-buses, the municipality has a high degree of coverage with public transport.

Trolley transport is managed by the "Electric Transport Administration of Chisinau" (Regia de Transport Electric Chisinau (RTEC)), a public company owned by the Chisinau Municipality. Approximately 190 million passengers per year are transported by the trolley company; it puts on the street around 270 trolleybuses daily. Most of the equipment (fleet and infrastructure) is completely outdated. Official data shows 35-40% of non-paying passengers, belonging to groups that warrant reduced tariffs by law); the company will need around 100 million lei (8 million US$) to cover the difference between costs and revenues.

Bus transport is managed by "Bus Urban Park" (Parcul Urban de Autobuze), a public company owned by the Chisinau Municipality. The company owns 190 buses, but only around 100/110 are available to run on the streets daily. 25 million passengers per year are transported by the bus company, 40% of them non paying passengers. The company needs

more than 40 million lei (3.2 million US$) to cover the differences between costs and revenues.

Minibus services are managed by 22 companies (21 private) which hold effectively 1800 minibuses, from which about 1600 are daily on the urban roads. They are companies which are 100% private. Transport by minibus started at the beginning of the '90s, as a reaction to the failure of the public sector to provide the necessary urban transport services. Total investments in private minibus companies can be evaluated at around 160 million euros today. Unofficial figures, from surveys, estimate that around 200 million passengers per year are transported by minibuses. There is no subsidy to these companies, but neither are non-paying passengers accepted.

There are approximately 1000 cars authorised as taxis, with an unknown number of non-authorised ones.

Current concessions are made as follows: a number of units belonging to one company are assigned to a route, where they can meet with other units from other companies. Consequently, private companies cannot manage their routes as they cannot change assigned buses (unless the owner of the vehicle is the same), they cannot adjust capacity to demand (increasing or reducing bus size or number). The current situation leads to competitive riding between passengers from time to time, only avoided by some kind of auto-regulation and inspection by the companies.

The municipal transport enterprises operate without contracts, based on order-plans.

The main complaints from current players relate to the following issues (financial aspects will be commented in the next chapter):

- Unfair competition rules: 2001 route tenders are not competitive, just to put into regulation the existing situation; bus and trolley acquisition tenders have not been transparent and lack rules on competition.

- Unstable conditions regarding route concessions: Public companies have no contract to run their routes. Private companies' contracts ended in August 2006 (2001 tenders were supposed to last 5 years. There have been no renewals and nothing is expected to happen before the municipal elections).

- Unstable conditions regarding vehicle requirements: Converted vehicles (from freight transport to passenger transport) were approved and even encouraged in 2003 regulations; a national law has recently (2006) changed the rules, sending those vehicles (60%-80% of the fleet) off the streets. New regulations mean that the minimum investment for putting a minibus on the street rose from around 8,000 euros to 15,000 euros (10,000 to 20,000 US$).

- Neither private nor public companies can manage their routes. They cannot provide good management as they do not have any control over the main questions affecting

their work (tariffs, route definition, and contract with the administration...) and there is no clear rule as to how these elements will change.

- Lack of planning: there is a need for some planning to optimise route networks; this fact, together with a clearly over-dimensioned minibus fleet leads to inefficient use of the bus and street capacity as well as some traffic problems

An important issue is the lack of clear data relating to the lack of clear rules:

- While minibus business can mean nearly 600 million lei (50 million US$) per year, official figures show no more than one third of these figures
- While Public companies claim that 35-40% of the passengers are non-paying passengers, independent surveys show figures around 15-20%.

4.3.2 Diagnosis

The current structure of public transport operations is a result of recent history: the lack of resources of the public companies managing urban transport opened the door to private companies (minibuses) that bridged the gap; the current situation has evolved without planning. Non-financial main issues that can be raised in this Diagnosis of the current situation are as follows:

- Lack of transport planning. No data, no knowledge of how Chisinau people move, and thus no planning of the network and the services.

- Lack of clear rules for providing services: public companies have no contract, private companies have finished their concessions and there has been no subsequent renewal of them.

- Lack of management options. In the present situation, the companies cannot manage their routes.

- Lack of clear competition rules. While public companies receive new vehicles from the government, private companies see how the rules regarding which vehicles they can use change from year to year.

4.4 FINANCIAL SITUATION

4.4.1 Description

Financial issues greatly affect the present situation of public transport. Public companies are on the brink of bankruptcy, needing constant resources from the City Council to cover daily expenses.

An estimated 140 million lei is needed to keep both companies in operation (trolley and buses), but without any renewal or improvement other than just putting the available fleet on the street.
There are two main issues in this financial problem: one is tariffs, the other is the absence of any plan, program or general scheme to stop the deterioration of public companies.

- Public transport tariffs went unchanged from 2000 to 2006 for political reasons, as the decision to change tariffs is made by political bodies. In 2006 there was an important rise in Public Transport tariffs, an increase that showed almost no elasticity at all: the companies raised their revenues with the same amount of tariff increase without losing passengers. This result shows that the political fear that the population will not accept a rise in Public Transport tariff towards covering their real costs has no base at all.

- The tariff problem is also related to non-paying passengers: social groups that by law can travel at no cost on public transport companies. This reduces the revenue for trolley and bus companies, but is also a source of uncertainty and of unclear figures.

- Together with this is the problem of unfair competition rules: while private companies need to cover their costs, public companies get subsidies from local authorities to cover their expenses without a specific framework.

- In the case of public companies, there have been no plans to stop the deterioration of the financial situation, only subsidies to keep buses and trolleys running. That has led to a situation where fleet and infrastructure of both companies are outdated and with bad maintenance status. Where companies cannot invest in new vehicles or in the renewal of assets, where most of the maintenance is done by the company staff as there are no resources to do it in a different way. All new buses and trolleys are acquired with funds from the National Government.

- Private companies also suffered from this tariff situation, putting at risk the existing investments. At present, changes in vehicle requirements together with the end of existing concessions and the uncertainty of tariff levees make it difficult to invest in the sector.

4.4.2 Diagnosis

The main conclusions from the existing financial situation are the following:

- Public companies are in a clear state of bankruptcy

- No stable methods of tariff updating are available

- No clear rules of competition are defined in a framework in which private and public companies work together.

4.5 TRENDS FOR IMPROVEMENT

The approval of the Strategy for the Development of Public Urban Transport is an important step towards the future.

Strategic objectives are the following:

- General long term objectives.
    - The functioning of public transportation at minimal costs.
    - An improvement in the quality of services.
- Specific medium and short term objectives.
    - An improvement in the efficiency of the transportation system
    - The perfecting of public passenger transportation management.
    - The optimisation of the means of transportation structure.
    - The optimal development of the street network and of the transport infrastructure.
    - An improvement in urban traffic management.

Strategic components are the following:

- The street network and the transport infrastructure
- The management of the urban road traffic
- Public passenger transportation management
- Subsidies, support for the vulnerable social layers, and public transportation financing.

Even when the strategy puts together most of the problems and shows the guidelines to solve them, the different players in the urban public transport show fears about the real effects of the approved strategy:

- There is no political interest in the development of the strategy. It was approved, forced by the pressure of the different sectors involved, but no real efforts seem to have been accomplished since then.

- The amount of resources needed is important (3500 million lei in five years), and there are fears that they will not be available to develop the proposed strategy. 55% of the requested funds should come from sources other than local administration (state budget, grants,..) thus being out of the City control.
- Even then, as most of the resources (85%) are intended for the street network and transportation infrastructure, there is a margin to improve all other transport related issues even if all the requested resources are not available.

- Nobody expects any new moves before the next election; unstable conditions lead to no incentive to new investments, even for fleet renewal.

Within this framework, there is a need to specify the role of the National Government in this trends toward the future; the city needs the National Government to go ahead in this sector, but, as in all areas covered, there is a need for clear rules and clear definitions on what should be provided by whom and under what terms.

4.6 SWOT ANALYSIS OF THE URBAN PUBLIC TRANSPORT

In the documents that led to the approval of the Urban Transport Strategy for the Chisinau City Council there is a SWOT analysis that can help in the understanding of the situation. The analysis that follows comes from the analysis of the WB team, dealing with the preparation of a strategy for the National Government.

STRENGTHS	WEAKNESS
An urban transport strategy has been approved by the local administration. Existing problems and need for action are recognized. . A near-captive public - - passenger transport demand shows little price elasticity. This is an important demand base and at the same time makes the reform of the sector urgent.. Private companies already play an important role in urban public transport Good human resources working in the sector, in private and public companies can support the reform process.	Public companies in urban transport are technically bankrupt and have no resources for investments and adequate maintenance. Lack of resources in local administration towards public transport sector (other that roads/streets) Short term political decisions dominate in the sector. There is no stable framework. Bad condition of most parts of infrastructure. Many capital repairs needed..
OPPORTUNITIES	**THREATS**
The present situation, with private concessions coming to an end, can be a good starting point for a reform of the sector. The recent allocation of resources from National Government to the Chisinau municipality for fleet renewal and street maintenance can help if sustained in the near future. The preparation of the Govermment's Land Transport Strategy, focusing on Road Maintenance, can be an opportunity if Urban Road System is included in maintenance financing system. The interest of multilateral organizations and IFI's can help in raising the needed funds to improve the present situation.	The fact that even in these difficult conditions public transport works go against any change. If investments are done now, this could downplay the importance of sector reform and of the creation of a stable framework. The presence of many other urgent needs in the country that can attract the available resources.

4.7 URBAN TRANSPORT STRATEGY

The existence of two decision levels related to Urban Transport makes the definition of a strategy difficult for the National Government, as the main objective is to help local authorities (with direct responsibility in the issue) to develop and implement their own strategy, with no interference at each competence level.

Annex 2 includes the strategy adopted by Chisinau Municipality with all its development. The municipal strategy is asking for a budget from the National Government (1,500 million lei / 120 million US$) and gives the Ministry of Transportation joint responsibility in the development of three tasks:

- The preparation of a ring-road project for Chisinau
- The adoption of quality and secure transportation standards and technical specifications for the accepted vehicles for public transportation
- To classify the transportation services according to a quality standard (taxi, maxi taxi, express transportation, simple transportation)

The government should include these specific items in its strategy together with general help in all other aspects in the development and implementation of the strategy, within a framework in which the responsibilities are clearly delimited.

5. TRANSVERSAL ISSUES

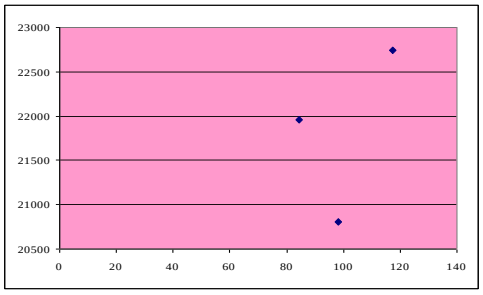
5.1 TRAFFIC FORECAST

5.1.1 Transport evolution in Moldova

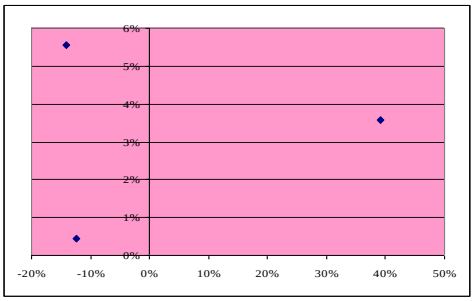
In order to get an idea of the possible future trends, several analyses have been carried out. Three problems arose when carrying out this analysis:

- There are very few reliable time series, if any.
- Moldova shows a constantly decreasing trend in many matters (population, students, transport indicators, etc). Thus it is quite difficult to forecast a positive evolution of these variables.
- Additionally, the economic situation of the country has caused several ups and downs in many of these indicators through the years. Correlations between variables are of no significance, either when using absolute total values or when using annual increases.

Relationship between GDP and ADT (average daily traffic)

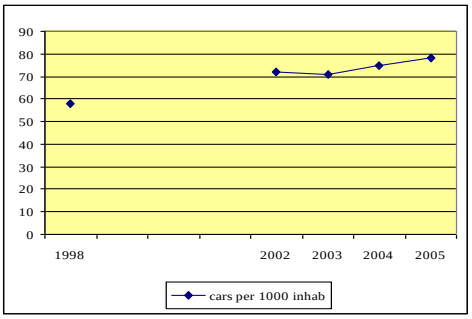


Relationship between GDP increases and ADT increases

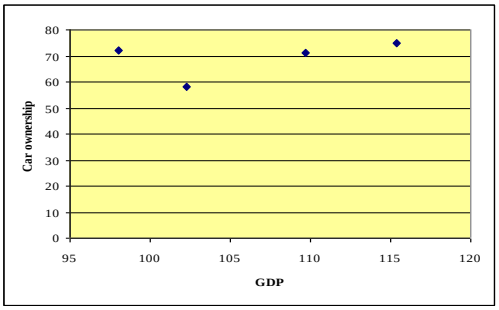


Nevertheless, some rough guesses lead to simple forecasts. For instance, car ownership is increasing at about 4-6%, that is, a little less than the GDP per capita growth rate, which seems sensible. In the future it ought to be the same – increases in net income will mean similar increases in car ownership. Furthermore, it is sensible to assume that annual mileage will increase in the future (due to fleet renewal) and, therefore, road traffic will grow a little more than the economy as a whole.

Car Ownership (Cars per 1000 inhabitants)

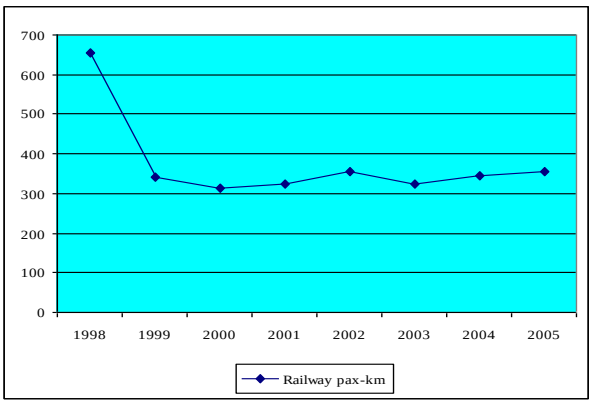


Relationship between GDP and car ownership

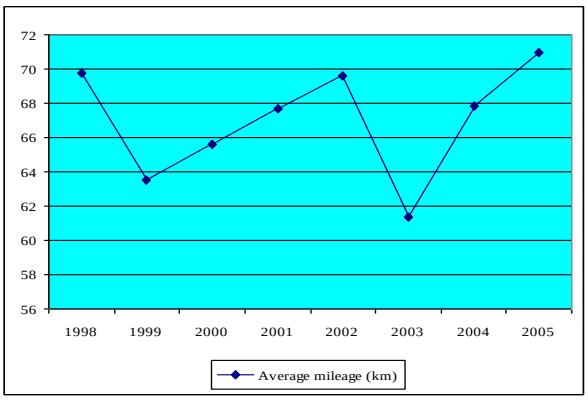


Rail passenger demand is stagnant, with minor oscillations. This is logical and related to the previous trend, since any increase in wealth is generally translated into increased mobility, which in turn is absorbed by private cars. This situation cannot be altered without political decisions related to urban and metropolitan transport and traffic control, which do not seem to be probable in the near future.

Rail pax demand (pax-km)

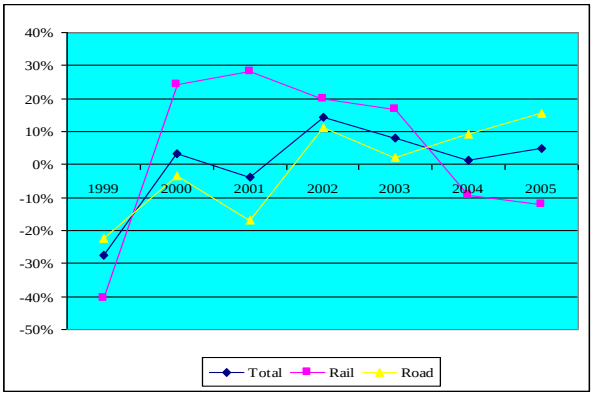


Average trip length (km)

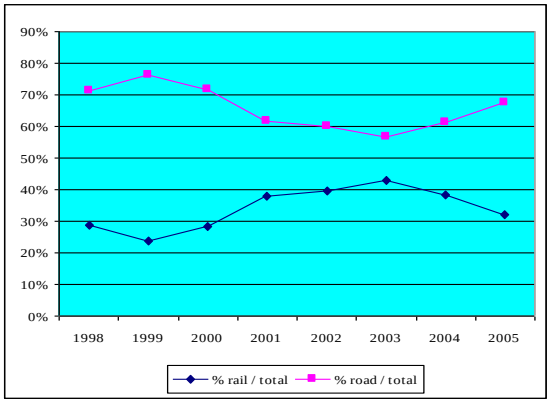


Total freight demand seems to be increasing in recent years by rates slightly less than the GDP's, which is understandable and can be expected to be more or less the same in the future (probably with figures closer to the GDP increase).

Annual increase in ton-km



Modal share (rail + road)



Freight road traffic seems to be increasing very quickly, reaching levels that double GDP growth (up to 15%). This feature is common to many developing economies. Therefore, in the future such rates of growth must be expected, unless hampered by deteriorating roads or any external factor.

Freight rail traffic is recently in decline, after a short recovery period that followed the collapse of a decade ago. This is logical due to the country's size and its trade structure, neither factor backing a modal share of around 30-40%. Most probably, in the future, freight rail transport will deteriorate further until it reaches a niche with a lesser modal share. This evolution will not be stopped without far reaching reforms and market adaptation – rail transport volumes will depend much more on its capability of adapting to the market than to macroeconomic trends.

5.1.2 The need of a benchmark

Due to the lack of viable values for Moldova, it has been deemed useful to set up a benchmark. The main problem is that there is very little data available for Eastern European countries -- Romania has been chosen as an example for a few analyses. In order to obtain more information, EU countries have been taken as a reference. Eurostat has been the source of information so as to have an idea of how many of these variables are forecast for EU 15 (15 countries).

Romania could be considered a second-best, as far as it is very closely related to Moldova for geographical and psychological reasons. Its recent membership of the EU shows that its economy has been relatively successful and, therefore, can shed light on the expected future evolution of Moldova. Unfortunately, only one reliable modal variable is available for Romania: passenger by rail. And it shows a decreasing trend, what prevents from obtaining any sensible regression (the decreasing demand against the growing economy leads to negative elasticity).

Some transport variables have been related to the GDP for EU 15. The conclusion is that the elasticity of passenger transport is lower than one, while the elasticity of freight transport is slightly below one (0.8 – 0.9) for rail and waterways, and higher in the case of road (up to 1.4).

The same analyses have been carried out for a selection of the richest European countries (Germany, France, United Kingdom) and less rich countries (Spain, Greece, Slovenia). The conclusion is that domestic policies and economic structures are different enough so as to provide relatively different patterns from country to country. But, in general terms, some ideas are rather coherent:

- Passenger transport has a lower elasticity than freight transport.
- Also in the case of passenger transport, highly developed countries seem to have much lower elasticity than less developed ones (the latter having figures around 1).
- There is no correlation between freight transport elasticity and development level (examples are aplenty showing different evolutions). Figures between 0 and 2 are rather common.

Therefore, in the long run Moldova's elasticities will probably be more or less as follows: Passenger transport elasticity ≈ 1.0; Freight transport elasticity ≈ 1.5 – 2.0. Annex 4 presents the analysis for the required benchmarks.

5.1.3 Forecasts for Moldova

According to the previous conclusions and some complementary analyses based on socio-economic trends, some forecasts can be made, which require first some reflections on the expected economic evolution.

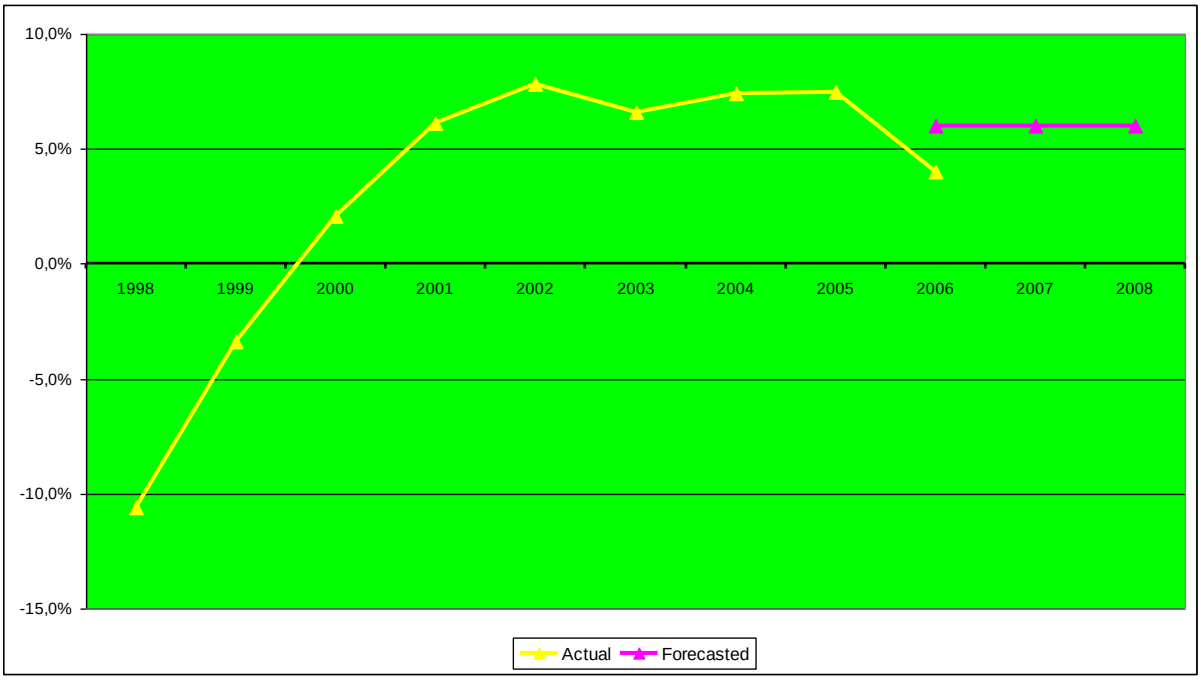
Macro-economic forecast

After very unstable recent past, it seems that more stable growth can be expected. Nevertheless, the Moldovan economy is not robust and relatively minor events can affect its evolution. According to several sources, it seems that last year growth was expected to be

around 7%, but the increase in price of oil and gas, along with a sharp reduction of wine exports to Russia, reduced the figure to a mere 4%.

In spite of this figure, all forecasts continue to place Moldova's growth in the medium term around 6-7%. The lower band would be most probably safer as an average for any forecast.

GDP growth (%)



Transport demand forecast

With all this information, and with many caveats, the following scenarios can be taken as a reference for the evolution in Moldova for the next decade:

	Low scenario	High scenario
GDP	+4%	+8%
Road traffic – light vehicles	+3%	+10%
Road traffic – heavy vehicles	+7%	+15%
Rail demand – passengers	-1%	+1%
Rail demand – freight	-5%	+2%

5.2 LEGAL ISSUES RELATED TO TRANSPORT

5.2.1 Public procurement framework

Public procurement represents an important amount of the Moldovan Government's budget. Total expenditure on procurement amounted to nearly US$118 million in 2002. Procurement accounted for 17 % of total expenditures by the State government and 42 % of expenditure by local governments with expenditure at all levels showing substantial increases over past years.

Public procurement in Moldova in its first years of independence was characterised by an uncertain legal framework and a lack of governmental control over the expenditure of public funds, as most of the previous state orders and contracts systems had been abolished, creating a regulatory vacuum.

The first efforts of the Moldovan authorities to fill the vacuum (such as the Resolution on State Orders in 1991 and the Regulation on Public Works in 1993) have been insufficient to provide the framework for a satisfactory rules-based procurement system. This situation lasted until 1997, when the Government, assisted by the World Bank, adopted the Law on Procurement of Goods, Works, and Services for Public Needs (No. 1166-XII, dated April 30, 1997). It is based on the UNCITRAL Model Law and provides a strong basis for public procurement, including a range of available procurement methods.

However, some weaknesses like subjective bid evaluation allowing too much discretion to public officers can be mentioned, characterising the situation by a contrast between good law and bad practices.

The main institution charged with implementing procurement procedures on behalf of the public institutions is the National Agency for Government Procurement (NAGP), established soon after the enactment of the procurement law. It is a highly-centralised model of organisation, quite unusual among Eastern European countries, but this measure was estimated as necessary to solve the problems of low compliance and weak enforcement that had undermined the effectiveness of previous legislation.

The primary role of the NAGP is to help procuring entities at key points in the procurement process and to concentrate procurement expertise in the Agency, for follow-up support. Even if provided with modest resources, the Agency is considered to have had a positive effect on the conduct of public procurement, establishing itself as a centre of expertise in an area where very little exists in other institutions, and assisting procuring entities to process procurement transactions in a reasonably prompt manner.

Having progressively increased the scope of its services, it now approves about 60 percent of transactions (up from 40 percent in 2000) and covers all procuring entities at the State level. Nevertheless, the Agency has a very low coverage of local state procuring entities, which represents a key limit of the procurement law. There are also some other weaknesses to mention:

- Being subordinated to a ministry of the government, the Agency is often subject to political pressure for its decisions and can not be considered responsible for having approved transactions in discrepancy with the law;

- The NAGP plays both an executive and an approving role in public procurement transactions, thus can not provide objective bid complaints' review.

The allocation of human resources by procuring entities is rather inadequate, considering the value of the expenditures involved. The staff of procuring entities who serve on Working Groups are generally not trained in procurement and at the State level, most ministries have only one person who works full-time on procurement. Also, the Government has no means of providing procurement training to civil servants. The inclusion of ministers in the Working Groups that make procurement decisions, including decision on awarding contracts, means that the procurement process is subject to political interference.

Despite the availability of a relatively good law, its effect remained quite insignificant in the absence of a clear set of implementing regulations, specifying detailed instructions on the correct application of the law. Thus, the practice of procurement by procuring entities is often far from compliance with law. Primary among these is the heavy over-use of the Single Source Procurement method, whereby the procuring entity directly contracts with a single supplier, with no competition.

In many cases, the NAGP 'approves' the use of the Single Source Procurement method, even when the conditions for its use, as defined in the procurement law, have not been met. In 2001, 67 percent of public expenditures were contracted this way, which indicates that substantial areas of government expenditure were not opened up to competition.

Equally, there are weaknesses in the provisions of the law that facilitate non transparent procurement practices. Examples of these are that the law permits the period allowed for bidders to prepare their bids to be as short as 10 days. In practice, most tenders observed for this assessment were in the range of 20 to 25 days, but even that is too short to maximise competition. Also, the widespread use of subjective systems for evaluating bids and selecting the winning bidder reduces the transparency of this key step in the procurement process.

In this context, the World Bank recommended a range of measures in its Country procurement assessment report (2003):

- an amendment to the Procurement law, in order to align it with the WTO requirements and a simultaneous overhaul of the procedures and institutional arrangements for administrative review of bid protests.
- the elaboration of a set of comprehensive series of implementing regulations.
- the presentation of monthly reports and of a yearly report on the NAGP activity .
- the creation of an independent commission, comprising independent experts, in order to review procurement protests.
- the raising of NAGP to the level of a key resource centre in public procurement, by adhering to the procurement law in its own dealings, and the leverage of its ability to develop the capacity of other institutions by establishing a Training Division.

The Moldovan authorities proceeded to solve some of these issues and during the last few years, Moldova has improved the sector by:

- increasing de-centralisation of procurement operations (money spending department or Units in different administrations)

- providing support for this de-centralisation via the training of the people (Handbooks were made available)
- a project of law on public procurement drawn up by 22.03.2006.

However, the above mentioned improvement was hampered by the diminishing autonomy of the National Procurement Agency which was included in a larger agency with wider attribution. The draft law addresses the previous main problems, especially independence, which should be re-established. However further improvements should be made (in the law or in parallel) in many aspects.

- It is necessary to accelerate the adoption of secondary legislation, in order to ease the implementation of the main regulations..
- A balance needs to be struck between EU models and the specific requirements of the Moldovan situation
- Capacity building actions of the spending units should .be strengthened.
- Some improvement in bid protests reception should be made.

5.2.2 Public private partnerships

Public-private partnership (PPP) is a system in which a government service or private business venture is funded and operated through a partnership of government and one or more private sector companies.

In some types of PPP, the government uses tax revenue to provide capital for investment, with operations running jointly with the private sector or under contract. In other types, notably the Private Finance Initiative (PFI), capital investment is made by the private sector on the strength of a contract with the government to provide agreed services. Government contributions to a PPP may also be in kind (notably the transfer of existing assets).

Typically, a private sector consortium forms a special company called a special purpose vehicle (SPV) to build and maintain the asset. The consortium is usually made up of a building contractor, a maintenance company and a bank lender.

It is the SPV that signs the contract with the government and with subcontractors to build the facility and then maintain it.

A typical PPP example would be a hospital building financed and constructed by a private developer and then leased to the hospital authority. The private developer then acts as landlord, providing housekeeping and other non medical services while the hospital itself provides medical services.

5.2.2.1 Origins

Pressure to change the standard model of Public Procurement arose initially from concerns about the level of public debt, which grew rapidly during the macro-economic dislocation of the 1970s and 1980s. The Governments sought to encourage private investment in infrastructure, initially on the basis of accounting fallacies arising from the fact that public accounts did not distinguish between current and capital expenditure.

Although the idea that private provision of infrastructure represented a way of providing infrastructure at no cost to the public has now been generally abandoned, interest in alternatives to the standard model of public procurement has persisted. In particular, it has been argued that models involving an enhanced role for the private sector, with a single private sector organisation taking responsibility for most aspects of service provisions for a given project, could yield an improved allocation of risk, while maintaining public accountability for essential aspects of service provision.

Initially, most public-private partnerships were negotiated individually, as one-off deals. In 1992, however, the government of the United Kingdom introduced the Private Finance Initiative (PFI), the first systematic program aimed at encouraging public-private partnerships. In the 1992 program, the main focus was on reducing the Public Sector Borrowing Requirement, although, as already noted, the effect on the public accounts was largely illusory. The Labour government elected in 1997, persisted with the PFI sought to shift the emphasis to the achievement of 'value for money' mainly through an appropriate allocation of risk.

5.2.2.2 Early problems

Because of the focus on avoiding increases in public debt, many private infrastructure projects in the early 1990's involved provision of services at substantially higher cost than could have been achieved under the standard model of public procurement. The central problem was that private investors demanded and received a rate of return that was higher than the government's bond rate, even though most or all of the income risk associated with the project was borne by the public sector.

A number of studies of early initiatives to promote private investment in infrastructure reached the conclusion that, in most cases, the schemes being proposed were inferior to the standard model of public procurement based on competitively tendered construction of publicly owned assets.

One response to these negative findings was the development of formal procedures for the assessment of PPPs in which the central focus was on 'value for money' rather than reductions in debt. The underlying framework was one in which value for money was achieved by an appropriate allocation of risk.

Although the general view that governments should seek 'value for money' has been widely accepted, there have been continuing disputes over whether the guidelines designed to achieve these goals are appropriate, and whether they have been correctly applied in particular cases.

5.2.2.3 Theoretical Modalities

In general terms, experience in the matter leads us to the division of different existing modalities of funding into four different types:

- Modalities with budgetary repercussion
- Modalities without budgetary repercussion
- Private Modalities
- Mixed Modalities

1) Modalities with budgetary repercussions
It includes the following systems:

Traditional system
It is the conventional system; the builder is paid as the work advances according to a budget approved by the Administration.

German system or "Turnkey"
The successful bidder constructs and finances the work. Once finished the Administration chooses between paying the total price at once or in a maximum of ten annuities.

"Shadow" toll (indirect)
The cost of infrastructure is paid by the Administration to the private agent in charge of the construction, conservation and exploitation of the work throughout a wide period of time. The amount paid depends on the utilisation of the infrastructure by the citizens and sometimes on the availability.

Creation of companies or public entities
These are societies created for the construction and/or exploitation of infrastructures, with juridical personality and own patrimony and labour personnel (not public servants) that do not depend on the Administration. Their activity consists fundamentally of the management of the construction of the infrastructure, as well as the administration of this infrastructure. Their income proceeds from the canon received from the users and their funding comes from patrimonial contributions from the Administration, EU funds and foreign resources. They have capacity for their own indebtedness but, nevertheless, the Administration can subsidise their activity.

Another model that has been used and mentioned above is DBFOT (design, build, finance, operate and transfer), by virtue of which the concessionary society, normally of private capital, constructs and manages the infrastructure. The Administration pays for the provision of these services. It is a contract almost equal to a 'pure concession model', only that in this case it is not the user who pays, but the Administration.

Besides introducing improvements in efficiency, the principal advantage of this formula has been that its debt does not normally consolidate to the effects of the calculation of the public debt. All this is in agreement with the SEC-95 (January 1, 1999), which differs between public Administration and company according to market criteria: if an economic unit orientates its production of goods or services to the market (it sells them) its economic magnitudes must join the managerial sector independently of its public or private property; therefore, the SEC-95 demands that the income for sales covers at least 50 % of the operating costs.

This situation provokes alternative models for development, considering that the debt of this type of entity is not consolidated in the Public Sector. These models are based principally on the constitution of a fund of securitisation, an operation of a financial nature by virtue of which the transmission of certain assets (principally credit rights) to an entity "ad hoc" (the so called fund of securitisation) is possible for their sale on the financial markets. A similar mechanism has acquired great proliferation in USA in recent years.

2) Modalities without budgetary repercussions
This section of the document includes those modalities in which there is a mixture of public management and private remuneration, so the effect is that the cost of the infrastructure is supported by the users and not by the contributors as a whole, by using some kind of toll system.

Private modalities
Opposite the previous modalities it is necessary to place the traditional figure of the 'concession', as a model of funding and private management. It is a well-known mechanism, according to which the individual constructs the infrastructure and its cost is paid by means of the perception of the income that generates its exploitation through collecting a toll from users (though, in certain conditions, it can receive subsidies or public contributions, in such a way that we are talking about the 'soft or subsided toll').

Mixed Modalities
This group includes all those formulae in which the executor of the infrastructures is paid by means of a combination of public and private resources.

3) Recommendations for an attractive structure of the project for the private sector
Finally, besides the study of the previous indicated modalities to involve private initiative in the development of infrastructures from the point of view of economic-financial viability, we can refer to some conditions for stimulating the participation of private firms:

- Legal security and suitable legislation.
- Economic stability.
- Wide and developed financial markets.
- Adequate risk distribution.
- Clear procedures and arbitration.

4) Economic and finance model
In this respect, an individualised economic and finance study would be necessary to consider the latest advances for concession project evaluation based on the theory of real options, as a formula for dynamic evaluation that can overcome the weaknesses of classical procedures (VAN, TIR, etc.) which have an eminently static character.

These formulae try to annotate the risk to the private investor, thus increasing notably the attraction of the project and therefore reducing its financial cost, without significantly altering the global balance for the Administration for the set of projects of investment.

As the analysis of investments has to be carried out in conditions of uncertainty, we will study different possibilities of real options, the incorporation of the latest advances in this matter allows a more precise evaluation of the project, bearing in mind the value derived from the managerial and administrative flexibility in the above mentioned projects.

This approach presents important advantages, among which can be highlighted:

- Obtaining some rights of decision (real options) associated with the investment, the model of real options offers a new frame of dynamic analysis, in which not only the initial conditions and the possible evolution of the variables that affect the project are considered, but also the possible response of the management of the company.

  The real options approach offers a new way of conceiving the risk of investment projects. The systematic risk of investment projects is that which comes from the portion of its possible future losses that cannot be reduced by subsequent decisions of the direction of the company.

- The habitual binomial profitability - risk is replaced by the trinomial profitability – risk - flexibility, recognising the value that the latter adds to the project.

- The real options model makes the analysis of the inter-relationships possible between different investments, both present and future, that compose the project portfolio of the company, recognising the dynamic character of the process of investment.

This approach includes three components of great use to private agents:

- The options are decisions - fixed quotas. An option gives the opportunity to take a decision after seeing how the events develop.

- The value of options corresponds with the value of the financial markets.

- The philosophy of options can be used for designing and managing actively the strategic investments. Non-linear returns can be instruments of design that help to reduce exposure to uncertainty, to improve the returns when the results are good, etc.

5.2.2.4 Suggestions for Moldovan Theoretical Modalities

In view of the Moldovan general situation it is recommended that a cautious approach be made to PPP contracts.

Due to the following characteristics of the Moldovan road network:

- Low rate of traffic
- Bad state of pavement infrastructure
- Finance problems
- Irregular maintenance

We could advise a modality of long term concessions to design, build, finance, operate and transfer and surely we could recommend rejection of options of direct toll and adopt a shadow toll modality.

Probably it would be convenient to choose some sections of road, long enough to achieve the appropriate synergy in construction and maintenance equipment, so as to make a contrast with other stretches of roads improved and managed by traditional systems.

It seems that the best recommendation in this area is a separate feasibility study regarding projected investments to better address the options for PPPs in Moldova.

5.2.3 Environmental legal framework

The institution responsible for the protection of the environment and the regulation of the use of natural resources in the Republic of Moldova is the Ministry of Environment and Natural Resources (MERN). It was created in 1998, from the former Department for the Protection of the Environment.

The executive institution directly subordinated to the Ministry is the State Inspectorate for the Environment (IES), which contributes to the implementation of the issues concerning policies and legislation in the field.

The foundation of the environmental policy was set by the *Law concerning the protection of the environment* (1993), *The concept of the protection of the environment* (1995), *The national strategic program of actions for the environment* (1996) and *The national plan of actions for health in the field of the environment* (2001). By 2003, Moldova had signed 17 international agreements and ratified 15, adopted 25 laws and approved more than 50 regulations, instructions etc. which also form the normative framework for the protection of the environment.

The *Concept for the environmental policy of the Republic of Moldova* (2001) substituted action plans and concepts employed until the mid 90's. It tries to adjust the main goals of environmental policy taking into account the social and economic changes in the country and also recent regional and global trends. Another key-document is the *Action Plan EU-Moldova* which emphasises the aspects concerning sustainable development and the measures to be taken to better integrate the environmental dimension into the policies of other sectors, transport being paid particular attention to. The *Strategy for economic growth and reduction of poverty* also contains a chapter on environmental protection and the sustainable use of natural resources, stressing the need for integrating these principles into all sectors of social-economic activity.

The *Law concerning the protection of the atmosphere* adopted by the Parliament of Moldova in 1997 is the fundamental act regulating interactions in this field.

Other main juridical and normative acts about the environment protection in the sector of the road transport are the following: *The law concerning penalties for the pollution of the environment* (1998), The decision of the Government: *"On the approval of the national program for the environment safety"* (2003), *"On the program of decreasing air pollution from motor cars"* (2001), *"On the services provided at the points of border crossing and control"* (1999), *"On the approval of the Highway Code"* (1999), *"On the transportation of dangerous goods over the territory of the Republic of Moldova"* (2002), *"On the interaction of services and the regulation of tax collecting and automating monitoring systems during controls at the border-crossing points of the Republic of Moldova"* (2000)

Moldova committed itself in the *Action plan Republic of Moldova-EU* to implement the EU's environmental prescriptions and reinforce the institutions and procedures necessary for environmental assessment. In consequence, a handbook concerning the implementation of the SEA Directive was recently drawn up. A project of Strategy for the implementation of the SEA Protocol was set up and it was to be presented to the Government in order to be adopted in 2006. On this basis, a SEA of the Roads Development Strategy is supposed to be prepared in 2007.

Compared to 15-20 years ago, when the industrial and the energetic sectors were the main pollutants, today the main source of emissions are mobile sources such as road transport. Following the data provided by the Ministry of Environment of Moldova, noxious emissions have increased by 10-15% per year during the last five years. At the end of 2005, the total of these emissions was ≈ 155-160.000 tons, that is 45.000 tons more than in 2000. It is due notably to the increase in imported second hand motor cars, as road transport is responsible for about 90% of total emissions. As a result of some control operations it was noted that the emissions of every second Diesel motor car and those of every third motor car with a carburettor engine exceed the norms.

Nevertheless, the number of vehicles controlled for their emissions decreased because of a reduction of staff in regional units. Only 20% of motor cars are controlled by ecological inspectors each year. At the customs posts of the republic, 15 posts of environmental control were closed. In the North of the country only 2 customs posts (Criva and Otaci) out of 12 ensure ecological control. The situation is the same in the Southern part of the country.

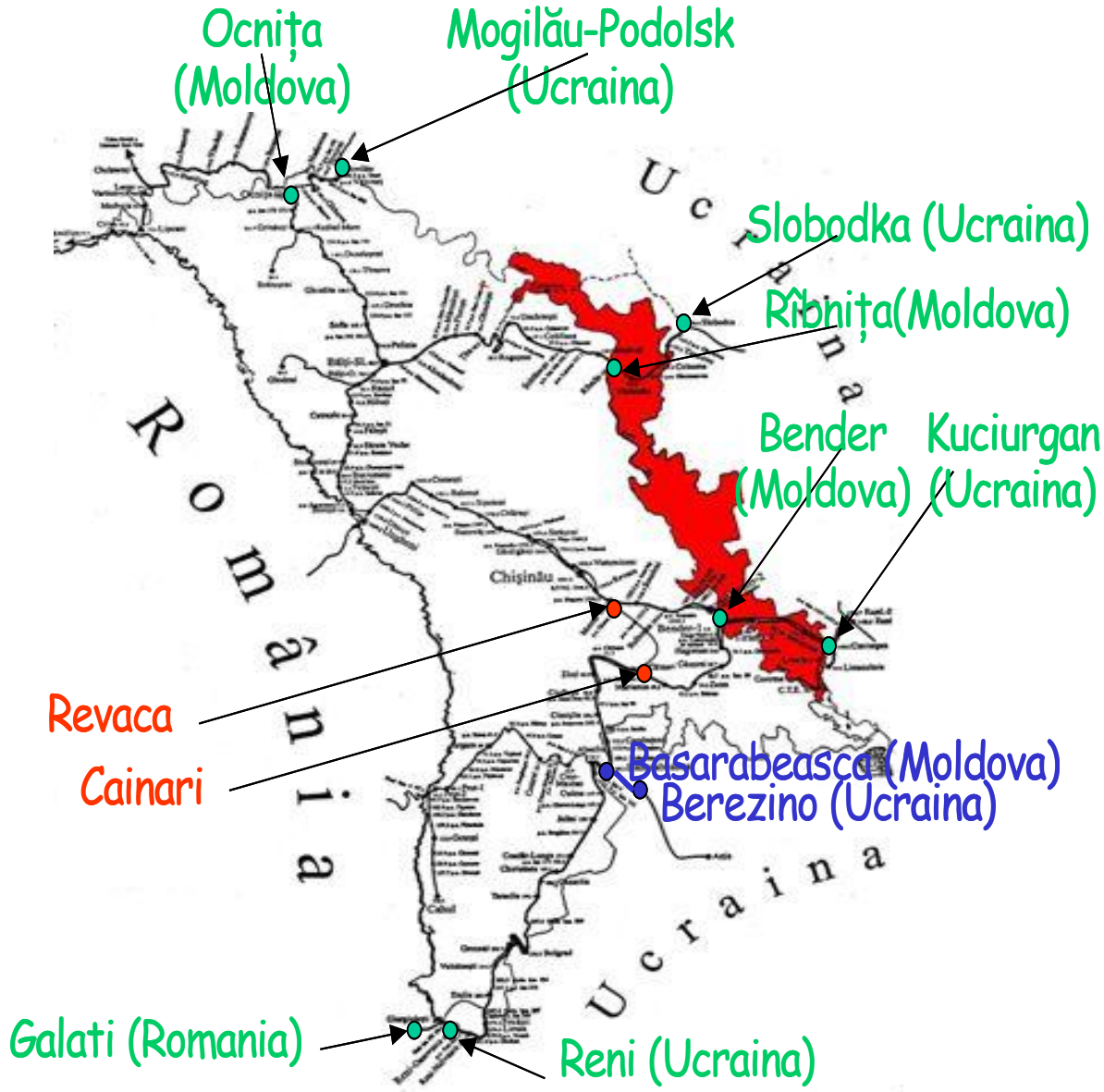
In Chisinau, vehicles generate about 90-95% of the total volume of polluting substances in the urban air. The total emissions of noxious gas are about 160.000 tons per year, which means 115-120 kg of noxious substances per inhabitant of the capital. Following these statistics, there are about 400.000 motor cars in Moldova,of which 200.000 are registered in Chisinau and its suburbs. Every day, some 200.000 other vehicles come from other regions or cross the city. Consequently, there is considerable pressure on the city's road network, which was conceived for 90-100.000 vehicles. During the most recent period, in peak hours there are 4 times more motor cars on the streets than normal.

6. SWOT ANALYSIS OF THE MOLDOVAN TRANSPORT SYSTEM

STRENGHTS	WEAKNESSES
Existence of a well developed infrastructure network (rail / road) inherited from pre-independence period	Lack of funds for investment and maintenance, lack of a stable financing framework
Good geographic location as a gateway between EU and CIS countries	The condition of the road network is the poorest in Europe, important backlogs in road maintenance
Easy physical access to any point of the territory	Slow pace in railway restructuring
Trade oriented economy, good economic growth of neighbouring countries and trading partners	Important backlogs in investment for vehicle fleets and logistics facilities for road transport
Good level of education and training of people working in the transport sector	Administration seems unable to effectively address daily road, rail, and urban transport problems.
Effective organisation of transport professions	Serious understaffing of the Ministry of Transport and Road Industry. As a consequence MTRI has difficulties in fulfilling the roles and responsibilities it has today
Sustained demand for long distance rail transport services	Lack of an overall coordinated transport strategy for all modes of transport
	Lack of socio-economic knowledge on mobility of people
OPPORTUNITIES	**THREATS:**
Possibility to benefit from external financial support by IFI's, EU and MCC to rebuild transport infrastructure	Needed transport infrastructure investments are out of reach of Moldovan public finance capabilities
Existence of a potentially strong passenger public transport demand to be satisfied by adequate offers (rail, road)	Passenger rail transport gradually disappears due to absence of cost recovery by CFM
Existence of a potential interior road freight transport market	International traffic flows avoid Moldova
Possible medium term development of inland waterway connections; proximity of major seaport connections	EU standards for equipment, services and trading goods, and the limitation of mobility of people create new barriers for trade exchanges
	The level of international investment remains low in key sectors
	Development of rural areas remains low and rural population remains without adequate mobility

ANNEX 1. ANALYTICAL AND GRAPHICAL INFORMATION. RAIL TRANSPORT

Map 1: Railway network of the Republic of Moldova



(source: CFM and Transport Ministry)

Map 2: Railway network of the Republic of Moldova (technical equipment)

(Source: www.bueker.net)

Map 3: European Railway Corridor IX

(source: EU)

Corridor IX is a rail and road corridor and includes port expansions. Total length: 6 500 km.

Helsinki (FI) Vyborg (RU) St Petersburg (RU) Pskov (RU)		↓ Moscow (RU)	
↓	Kaliningrad (RU) / Klaipeda (LI) Minsk (BEL)	↓	
		Kiev (UKR) Ljubasevka (UKR)	↓
			Odessa (UKR) ↓
		Chisinau (MD) Bucharest (RO) Dimitrovgrad (BU) Ormenio (BU) Alexandroupolis (GR)	

Table A1.1: Characteristics of the railway network (2005)

Characteristic	Value
Total length of the railway track	**1075 km**
Standard gauge (1,435 mm)	14 km
Double track lines	221 km
Automatic Block Signalling	577 km
Maximum speed	100 km/h
Rail characteristics	65 kg/m (main lines) 45-55 km/m (secondary lines)
Sleepers	Mostly wooden, spaced at 1 840/km
Max. Axleload	24 tonnes

(*Source: Jane's 2005*)

Table 10: Density of the railway network in some neighbouring countries

Network	Km railway line / 1000 sq. km
Moldova	32
Romania	45
Ukraine	36
Bulgaria	38
Greece	20
Belarus	26
Serbia / Montenegro	40
FYROM	27
Croatia	48
Slovenia	61
Hungary	85

(*Source: UIC*)

Table A1.3: Current rolling stock characteristics (2005)

	Fleet	Available	Life duration	Average age	Out of service rate (%)	Turnover (in days)	Depots	Mainte-nance Works
Diesel locomotives	242 [5]	156 / 156	Mainline – 20 Switching – 25	*	41 %		*	*
DMU	41 [6]	31 / 25	20	*	25 – 39 %			
Wagons		8492 / 8318	20	*	64 %	*	*	*
Box wagons		2335		*			*	*
Gondola wagons		2327		*				
Tank wagons		634		*				
Refrigerator wagons		502		*				
Other wagons		2520		*				
Passenger coaches		560 / 440		*	56 %		*	*
1st class		12		*				
2nd class		162		*				
Mixed		233		*				

(Source: UIC / CFM) * = (information requested, not transmitted by the Ministry or CFM)

Table A1.4: Rolling stock evolution

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Loco-motives	277	301	272	249	223	199	190	177	177	162	163	162	159	156
DMU		273	44	41	36	34	34	31	30	30	33	31	31	31
Passenger coaches	474	658	874	654	626	505	592	583	582	561	580	581	560	560
Railway's own wagons		15511	14993	14097	13316	12838	12233	11010	10577	11099	9303	8723	8492	8492

(Source: UIC)

Table A1.5: Staff level evolution

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Staff ('000)	22.0	24.7	21.4	20.4	19.1	17.3	16.4	12.5	12.3	12.7	13.3	14.8	14.3	14.3

(Source: UIC)

[5] 61 2TE10M, 60 3TE10M, 7 M62, 114 ChME3
[6] 41 D1 hungarian-built DMUs

Table A1.6: Freight traffic evolution (M tonnes and M tonne-km)

	1992	1994	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
M tonnes	34.8	22.1	14.6	13.1	12.5	12.8	11.1	6.6	8.1*	10.6	12.6	14.7	13.3	11.7
M tonne-km	7862	4861	3366	3004	2785	2818	2652	1232	1538	2049	2715	3000	2968	2980

*(Source: UIC *estimation)*

Table A1.7: Freight traffic modal share (tonnes)

Years	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Tonnes Carried (M)												
Total	328.2	54.2	45.5	45.5	38.7	28.0	29.2	27.9	31.8	34.3	34.7	36.4
Rail	65.4	13.2	12.5	12.8	11.1	6.6	8.2	10.6	12.6	14.7	13.3	11.7
Road	262.8	41.0	33.0	32.7	27.6	21.4	21.0	17.2	19.1	19.5	21.3	24.6
River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Air	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Modal share (%)												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rail	19.9	24.4	27.5	28.1	28.7	23.6	28.1	38.0	39.6	42.8	38.3	32.1
Road	80.1	75.6	72.5	71.8	71.3	76.4	71.8	61.6	60.0	56.8	61.3	67.6
River	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.4	0.3	0.3	0.3	0.3
Air	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Traffic index % (1990 = 100)												
Rail	100.0	20.2	19.1	19.6	17.0	10.1	12.5	16.2	19.3	22.5	20.3	17.9
Road	100.0	15.6	12.6	12.4	10.5	8.1	8.0	6.5	7.3	7.4	8.1	9.4
River	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Air	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

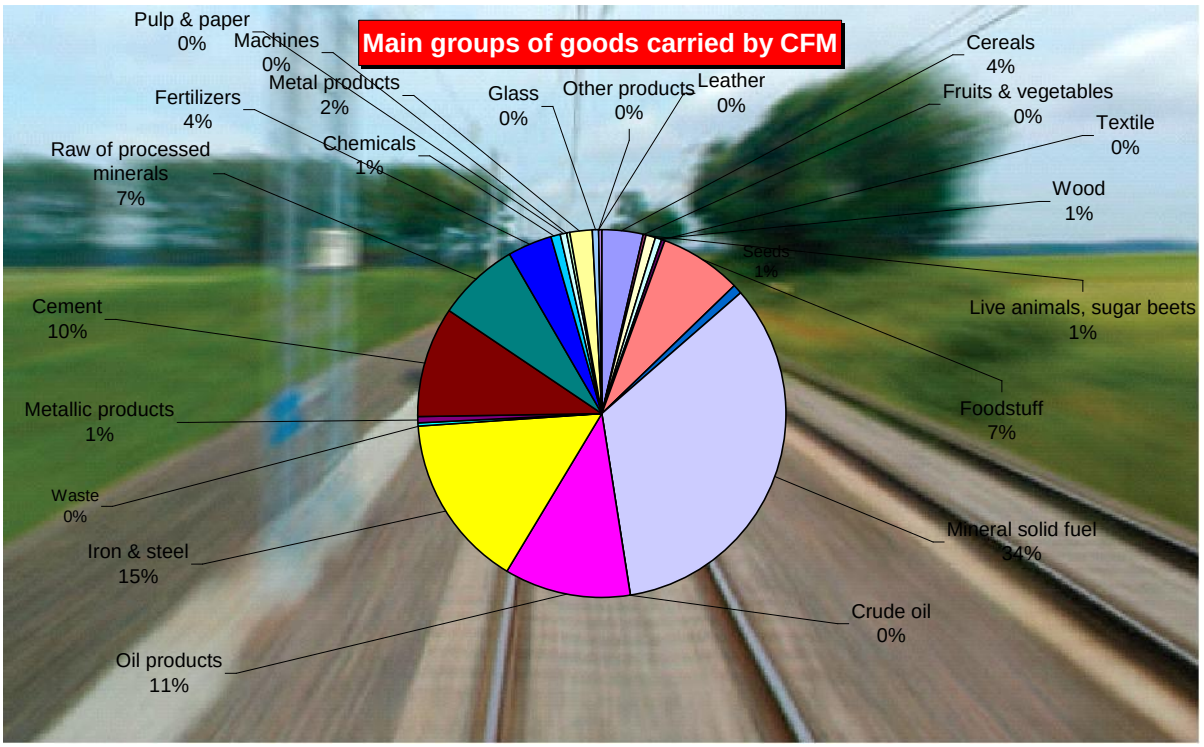
(Source: Statistic Institute of Moldova)

Table A1.8: Freight traffic modal share (tonnes-km)

Years	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Tonne-km Carried (M)												
Total	21 315	4 296	3 892	3 968	3 597	2 350	2 605	2 603	3 308	4 293	5 162	5 458
Rail	15 007	3 134	2 897	2 937	2 575	1 191	1 513	1 538	2 049	2 715	3 000	3 053
Road	6 305	1 159	992	1 028	1 018	1 156	1 088	1 060	1 257	1 577	2 161	2 405
River	0	0	0	0	0	0	0	3	0	0	0	0
Air	2	2	2	2	4	3	4	2	1	1	1	0
Modal share (%)												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rail	70.4	73.0	74.4	74.0	71.6	50.7	58.1	59.1	61.9	63.2	58.1	55.9
Road	29.6	27.0	25.5	25.9	28.3	49.2	41.8	40.7	38.0	36.7	41.9	44.1
River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Air	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0
Traffic index % (1990 = 100)												
Rail	100.0	20.9	19.3	19.6	17.2	7.9	10.1	10.2	13.7	18.1	20.0	20.3
Road	100.0	18.4	15.7	16.3	16.1	18.3	17.3	16.8	19.9	25.0	34.3	38.1
River	100.0	100.0	100.0	100.0	3.1	56.3	18.8	812.5	93.8	109.4	115.6	0.0
Air	100.0	100.0	100.0	100.0	150.0	137.5	170.8	83.3	54.2	37.5	41.7	0.0

(Source: Statistic Institute of Moldova)

Figure 1: CFM freight traffic distribution



(Source: Statistic Institute of Moldova)

Table A1.9: Passenger traffic evolution (M passengers and M passenger-km)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
M passengers	17.5	18.2	14.9	11.7	10.4	10.3	9.4	5.4	4.8	4.8	5.1	5.3	5.1	5.0
M passenger-km	1718	1660	1204	1019	882	789	656	343	315	325	355	352	346	355

(Source: UIC)

Table A1.10: Passenger traffic modal share (passengers)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Volume (M passengers)														
Total	120.4	36.4	33.8	35.9	33.4	337.5	384.7	406.1	326.7	211.6	280.7	296.3	306.8	317.1
Rail	17.5	18.2	14.9	11.7	10.4	10.3	9.4	5.4	4.8	4.8	5.1	5.3	5.1	5.0
Bus (interurban)	102.6	18.0	18.7	24.0	22.8	20.6	17.7	16.2	18.9	19.0	21.9	24.4	25.9	27.7
Bus (urban)						45.0	54.0	49.3	53.5	53.7	62.0	69.0	73.4	78.6
Trolleybus						261.0	303.1	334.7	248.5	133.0	190.7	196.5	201.0	204.3
Taxi						0.4	0.3	0.3	0.7	0.7	0.6	0.7	1.0	1.1
River						0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Air	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Interurban modal share (%)														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rail	14.5	50.0	44.1	32.6	31.1	33.1	34.4	24.7	20.0	20.0	18.7	17.7	16.3	15.2
Bus (interurban)	85.2	49.5	55.3	66.8	68.2	66.2	64.8	74.2	78.9	79.0	80.4	81.5	82.9	84.1
Air	0.2	0.5	0.6	0.7	0.7	0.8	0.8	1.1	1.0	1.0	0.9	0.8	0.8	0.8
Interurban traffic index % (1990 = 100)														
Rail	100	104	85	67	59	59	54	31	27	27	29	30	29	29
Bus (interurban)	100	18	18	23	22	20	17	16	18	18	21	24	25	27
Air	100	67	67	80	77	80	73	77	83	83	83	83	83	83

*(Source: Statistic Institute of Moldova * the inter-urban/urban split is not defined)*

Table A1.11: Passenger traffic modal share (passenger-km)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Volume (M passenger-km)														
Total	4 557	2 711	2 138	2 235	2 116	3 059	3 013	2 676	2 415	2 131	2 624	2 963	3 347	3 569
Rail	1 718	1 661	1 204	1 019	882	789	656	343	315	325	355	352	346	355
Bus (inteurban)	2 072	653	709	911	940	808	705	612	647	648	659	668	680	689
Bus (urban)						263	362	401	374	421	639	972	1 269	1 388
Trolleybuses						838	969	1 074	814	435	636	654	667	676
Taxi						7	6	6	12	12	11	13	20	21
River						0	0	0	0	0	0	0	0	0
Air	767	397	225	305	294	354	315	240	253	290	324	304	365	440
Interurban modal share (%)														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rail	37.7	61.3	56.3	45.6	41.7	40.4	39.1	28.7	25.9	25.7	26.5	26.6	24.9	23.9
Bus (interurban)	45.5	24.1	33.2	40.8	44.4	41.4	42.1	51.2	53.3	51.3	49.2	50.4	48.9	46.4
Air	16.8	14.6	10.5	13.6	13.9	18.1	18.8	20.1	20.8	23.0	24.2	23.0	26.2	29.6
Interurban traffic index % (1990 = 100)														
Rail	100	97	70	59	51	46	38	20	18	19	21	20	20	21
Bus (interurban)	100	32	34	44	45	39	34	30	31	31	32	32	33	33
Air	100	52	29	40	38	46	41	31	33	38	42	40	48	57

*(Source: Statistic Institute of Moldova * the inter-urban/urban split is not defined)*

These tables, following Soviet rules, are less detailed than the freight ones. In particular, private car traffic is not directly available, even if it can be approximately estimated, in particular with neighbouring countries' motorisation and car traffic. Moreover, the distinction between urban and inter-urban traffic is not made for some modes (buses). An estimation was done on the basis of the World Bank Transport Study (Moldova: Transport Strategy Update with Emphasis on the Road Sector December 2002), which gave an interurban bus traffic overview for the 1992 – 2000 period.

Figure 2: CFM organisation chart

(*Source: CFM*)

Table A1.12: List of CFM subdivisions ("*Subdiviziuni Calei*")

Localisation	Subdivision	Status
	Data processing Centre	
	Maintenance Centre "*Jeldorsnab*"	
	"*Militarized guard service*"	
	"*Passenger service department*"	
Balti	Railway Station	Self financed
Balti	Locomotive Depot	
Balti	Railway network district	
Balti	Feeding and electric lines	
Balti	Signalling and telecommunications	
Balti	Wagon Depot	
Balti	Civil Engineering	
Basarabeasca	Railway Station	Self financed
Basarabeasca	Railway network district	
Basarabeasca	Feeding and electric lines	
Basarabeasca	Signalling and telecommunications	
Basarabeasca	Civil Engineering	
Basarabeasca	Freight Depot	
Basarabeasca	Refrigerated Wagon depot	
Chisinau	Railway Station	Self financed
Chisinau	Locomotive Depot	
Chisinau	Railway network district	
Chisinau	Feeding and electric lines	
Chisinau	Signalling and telecommunications	
Chisinau	Civil Engineering	
Chisinau	Marshalling yard	
Chisinau	« Security bend along the railway lines »	
Guirgiulesti	Railway Station	Self financed
Ocnita	Railway Station	Self financed
Ocnita	Railway network district	
Reutel	Railway Mechanical Maintenance tool station	
Ribnita	Railway Station	Self financed
Bender / Tighina	Railway Station	Self financed
Bender / Tighina	Locomotive Depot	
Bender / Tighina	Railway network district	
Bender / Tighina	Railway Mechanical Maintenance tool station	
Tiraspol	Railway Station	Self financed
Ungheni	Railway Station	Self financed

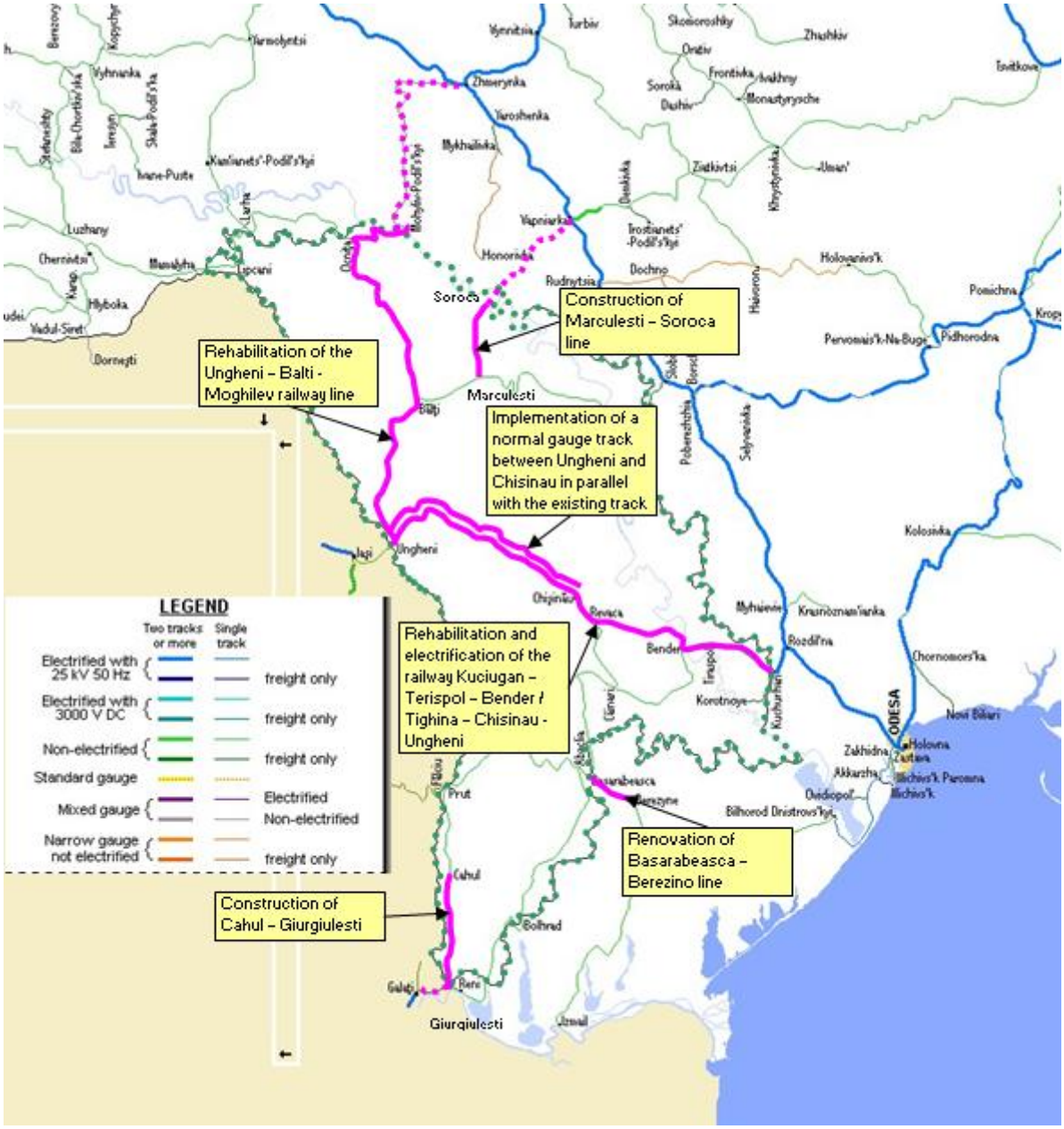
(*Source: CFM*)

Table A1.13: List of major freight forwarders in Moldova

Name of freight forwarder	Nationality
"Ana - Prim" S.R.L.	Moldovan
"Car - Rier 2000" S.R.L.	Moldovan
"Clivasima" S.R.L.	Moldovan
"Elia" S.R.L.	Moldovan
"Expedit - Euro - Trans" I.T.E.	Russian
"Kea - Car" F.T.E.	Moldovan
"Litrans - Impex" S.R.L.	Moldovan
"Litranstrafic" S.R.L.	Moldovan
"Luktrans" S.R.L.	Moldovan
"M - Intrans" F.P.C.	Moldovan
"Mabanaft Moldova" S.R.L.	Moldovan
"Moldcontainer" S.R.L.	Joint/Foreign
"Navibul - US" S.R.L.	Moldovan
"Partner - A" I.I.	Moldovan
"Pavel - Trans" C.T.E.	Moldovan
"Poteca" S.R.L.	Moldovan
"Rosregiontranscom" S.R.L.	Moldovan
"Socorta" S.R.L.	Moldovan
"Transexim" C.T.E.	Moldovan
"Transfer - Impex" C.T.E.	Moldovan
"Transfer - SV" S.R.L.	Moldovan
"Transit - Service - L" S.R.L.	Moldovan
"TransRail - Service" S.R.L.	Moldovan
"TransRail Moldova" S.R.L.	Moldovan
"Transservice - M" S.A.	Moldovan
"Trinex" C.T.E.	Moldovan
"Ukrintertrans"C.T.E.	Moldovan
I.M. "AS - Petrol"	Moldovan
I.M. "Balcantir"	Moldovan / Romanian
I.M. "MMZ S.A.T.I."	Moldovan
I.M. "MoldRomUkrtrans"	Moldovan / Ukrainian)
I.M. "Transline"	Moldovan
I.M. "Translogistic"	Moldovan
I.S.T. "Informbusiness"	Moldovan
S.R.L. "Euromixt"	Moldovan

(*Source: CFM*)

Map 4: Location of infrastructure projects



ANNEX 2. MAJOR STRATEGIC PROJECTS ACCORDING TO THE MUNICIPALITY COUNCIL OF CHISINAU

A. The estimative costs of the basic directions of transportation development in 2006-2010

Nr. crt.	Activities	Costs, thousands lei	Percentage %
1	Development of the street network and the transportation infrastructure	2.959.900	85.2
2	Improvement of the route traffic management	7.275	0.2
3	Improvement of the passengers' public transportation management	6.665	0.2
4	Subsidising and protection of the social vulnerable layers and public transportation financing	500.025	14.4
	Total	**3.473.865**	**100**

B. Financing sources for the public transport.

Financing sources	Costs, thousands lei	Percentage %
Local budget	1.557.620	44.8
State budget	1.501.140	43.2
Grant	409.105	11.8
Private investments	6.000	0.2
Total	**3.473.865**	**100**

C. Major activities and projects

#	Activities	Implementation period	In charge	Costs, thousands lei	Financing sources
CS 1	Development of the street network and the transportation infrastructure				
1.1	The projection of the ring-road for Chisinau	2006-2007	DAU, MTRA, "Urbanproject" Institute	900	State budget Local budget
1.2	The elaboration of investments projects for the road infrastructure objectives aimed at increasing the circular traffic	2006-2010	DAU ,DPT	500	Local budget
1.3	The elaboration of project regarding the avoidance of the city centre	2006	DAU ,DPT, "Urbanproject" Institute, RPS	1.000	Local budget State budget
1.4	The reservation of territory for parking lots (the issuing of authorisation permits for public access construction to be conditioned by the existence of enough parking space on the owners' territory)	2006	DAU, LD, EA,DC	6.000	Local budget Private investments
1.5	The arrangement of intermediary stations and technological territories for public passenger transportation	2006-2007	DAU, DPT, EA	1.500	Local budget Private investments
1.6	Construction of artificial facilities (viaducts, bridges) Centre – Ciocana (Ismail str – Vadul lui Voda str); Uzinelor str – Cuza-Voda bd; vasile Alecsandri str – Calea Mosilor; Studentilor str (section between N.Dimo str and M.Sadoveanu str), Telecentru – Vasile Lupu str (Pietrarilor str, Vasile Lupu str); M.sadoveanu str- Bucovinei str – Igor Vieru str.	2006-2010	DAU ,DPT, CCH	1.000.000	Local budget State budget
1.7	The construction of streets and highs-streets: Cantemir bd; Studentilor str,(section between N.Dimo str and M.Sadoveanu str; Mesager str.(section between M.Viteazu str.and Calea Iesilor); Mircea cel Batrin bd (section between Prof.Ion Dumeniuc str and Bucovinei str.)	2006-2008	DAU , DPT	900.000	Local budget State budget
1.8	The street reconstruction : Vasile Alecsandri str(section between V.Micle str and Alexei Mateevici str); Ismail str(section between 31 August 1989 str and "Gaudeamus" market); 31 August 1989 str (section between A.Sciusev str and Ciuflea str.), Hincesti str(section between "Gaudeamus"market and Sprincenoaia str); Lev Tolstoi str (section between M.Kogalniceanu str and Bucuresti str.)	2006-2007	DAU, DPT	450.000	Local budget

#	Activities	Implementation period	In charge	Costs, thousands lei	Financing sources
1.9	Construction of trolleybus lines: Petricani str, from M.Viteazu str- Agrarian State University; Calea Mosilor; the section between ismail str and Calea Orheiului; Muncesti highway; the section between Burebista str and Gradina Botanica str; Uzinelor str – Gradina Botanica str- Dacia bd.;Dacia bd, from Gradina Botanica till the Chisinau National Aeroport; Independentei str; Sarmisegetuza str; section between N.Zelinski str and Gradina Botanica str.;Columna str; section between A.Puskin str and Mitropolit G Banulescu Bodoni; Calea Orheiului, from Ceucari str till Stauceni region	2006-2010	DPT	600.000	State budget Local budget
CS 2	**Improvement of the route traffic management**				
2.1	The analysis of urban traffic finding the crossroads with critical traffic capacity	2006	DPT	750	Local budget Grant
2.2	The elaboration of projects regarding the limitation of certain transport categories access to congested zones	2007	DPT	25	Local budget
2.3	The implementation of a traffic control system and the reconstruction of semaphore facilities (green light)	2008-2009	DPT, RPS	4.000	Local budget Grant
2.4	The implementation of an automatic system of public lighting control	2006	DPT, "Lumiteh"	2.500	Local budget
CS 3	**Improvement of public passenger transportation management**				
CS 3A	**The improvement of the institutional capacity of transportation management**				
3.1	The elaboration of a regulation stating the bodies responsible for public transport management, representing CMC	2006	DPT, Consulting company	15	LGI/OSI
3.2	The carrying out of a feasibility study regarding the creation of a unique control centre of the public transport activity and its implementation (including the allocation and arrangement of technological territories)	2007-2008	DPT	5.000	Local budget Grant
3.3	The elaboration of a set of indicators characterising the activity of the transportation system by CMC and reflecting this data in an annual report regarding the situation of the public transportation	2006-2010	DPT Consulting company	75	Local budget
3.4	The carrying out of a study concerning the implementation of new payment methods offered to passengers and the elaboration of an integrity policy for public transportation	2007	DPT, Consulting company, TUM, CETD, UBP	250	Local budget Grant
3.5	The establishment of working hours with a difference in time from the beginning of the institutions activity, that would allow staggering of the ‘rush hour’ effect	2007-2010	DPT	-	
3.6	Create reports regarding the impact of environment pollution by urban transport, also including the public one and the evaluation of costs incurred by pollution.	2006-2007	CTO EMM	10	Local budget

#	Activities	Implementation period	In charge	Costs, thousands lei	Financing sources
3.7	Encourage the opening and administration of the market, avoiding unfair competition between the operators	2006	DPT, Consulting company	25	LGI/OSI
3.8	Elaborate a regulation for the organization of the operators' employment competition (with new mechanisms of operators' employment, standard contracts)	2006	DPT , Consulting company	20	LGI/OSI
3.9	Develop and adopt a program consisting of continuous operators' training.	2006	TUM	5	LGI/OSI
3.10	Establish standard contracts and adopt contractual relations with the transport companies.	2006	DPT , Consulting company	15	LGI/OSI
3.11	Adopt quality and secure transportation standards and technical specifications for the accepted vehicles destined for public transportation	2006	DPT, MTRA,	-	
3.12	Classify the transportation services according to a quality standard (taxi, maxi taxi, express transportation, simple transportation)	2006	DPT, MTRA,		
3.13	The acceptance of an partnership agreement between the authorities and transportation operators	2006	DPT, Transportation companies and associations		
CS 3C	**The optimization of means of transportation and route network structure**				
3.10	Analyze the passenger flow and carry out an optimal route scheme.	2006	DPT , Consulting company, TUM	750	Local budget Grant
3.11	Elaborate a policy of electric transportation development, including the involvement of trams.	2007	DPT, DAU	500	Local budget Grant
CS 4	**Subsidizing, protection of vulnerable social layers and public transport financing**				
4.1	Develop a protection policy for vulnerable sociable layers according nominative compensations	2006	DPT , Consulting company	10	LGI/OSI
4.2	Adopt a policy of public transport subsidizing and financing	2006	DPT , Consulting company	10	LGI/OSI
4.3	Establish a policy of transportation tariffs	2006	DPT , Consulting company	5	LGI/OSI
4.4	Elaborate and approve a plan of rearranging municipal transport enterprises	2006	CETD, UBP	-	UBP, CETD
4.5	Acquire new public transportation means for the city operators (100 - trolleybuses and 50- buses)	2006- 2010	DPT, CCH	500.000	Local budget Grant

D. Indicative list of priority projects communicated by the Municipality of Chisinau

1. Studentilor Str. – link road between Dimo Str. – Mihail Sadoveanu Str. – Bucovina Road – Ion Dumeniuc Str. – Mircea Cel Batrin Bul. The total cost of the project estimated at 188 mil. lei. This project envisages the construction of a bridge of 200 m.
2. Link road between Chisinau and Humulesti (village).
3. Construction and modernisation of the road Dacia Blv. – Gradina Botanica – Airport district with the modification of the road junction Bacioii Noi – Dacia Blv. On two levels. This project is estimated at 185 mil. lei, it supposes construction of an additional strip, electric lighting along the road, drainage elements, public transport stations.
4. There are some feasibility studies undertaken for the road junctions of Calea Basarabiei str., Ismail str., Vadul lui Voda str. – for the construction of a two level road. For this scope 100 thousand lei were allocated in 2006.
5. The link road between Togatin and Bunet – estimated at 1,7 mil. lei
6. In 2007 it is supposed some designed works for a ring road around Chisinau are to be started. The cost of the works is estimated at 900 thousand lei. Subway depression works cost almost 15 mil. lei.
7. Some design work is planned to be started in 2007 for Cantemir Blv. According to the Strategy for Public Transport and Road Infrastructure Development in Chisinau Municipality for the period 2007 – 2010, approved by the Municipal Council Decision, the construction of trolley lines is planned in Calea Mosilor Str, Gradina Botanica Str., Independentei Str, Columna Str, Stauceni Communiti and National Airport Aria. The estimated cost is 600 thousand lei.

ANNEX 3. SOCIO-ECONOMIC FRAMEWORK

A3.1 GENERAL OVERVIEW

The Republic of Moldova is an inland country in Eastern Europe. It borders on Romania at its West and on Ukraine at its East. It was a part of the Soviet Union until 1991.

Since 2003 the Moldova administrative division consists of 32 districts (raioane), 3 municipalities (Chişinău, Bălți and Tighina) and two semi-autonomous regions (Găgăuzia and Transnistria). Chişinău is the principal city and also the capital.

Along with Albania, the Republic of Moldova is one of the poorest nations in Europe. Agriculture used to be the driving force for the economy of the country, though it gradually lost weight due to a rapid industrialisation process. More than half the working population is involved in agricultural work.

The Moldovan economy suffered a serious recession after becoming independent from the Soviet Union, which has been worsened still more by the conflict with Transnitria.

A3.2 POLITICAL FRAMEWORK

Moldova is committed to and has made progress in applying the principles of multi-party democracy. The ruling Communist Party of Moldova (CPM), which once again won a majority of seats in the recent parliamentary elections, reinforced its commitment to European integration in the course of the campaign. This entails political and economic policy adjustments. Moreover, political developments in its neighbouring countries, Ukraine and Romania, reinforce these policy shifts. On the issue of the breakaway territory of Transnistria, a recently proposed Ukrainian plan has gained the conditional support of the Moldovan parliament and the endorsement of the OSCE Parliamentary Assembly; however, full realisation of the plan will require a number of difficult intermediate steps and an unwavering commitment from all parties attending the five-party talks on a resolution.

A3.3 ECONOMIC FRAMEWORK

Moldova underwent economic contraction after the collapse of the Soviet Union with the subsequent loss of diverse markets and cheap energy resources. Increase in energy prices and exports led to high inflation. This was one of the main factors behind the rise in Moldova's international debt and a drop in the GDP.

The macro-economic performance of the Moldovan economy over the past few years has been good. The gross domestic product (GDP) grew in real terms by 6.3 and 7.3 per cent in 2003 and 2004, respectively. High levels of worker remittances and fast growth in the region were the main drivers of economic growth. Fast domestic credit growth and strong foreign currency inflows have exerted significant pressure on domestic prices and inflation has once again surged to double digits. The sharp currency appreciation in 2004 has had a mild effect on external competitiveness as exports continue to grow supported by strong economic growth in the region. Fiscal performance has improved pursuant to strong indirect tax receipts. The government has pursued a prudent fiscal policy managing to sustain consolidated budget surpluses in both 2003 and 2004, thus providing a stronger base for debt servicing.

In 2004 Moldova's external debt burden was considerably reduced to 74 per cent of GDP and its debt service improved. Foreign direct investment (FDI) flows increased in 2004 following poor inflows in 2003, but remain significantly below the economy's needs. The difficult business climate, government interference and the slow pace of privatisation have all hampered the influx of high quality foreign investment. The banking sector is growing in line with the economy but weaknesses related to corporate governance, supervision and lack of transparency in banking ownership need to be addressed to ensure the sector's potential is realised. Corruption remains a serious problem, undermining the administrative and legal efforts to improve the business environment.

Moldova has made some progress in reform over the last strategy period. Formal trade barriers and administrative hurdles with respect to business registration, licensing and tax administration were reduced. The "Guillotine Law" adopted in February 2005 is expected to lead to further cuts in red tape. Some progress has also been made in the telecom sector, which was fully liberalised in 2004. Despite these improvements serious weaknesses remain. Privatisation has slowed down over the past two years and privatisation in key areas such as energy and wineries were either postponed or failed to attract sufficient interest. Reform in the energy sector and municipal infrastructure sector advanced slowly or not at all. Although commercial lending volumes have continued to grow, access to long-term finance for investment projects remains a significant barrier for entrepreneurs. While in the short run growth is likely to continue, long term prosperity will depend on renewed efforts to implement structural reforms, strengthen institutional capacity building and improve the investment climate.

The following economic indicators have been analysed in detail:

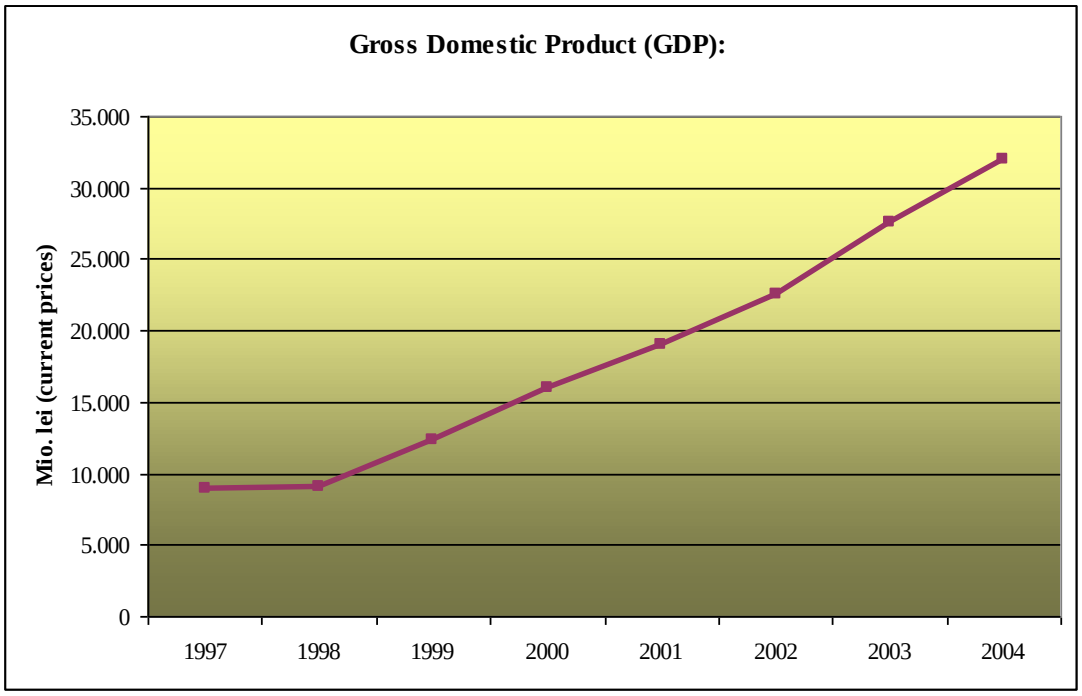
- Gross Domestic Product
- Salaries
- Consumer Prices Index

GDP

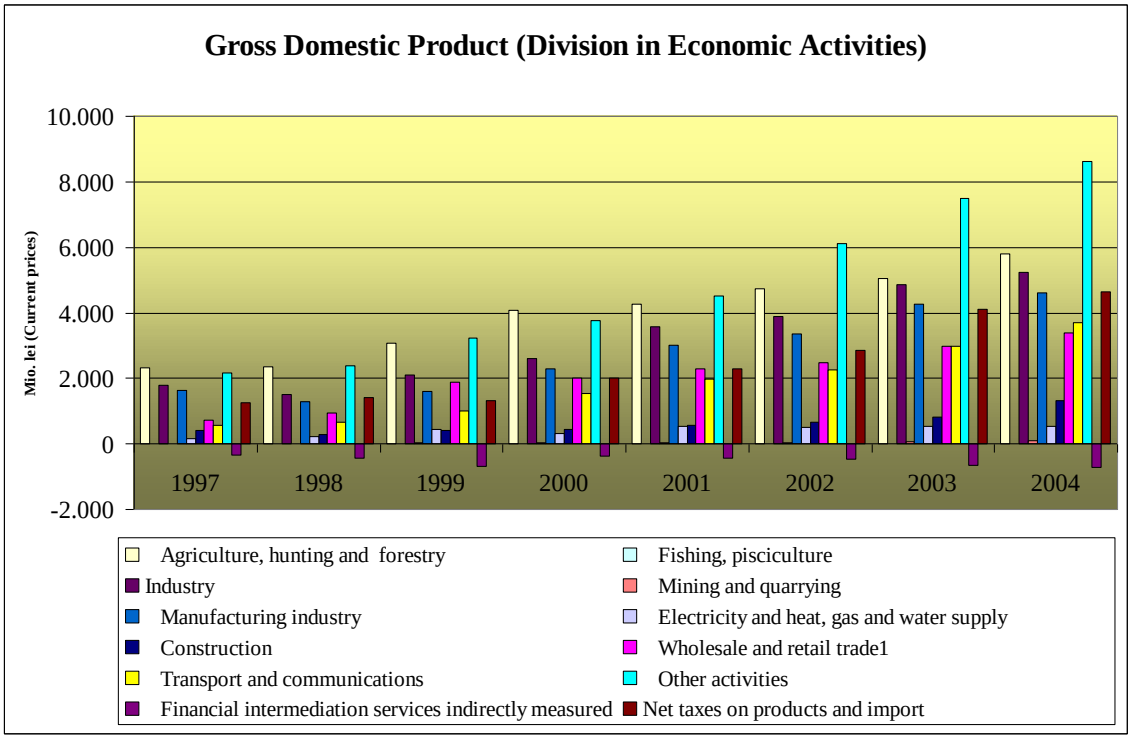
The following chart shows a steady increase in the GDP of the country for the period 1997-2004.

Focusing on the division of the GDP among economic activities, a stable trend can be deduced from the chart, as most activities tend to have a similar growth.

Evolution of Gross Domestic Product



GDP (Division in Economic Areas)

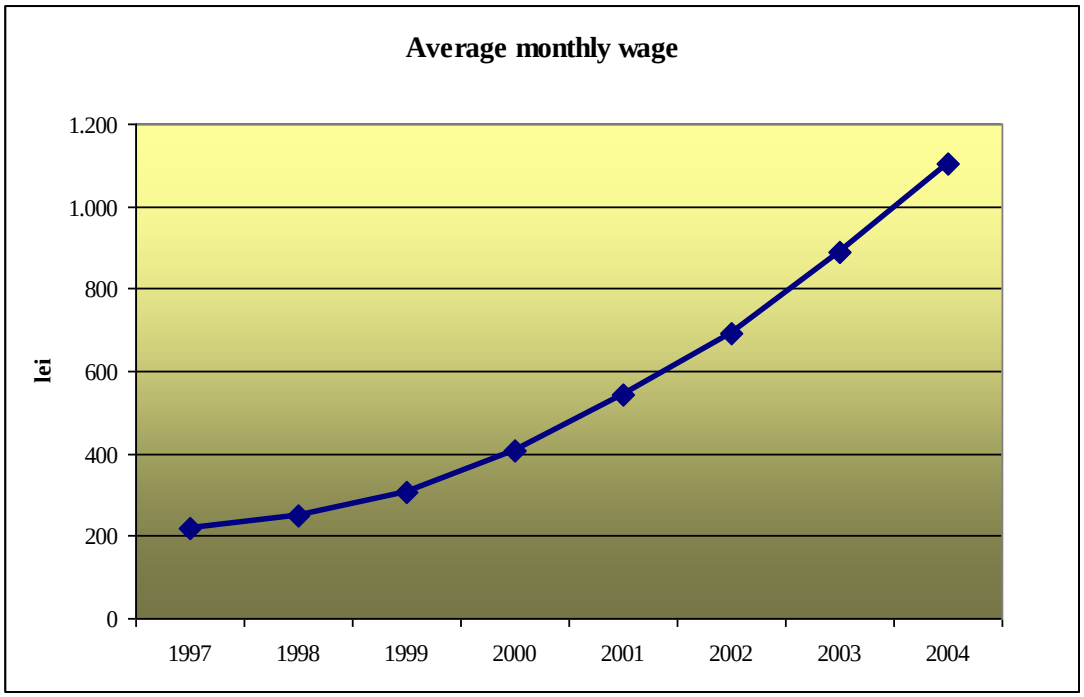


Salaries and consumer prices index

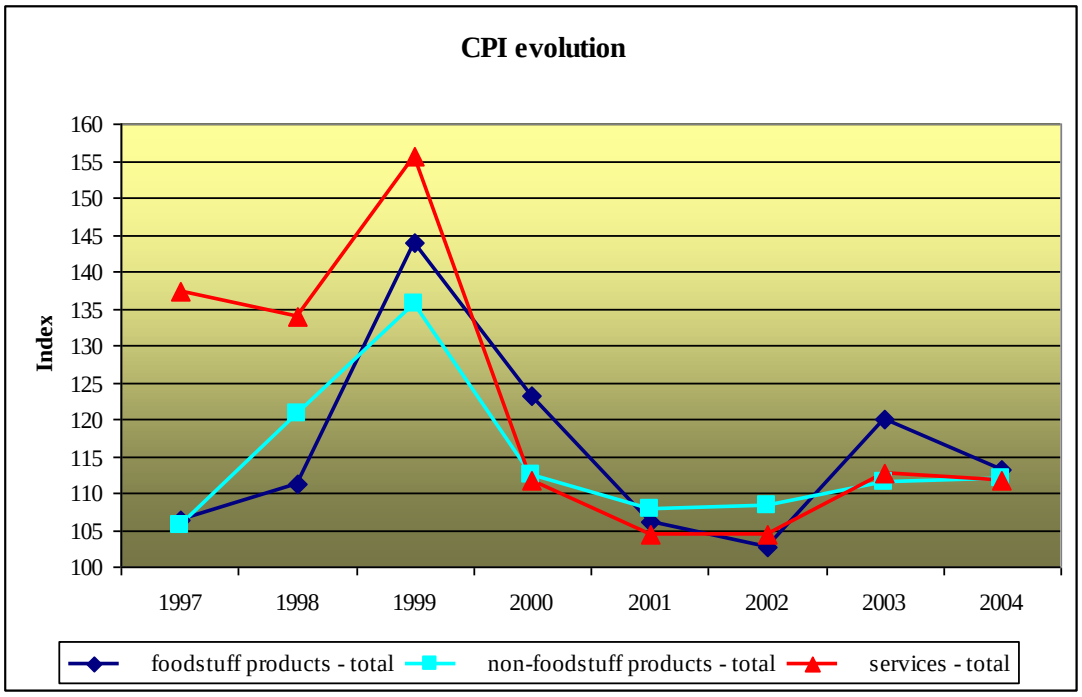
Though monthly salaries have shown an upward trend over the last decade, the Consumer Prices Index shows unsustainable values for this same period.

Even though there was a sharp decrease in indices in the year 2000 (inflation was over 50% the previous year), values continued to be very high afterwards (over 10%).

Average monthly wage



Consumer Prices Index Evolution



A3.4 SOCIAL INDICATORS

The following indicators related to social features of the Republic of Moldova have been analysed:

- Population:

  Life expectancy at birth and fertility rate

Population (age groups and pyramid)

Location of the population

- Education:

  Investment on education

  Evolution of students in the country

  Level of qualification of students

Population

There is an alarmingly low percentage of young population in the Republic of Moldova, along with a sharp decrease of those inhabitants over 60.

The latter effect is due to extremely low life expectancy at birth for the population of the country, particularly for males (around 60 years).

The total fertility rate is below the Replacement Rate, which may be an explanation for the few babies born during recent years and the progressive ageing of the population.

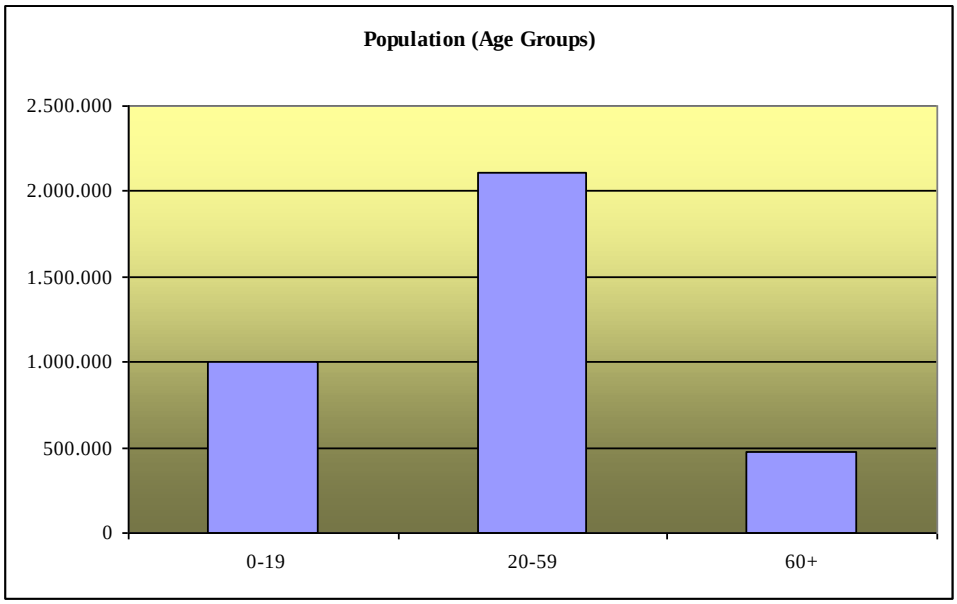
Life Expectancy and Fertility Rate

Life expectancy at birth:
total population: 64.74 years
male : 60.39 years
female: 69.31 years
(2002 est.)
Total fertility rate:
1.71 children born/woman (2002 est.)
below Replacement Rate

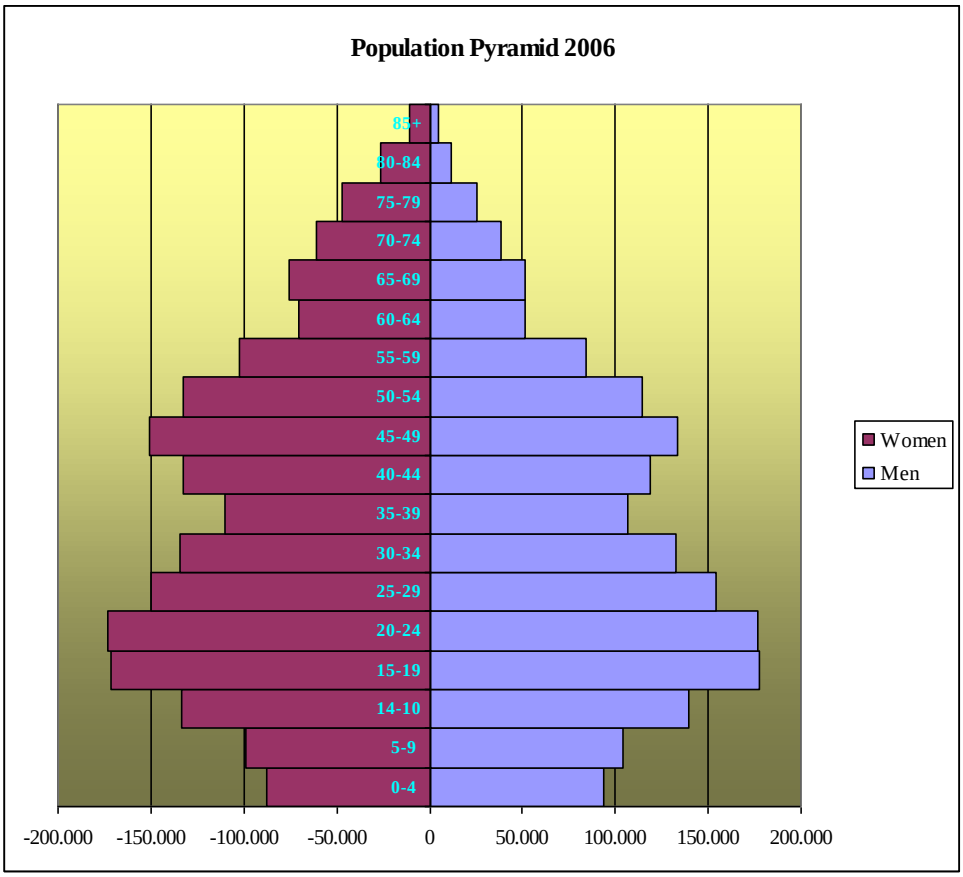
Both effects can be seen in the following charts, the first one showing the population by age groups.

The second one is a population pyramid. The top of the pyramid rapidly decreases from age 60 onwards, particularly for males. The bottom of the pyramid is much shorter than the middle part, which gives an idea of the ageing process the country is suffering.

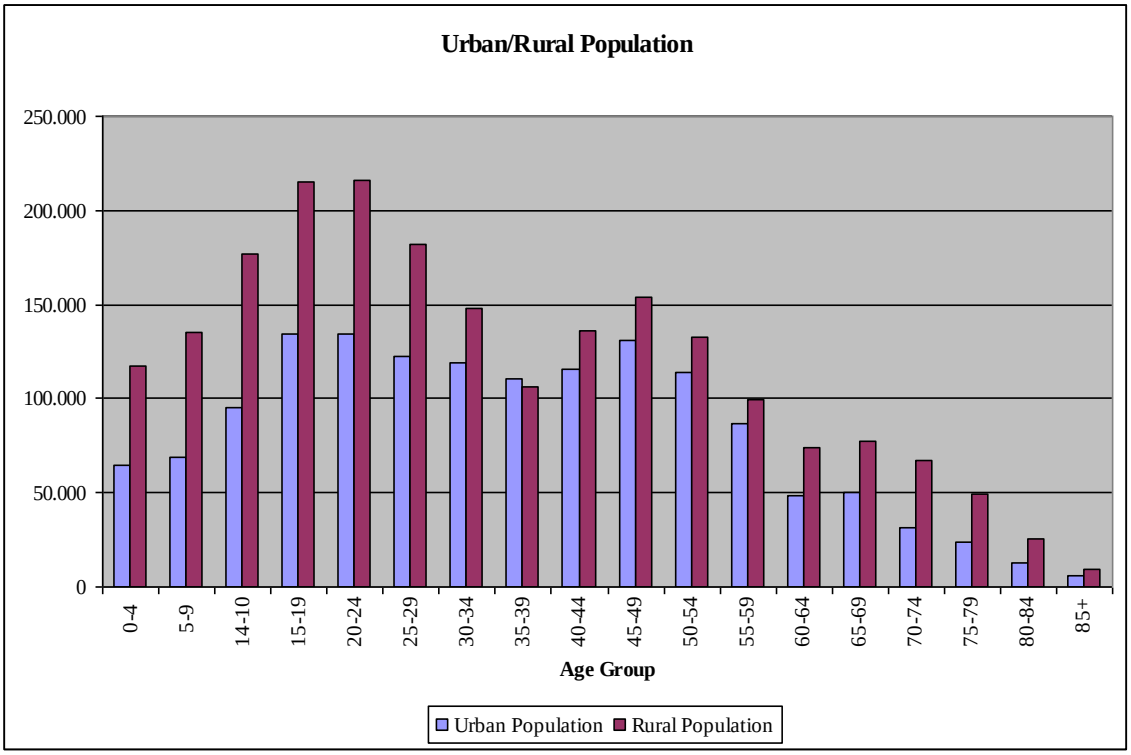
Age groups



Population Pyramid (2006)



Location of the population



Almost two thirds of the population live in rural areas. This is coherent with the main occupations of the working population, which are largely related to agricultural activities.

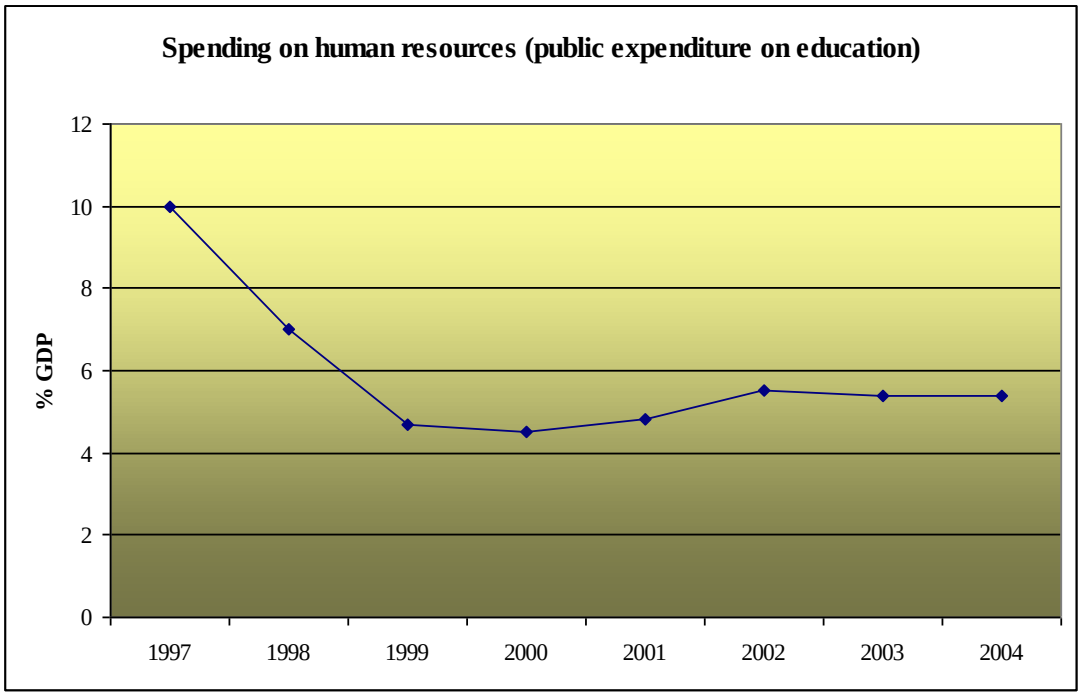
Education

Public expenditure on education in Moldova suffered a sharp decrease in 1999 and has remained more or less stable since then.

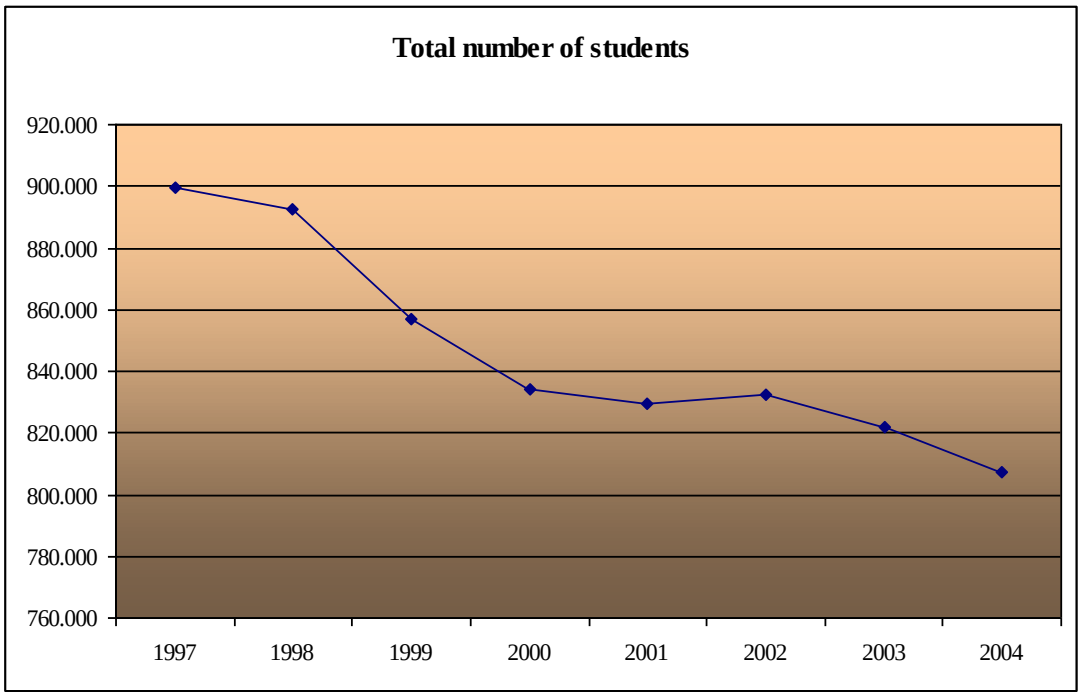
The number of students, however, has not stopped decreasing throughout the last decade, as can be seen in the chart below.

This effect, together with the fact that most of the people who have attended school have not continued beyond primary education, implies a low level of qualification for the working population of the country.

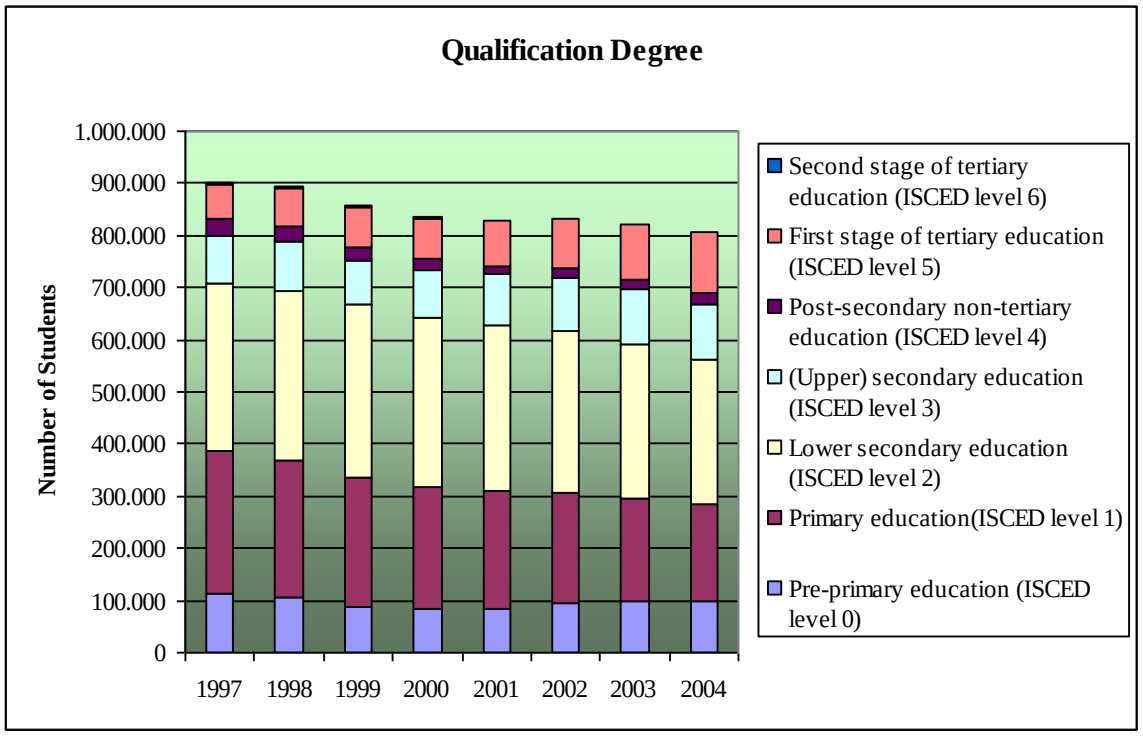
Public expenditure on education



Evolution of number of students



Level of qualification of students



A3.5 AGRICULTURE

Agriculture is the most important sector in the Moldovan economy. Agriculture contributes close to a third of the country's GDP. Tobacco, like wine, is a major source of export revenue. Moldova is also a leading producer of grapes. Other important crops include wheat, maize, beet, vegetables and fruits. In addition, dairy and pig farming are important sources of livelihood. Most agricultural products are widely exported, particularly to Russia.

At present agriculture is still the key sector in the national economy. Together with the food industry, agriculture represents around one third of the GDP and a considerable share in the volume of exports. The agro-industrial sector enterprises constitute the nucleus of the Moldovan economy.

Agro-industrial production determines the structure of the food industry, encompassing the main branches of the national economy (dairy products, sugar, wine, oils, vegetable and animal fats, tobacco, fruit and vegetable processing, etc.). Animal production is oriented towards local needs.

Main crops by volume are the following (in tons):

- Cereal crops (except maize) 1,260,000
- Corn 1,239,000
- Sugar beet 1,452,000

An average of 700,000-800,000 tons of vegetables are annually produced. Geographically, the areas used for vegetable growing are located near rivers (Nistru, Prut, Reut, Byc).

Principal animal products, from the point of view of transport, in 1999 were as follows:

- Meat (live weight) –145,000 tons
- Milk-610,000 tons

The Moldovan food industry comprises 198 enterprises providing employment for over 30,000 people. The industry is fully supplied with local raw material and to a large extent is the mainstay of the country's exports (approx. 65%).

The main outlets for Moldovan meat producers are still the markets of the CIS, especially in Russia, Belarus, Kazakhstan and Ukraine. Germany is the largest Western buyer of meat products produced in Moldova.

Viticulture is one of the major branches of the national economy which supplies the wine and spirits industry with raw materials, its products being the first concern of Moldovan exports. The total vineyard area covers 170,000 hectares.

A3.6 INDUSTRY

The industrial sector accounts for approximately one third of Moldova's GDP. Food processing is an important industry. Moldova exports wine to Russian, Asian and Western markets. In addition, Moldova produces brandy, vegetable oil and sugar. The metal refining industry is almost totally dependent on imported raw materials and fuel from Russia.

Light industry comes in second place (after the food industry) in terms of volume of goods produced in Moldovan industry. The importance of this industry is dependent upon its access to European markets (knitwear, carpets, footwear, ready made items, etc.). Highly qualified staff with low wages compared to European standards is the main advantage of the light industry.

The metallurgy industry of Moldova is represented by the metallurgical plant of Moldova (Ribnita town). Established in 1985 the Metallurgy Plant of Moldova is a new generation plant and has among the highest output capacities for the industry in the CIS countries. Its production capacity is 700,000 tons per annum.

Moldovan metallurgy output is being exported to over 20 countries in the world (USA, Germany, Spain, Turkey, Thailand, Chile, Hungary, Romania, Russia, Ukraine, the Baltic States, etc.)

A3.7 TOURISM

Notwithstanding a decrease in the number of tourists that have visited Moldova lately, a structural change in this industry is noticeable. Until recently the main flow of tourists was from CIS states with numbers from other countries being insignificant, but the number of tourists from the CIS and other countries is levelling out. However the CIS countries still

dominate as regards the inflow of tourists: Russia-18.4%, Romania -14.8 % and Ukraine -13.8 %. Western countries providing the main flow of tourists are the United States, Germany, Italy and France.

Tourism contributes around 0.5% to the GDP and is deemed, obviously, an under-developed sector. In Romania and Bulgaria tourism contributes much more to the GDP, which is a considerable share in the economy of some administrative units (e.g. seaside counties, mountain areas).

The tourism industry is excessively regulated, which creates access barriers (licenses, permits for each employee), high start-up costs for some types of businesses, the obligation of annual clearance of lodging units documentation with a large number of authorities, etc.

At the same time, it is necessary to speed up the adoption of a legal framework to provide for the creation of a system of national tourism areas in line with practices of EU member States that are well advanced in this industry, with actions such as a clear determination of the status of hotels, local tourism areas, guarantees for strategic investments in tourism, lowering the entry barriers to the tourism market, etc.

In the year 2005, the number of visitors to Moldova totalled 152,800 people, of which 82,300 were foreigners.

In the first three quarters of the year 2005, the most important countries of origin of foreign visitors were the following:

- USA – 13,5 %
- Romania – 13,2%
- Russia – 12,9 %
- Turkey – 12,4 %
- Ukraine – 12,2%

The purposes of visit, in the three first quarters of the year 2005, were as follows:

- Business and professional – 65,3%
- Leisure – 31,4%
- Other purposes- 3,3%

A3.8 TRADE

According to the Ministry of Economy, imports in 2004 amounted to US$ 1774.2. The main categories of imports are mineral products, machines, electronic devices and equipment, chemical products, textiles, footwear, wood, wooden products and furniture.

The Commonwealth of Independent States (CIS) represents some 50 % of total exports, around 30 %.for the European Union and some 10% for neighbouring Romania. The main categories of exports are foodstuffs, beverages and tobacco; clothing and textiles, footwear and similar articles; vegetables; livestock and animal products; machines, electronic devices and equipment.

State monopoly on foreign trade was removed in 1992, and since April 1993 the centralised system for export licensing of goods has been replaced with a special list of goods, the export of which was restrained. Since 1994 however, foreign trade has been completely liberalised and, starting in 1995, all export restrictions were abandoned, with import taxes not exceeding 20%. The process of joining World Trade Organisation (WTO) was initiated in 1992.

Considering the share of imports in GDP (40.4%), Moldova is regarded as an economy highly dependent upon foreign trade.

Of no little importance is the significant increase in export geared towards the countries of the European Union, the share of these countries in the total export volume amounting in 1999 to 20.5%. There have been perceptible increases in delivery of goods to Germany, Italy, Austria, France.

Moldova is a participant in a number of free trade areas. The plurilateral CIS free trade area, consisting of the former Soviet republics (with Russia and Ukraine as the most important partners of Moldova) is playing an extremely important role in Moldova's external trade absorbing over half of the country's exports.

The CIS free trade area was established in 1992 and the two umbrella multilateral free trade agreements were signed in 1992 and 1994. These agreements have not been ratified by the Russian parliament and are not in effect and have been substituted by a number of bilateral free trade agreements among the CIS members. Moldova has concluded agreements with all CIS participants, except Tajikistan. The agreements provide for duty-free trade in goods with potential exemptions (not specified in the texts of the agreements) and free transit of goods through the signatories' territories. The agreements explicitly prohibit re-exports. There are provisions for contingency protection (safeguards and anti-dumping).

Despite a free transit provision included in the FTAs, Moldova experiences serious problems with the transit of its trade through the territory of Ukraine. This transit route is of paramount importance for Moldova due to the importance of Russia as an export market. At different times, restrictions have included regional transit fees (for each **oblast** of Ukraine), long processing times at the border and mandatory payments in local Ukrainian currency (and at an unrealistic exchange rate). As a result of numerous bilateral talks, some restrictions were repealed or relaxed, though new restrictions then arose. The transit environment remains chaotic and a regime of free transit has never been achieved.

An important deficiency of the CIS trade arrangements is the lack of multilateral dispute resolution mechanism. Although some barriers faced by Moldova in the CIS and, most importantly, transit issues in Ukraine, are in violation of the spirit and the letter of the CIS agreements, there is little Moldova can do in the framework of the CIS as all disputes have to be resolved politically at the bilateral level.

There was a Romania – Moldova free trade agreement that became effective on January 1, 1995 and covered all agricultural and industrial products. However, the admission of Romania into the European Union on January 1, 2007, implied the entry into a new legal framework of Romanian foreign commercial relations and Romania's withdrawal from all its free trade agreements, including with Moldova.

The situation could change after January 1, 2007, as the Romanian exports will be taxed in the same measure as other E.U. member states, while Moldova benefits from the GSP plus system which allows the exportation of about 7,200 names of products to the European Union.

It should also be stressed that Moldova is paying attention to the issue of creation of a 'free economic zone' on the borders of the states of Moldova, Romania and Ukraine within the frames of the PABSEC – Parliament Assembly of the Black Sea Economic Cooperation.

However, despite the political correctness of the promotion of the values of regional collaboration, it is unrealistic to hope that Ukraine, Moldova and Romania will form, in the near future, a trilateral regional economic cluster. Their external, economic and political priorities are too different and it is impossible, at least in the near future, to bring them towards a common denominator. It should also be mentioned that mutual relationships between the countries are not as smooth as they used to be during the previous decade. Subsequent to the political ascension of the communist party in Moldova, relations between Moldova and Romania have entered a phase of reciprocal distrust and misunderstanding.

Moldova's exports remain highly dependent on the CIS markets, particularly Russia. Although the share of exports going to these countries has been declining since 1997, when it reached its post-independence peak of 70 percent, the CIS still remains the destination over 50 percent of Moldovan exports. The increase in non-CIS exports has been mainly the result of increased exports to the EU-15, with the share of exports to Romania and other countries exhibiting little overall change. The increased non-CIS share was driven, in the first instance, largely by the large drop in trade to Russia following the 1998 financial crisis. Since then, however, exports to the European Union have grown broadly in line with total exports, so that the share of EU (without including Romanian and Bulgaria) exports in total exports has remained relatively constant at about 21%-23%.

In addition to being geographically concentrated, Moldovan exports are also heavily concentrated in a few product categories and have become increasingly concentrated over time. The share of the top three export products in total exports has increased from almost 40% to slightly more than 50% from 1995 to 2003. Over the same period, the number of products that Moldova has exported has fallen, declining from 765 in 1995 to 597 in 2003.

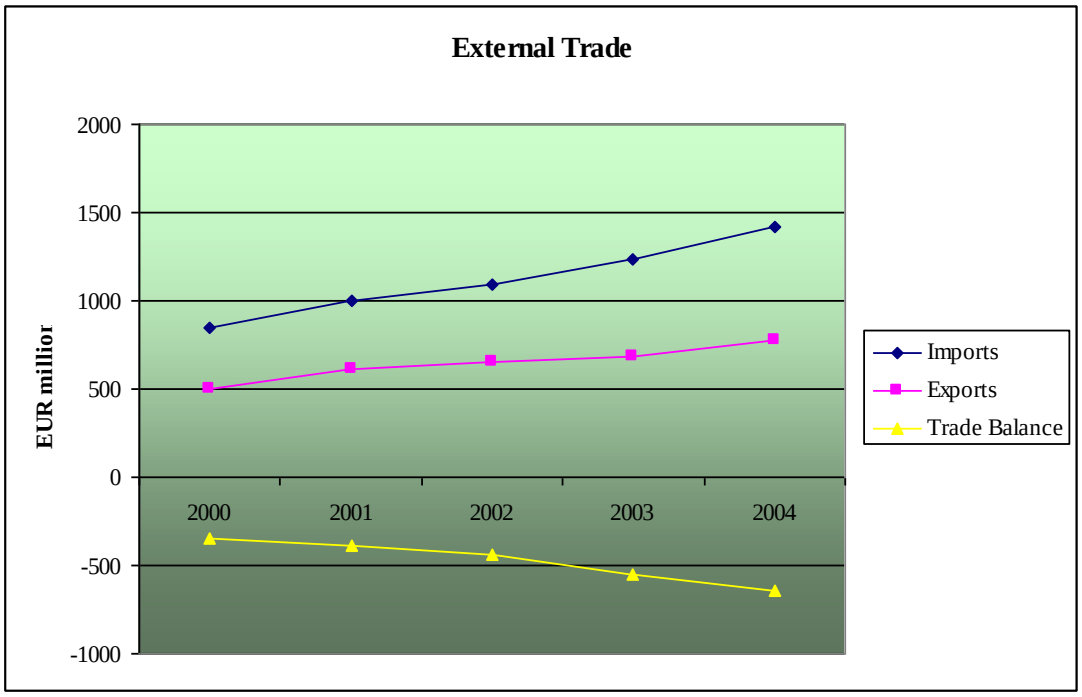
Moldovan imports have undergone a much faster re-orientation with the share of imports coming from non-CIS countries increasing rapidly since 1995. This pattern is similar to other transition countries. The share of imports from the EU grew very quickly in the early and mid 1990s and by 2003, over a quarter of Moldova's imports came from the EU. An equally important increase in non-CIS imports has similar effects.

While imports are dominated by energy, they are, in general, more diversified than exports. Energy has been the single biggest import item throughout the 1990s. The share of energy in total imports, however, has been constantly declining and by 2003 had fallen to 21 percent of total imports, significantly below the 46 percent share recorded in 1995.

On the other hand, the import of manufactured goods has been on the rise and replaced energy as the leading import group, reaching 30 percent of 2003 imports. Imports of food products and chemicals and fertilisers have also been increasing.

The evolution of the external trade in the period 2000-2004 is summarised in the graph below . As can be observed, imports and exports show a moderate and similar increase in the period 2000-2004, but the total balance, besides being negative in sign, shows a decreasing trend in this period.

External Trade



A3.9 FOREIGN INVESTMENT

Moldova's government is keen to promote foreign participation in the investment process. The National Agency for Attracting Investment was set up as a non-commercial public body in December 1997. The agency works closely with international financial institutions such as the World Bank, European Bank for Reconstruction and Development, Chambers of Commerce of various states, as well as foreign embassies.

Foreing Direct Investments evolution

Year	FDI (millions USD)
1992	17
1997	72
2002	132
2003	71
2004	148

Though FDI volumes have not been high, considerable investments have come in for industries as diverse as food processing, packaging, textiles, electrical equipment and other light industry, as well as in the utilities and financial services sector. Russia is the single largest foreign investor accounting for 36% of the total FDI. Most of it involved Gazprom's investments in Moldova's gas utilities and the LUKoil-Moldova joint stock, although Russian investments in other areas are increasing. The US is the next biggest investor with 10% of the total. Other major investors include Spain (just under 10%, including Union Fenosa's investment in power distribution), the Netherlands (7.7%), Germany (4.8%), France (4.1%) and Switzerland (3.8%). Neighbouring Romania accounts for 1.3%.

The largest share of FDI is concentrated in the energy and water sectors, with Russia and Spain being the major players as only two transactions (Gazprom- Russia- investment in Moldova gas and Unión Fenosa – Spain- privatisation of the three central and southern electricity distribution companies) account for the biggest part of Moldova's FDI.

The risks associated with foreign investment in Moldova are perceived to be very high. The legal and institutional environment for foreign investment does not appear to be conducive to large inflows of foreign capital. There is little stability in the range of legislation affecting investment in Moldova and the implementation of rules and regulations often causes substantial problems for enterprises. The cost of operating in Moldova is also influenced by the local barriers that raise the cost of imported inputs, the high cost of capital, the lack of adequate infrastructure and services, and the high cost of the regulatory burden imposed by the government.

A3.10 PRIVATISATION AND LIBERALISATION

Several market-oriented reforms have been implemented in order to encourage corporate investments and the privatisation of most state-owned enterprises.

In 1993, the government took a strategic decision to launch a mass privatisation program by free distribution of public property to citizens through Patrimonial Bonds (PBs). This was the main component of the privatisation programme during 1993-1996. As a result, more than three million Moldovan citizens became shareholders and more than two thousand state enterprises were re-organised into joint stock companies by end 1996.

The need for cash from privatisation marked a new era for the privatisation process. During 1997–1998, several state enterprises were sold to foreign and domestic investors through

investment tenders. Lafarge of France bought the cement factory Ciment, Steilmann Group of Germany acquired the garment factory Balteanca. Eurofarm Inc acquired a controlling stake in several companies. The South, Central and Chisinau power supply networks were purchased by Union Fenosa of Spain in 1999. Israeli investors bought Moldova-Tur, a major company in the hotel and tourism business.

At the end of 2004 the Government of Moldova and Azpetrol group of companies signed a package of agreements on carrying out several investment projects amounting to US$ 250 million in the southern region of the country. The project includes construction of the oil terminal and a cargo and passenger port in Giurgiulesti on the Danube, a petroleum refinery near the terminal and creation of a network of 50 fuel stations in Moldova.

Enterprises that make considerable investments in Moldova are granted tax incentives. In order to qualify for these tax incentives, the companies must enter into agreements with the Tax Inspectorate of the Ministry of Finance.

Overall, the regulatory burdens tend to be greater in Moldova than in other CIS countries of similar income levels. And excessive government interference affects large and small firms, domestic and foreign companies, and exporters as well as firms oriented toward domestic production. This makes the deregulation agenda a top priority for Moldovan policymakers.

Regulatory burdens remain at the core of investment climate weaknesses in the Moldovan economy. Moldovan firms continue to perceive aspects of business registration, licensing, inspection, certification, and standardisation as major costs of doing business.

The system of business registration continues to be complex and time-consuming, particularly for small businesses.

Even though the range of licensed activities was significantly reduced, their definition was expanded, such that in some cases a separate license is needed for a sub-category of licensed activity. Obtaining a license still requires a large number of various documents and authorisations provided by various ministries, making the process time-consuming and prone to corruption.

The inspection regime continues to be extremely complex and involves too many government bodies. Comparative analysis shows that the frequency on inspections in Moldova is higher than in the neighbouring countries.

The excessive amount of authorisations and other documents, which often need to be presented to different regulatory bodies, make the process time-consuming.

A3.11COMPETITION

Moldova regulates monopoly through legislation on limiting monopolistic activities and development of competition, and has separate legislation on protecting competition.

The law on protection of competition stipulates that the National Agency on Competition Protection is in charge of determining government policy for developing competition.
The legislation defines various types of anti-competitive practices and lays down the objectives and the competencies of the authority responsible for protection of competition.

The law also regulates the types of state control over the structure and the functioning of markets, as well as the liabilities in case of breach of competition regulations.

A3.12 CONTRACTURAL FRAMEWORK WITH THE EU

After the accession of Romania to the EU on January of 2007, Moldova is an immediate neighbour of the EU.

At the EU Moldova Cooperation Council of 24 February 2004, both parties agreed that the European Neighbourhood Policy offers an ambitious and realistic framework for strengthening their relationship, allowing Moldova to benefit fully from EU enlargement.

The EU considers that the European Neighbourhood Policy, which should be seen as distinct from the question of possible EU accession that is regulated by article 49 of the Treaty on European Union, provides the most appropriate framework for the partnership. In March 2004, Moldova recognised the importance of the Neighbourhood Policy for Moldova's internal reform process and as a way to come closer to the EU.

The European Neighbourhood Policy sets ambitious objectives for partnership with neighbouring countries based on strong commitments to shared values and political, economic and institutional reforms.

The Union offers the prospect of a stake in its Internal Market and of further economic integration. The speed and intensity of this process will depend on the will and capability of each partner country to engage in this broad agenda. The policy builds upon and reinforces the existing framework of co-operation.

The Partnership and Co-operation Agreement (PCA), which forms the legal basis of EU-Moldova relations, was signed in November 1994 and entered into force in July 1998. It covers a wide range of areas including political dialogue, trade and investment, economic co-operation, legislative approximation, culture and science. The parties recall the common values that they share, and state their commitment to promote international peace and security as well as the peaceful settlement of disputes, and agree that respect for democratic principles and human rights as well as for the principles of market economy underpin their internal and external policies and constitute an essential element of partnership and the Agreement.

The parties accord to one another Most Favoured Nation (MFN) treatment and limit the possibility of imposing restrictions on imports and exports. The PCA also states that upon further progress of market oriented economic reforms in Moldova the possibility of beginning negotiations on the establishment of a free trade area will be considered. The conclusions of a joint study on the effects of a FTA in 1999 suggest postponing the introduction of the FTA until regulatory, administrative and economic conditions would allow Moldova to fully benefit from its establishment.

In September 2003, Moldova presented a Concept for the Integration of the Republic of Moldova into the European Union, of which the EU took note, also in view of preparations for a possible joint Action Plan under the European Neighbourhood Policy.

In the Concept, Moldova welcomed the European Neighbourhood Policy, while at the same time expressing the wish to be included in the Stabilisation and Association Process covering the countries of the Western Balkans.

Since 1991, the EU has provided assistance to Moldova totalling €253 million. This comprises technical assistance under the TACIS programme, including for cross-border co-operation, macro-financial aid through balance of payments loans and grants, assistance through the Food Security Programme, and humanitarian assistance.

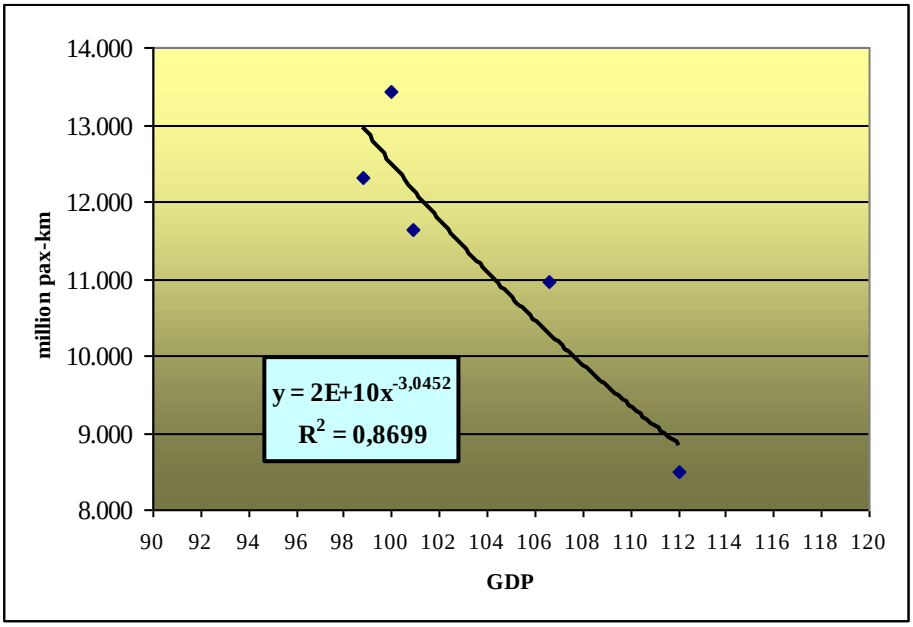
ANNEX 4. TRANSPORT EVOLUTION BENCHMARK

Due to the lack of viable values for Moldova, it has been deemed useful to set up a benchmark. The main problem is that there is very little data available for Eastern European countries -- Romania has been chosen as an example for a few analyses. In order to obtain more information, EU countries have been taken as a reference. Eurostat has been the source of information so as to have an idea of how many of these variables are forecast for EU 15 (15 countries).

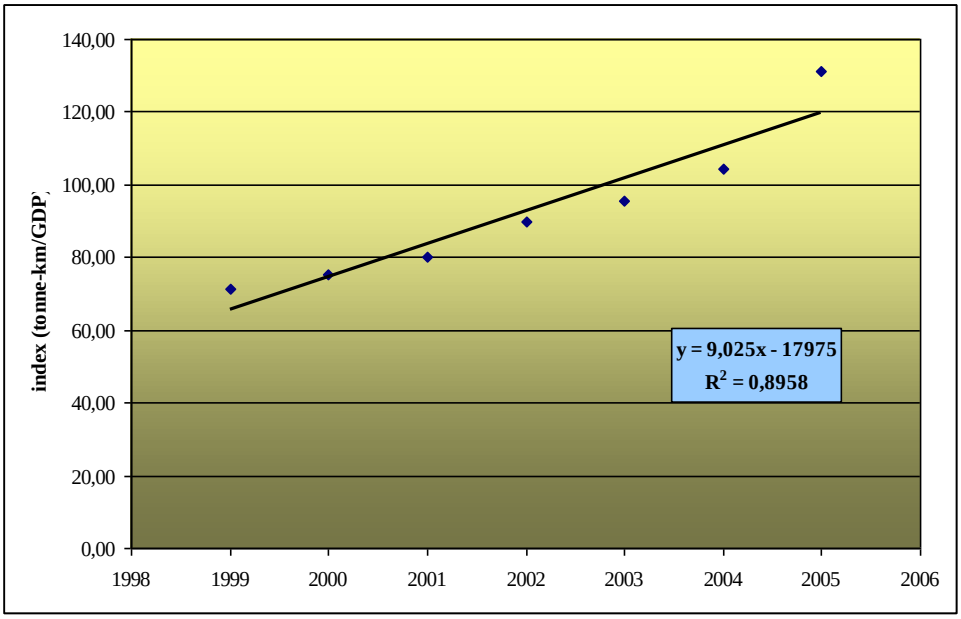
The following sections show several regression analyses always relating the GDP (expressed as an index where 1996 represents 100) to a transport-related variable. Potential equations have been used for the analyses, as this kind of equation gives the elasticity between the two variables, which is another important source of information. Values of R^2 close to 1 imply the analysis is very accurate; higher than 0.7 means it is good. The closer to zero, the worse the analysis is.

A4.1 THE ROMANIAN BENCHMARK

GDP – Passenger Rail Transport



Volume of Freight Transport (Romania)



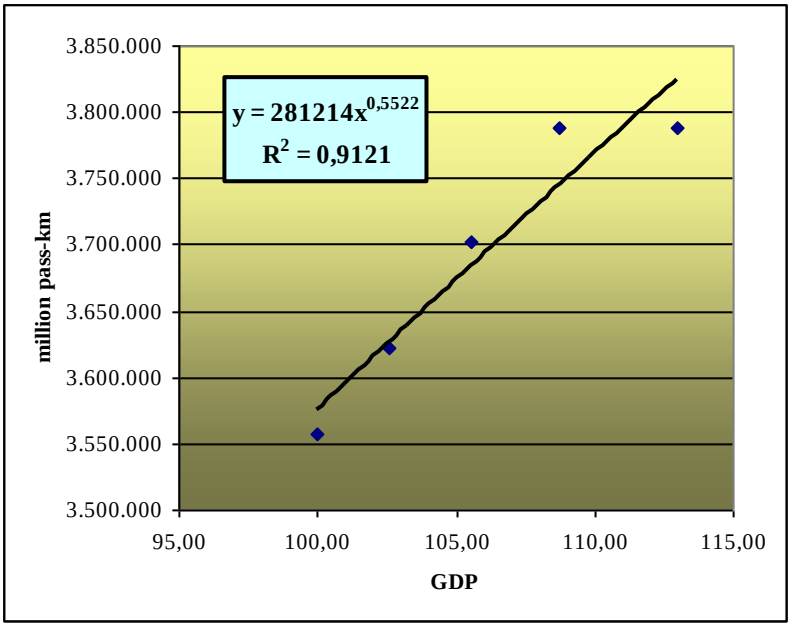
A4.2 THE EU 15 BENCHMARK

The following transport variables have been related to the GDP for EU 15:

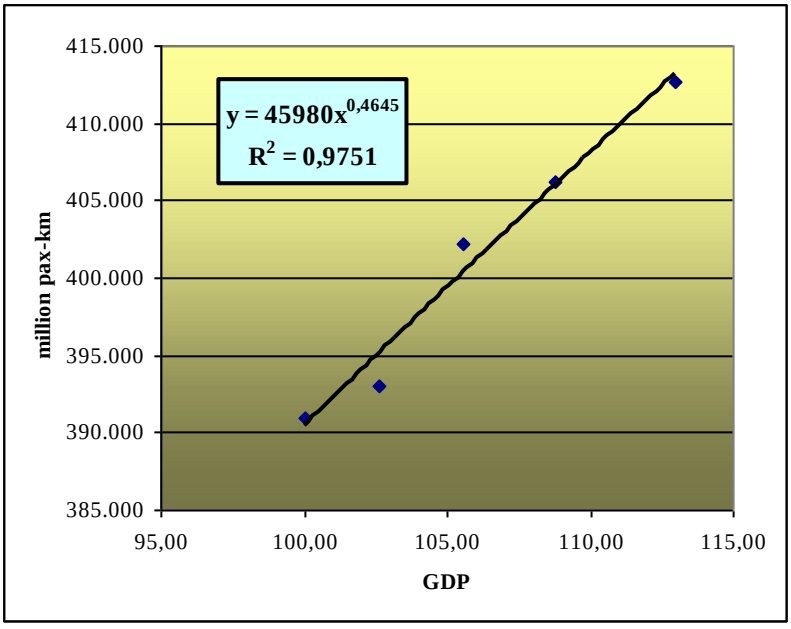
- Passenger Car Transport
- Passenger Bus Transport
- Passenger Rail Transport
- Goods Road Transport
- Goods Rail Transport
- Goods Waterway Transport

The results of the Potential Regression Analyses are shown in the following charts, where the equation as well as the degree of statistical validity (R^2) is shown.

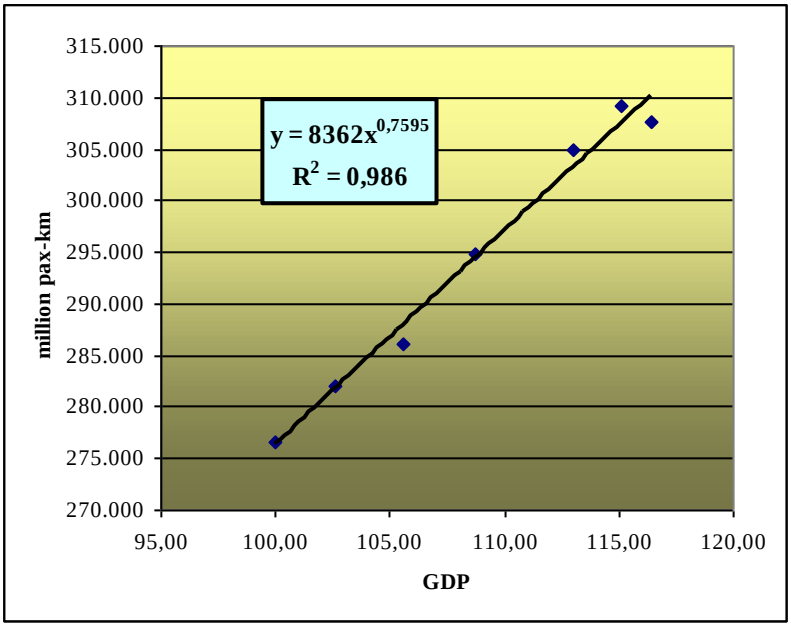
GDP – Passenger Car Transport (EU 15)



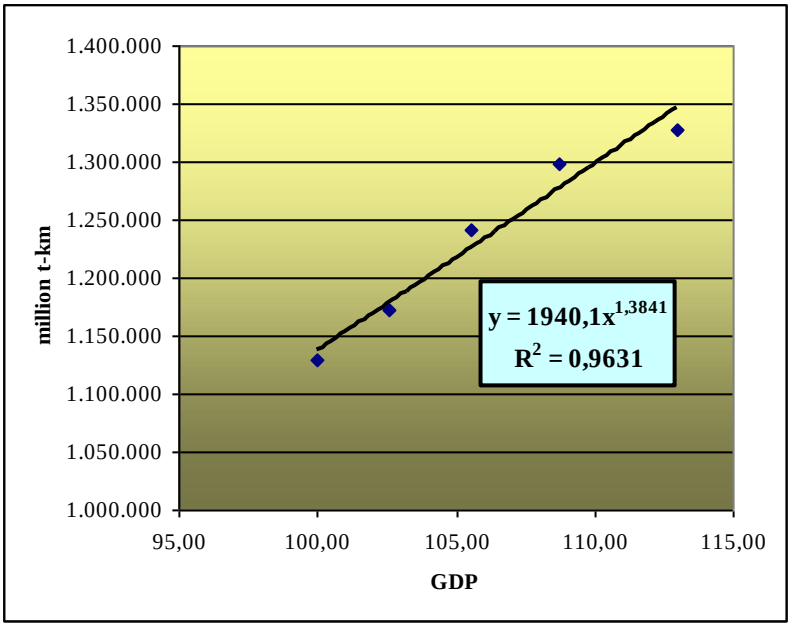
GDP – Passenger Bus Transport (EU 15)



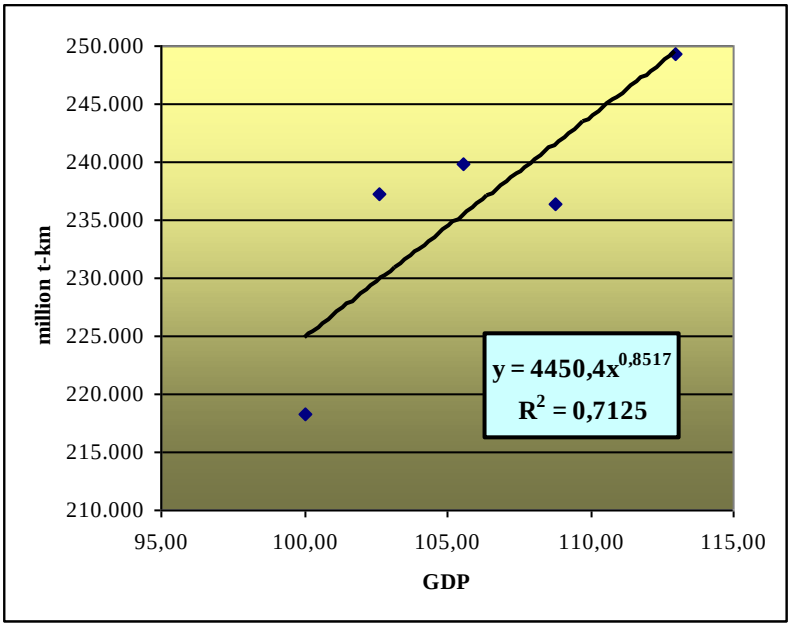
GDP – Passenger Rail Transport (EU 15)



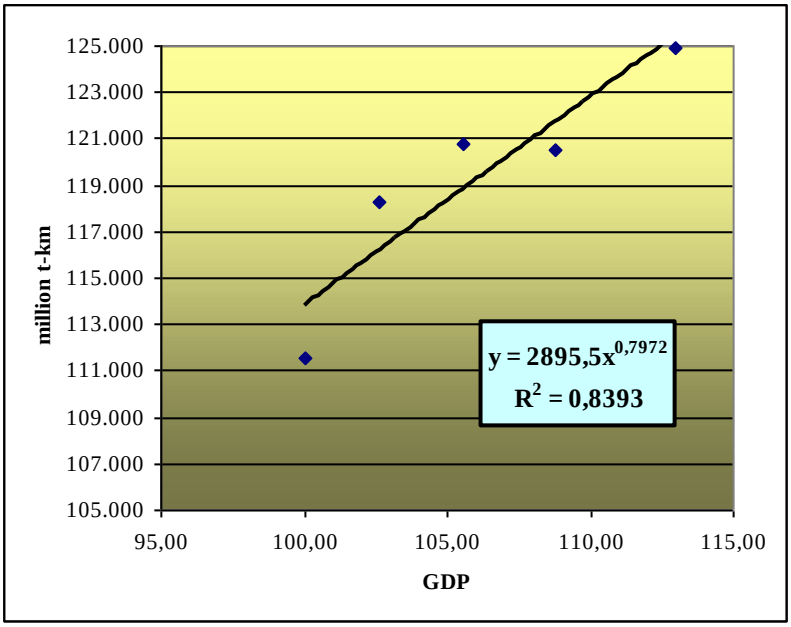
GDP – Goods Road Transport (EU 15)



GDP – Goods Rail Transport (EU 15)

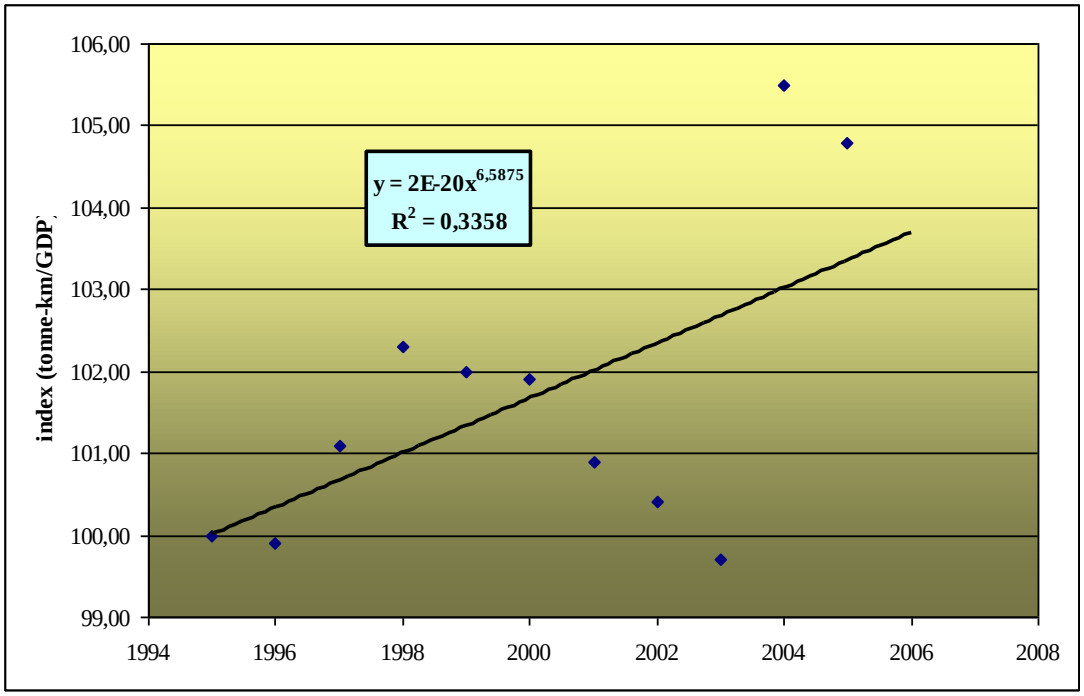


GDP – Goods Waterways Transport (EU 15)

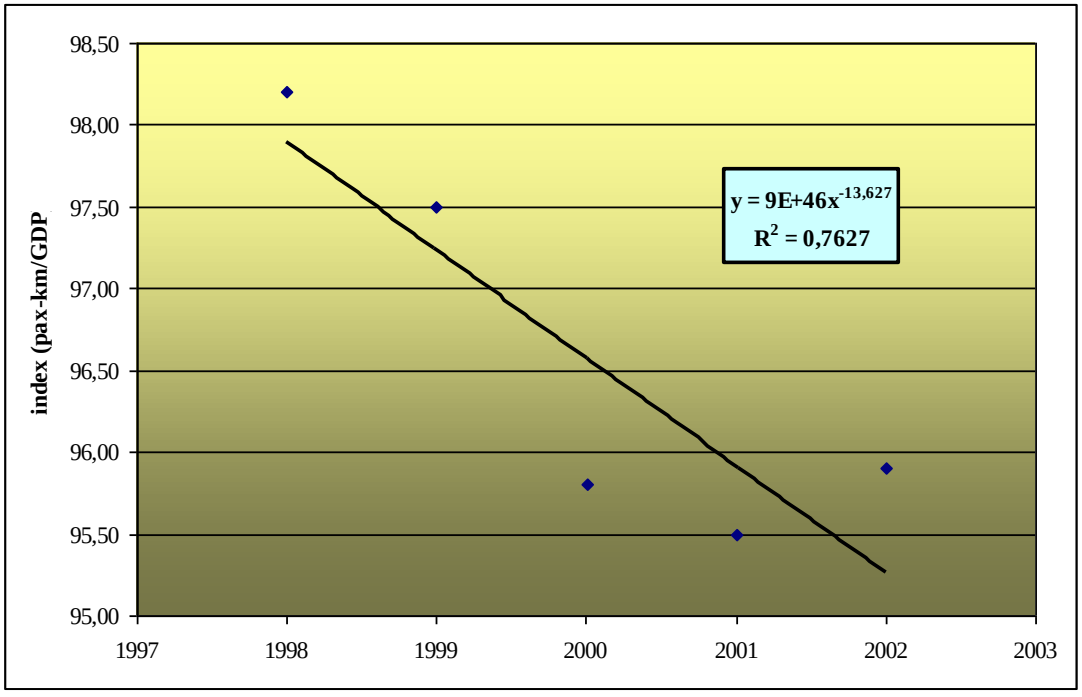


Additionally, the following charts show the evolution of the Total Volume of Freight and Passenger Transport in the area, expressed in relation to the GDP.

Volume of Freight Transport (EU 15)



Volume of Passenger Transport (EU 15)



A4.3 RICHEST EUROPEAN COUNTRIES

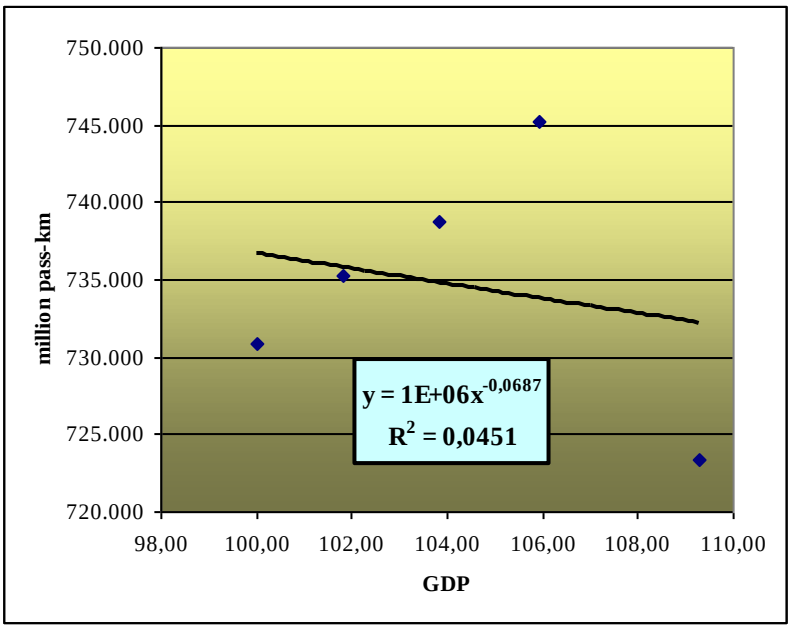
The same analyses have been carried out for a selection of the richest European countries, which include the following ones:

- Germany
- France

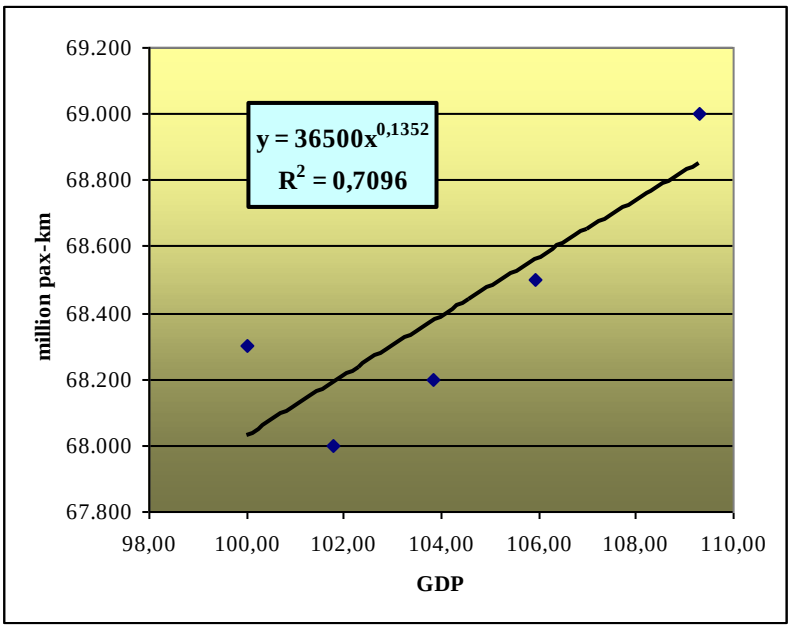
- United Kingdom

A4.3.1 Germany

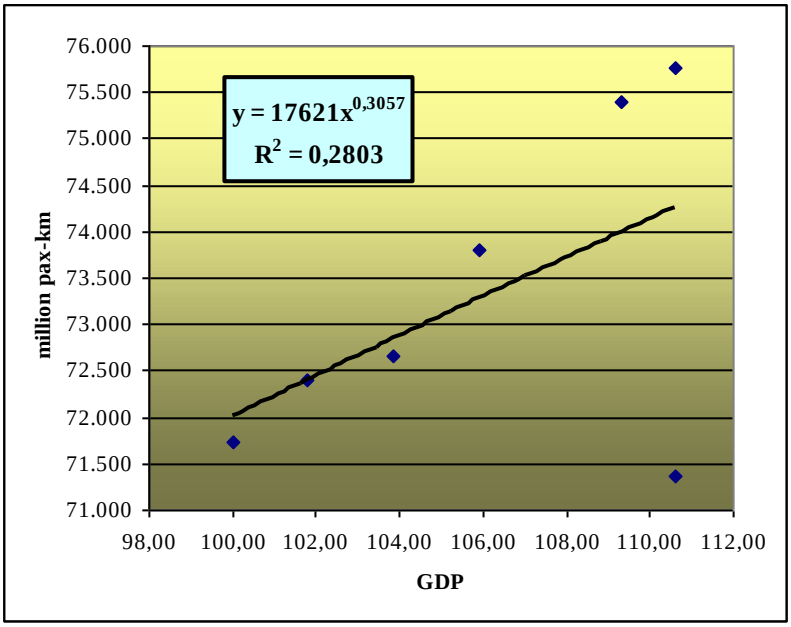
GDP – Car Passenger Transport (Germany)



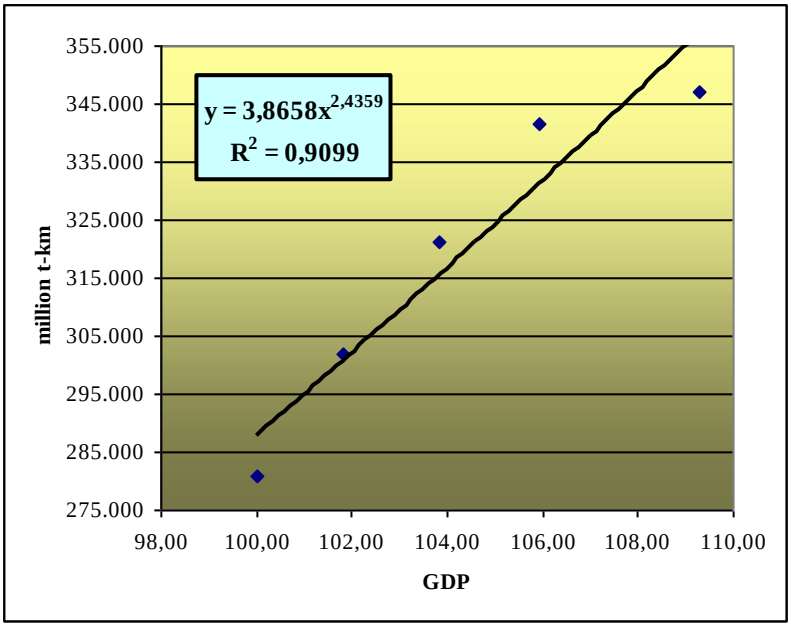
GDP – Bus Passenger Transport (Germany)



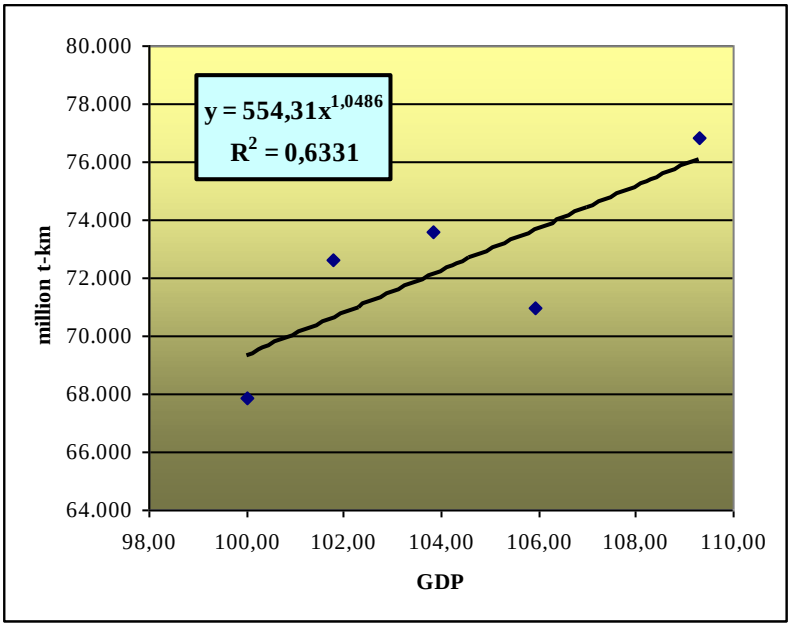
GDP – Rail Passenger Transport (Germany)



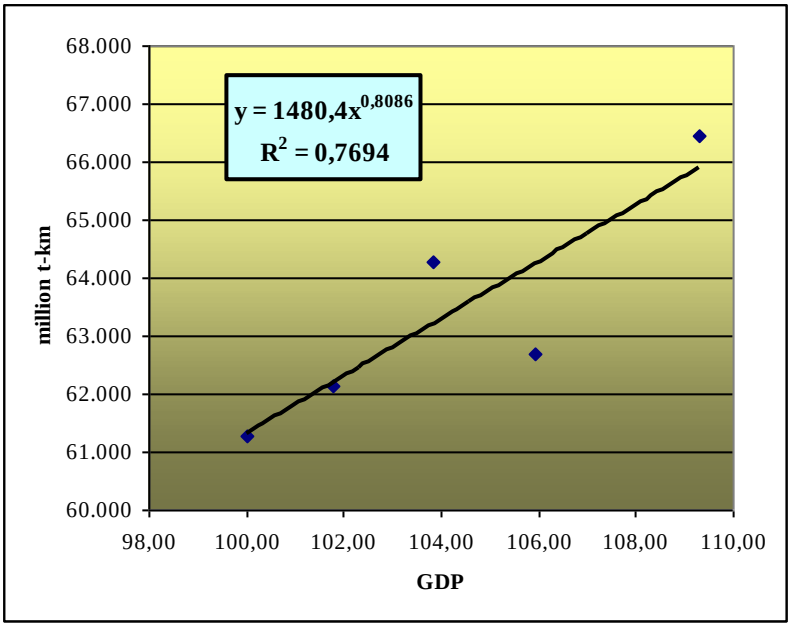
GDP – Goods Road Transport (Germany)



GDP – Rail Goods Transport (Germany)

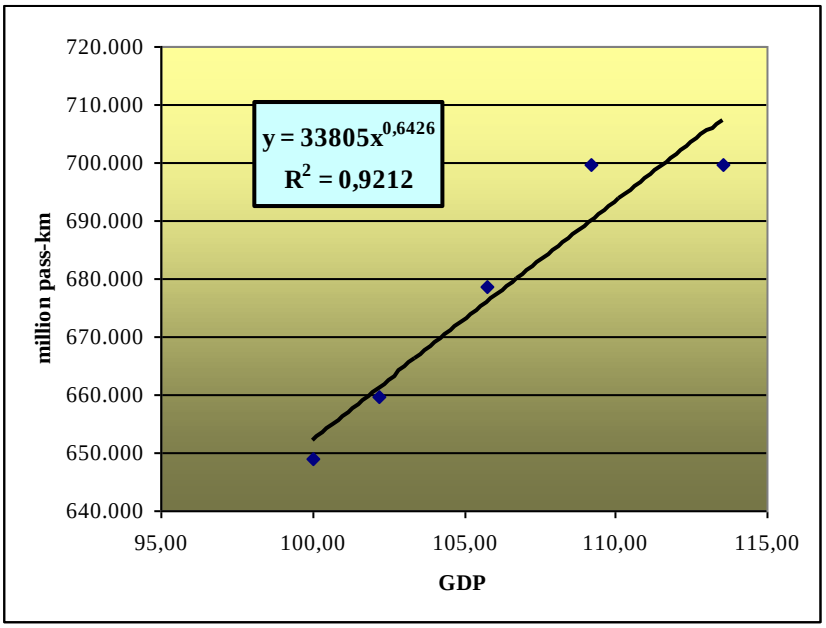


GDP – Waterway Goods Transport (Germany)

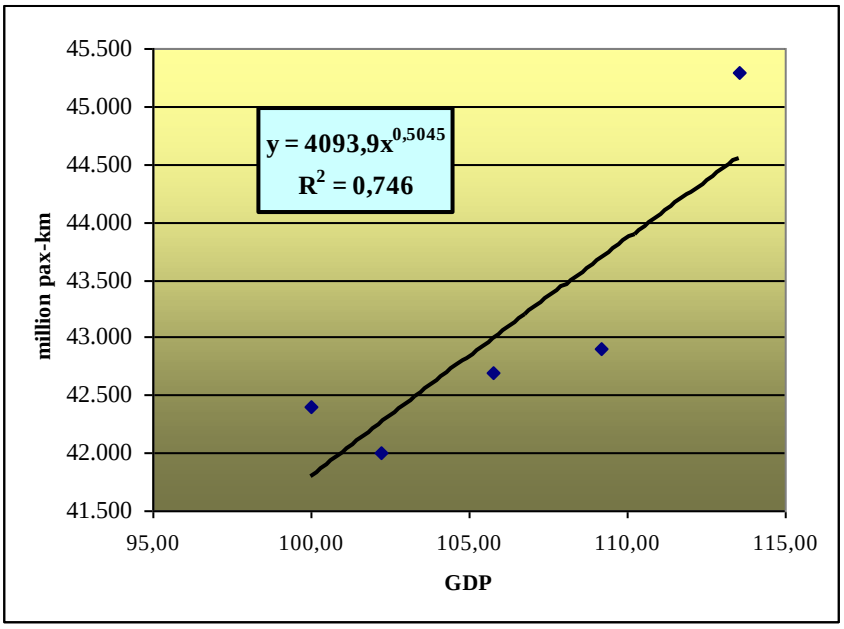


A4.3.2 France

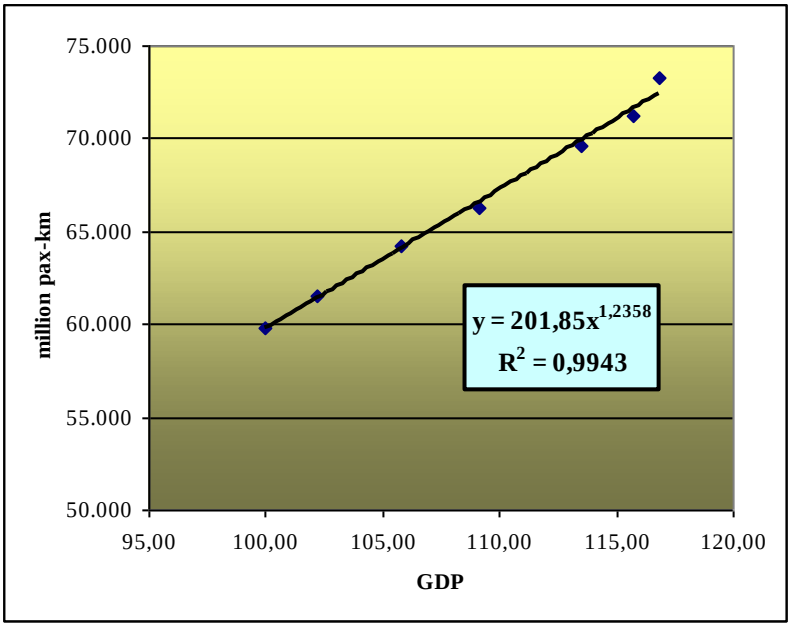
GDP – Car Passenger Transport (France)



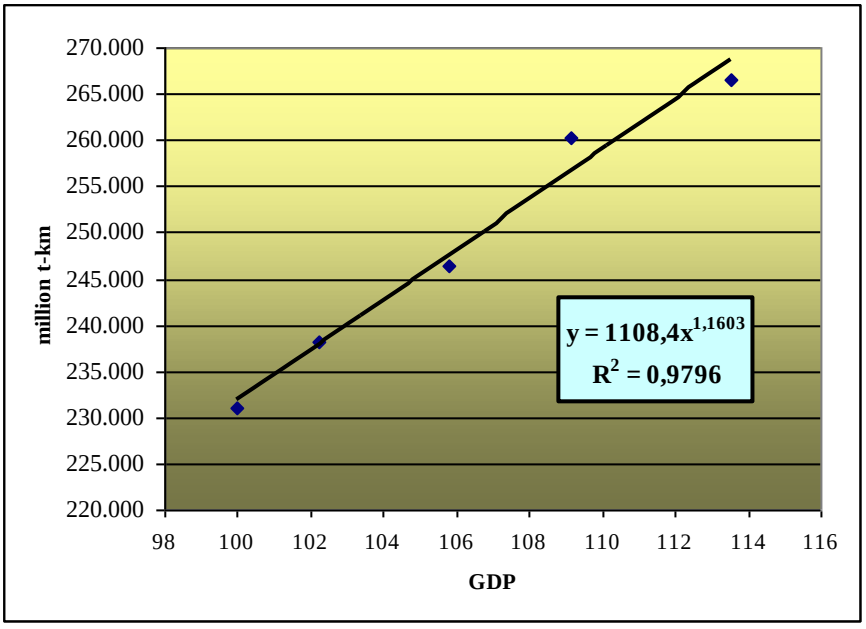
GDP – Bus Passenger Transport (France)



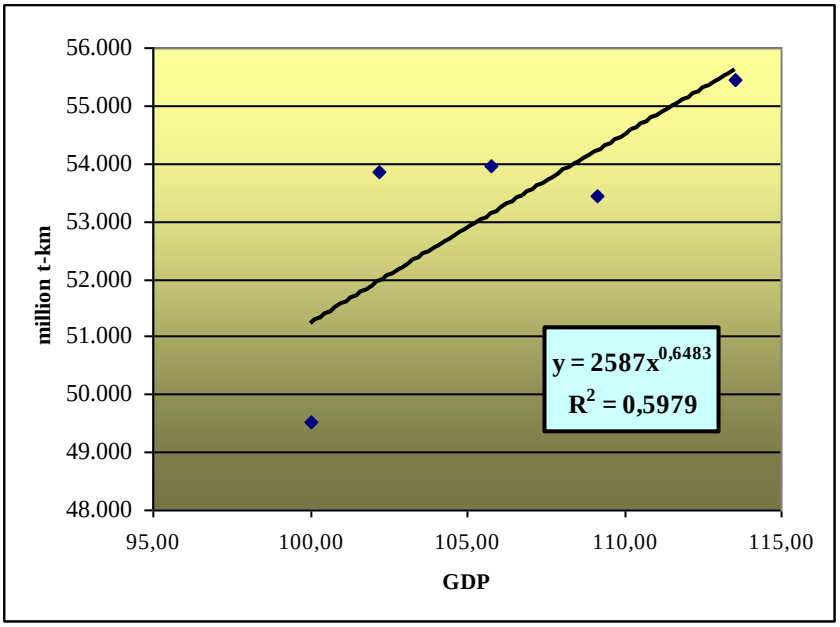
GDP – Rail Passenger Transport (France)



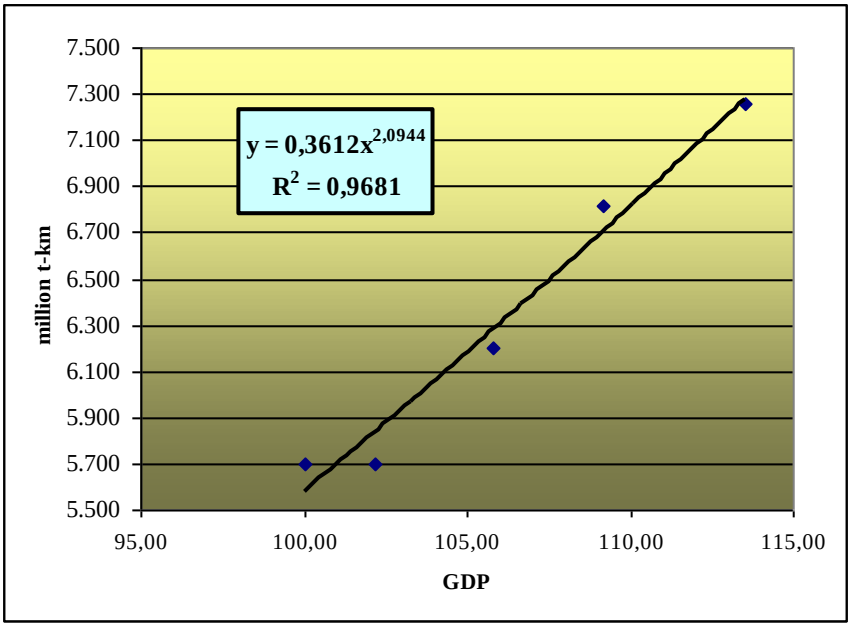
GDP – Road Goods Transport (France)



GDP – Rail Goods Transport (France)

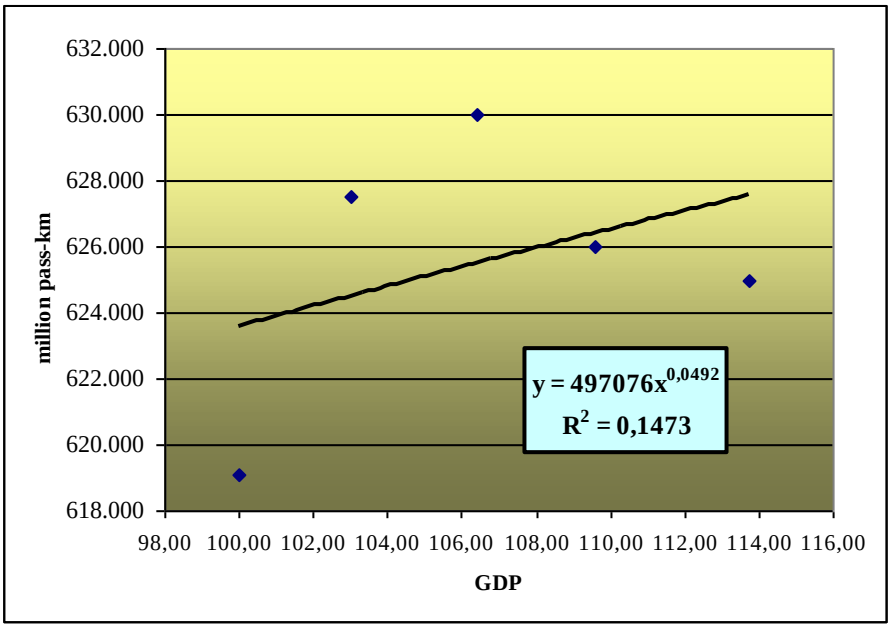


GDP – Waterway Goods Transport (France)

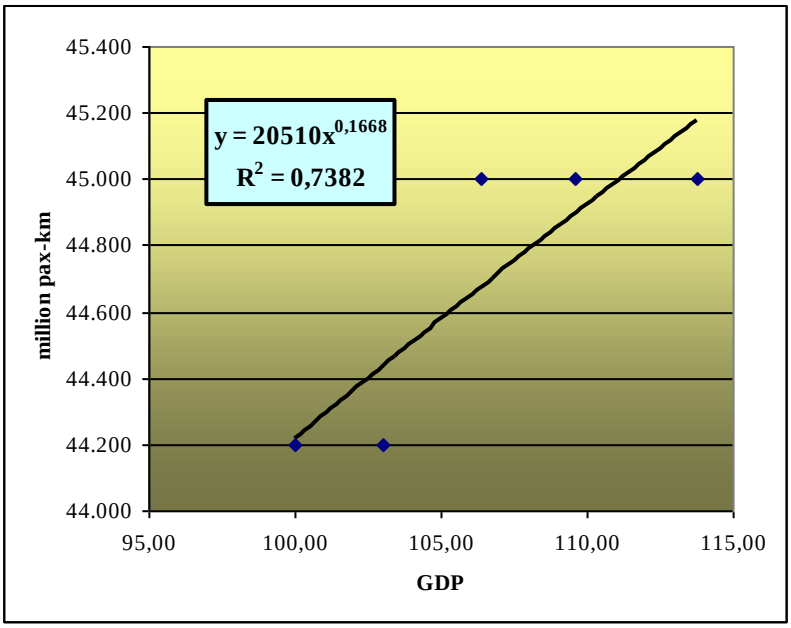


A4.3.3 United Kingdom

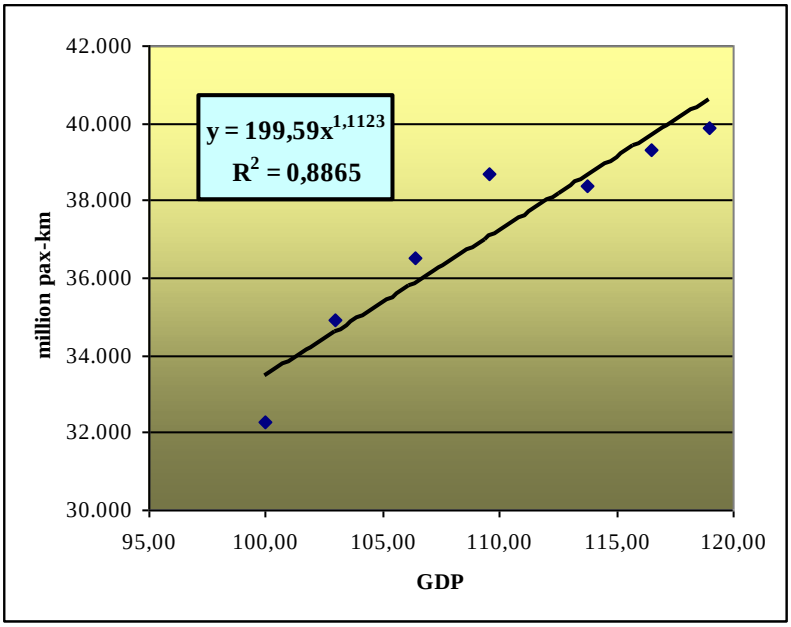
GDP – Car Passenger Transport (United Kingdom)



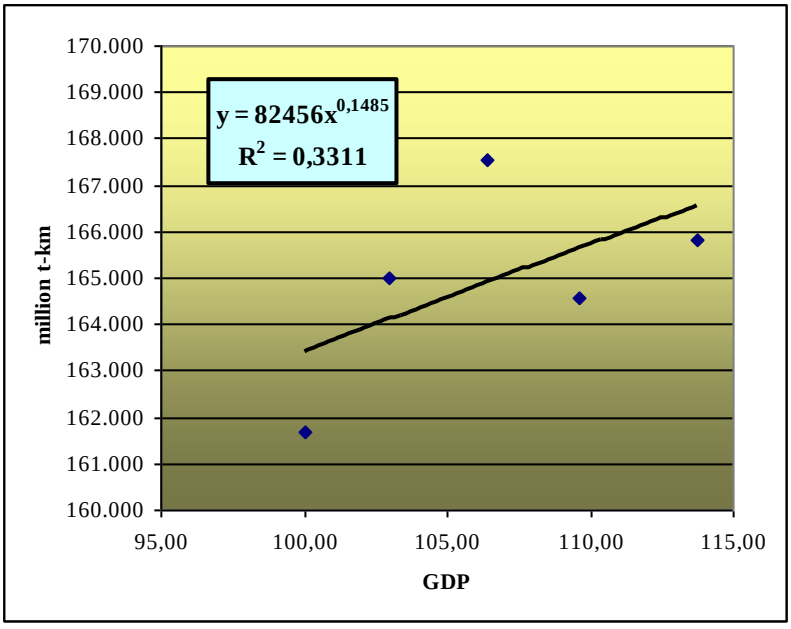
GDP – Bus Passenger Transport (United Kingdom)



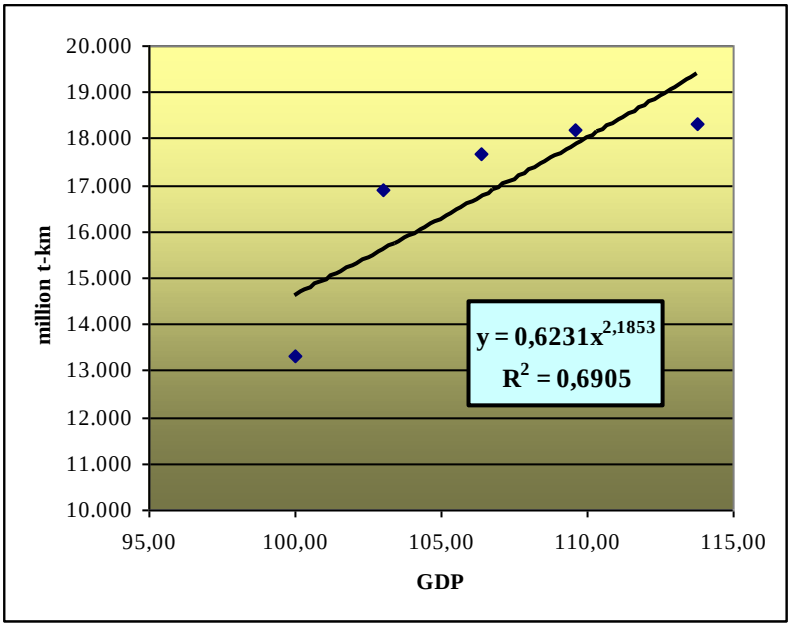
GDP – Rail Passenger Transport (United Kingdom)



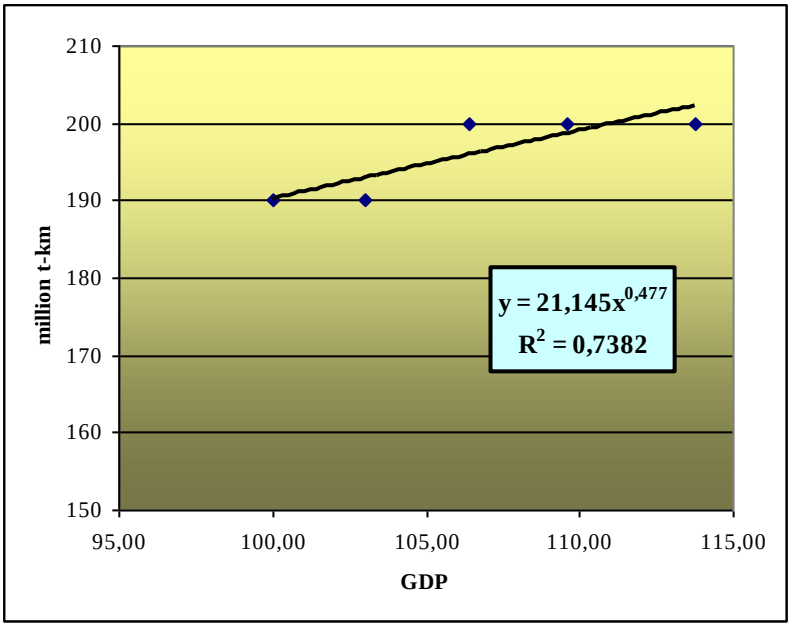
GDP – Road Goods Transport (United Kingdom)



GDP – Rail Goods Transport (United Kingdom)



GDP – Waterways Goods Transport (United Kingdom)



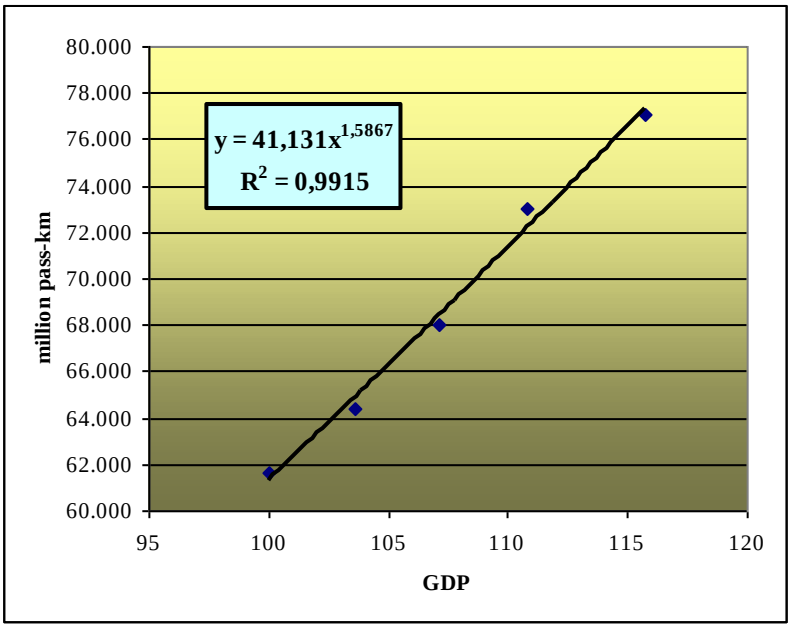
A4.4 NOT-SO-RICH EUROPEAN COUNTRIES

Finally, in order to compare the results with a set of not-so-rich European countries, the following ones have been selected for the same previous analyses:

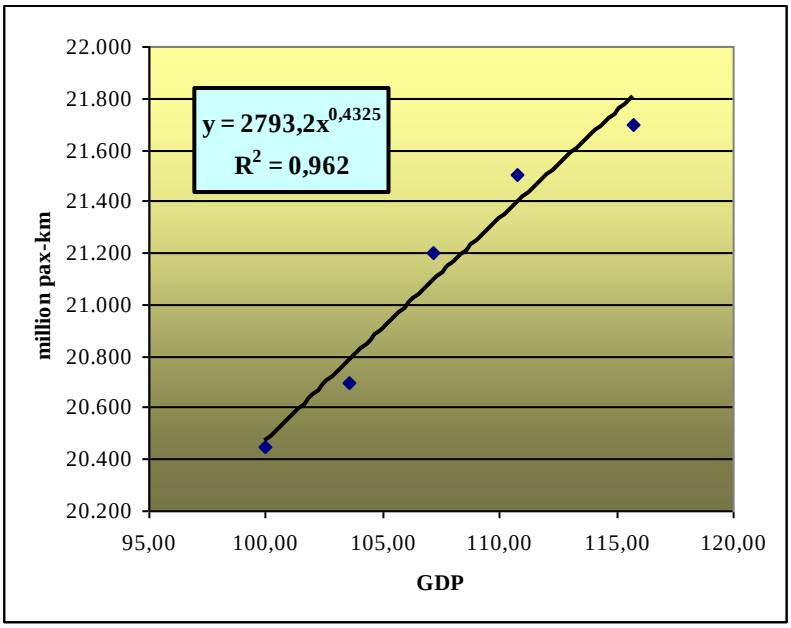
- Greece
- Spain
- Slovenia

A4.4.1 Greece

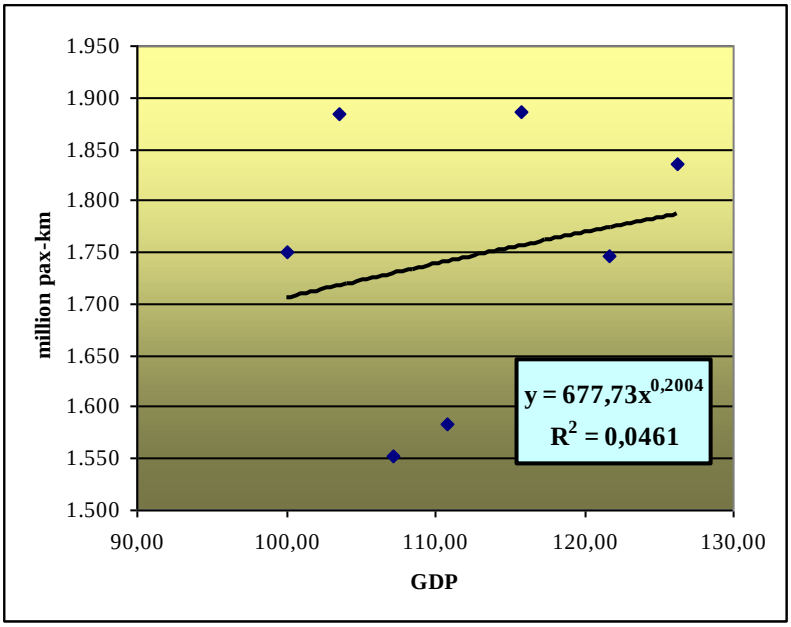
GDP – Car Passenger Transport (Greece)



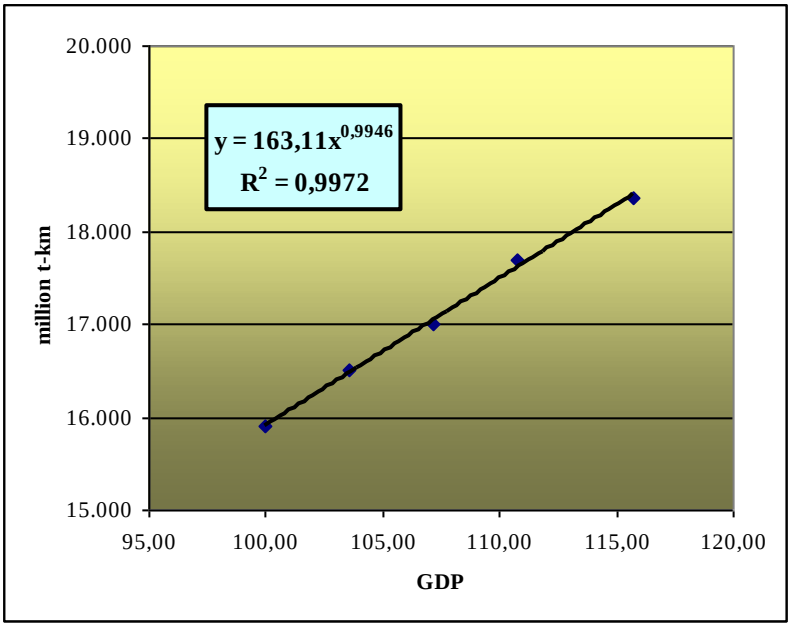
GDP – Bus Passenger Transport (Greece)



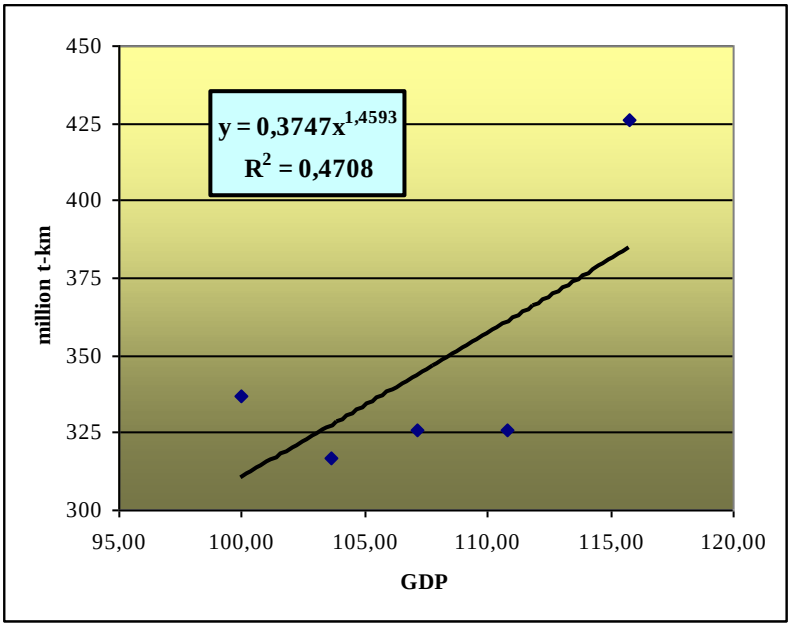
GDP – Rail Passenger Transport (Greece)



GDP – Road Goods Transport (Greece)

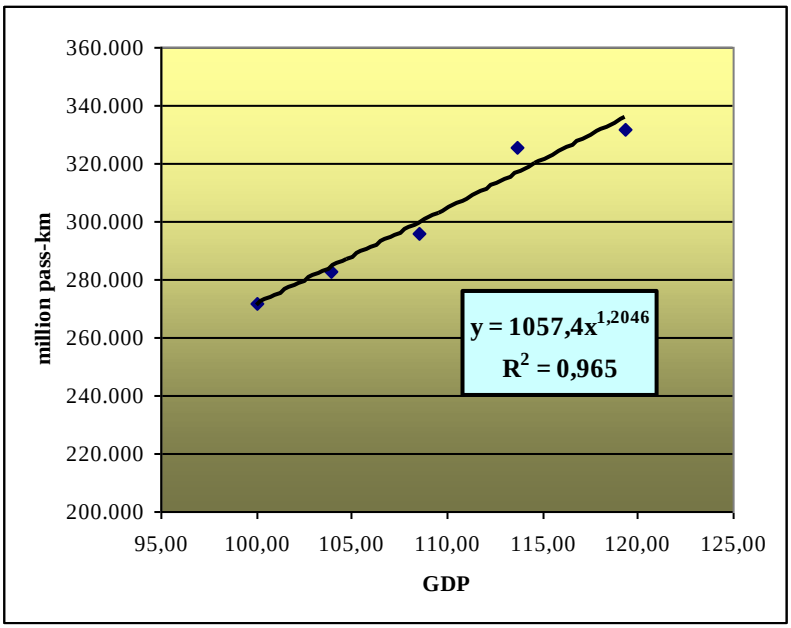


GDP – Rail Goods Transport (Greece)

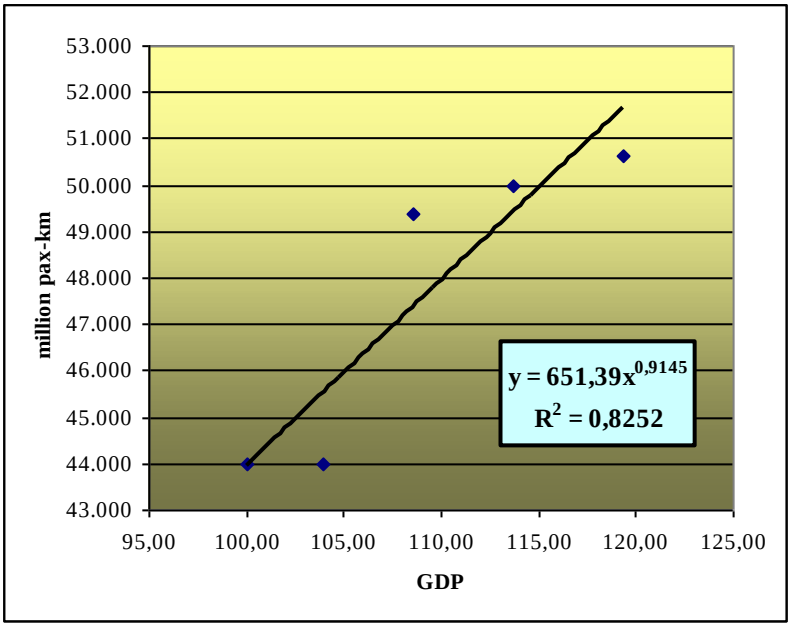


A4.4.2 Spain

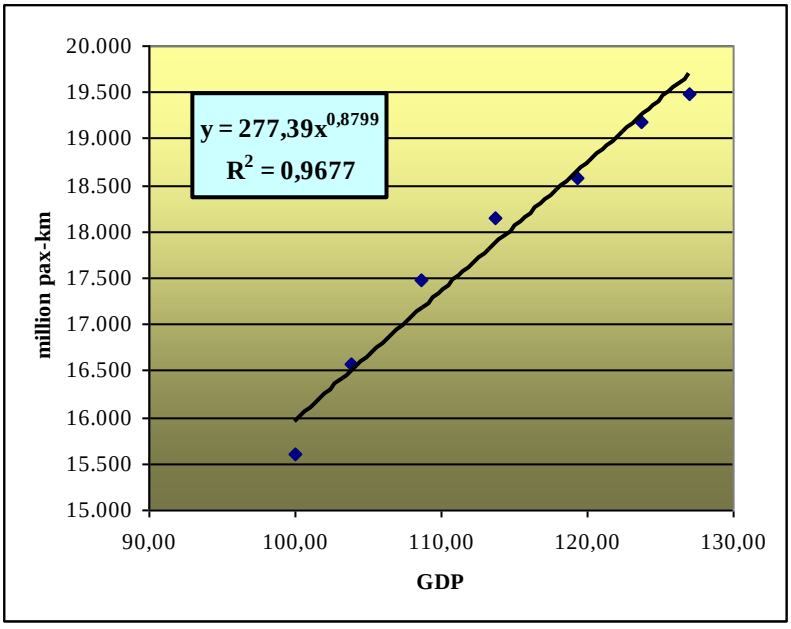
GDP – Car Passenger Transport (Spain)



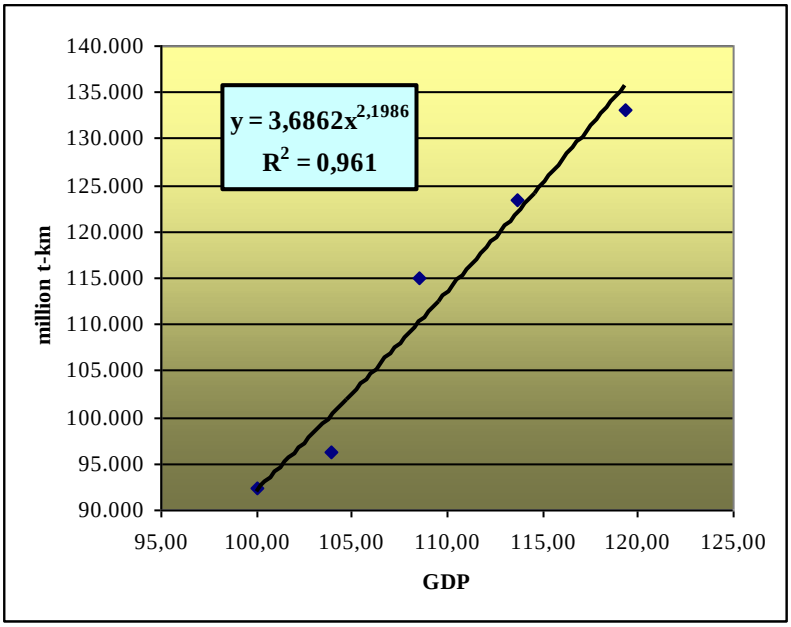
GDP – Bus Passenger Transport (Spain)



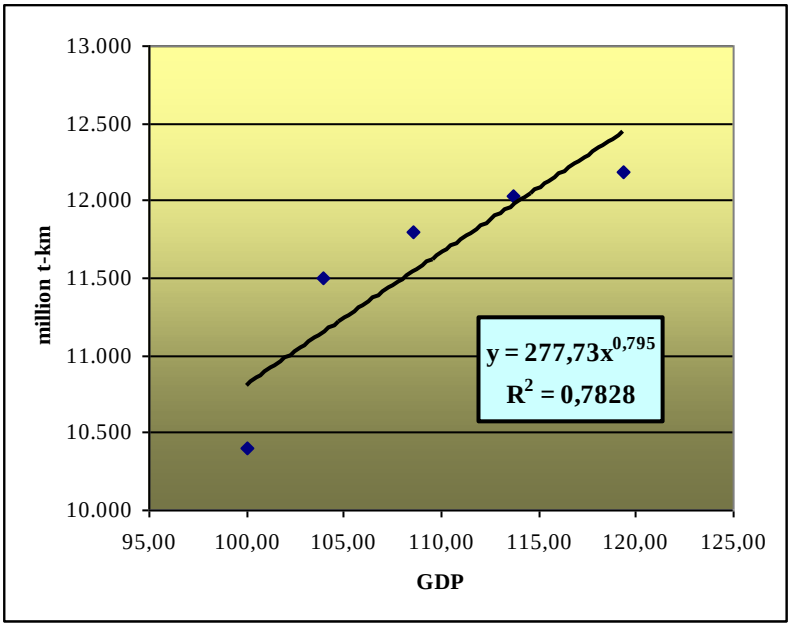
GDP – Rail Passenger Transport (Spain)



GDP – Road Goods Transport (Spain)

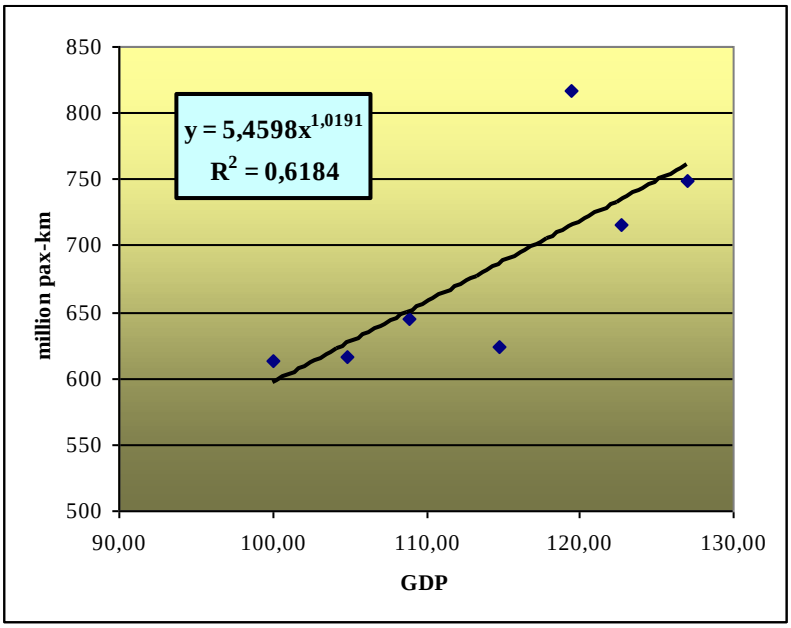


GDP – Rail Goods Transport (Spain)



A4.4.3 Slovenia

GDP – Rail Passenger Transport (Slovenia)



A4.5 CONCLUSIONS FROM THE BENCHMARK

As a result of all previous analyses, some final conclusions may be drawn:

- The evolution in Moldova does not make it possible to calibrate any sensible model. Until all indicators are more stable, it does not seem possible to do so with a minimum of reliability.

- In order to have some reliable comparison, efforts have been made in order to calibrate some models with information from neighbouring countries. Nevertheless, data available for Eastern European countries are very scarce. Romania has been chosen as an example, and the analyses show a clear decline in transport variables, with a tending-to-zero trend, which does not make any sense.

- The analyses in EU 15 countries show that passenger transport tends to grow at a slower pace than freight transport, related to GDP growth. Although no clear-cut pattern is obvious, the general conclusion is that it is possible to take as an estimate of the elasticity for the case of Moldova in the long run, based on the results above and being aware of the great degree of uncertainty for these figures as follows: Passenger transport elasticity ≈ 1.0; Freight transport elasticity ≈ 1.5 – 2.0.

- Nevertheless, the aforementioned data are related only to domestic traffic (or import-export traffic) but no clear estimate can be made in the short run for the transit traffic, which could be very important in the long run.