DIOMIS

Evolution of intermodal rail/road traffic in Central and Eastern European Countries by 2020

ROMANIA

Developing Infrastructure & Operating Models for Intermodal Shift

January 2010

ISBN 978-2-7461-1771-6

Warning

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FOREWORD

In January 2008, the Combined Transport Group of the UIC presented the ***AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE***, which constituted the epitome of the work carried out over two years in the ***UIC DIOMIS project***: developing infrastructure and operating models for intermodal shift.

Previously, with KombiConsult and K+P Transport Consultants, we investigated whether enough capacity would be available for Combined Transport (CT) on the European railway infrastructure by 2015 considering the expectations placed on Rail Freight and particularly on Combined Transport. In other words, given the most realistic growth projections, taking into account the foreseeable evolutions of the other Railway activities and visualising, on the basis of the current and planned infrastructure realisations and projects, the railway infrastructure available in 2015, would there be sufficient and appropriate infrastructure? If not, what should be done, in terms of investments and organisations, including those related to terminals?

It was shown that severe bottlenecks would constrain many parts of the European railway network and that, in all fields (infrastructure network, operations, terminals, …), there was a need for innovative solutions leading to a deep re-evaluation of our current infrastructure and operating models.

A recent update of our growth projections for CT, in the light of the present recession, indicates that, despite the current traffic downturn caused by the recession, CT will have grown considerably by 2015, compared to 2005, and that, with unchanged methods of production and without considerable improvements in productivity, we will still be faced, on the central part of the European network covered by the initial phase of ***DIOMIS***, with severe capacity constraints in the field of railway infrastructure, CT terminals and even wagons.

DIOMIS established that CT has become the growth business segment of freight railways and provides the opportunity to increase the market share of rail freight in Europe. However, considering the prospective capacity constraints that were identified by 2015, ***DIOMIS*** considered how the stakeholders, i.e. railways undertakings, operators and terminal managers, besides inevitable infrastructure expansions, can, within the projected infrastructure constraints, increase capacity and optimize capacity use in order to face the expected strong growth of combined transport of 7,3 % domestic and 8,7 % internationally ?

The results published in this ***AGENDA 2015 FOR COMBINED TRANSPORT IN EUROPE*** constituted a call for action for all the decision makers of the stakeholders (Railway Undertakings, Combined Transport Operators, Terminal Managers, Infrastructure Managers etc.), including national and supranational authorities and port authorities. The ambition of ***AGENDA 2015*** is to become an integral part of their respective strategies.

The second phase of DIOMIS, covering 2008-9, has ensured the full dissemination of AGENDA 2015 and updated the overall detailed report on Combined Transport (CT).

Most importantly, it expanded to a number of Central and Eastern European Countries (CEEC) the geographical scope and the investigation methods of ***DIOMIS***. The countries investigated in the course of this second phase were Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia, and Slovenia.

For each of these countries, the team identified the current situation of CT, its challenges and prospects, the prospective capacities of the railway infrastructure and of the CT terminals, and the related investment plans and needs. The impact of the current recession, that is hitting hard some of the countries involved, was also taken into account.

The result is a set of comprehensive reports, constituting for the deciders in these countries, and for the stakeholders of CT interested in developing CT business within and in relation with the CEEC countries, and in conjunction with ***AGENDA 2015***, a precious information source but, even more importantly, also a useful analytical and decision tool.

As was the case for the other ***DIOMIS 1*** and ***2*** modules, KombiConsult and K+P Transport Consultants carried out the work and prepared these reports. We are very thankful to Hans-Paul Kienzler, from K+P Transport Consultants, and to Rainer Mertel, from KombiConsult , and their respective teams.

DIOMIS was also coached by a very active Steering Committee, composed of Martin Burkhardt (Director General UIRR), Javier Casanas (Trenitalia, partim), Gerard Dalton (Infrastructure Director of UIC), Gilberto Galloni (Chairman Europlatforms), Sandra Géhénot (Senior Freight Advisor UIC), Eric Peetermans (SNCB Holding, Chairman CTG UIC), Eric Pfaffmann (DB Intermodal), Erich Rohrhofer (Head of Combined Transport, RailCargo Austria), Daniel Molcan (Head of Combined Transport, CD Cargo) and Oliver Sellnick (Freight Director UIC).

Our dearest wish is now that these papers be integrated into the strategies of the stakeholders and we are confident that all parties concerned will share our excitement at this perspective and will co-operate to this achievement. We certainly remain available to discuss with the interested parties the results and prospects detailed in these reports.

Eric Peetermans
Chairman
UIC Combined Transport Group (CTG)

Oliver Sellnick
Director Freight
UIC

December 2009

1. SOCIO-ECONOMIC INFORMATION ON ROMANIA

Romania is a country in south-east Europe, bordering with five countries, specifically Hungary and Serbia to the west, Ukraine and the Republic of Moldova to the northeast, and Bulgaria to the south. In the east the Black Sea defines Romania's border.

Geographically the country features a notable diversity; one third is lowland; one third is highland and the other third is very mountainous with the Carpathian Mountains dominating the centre of Romania (14 of its ranges above the altitude of 2,000 meters).

Romania is divided into forty-two counties, including the municipality of Bucharest, which has equal status with the counties.

Figure 1-1: Romania: administrative division by districts and visualisation of altitudes

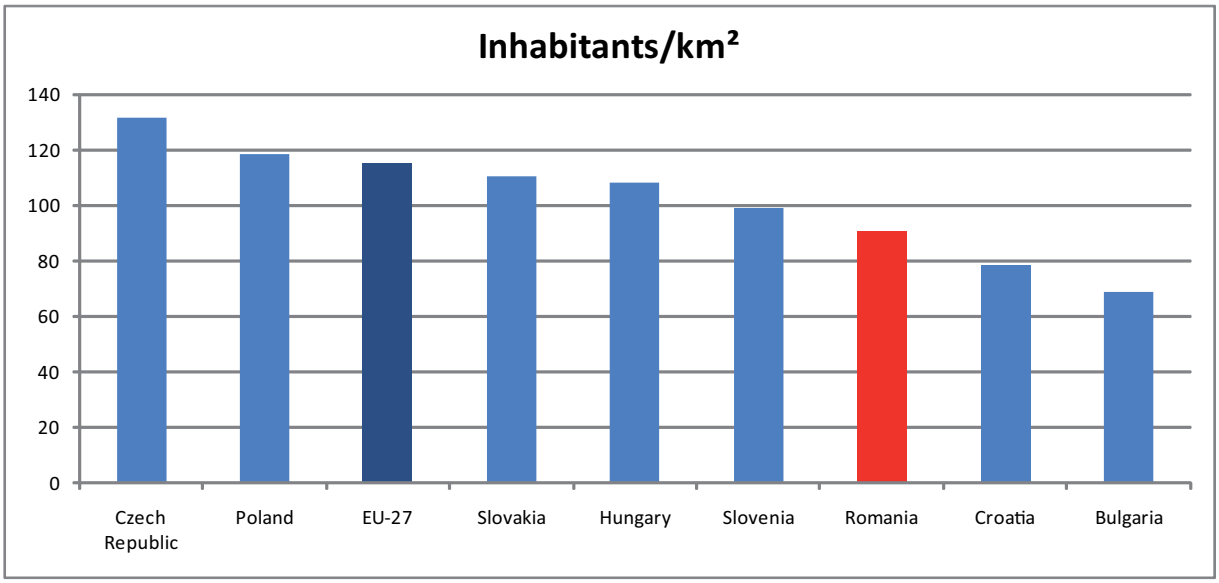
Source: National Institute of Statistics (INS), Romania

1.1 - Population

The population in Romania is, except for the Bucharest area, evenly spread over the territory. In 2008 Romania had a population of about 21.5 million inhabitants, the 7th largest population among the European Union Member States. Bucharest is by far the largest city with a population of about 1.9 million, which equates to 9 per cent of total population and 16.2 per cent of the urban population of the country. The next largest settlements accounting for a population over 300,000 are Iasi (321,000), Cluj-Napoca (318,000), Timisoara (318,000), Constanta (310,000) and Craiova (303,000). Further cities with populations over 200,000 are Galați, Braşov, Ploieşti, Brăila and Oradea and another 13 cities have populations over 100,000. The remaining population is divided between smaller cities and spread over the country.

Among the CEE countries covered by this DIOMIS study, Romania is the second largest both in terms of population and size of territory. With an area of about 238,391 km² this equated to an average population density of about 90 inhabitants per km² in 2008 (see ***Figure 1-2***), which is the third lowest amongst the covered CEE states, reflecting a notably low density in rural areas. It goes without saying that such circumstances impact on the volumes of freight traffic and on the market potential for intermodal services. The relations between these factors will be analysed in-depth in chapter 3.

Figure 1-2: Population density of selected European countries, 2008



Source: Eurostat, KombiConsult analysis

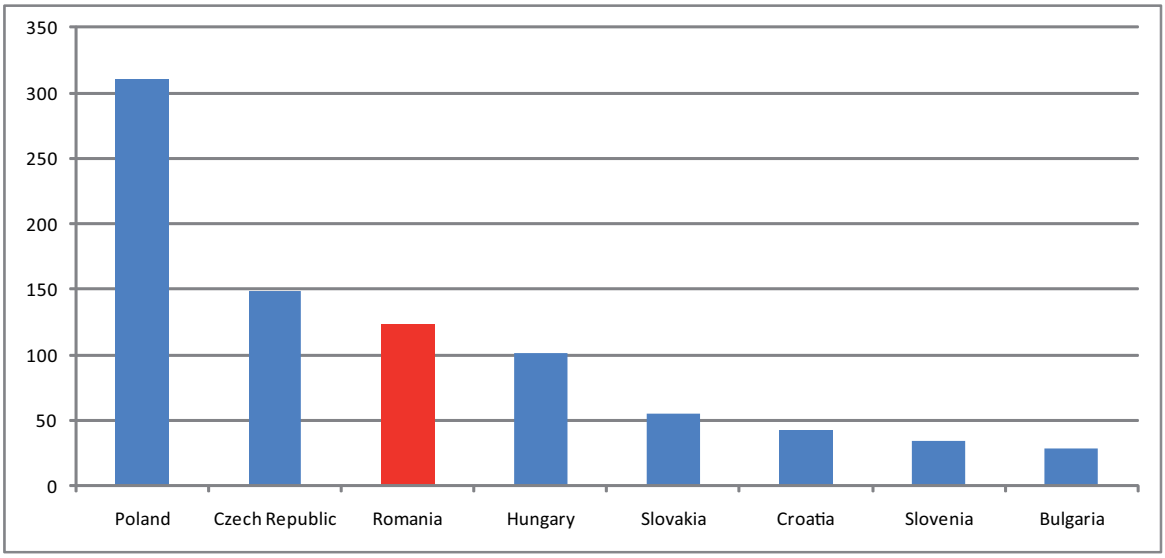
1.2 - Economy

After experiencing a decade of economic instability and decline in the 1990s, Romania transformed into a country of relative macroeconomic stability, characterised by high growth rates, low unemployment and declining inflation. This is reflected in the following key economic indicators:

- In 2007, Romania's Gross Domestic Product (GDP) amounted to €123,8bn at current prices. This is the third highest of the covered CEE states, and Romania even experienced the highest growth rate from 1999 to 2007 of those states, an average of over 17% per year (see ***Figure 1-3*** and ***Figure 1-4***). That means that the country's mean annual GDP growth rates lay far above the European average. Even from 2007 to 2008, the beginning of the economical crisis, it was another boost with a 10.6 per cent increase.
- However, in Romania GDP per capita was €5,700 in 2007, corresponding to about 23 per cent of the EU average of approximately €25,000. With respect to the eight CEE countries involved in this study, only Bulgaria was lower than Romania, which offers some background to the high GDP growth rate.
- The main share of the gross domestic product of about €137 million in 2008 is allocated in equal measures between trade, repair of motor vehicles and items for the home, hotels and restaurants; transport and telecommunications (23%) and other industrial activities (23%). Smaller shares are divided between financial services (13%), construction (10%), agriculture (6%), and other activities (14%).
- As one of the two main contributors to the country's GDP, the industrial basis of the country has not only been reinforced but also extended during the past decade. It has created an economy strongly involved in European and global trade relations. Thus, Romania's trading partners are mainly countries in the European Union accounting for over 69.2% of imports and over 70.5% of exports in 2007 (see ***Figure 1-5*** and ***Figure 1-6***). From 2003 to 2007, Romania more than doubled its external trade of goods and services, finally amounting to €80,400bn in 2007 (see ***Figure 1-7***). With this, it accounted for about 65 per cent of GDP, which is a high ratio among the covered CEE countries. Imports showed a considerable surplus over exports. Supply goods for industrial production accounted for the largest share in both activities with 34.6 per cent of imports and 36.9 per cent of exports, which underscores the strengthening position of industrial production in Romania.

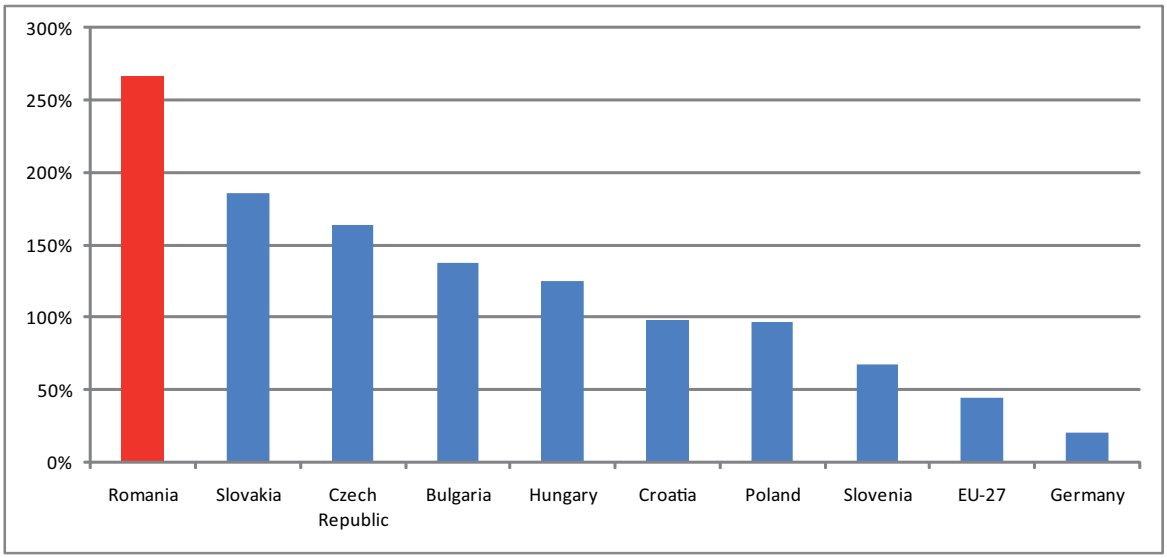
- Romania also has become one of the most attractive places in Central and Eastern Europe for Foreign Direct Investment (FDI). In 2007, it received FDI of €10.3bn, 8.3 per cent of GDP. Based on its high GDP at current prices in comparison with the other CEE countries involved in this study, this ratio reflects a very high volume. From 1991 to 2007 the main investing countries were the Netherlands, Austria, Germany and France (see ***Figure 1-8***). The importance of Romania for manufacturing is clearly expressed by the fact that the largest portion of FDI (49%) flowed into industrial production over this period (see ***Figure 1-9***).

Figure 1-3: Gross Domestic Product at current prices, 2007



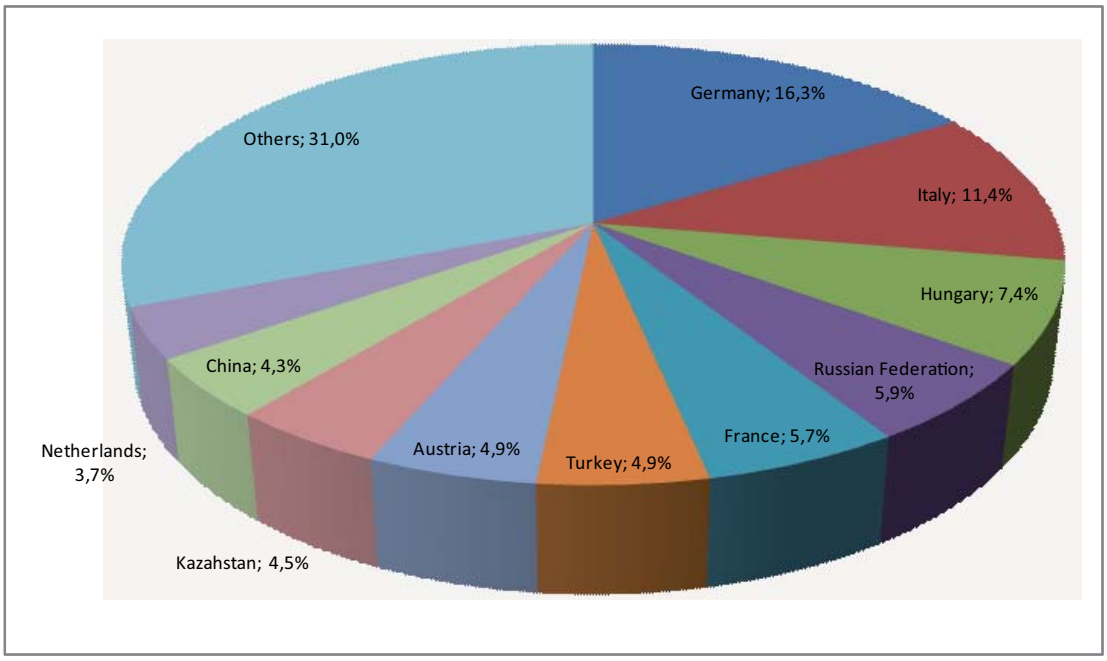
Source: Eurostat, website

Figure 1-4: Increase in Gross Domestic Product at current prices, 1997 – 2007



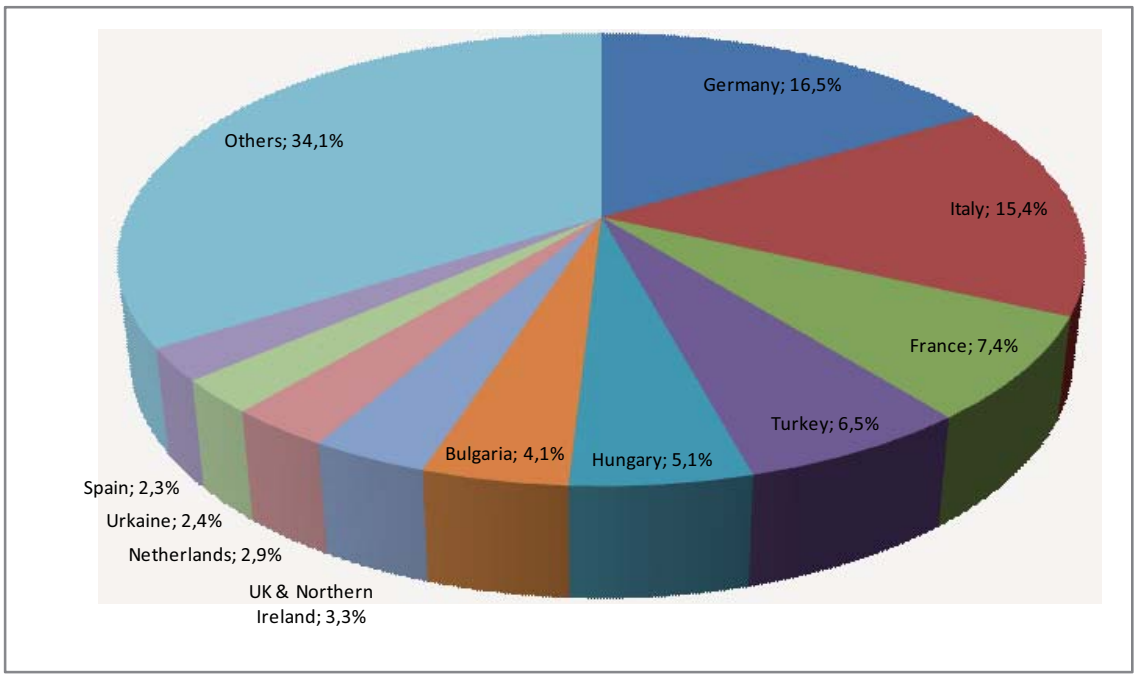
Source: Eurostat, website

Figure 1-5: Share of import partners by country in 2008



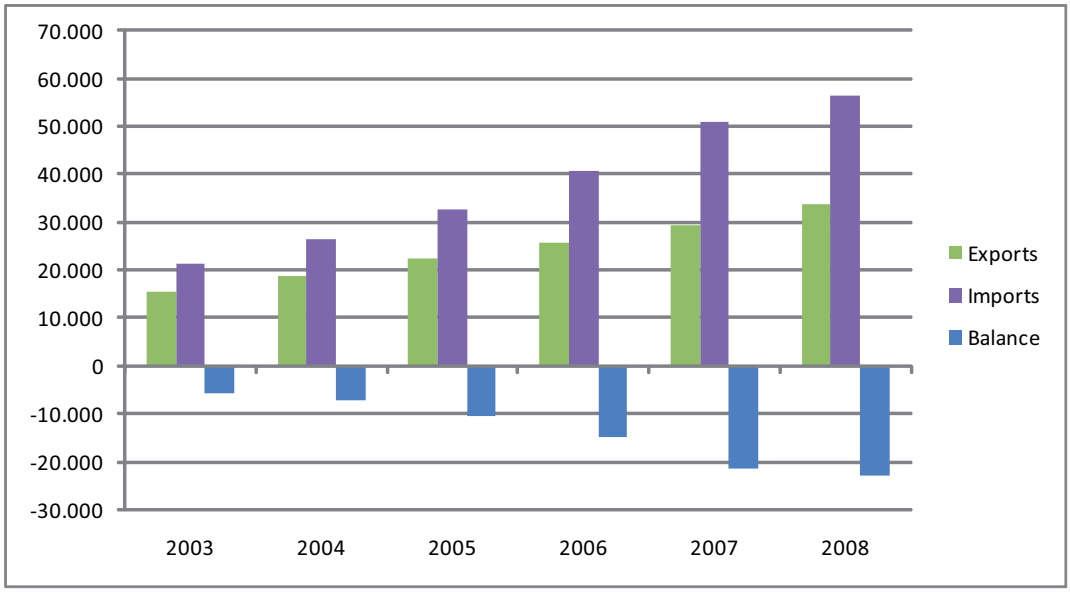
Source: INS – National Institute of Statistics, Romania, KombiConsult analysis

Figure 1-6: Share of export partners by country in 2008



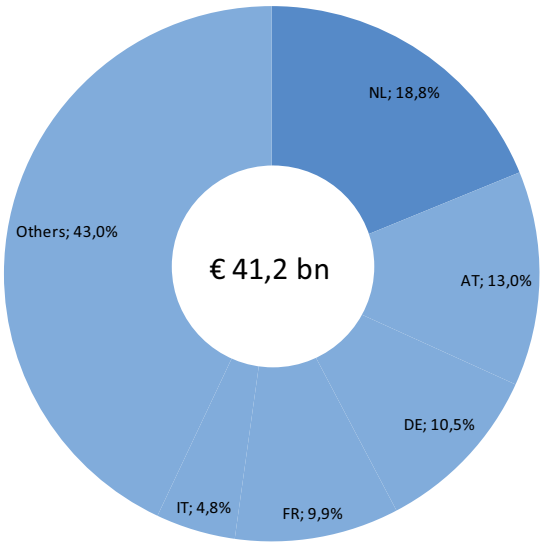
Source: INS – National Institute of Statistics, Romania, KombiConsult analysis

Figure 1-7: Development of Export / Import 2003-2007 in million Euros



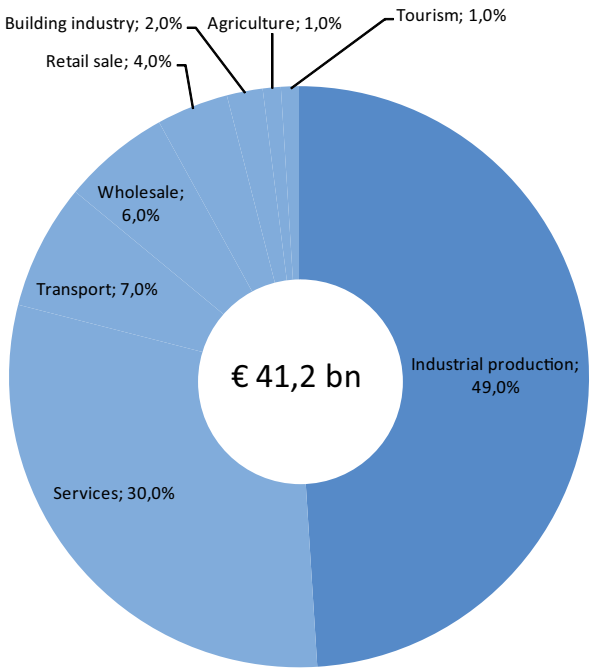
Source: INS - National Institute of Statistics, Romania

Figure 1-8: Foreign direct investments in Romania by investing country, 1991 – end 2007



Source: Eurostat, website

Figure 1-9: Foreign direct investments in Romania by investing industry, 1991 – end 2007



Source: Eurostat, website

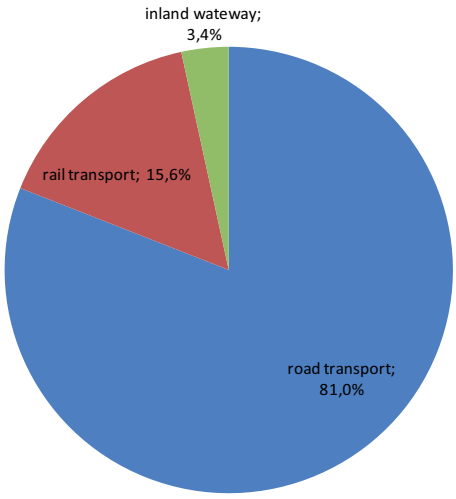
1.3 - Freight traffic

In 2007 about 15 per cent of the total volume of over 440 million tonnes of goods transported on national and international journeys in Romania was carried by rail (see ***Figure 1-10***).

Starting from 1998, because the coverage and the survey method changed at this point and previous data could not be compared, the total volume of transported goods reached its all-time low in 2000. Since then total volumes have, though at a slow pace, been steadily increasing. This is mainly a result of increased road transport, maintaining its leading position in terms of modal split up to the present, while rail transport has continued to suffer and decreased even further in recent years, falling to below 13 per cent of all goods transported in 2008.

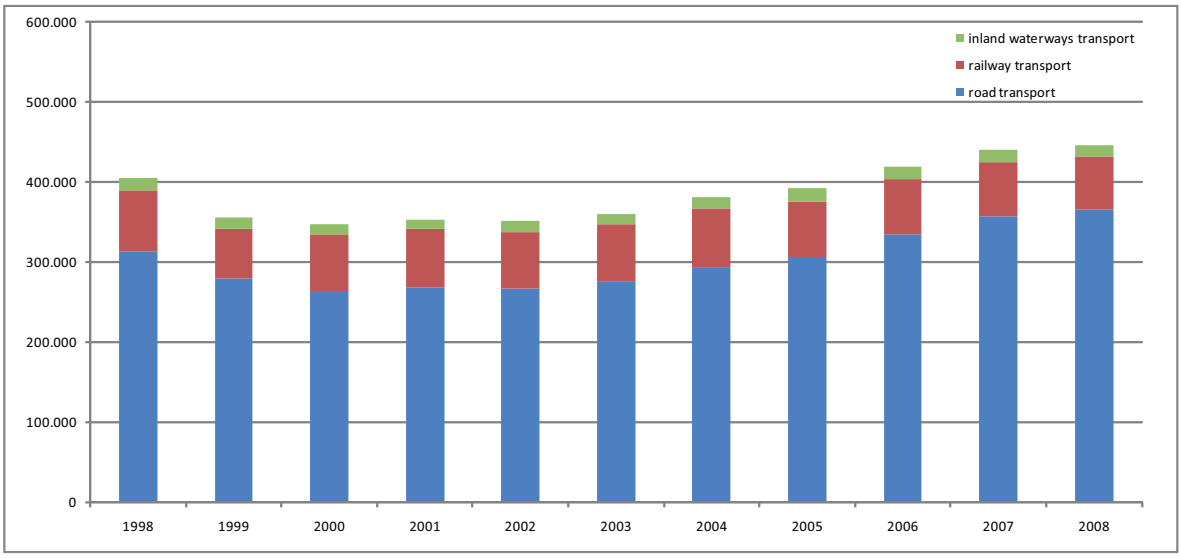
Although both road and rail seemed to suffer from the economical crisis, unlike road, which could further increase its volumes by 2.3 per cent from 2007 to 2008, rail lost a further 2.6 per cent of its volume over this period. Thus rail volumes almost fell to their lowest level seen in 1999.

Figure 1-10: Modal split of freight traffic in Romania (related to transported goods) by mode, 2007



Source: www.insse.ro, Romania in figures

Figure 1-11: Development of transport modes rail/road 1990 – 2008 in thousand tonnes



Source: www.insse.ro, Romania in figures

2. CURRENT STATE OF INTERMODAL RAIL/ROAD TRAFFIC IN ROMANIA

2.1 - Intermodal players

The main players cooperating in the organisation, implementation and operation of intermodal rail/road services are railway undertakings, intermodal operators and infrastructure managers.

Infrastructure Managers

As in virtually every EU Member State, the public nationwide rail network - disregarding local or regional lines - is managed by a single company, the relevant Romanian national ***infrastructure manager***:

- Romanian National Railway Company “CFR” SA

CFR SA is based in Bucharest and provides the public network in the country. It is a commercial joint-stock company, but state owned, established on 1 October 1998, when the former National Company of Railways was reorganised.

In order to ensure non-discriminatory access to the Romanian railway network and comply with European regulations, in 1998, during the restructuring of the former National Company of Railways, the regulatory agency Romanian Railway Authority (Autoritatea Feroviara Romana – AFER) was created. The Romanian Railway Authority is directly responsible to the Romanian Ministry of Transports, in addition to the Ministry’s railway department that coordinates the operations of the railway companies. Four other bodies are operating within AFER, which are of the following:

- Romanian Railway Safety Authority (RRSA – ASFR)
- Romanian Railway Notified Body (RRNB – ONFR)
- Romanian Railway Investigating Body (RRIB – OIFR)
- Romanian Railway Licensing Body (RRLB – OLFR)

Railway Undertakings

In 2007, the following railway undertaking supplied rail traction services in intermodal transport:

- CFR Marfa S.A.
- Servtrans Invest S.A.
- Grup Feroviar Roman (GFR)

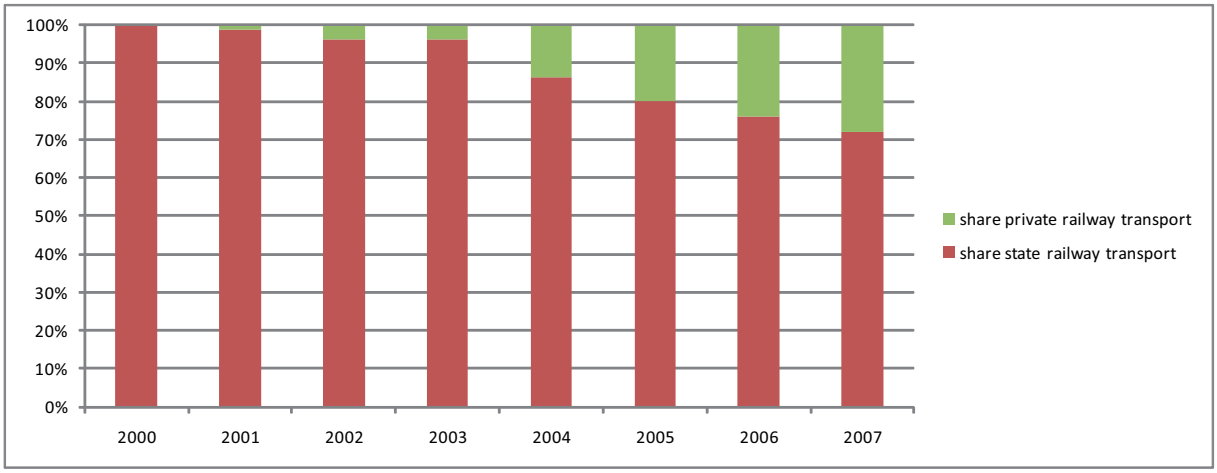
CFR Marfa, the national railway freight company, is clearly the main player for domestic and international intermodal services in Romania. It was established on 1 October 1998, when the former National Company of Railways was reorganised and split into separate companies.

Recently private railway undertakings have also started providing such services. According to information provided by the infrastructure manager CFR, for example, Servtrans Invest operates 8-10 intermodal trains per months from Constanta Port and they own about 300 special wagons for container carriage. They also operate “Transfesa” intermodal trains for the Romanian part (transit) of the Cologne - Kösekoy (Turkey) route. Grup Feroviar Român (GFR) is another RU providing traction services in intermodal transport.

Regarding conventional rail freight traffic, the pattern of railway undertakings is quite different from that in intermodal traffic market. Since the start of railway market liberalisation in Romania there has been success in terms of the number of new entrants. Although total rail freight volumes have decreased slightly over recent years, from 2000 to 2007, the private sector was able to gain a market share of almost 30 per cent (see ***Figure 2-1***) having started from zero. In 2008 there were a total of 23 companies providing freight services and holding licenses for the railway network in Romania (see ***Figure 2-2***).

Regarding the impact on intermodal traffic, for the time being the role of these railway undertakings is limited to bridging short distances for CFR Marfa between the CFR core network and terminal arrival points. For example in the port of Constanta the company “Romania Euroest” is responsible for shunting between the quay terminals and the marshalling yard, or the company Constantin Group for shunting operations in Berceni in Bucharest between the station and the terminal.

Figure 2-1: Comparison state/private railway transport 2000 – 2007 in per cent



Source: www.insse.ro, Romania in figures

Figure 2-2: List of licensed railways for freight traffic in Romania, 2008

RU Name	National Licence Number	History	Issuing Date	Pass/Freight	Insurance
C.N. SERVICE C.F. R.E.C.	23	New	01.04.2008	Freight	Yes
S.C. C.F. 33 ICIM ARAD S.A.	26	New	09.05.2008	Freight	Yes
S.C. CARGO TRANS VAGON S.A.	6	New	26.09.2007	Freight	Yes
S.C. CLASSFER S.R.L.	15	New	19.12.2007	Freight	Yes
S.C. COMPANIA DE TRANSPORT FEROVIAR BUCURESTI S.A.	4	New	12.09.2007	Freight	Yes
S.C. CONSTANTIN GRUP S.R.L.	11	New	06.11.2007	Freight	Yes
S.C. CRIMBO GAS GIURGIU FILIALA GIURGIU S.R.L.	28	New	17.06.2008	Freight	Yes
S.C. GRUP FEROVIAR ROMAN S.A.	24	New	08.04.2008	Freight	Yes
S.C. KAIROS S.R.L.	18	New	27.02.2008	Freight	Yes
S.C. LOGISTIC SERVICES DANUBIUS S.R.L.	29	New	31.07.2008	Freight	Yes
S.C. RAIL INTERNATIONAL S.A.	7	New	26.09.2007	Freight	Yes
S.C. RC - CF TRANS S.R.L.	9	New	12.10.2007	Freight	Yes
S.C. ROMANIA EUROEST S.A.	1	New	05.09.2007	Freight	Yes
S.C. SERVTRANS INVEST S.A.	21	New	12.03.2008	Pass/Freight	Yes
S.C. SOFTRANS S.R.L.	27	New	15.05.2008	Freight	Yes
S.C. TRANS EXPEDITION FEROVIAR S.R.L.	8	New	28.09.2007	Freight	Yes
S.C. TRANSBLUE S.R.L.	16	New	18.01.2008	Freight	Yes
S.C. TRANSFEROVIAR GRUP S.A.	10	New	25.10.2007	Pass/Freight	Yes
S.C. TRANSFEROVIARIA S.A.	20	New	12.03.2008	Freight	Yes
S.C. UNIFERTRANS S.A.	25	New	21.04.2008	Freight	Yes
S.C. VIA TERRA SPEDITION S.R.L.	2	New	05.09.2007	Freight	Yes
SOCIETATEA NATIONALA DE TRANSPORT FEROVIAR DE MARFA "CFR-MARFA" S.A.	12	New	09.11.2007	Freight	Yes
TRANSCOMBI	14	New	17.12.2007	Freight	Yes

Source: http://www.era.europa.eu/public/core/Safety/Licenses/Pages/licence_data_RO.aspxc

Although there is good competition in the rail freight market in Romania, CFR Marfa remains the main railway undertaking providing intermodal services. However, a few other railway undertakings are preparing to enter the market and carry out intermodal services through or even inside Romania, e.g. Servtrans Invest, GFR (see above), or Logistic Services Danubius SRL (LSD), a subsidy of Deutsche Bahn, and Rail Cargo Austria (RCA).

Intermodal service suppliers

In 2007, a total of six intermodal service suppliers could be identified which were providing intermodal rail/road traffic in Romania, which are as follows:

- Adria Kombi (Ljubljana, Slovenia)
- CFR Marfa (Bucharest, Romania)
- Eurolog (Piacenza, Italy), in cooperation with Pol-Rail
- Intercontainer Austria – ICA (Vienna, Austria), mainly as agent for RCA with respect to the customer Gartner (Lambach, Austria)
- ICA Romania (Bucharest,), mainly as agent for ICA Austria
- Intercontainer-Interfrigo – ICF (Basel, Switzerland)
- Pol-Rail s.r.l. (Roma, Italy), in cooperation with Eurolog
- Rocombi SA (Bucharest, Romania)
- TRW (Brussels, Belgium)

Although there are two local intermodal service suppliers (ICA Romania and Rocombi), CFR Marfa, the state railway company, also acts as an intermodal service supplier for several customers. This business model, where the national railway undertaking is active not only as a traction provider, but also as an intermodal operator, is the dominant model in most countries in south-east Europe. To complete the intermodal traffic chain, CFR Marfa also offers lorry transportation for intermodal service customers through its former subsidiary CFR Transauto.

There have been some changes since 2007. In 2009 InterFerryBoats (IFB), - in the framework of a re-organisation of B Cargo's intermodal activities – replaced TRW as operator of continental intermodal services also in Romania. A more detailed analysis of the supply of all operators is given in chapter 3.

2.2 - Legal framework

The framework of Romanian transport policy and the actions envisaged in terms of railway infrastructure and intermodal rail/road traffic are mainly laid down in the following documents:

- Strategy of the Ministry of Public Works, Transport and Housing
- Spatial Planning of the National Territory, Section I – Transport Networks
- Sectorial Operational Programme on Transport 2007-2013 (SOPT)

With regard to the rehabilitation of infrastructure and the modernisation of transport, the strategy of the Ministry of Public Works, Transport and Housing concentrates on the development of infrastructure and the national transport system, in order to ensure:

- The confirmation of Romania's position as an important "turntable" for continental and intercontinental transport along the main geographical East-West and North-South tracks.
- The organisation of national networks for all modes of transport in order to ensure better coverage of the territory, and to eliminate parts of the network where transport volumes and quality are insufficient for services, thus providing better conditions to fulfil people's transport requirements.
- The development of intermodal transport, both in terms of traffic and of producing an impact on the main European Corridors.
- The highest possible transport safety and environmental protection.

As mentioned above, the Romanian government considers the country to be in a favourable geo-strategic position as an important "turntable" for continental and intercontinental transport along the main geographical East-West and North-South lines, as three out of ten Pan-European transport corridors pass through the country. In fact, Romania is located at the intersection of two of the land corridors, which should enable the logistics industry to develop hub functions for regional and international freight flows: Corridors IV and IX are more or less identical for rail and road, while Corridor VII is the river Danube, used for inland waterway traffic (see ***Figure 2-3*** and also chapter 2.6.1). The routing of the corridors is as follows:

- Corridors N° IV (Dresden/Nuremberg - Prague - Vienna - Bratislava - Győr - Budapest - Arad - Bucharest - Constanța / Craiova - Sofia - Thessaloniki / Plovdiv – Istanbul)
- Corridor N° IX (Helsinki - Vyborg - St. Petersburg - Pskov - Moscow - Kaliningrad - Kiev - Ljubashevka/Rozdilna (Ukraine) - Chişinău - Bucharest - Dimitrovgrad - Alexandroupolis)
- Corridor N° VII (The Danube River - Northwest-Southeast).

Figure 2-3: Romania within the Pan-European transport corridor network

Source: Ministry of Economy and Transport: Transport infrastructure development in Hungary

Concerning direct action to promote intermodal traffic, the Romanian state had implemented the following instruments:

- In response to EU Directive 92/106/EEC establishing common rules for certain types of combined transport of goods between Member States, the Romanian government, acting through the Ministry of Transport, issued Government Ordinance no.88/1999 establishing rules for the combined transport of goods. In accordance with this ordinance, economic agents involved in combined transport may be granted temporary exemptions from income tax in return for investment in infrastructure development and for the acquisition/modernisation of installations relating specifically to combined transport.
- To promote the operation of rail block trains between terminals, it is planned that rail block trains receive a reduction in rail access charges, estimated at about 60 per cent of the normal rail access charge.

According to CFR, the rail infrastructure manager, the latter has not yet been implemented by the government, but CFR can provide discounts on certain costs on a non-discriminatory basis in accordance with the provisions of Directive 14/2001 EC.

Other measures are not in place and a workshop discussion with stakeholders on a variety of measures experienced in other European countries has shown that their implementation in Romania will be complicated to achieve. This is mainly due to the lack of financial resources at state level – or other priorities set by the government upon parliamentary decision – and the fear that non-fiscal measures e.g. exemption from traffic ban or weight limits will be used illegally by road hauliers rather than for the benefit of intermodal transport.

2.3 - Overview of total intermodal market

For this DIOMIS study, 2007 has been selected as the reference year for intermodal traffic. Assessment of the evolution of the industry by 2020 will be based on this. In order to establish the 2007 data base for total intermodal rail/road traffic in Romania, we worked from the basis of data supplied by the main intermodal carrier CFR Marfa, the national railway company.

In addition to the CFR Marfa data base we had access to the 2007 statistics of almost every railway undertaking and intermodal operator performing intermodal services in, with or through Romania. A thorough analysis and comparison proved that, even if two cooperating

companies were concerned, the majority of data sets were not consistent neither on an aggregate level such as the volume of a country-country link nor in sub-categories. Particularly striking were those cases where an intermodal operator reported figures which differed significantly for a clearly defined intermodal service from those provided by its rail traction service provider.

Owing to these inconsistencies we approached the "statistical reality" iteratively. First of all, we determined the transport volumes of routes or market segments where we could rely on two independent and fairly congruent data sources. In a second step, we analysed the statistics on intermodal services, for which we provided in-depth market knowledge and/or reliable auxiliary information such as frequency of departure, maximum train length or weight. By carrying out plausibility analyses and cross-checks, for example with CFR Marfa data, we were able to pinpoint traffic volumes and assign them with relative precision to market segments and traffic types. As a result, only a small percentage could not be allocated to a specific category of intermodal traffic. To complete the data base, however, we performed estimates based on our own specialist knowledge.

One of the main results of this extensive exercise is the overview of the 2007 total intermodal traffic in Romania and the allocation of volumes of unaccompanied traffic to traffic types (domestic, international, transit) and intermodal market segments (maritime, continental), presented in ***Figure 2-4***.

According to our analysis 359,900 TEU of intermodal units were moved on intermodal rail/road services in Romania in 2007. The cargo shipped by intermodal trains totalled 4.34 million gross tonnes, this figure includes both the weight of goods and the tare weight of the intermodal loading units. In 2007 no contribution to intermodal traffic was made by the transportation of heavy road vehicles on accompanied services in Romania (see ***Figure 2-4***), even if Romanian road transport companies may have used "RoLa" services elsewhere in Europe.

Unlike in many of the other countries covered by this study where domestic volumes are almost marginal, in Romania it represents the backbone of intermodal transportation. Data clearly shows that the majority of intermodal units are conveyed on domestic services, accounting for 68.8 per cent of the total volume. Notwithstanding, bilateral international services accounted for 20.8 per cent of total unaccompanied intermodal traffic in 2007 and

transit services accounted for only 10.4 per cent. Since the customers of transit and bilateral international services affecting Romania almost completely shipped goods originating from and delivered to Europe, all continental transport is accounted for by these kinds of services. In the domestic traffic segment, in contrast, more than 72 per cent is consists of marine containers moved on hinterland services to/from the port of Constanta within Romania.

Figure 2-4: Intermodal rail/road traffic in Romania, 2007

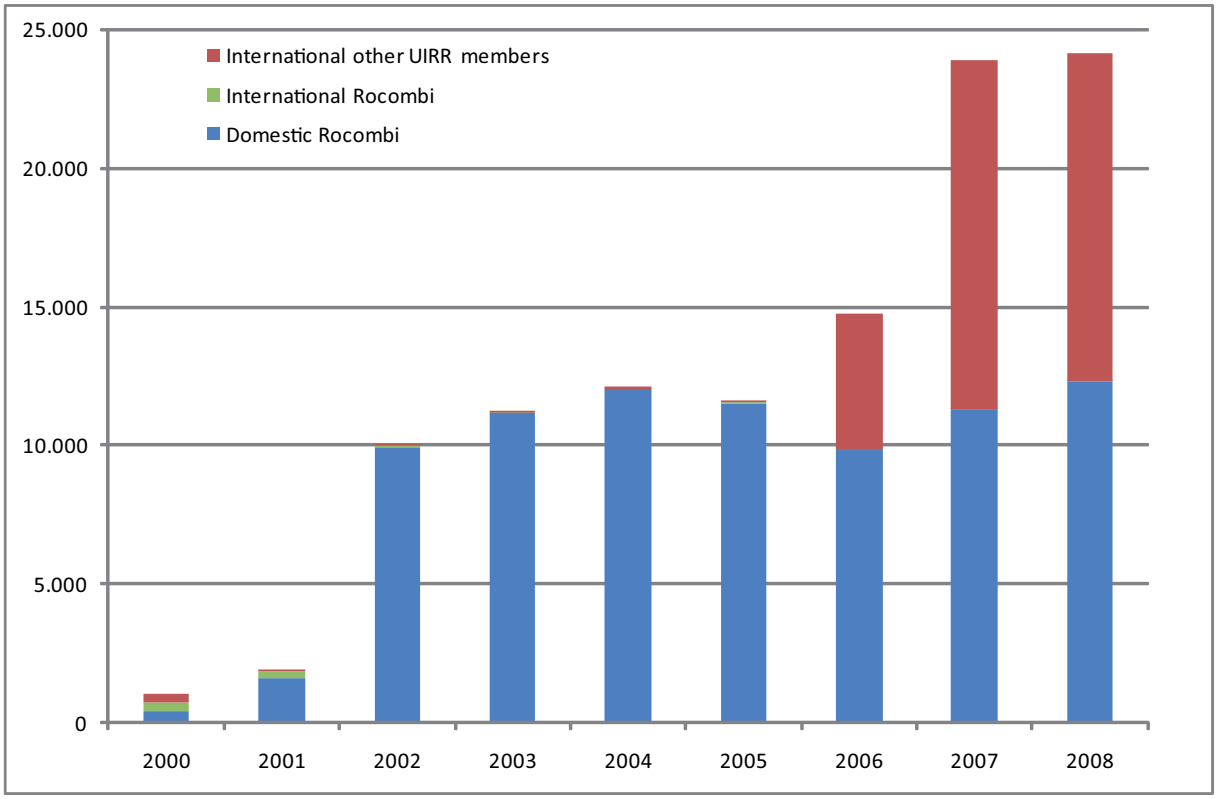
Intermodal market segment		TEU	%	Gross tonnes	%
Unaccompanied traffic		**359,900**	**100.0%**	**4,342,500**	**100.0%**
Domestic	maritime	180,000	50.0%	2,229,500	51.3%
	continental	67,700	18.8%	762,100	17.5%
	Subtotal	**247,700**	**68.8%**	**2,991,600**	**68.9%**
International	maritime	-	0.0%	-	0.0%
	continental	74,700	20.8%	924,600	21.3%
	Subtotal	**74,700**	**20.8%**	**924,600**	**21.3%**
Transit	maritime	-	0.0%	-	0.0%
	continental	37,500	10.4%	426,300	9.8%
	Subtotal	**37,500**	**10.4%**	**426,300**	**9.8%**
Total intermodal traffic		**359,900**	**100.0%**	**4,342,500**	**100.0%**

Source: KombiConsult analysis based on railways and operators statistics

Though we do not provide a long-term time series of total unaccompanied traffic expressed in TEU and gross tonnes, an idea on the development of this intermodal market can also be taken from other sources which however present a share of the market (see ***Figure 2-5***). It shows that, like for the total unaccompanied traffic market in Romania, the majority of Rocombi's total number of unaccompanied consignments is conveyed on domestic services. Only in recent years international volumes increased as other UIRR-members initiated services to and from Romania, commercially independent from Rocombi as local intermodal service supplier.

Even without taking transit services into account, this seems to reflect that Romania also considerably benefited from the boom of European economy and global trade.

Figure 2-5: Unaccompanied traffic of UIRR members in Romania in consignments, 2000-2007



Source: KombiConsult analysis based on railways and operators statistics

2.4 - Unaccompanied intermodal traffic

2.4.1 - Domestic traffic

In 2007, 247,700 TEU of intermodal units were carried on inland links in Romania; total freight accounted for 2.99 gross tonnes.

The share of marine containers of this volume was over 72 per cent, which were seaborne containers routed to and from the port of Constanta. Most of this volume was moved between the port of Constanta on the one side and private sidings rather than intermodal terminals on the other side. There is, for example, the Renault-Dacia factory in Pitesti, where a dedicated regular block train service with Constanta operates. In terms of intermodal terminals only two could be identified with regular services to and from Constanta; these are specifically Bucharest and Pitesti.

For the time being, CFR Marfa is the main provider of domestic intermodal services. Owing to the fact that most of the volumes are moved to private sidings, they are mainly dedicated services and it is assumed that only a small portion is integrated into an inland single-wagon system in order to reach all terminals in Romania.

However, apart from the positive impact of the port of Constanta, it should be acknowledged that geo-economic conditions may also, to a certain degree, be beneficial for domestic intermodal traffic in Romania. Although population and economic activities are concentrated in the Bucharest area to a large extent, the remaining population is evenly spread over the country with several smaller population and economic activity centres. Thus in the country, which is relatively large, a few distances between major cities or important production sites may be long enough to establish road-competitive intermodal services. However, due to the condition of the terminals there are no regular block train services between terminals. Furthermore there are additional challenges in a country like Romania, where truck operators offer their services for significantly lower rates than in Western Europe.

A small share of Romania’s domestic transport volume is operated via the intermodal operator Rocombi.

2.4.2 - International traffic

The total unaccompanied cross-border traffic in Romania, including transit, accounted for about 112,200 TEU and 1.35 million gross tonnes respectively in the reference year 2007. Of the total international volume, 74,700 (66.6 per cent) were allocated to bilateral and 37,500 TEU (34.4 per cent) to transit services.

For many years ***bilateral international traffic*** has been operated almost completely by dedicated intermodal trains. Only on a few bilateral routes or links such as those with German intermodal shipments are still carried in single-wagon traffic together with conventional wagonloads under the responsibility of the railway undertakings involved. The economic basis of the dedicated intermodal services, however, is a mix of a block train contract between intermodal service suppliers and a railway undertaking, which transfers the capacity risk from the railway to the operator, or a block train contract between a dedicated customer and a railway undertaking, which leaves the risk to the railway undertaking. In recent years ever more intermodal service suppliers have become active in Romania.

According to our investigations, the following companies – some of them cooperating in commercial partnerships – supplied bilateral intermodal block train services to and from Romania in 2007:

- Adria Kombi
- CFR Marfa
- Eurolog, in cooperation with Pol-Rail
- Intercontainer Austria
- ICA Romania
- Intercontainer-Interfrigo – ICF
- Pol-Rail s.r.l., in cooperation with Eurolog
- Rocombi SA
- TRW

Figure 2-6 provides a breakdown of bilateral international traffic by transport corridor, which reflects some discrepancies between trade and intermodal statistics. While some countries have a considerable share in both trade and intermodal traffic, e.g. Hungary, there are some other countries in Romania's external trade top ten with which there has been no intermodal traffic so far. This is true e.g. for Germany, which is the main trading partner

for both export and import, but the interchanged volume on intermodal services is almost nonexistent. This example expresses that - apart from goods not suitable for intermodal transport such as heavy bulk - there is still large potential for shifting additional volumes from road to rail.

The table further demonstrates that Hungary, followed by Austria and Russia, is the most important country as concerns unaccompanied traffic involving Romania. The large share can be explained by the fact that Hungary – with the station Sopron and the terminal Budapest - is used as a consolidation point for traffic volumes being forwarded to other final destinations.

Figure 2-6: International unaccompanied traffic in Romania by corridor, 2007

Corridor		TEU
Romania -	Austria	16,600
Romania -	Belgium	9,400
Romania -	Bulgaria	2,800
Romania -	Czech Republic	2,700
Romania -	Hungary	19,100
Romania -	Italy	9,700
Romania -	Russia	13,100
Romania -	other countries	1,300
Total		74,700

Source: KombiConsult analysis based on railways and operators statistics

In 2007 all ***intermodal transit traffic*** through Romania, as was primarily the case for bilateral international traffic, was shipped on dedicated intermodal block trains. The economic responsibility of every service lay with one intermodal operator or a partnership of companies, who contracted a lead railway undertaking to carry out the rail traction between origin and destination. According to our survey the following intermodal service suppliers provided transit services in 2007:

- Intercontainer-Interfrigo (ICF)
- AdriaKombi in cooperation with Kombiverkehr
- Railog
- Transfesa

The majority of intermodal transit services are clearly geared towards the requirements of continental logistics even if intermodal operators may sporadically transport one or two marine containers. As a result, all of the total transit volume of 37,500 TEU in 2007 could be attributed to continental shipments, mainly traversing Romania to and from Turkey. The corridor through Romania which accounted for the largest number of shipments in 2007 is:

- Hungary – Turkey

Intermodal transit flows through Romania, already forming the largest part of total transit rail freight, may strengthen further in the future. This is not only due to the growing integration of south-east Europe and Turkey into the “mature” Western European intermodal network, but also due to the lack of quality of other routings e.g. to and from Turkey, in particular via Serbia. More and more players are searching for a better and faster route, such as through Romania.

2.5 - Accompanied intermodal traffic

In Romania there were no accompanied intermodal services recorded in 2007.

2.6 - Rail and intermodal terminal infrastructure

2.6.1 - Rail network

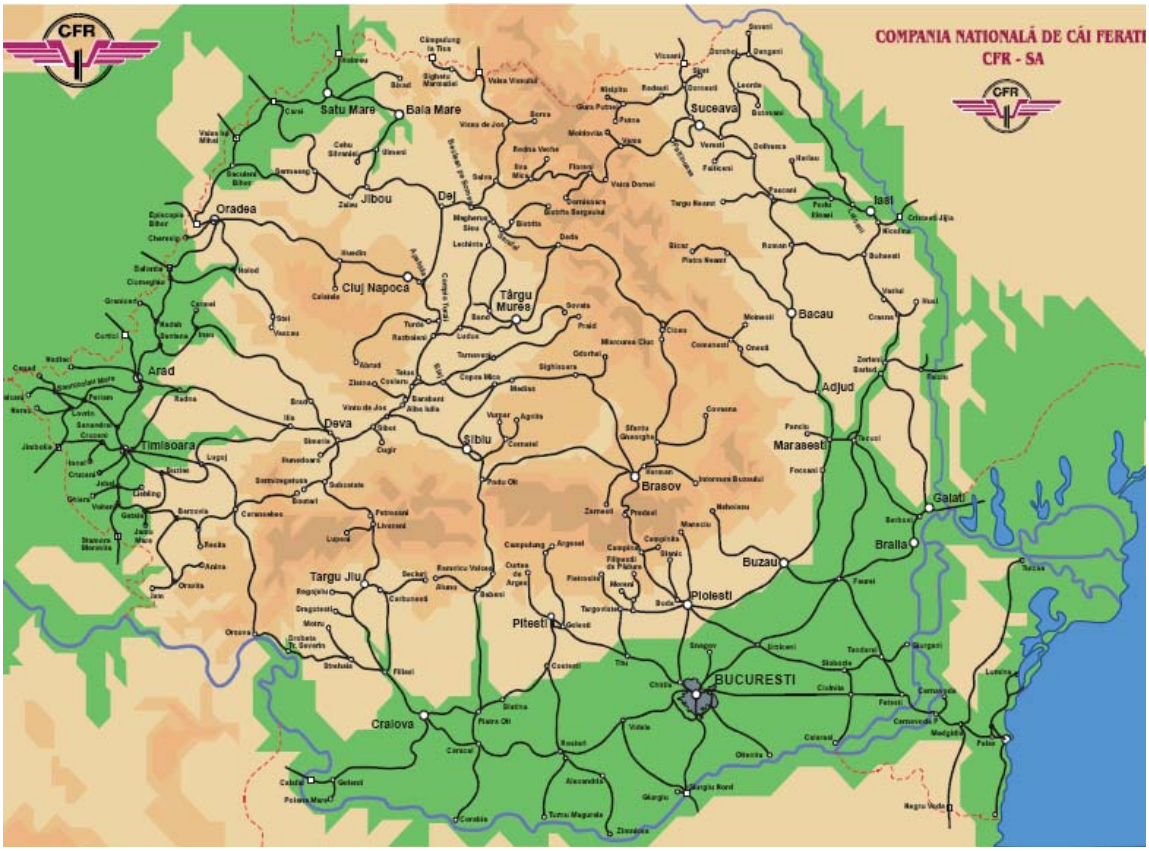
As already mentioned in chapter 2.1, the national rail infrastructure in Romania is owned and managed by the Romanian National Railway Company “CFR” SA, which is responsible for a total of 10,882 km of line (see ***Figure 2-8***).

Figure 2-7: Key indicators of Romania's railway network

Indicator	Kilometres	% of network
Total length of line	13,589	100%
Total length of track	10,882	80%
Single-track lines, length of line	8,175	60%
Double-track lines, length of track	2,707	25%
Double-track lines, length of line	5,414	40%
Electrified lines, length of track	3,292	30%
Railway stations (number)	1,419	
Shunting yards (number)	21	

Source: "CFR" SA, KombiConsult analysis

Figure 2-8: Railway network in Romania



Source: "CFR" S.A.

Generally the railway network is of a poor standard and underdeveloped, suffering from a long period of insufficient investment. This is a result of a greater focus on the development of the road network rather than the rail network. Since 1990 the length of the rail network has decreased from about 11,350 km to 10,800 km, about a 5% decrease, due to the closing of little used lines.

However, the Romanian government considers the country to provide a favourable geo-strategic position as an important "turntable" for continental and intercontinental transport along the main geographical West-East and North-South tracks, as three out of ten Pan-European transport corridors affect the country. In fact, Romania is located at the intersection of two of the land corridors; Corridors IV and IX are more or less identical for rail and road, while Corridor VII represents the river Danube for inland waterway traffic (see ***Figure 2-9***):

- Corridor N° IV (Dresden/Nuremberg - Prague - Vienna - Bratislava - Győr - Budapest - Arad - Bucharest - Constanța / Craiova - Sofia - Thessaloniki / Plovdiv – Istanbul)
- Corridor N° IX (Helsinki - Vyborg - St. Petersburg - Pskov - Moscow - Kaliningrad - Kiev - Ljubashevka/Rozdilna (Ukraine) - Chişinău - Bucharest - Dimitrovgrad - Alexandroupolis)
- Corridor N° VII (The Danube River - Northwest-Southeast).

Figure 2-9: Pan-European corridors in Romania

Source: Ministry of Transport, Construction and Tourism

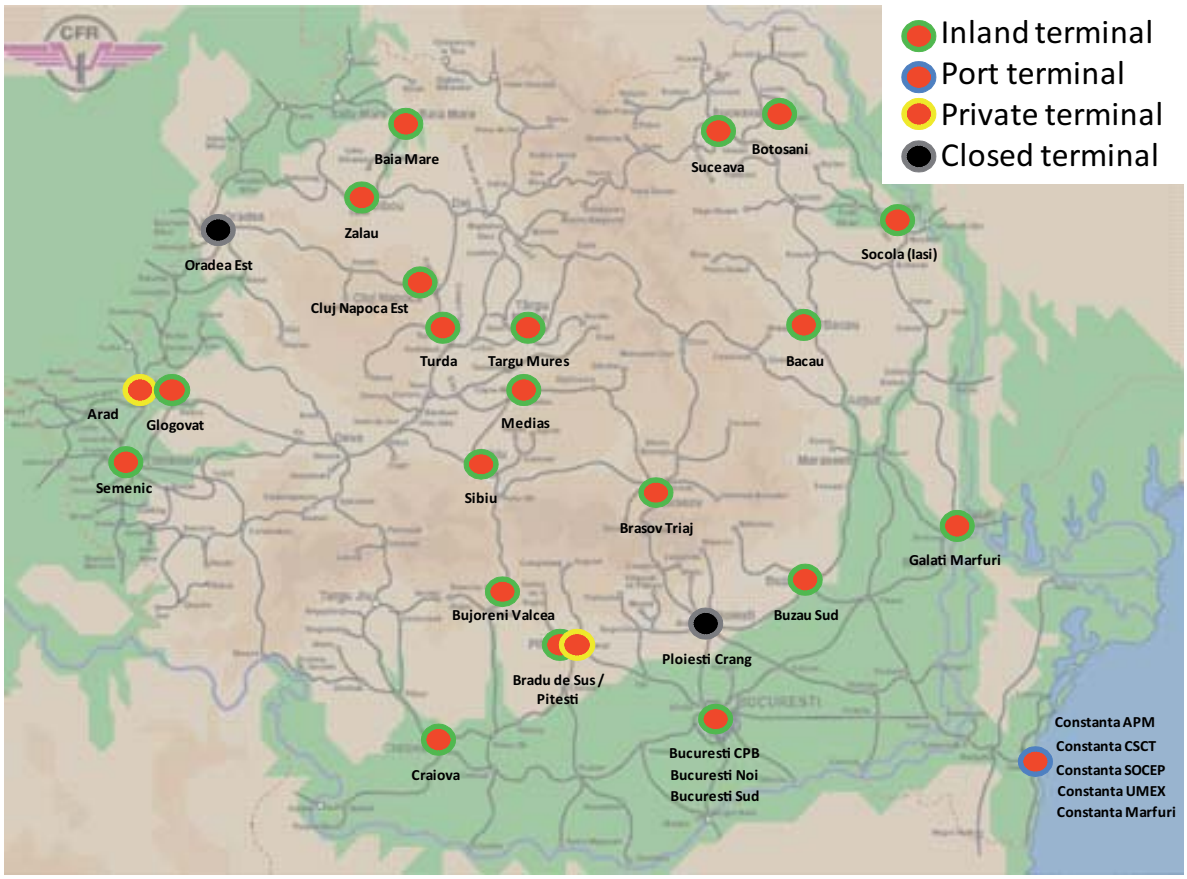
The rail infrastructure of ***Corridor IV*** is electrified and also provides double-track lines on the majority of the Romanian railway sector. At 99 per cent it is almost completely electrified and 98 per cent has double track. However, an important section of the Romanian network which is not electrified is the section between Bucharest and Giurgiu at the border to Bulgaria, important because this line is intended to be used more in future for transit services to and from Turkey. Indeed, this section is part of Corridor IX which is generally less developed at only 79% of both electrification and double track. On both corridors the maximum speed for freight trains is stated as 95 km per hour, with the possibility of a maximum speed of 120 km per hour on small sections (between Bucharest-Campina on corridor IV, Bucharest-Ploiesti on corridor IX). However, currently there are construction works on Corridor IV between Bucharest and Constanta, which have led to a considerable decrease in operative quality. This issue is already affecting existing services, but it is not the only problem. In recent years Romania's railway infrastructure has generally suffered from a lack of maintenance and investment, and the little investment there has been has focused solely on main railway lines such as the Pan-European Corridors and on the road network rather than the rail network. These circumstances have led to a considerable decrease in quality due to many capacity and speed restrictions along significant sections such as the one mentioned above on Corridor IV. In future these constraints might become severe bottlenecks if intermodal services with or through Romania increase and infrastructure investments are delayed.

2.6.2 - Terminal infrastructure

There are at least 30 intermodal terminals in Romania built to serve unaccompanied intermodal traffic., The vast majority were owned by CFR Marfa and are operated by CFR Transauto, the latter also being responsible for pre- and on-carriage transport to and from the terminals. In 2004 Transauto, at that time a CFR Marfa subsidiary, was privatised including terminal assets and land, and the two companies are now disputing ownership, which, at present is hampering any new investment because of the uncertain legal basis. In addition to this there are also a small number of private terminals in Romania, e.g. the four container terminals in the port of Constanta and the terminal in Oradea (ICA Romania). According to our market investigation, one existing terminal site has already closed owing to the poor existing terminal infrastructure and a lack of demand for services (see ***Figure 2-10*** and ***Figure 2-11***). The ownership and operational responsibility of the intermodal terminals,

mostly built at the time of the national railway administration, changed from the authority to the infrastructure manager and back to CFR Marfa which is currently responsible. This is in contrast to many other European countries which have opted to allocate them to the infrastructure manager or private companies independent from the state railway.

Figure 2-10: Terminals for unaccompanied intermodal traffic in Romania



Source: "CFR" SA, KombiConsult analysis

The largest and most important terminals in Romania in terms of handling are the container terminals in the port of Constanta. They handled together about 180,000 TEU in 2007 for rail hinterland traffic. Thereof the most advanced in terms of infrastructure, handling and process organisation is the Constanta South Container Terminal (CSCT), owned and operated by DP World Constanta. The start-up facility for this container terminal, which provides three 616m long tracks and two gantry cranes, only came into operation in 2004. In the meantime, the terminal has developed through its high share of rail hinterland traffic of containers to the main driver of domestic intermodal traffic in Romania.

The next largest inland facilities in terms of rail/road transhipment volume at over 5,000 TEU per year are in Pitesti, owned by Dacia-Renault, and Bucharest. All other terminals have a rather low throughput of mainly seaborne containers, where no block trains are operated, only a few single containers served on an occasional basis.

The design of the majority of the terminals is relatively standard, usually including two rail tracks under two rail mounted cranes. The rail tracks are extremely short at only 100 to 300 metres. Most of them were built over 30 years ago in the late 1970s, when trucks were not permitted to drive over 100 km. Since that time they have not been well maintained or used properly. Thus technical and infrastructure conditions of all facilities are not state-of-the-art. Since, however, the demand for handling services has been meagre for a long time for most of the terminals, modernising the majority of these facilities does not currently appear to be a sound investment. In fact, there are too many terminals for too little traffic. Also it has been stated that for some terminals there are many problems with land ownership, which sufficiently impedes any intentions to improve the terminal situation in Romania.

As concerns recent developments in the terminal situation in Romania, private investors have been trying to enter this market, e.g. new terminals by a private investor Trade Trans have been or are being built in the free trade zone of Curtici on the Hungarian/Romanian border near Arad (Railport Arad) and in Pitesti.

Figure 2-11: Terminals for unaccompanied intermodal traffic in Romania

Terminal	Handling tracks		Handling equipment		Annual handling capacity (LU)		Handling volume 2007	
	N°	Length (m)	Gantry	Mobile	Reported	Calculated	TEU	LU
Arad (Railport Arad - Curtici)	2	650	1	2	33,300	41,700	-	-
Bacau	2	150	2		-	12,000	2,100	1,300
Baia Mare	2	192	2		-	15,400	800	500
Berceni	2	308	3			24,600	1,700	1,100
Botosani	2	110	1		-	8,800	400	300
Bradu de Sus (Pitesti)	2	300	3		-	24,000	3,100	1,900
Brasov Triaj	2	300	3		-	24,000	2,900	1,800
Bucuresti CPB Container Terminal	2	300	-	1	-	15,000	-	-
Bucuresti Noi	4	400	3	2	-	64,000	6,600	4,100
Bucuresti Sud	2	303	-	2	-	24,200	-	-
Bujoreni Valcea	2	300	2		-	24,000	2,000	1,300
Buzau Sud	2	250	2		-	20,000	900	600
Ciumesti					-	-	-	-
Cluj Napoca Est	2	200	2		-	16,000	1,800	1,100
Constanta Port (APM)	1	650	1	2	-	26,000	-	-
Constanta Port (CSCT, DP World)	3	616	2		-	160,000	149,200	93,300
Constanta Port (SOCEP)	7	400	3	2	-	95,000	25,800	16,100
Constanta Port (UMEX)	6	60	2		-	14,400	-	-
Craiova	2	400	3		-	32,000	500	300
Craiova private					-	-	-	-
Galati Marfuri	2	250	3		-	20,000	400	300
Glogovat	2	230	2		-	18,400	900	600
Medias	2	160	2		-	12,800	400	300
Oradea Est	2	200	2		-	16,000	600	400
Pitesti					-	-	80,600	50,400
Ploiesti Crang					-	-	-	-
Semenic (Timisioara)	4	250	2		-	40,000	4,700	2,900
Sibiu	2	180	2		-	14,400	400	300
Socola (Iasi)	2	300	2		-	24,000	900	600
Suceava	2	150	2		-	12,000	200	100
Targu Mures					-	-	-	-
Turda	2	115	1		-	9,200	600	400
Vintu de Jos					-	-	-	-
Zalau Nord	2	110	1		-	8,800	2,700	1,700

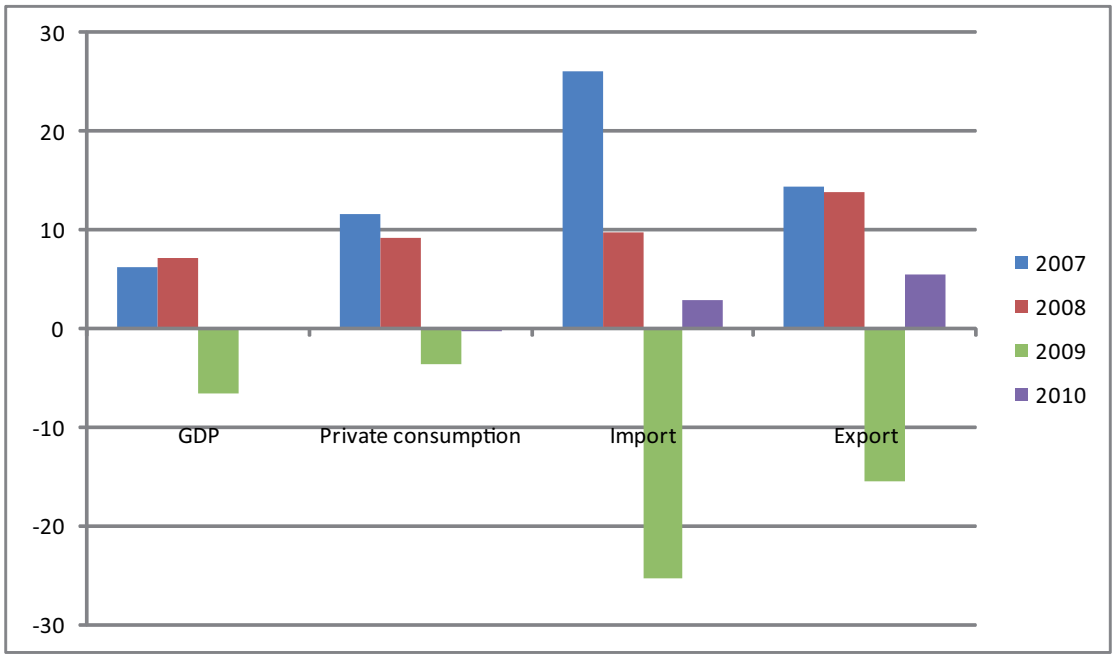
Source: CFR Marfa, KombiConsult analysis

3. EVOLUTION OF UNACCOMPANIED INTERMODAL RAIL/ROAD TRAFFIC IN ROMANIA 2020

3.1 - Recent developments up to 2009

The Romanian economy, after experiencing strong growth in recent years, has lost momentum due to the global financial and economic collapse. This has meant that real gross domestic product, which had previously grown rapidly, is estimated to fall over six per cent in 2009, primarily as a result of a collapse in the manufacturing and construction industries (e.g. for building shopping centres), and declining demand from private households. Likewise growth in Romanian external trade, which previously showed outstanding double-digit rates, also came to a halt in 2009, and the growth rates of exports and imports are estimated to drop by 15 and 25 per cent respectively (see ***Figure 3-1***).

Figure 3-1: Development of key indicators for Romania, 2007-2010, in per cent change on years



Source: Germany Trade & Invest, www.gtai.de, KombiConsult analysis

3.2 - Analysis of impact factors

The implementation of efficient and sustainable intermodal services generally requires a "critical mass" of regular shipments to and from a catchment area around an intermodal terminal. Sufficient volumes can be created either through agglomerations of people resulting in strong demand for consumer goods or when the area has major high-scale distribution centres or when it is strongly industrialised, generating a high level of inbound and outbound movements of industrial products like prefabricates, semi-finished goods or consumer goods, or through a combination of all these elements.

Against this background our investigation into the future of intermodal traffic in Romania has particularly focused on the analysis and evaluation of multiple socio-economic factors such as those mentioned above, which essentially impact on the opportunities for intermodal transport.

Moreover we have examined existing prognoses on road and rail traffic, political, infrastructure, intermodal and rail freight industry-internal factors and evaluated whether they may foster or boost, jeopardise or impede intermodal services in, with or through Romania and – if so - to what extent. Based on these results a quantified forecast of intermodal traffic by 2020 has been carried out (see chapter 3.3 to 3.5).

3.2.1 - Development of road and rail freight traffic

How can intermodal traffic increase volumes? It can grow by participating in the growth of the entire freight market or by capturing goods currently transported by road. Statistical data clearly shows that in Romania road traffic has been the most dynamic mode during the past decade and could increase its market share. Consequently, there is a vast **theoretical** market potential on international trade lanes. However, whether service suppliers are capable of designing a product which matches customer requirements and is competitive with road is another matter. Against this background it is useful to spotlight the expected evolution of the relevant long-distance freight market since it helps to locate global growth potential in demand for intermodal services.

According to the results of our inquiries with Romanian authorities there are no official long-term prognoses on goods transport and its modal split for the horizon 2015 or 2020.

We analysed other sources, but the results were not encouraging: early reference years, so that reality has already overtaken the forecasts; non-harmonised data; lack of transparency regarding the assumptions for forecasts.

The only source that appeared to be methodologically clear and suitable for establishing a frame of future freight traffic is *Progtrans'* "European Transport Report 2007/2008". It supplies several freight-related performance indicators for the years 2015 and 2020 generated through a trend forecast. This means that recently observed developments of several socio-economic factors were more or less extrapolated and used as inputs into a quantitative transport model. The results for Romania are presented in ***Figure 3-2***. It shows growth rates for several freight market segments 2005-2020 and 2015-2020 respectively. We used 2005 as a reference year as this was the last year for which *Progtrans* provided actual figures.

Figure 3-2: Prognosis of Romanian freight traffic related to performance (tkm)

Indicator		Growth rate	
		2005-2015	2005-2020
Total domestic traffic		49.4%	63.14%
Total International traffic		70.5%	97.9%
	Export	36.1%	55.6%
	Import	92.5%	122.6%
	Transit	83.3%	116.7%
Total freight traffic		53.9%	70.6%
Total road freight traffic		81.6%	103.5%
Total rail freight traffic		18.1%	27.1%

Source: Progtrans: European Transport Report 2007/2008; KombiConsult analysis

Progtrans forecasts that the total international freight market will grow by almost 98 per cent in the period 2005 to 2020. Another result of the *Progtrans* forecast is that total rail freight traffic will only rise by 27 per cent to 2020.

Against the background of our own investigations we considered the forecasts on total domestic, international and transit freight traffic to be plausible.

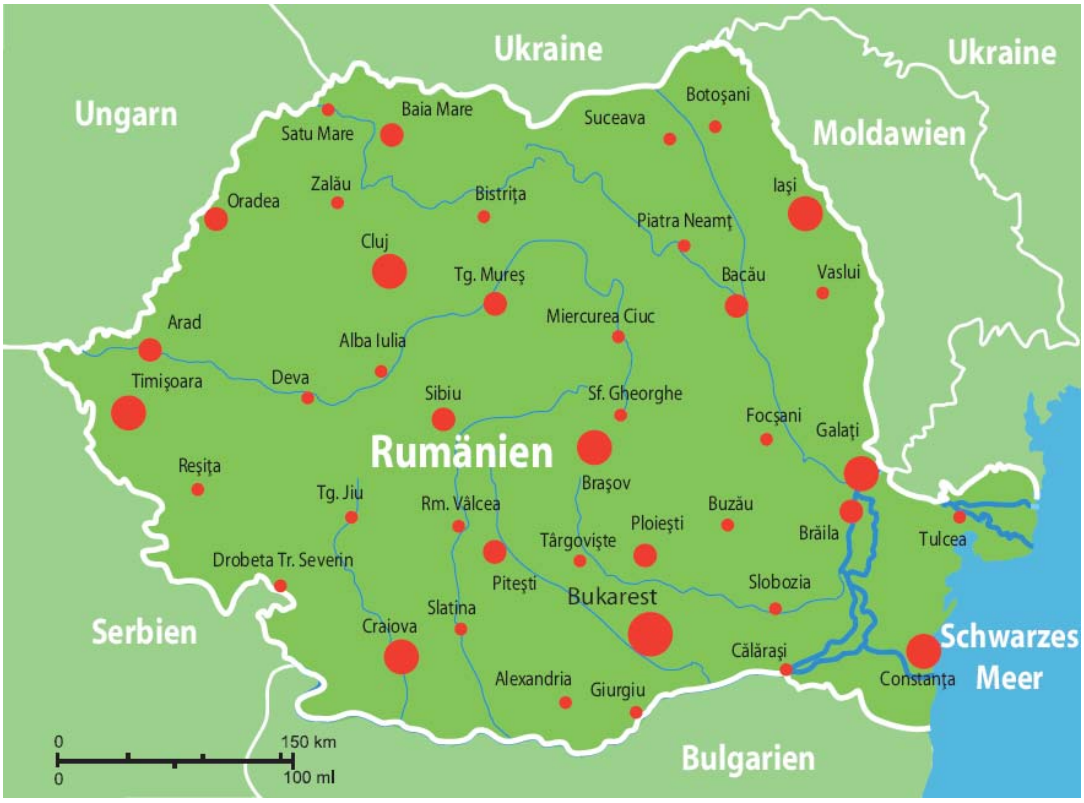
3.2.2 - Population

Size and regional distribution of population are a major influence on total freight traffic as well as on logistic patterns and particularly on modal choice with regard to the capability for consolidating volumes.

In 2008, Romania had a population of 21.5 million. The Swiss-based consultancy *Progtrans* forecasted in its "European Transport Report 2007" that Romania will lose about 1,100,000 inhabitants (-5.1 per cent) by the year 2020. If, however, the current trend, which sees an average annual decrease of the Romanian population of about 30 persons per 10,000 inhabitants, were to continue, the total population would 'only' decline by 360,000 (-1.7 per cent) to 21.17 million inhabitants.

Such a reduction would not considerably influence freight in general and intermodal transport specifically. What is much more important for potential demand for transport services is the distribution of the population. It is obvious that a large portion of Romania's population is concentrated in Bucharest and its vicinity, where about 9 per cent of the total population and 16.2 per cent of the urban population lives. Nevertheless, spread across the country there are several other catchment areas around the next biggest cities, for example, Iasi, Cluj-Napoca, Timisoara, Constanta and Craiova with over 300,000 inhabitants each, followed by cities such as Galați or Braşov with over 200,000 inhabitants (see ***Figure 3-3***). Thus, although Romania has a rather low population density of about 90 inhabitants per km², the third lowest of the covered CEE states indeed, this proves that Romania does not only have a strong centre with Bucharest, but also several regions where potential demand for transport services could be identified.

Figure 3-3: Population distrbution in Romania



Source: AHK Germany/Romania

3.2.3 - Evolution of Gross Domestic Product

Romania's real gross domestic product at current prices rose by over 269 per cent between 1999 and 2007 and continued to grow 2007 to 2008, but only by 9.8 per cent. Due to the current economic crisis it is expected to decline in 2009 and 2010 but rise again in 2011. Concerning long-term GDP forecasts, once again we established our own assessment on the basis of the *Progtrans* report. *Progtrans* expects Romania's real GDP (at 2000 prices) to rise in the period 2005-2015 by 62.5 per cent and in the period 2005-2020 by 91.6 per cent. This corresponds to following average growth rates:

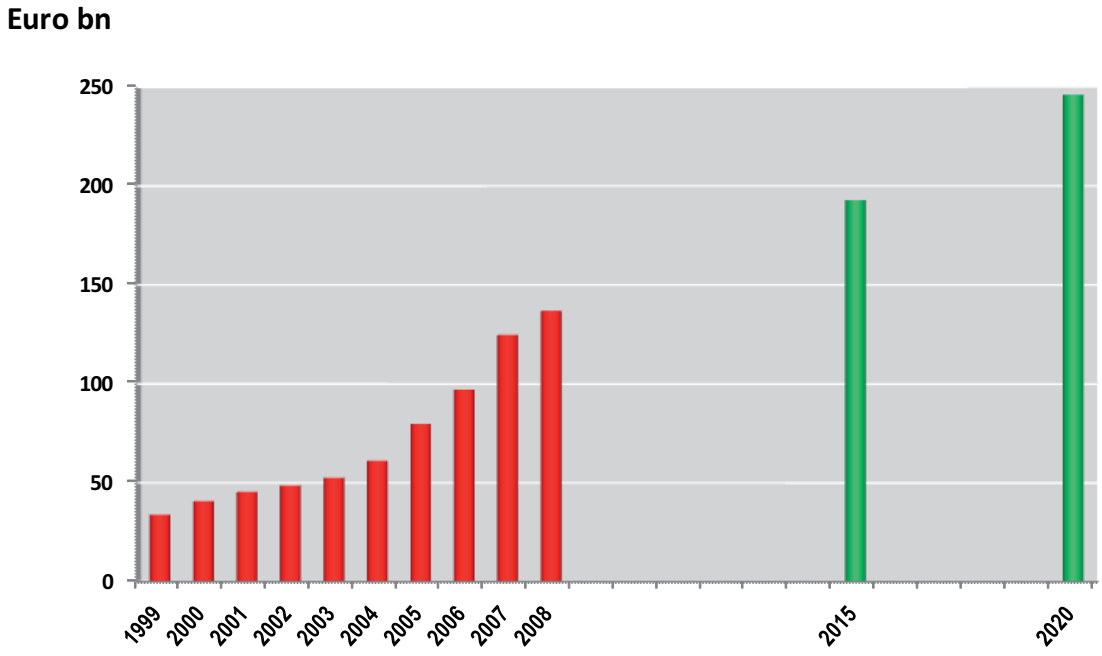
- 2005 – 2015: 5.0%
- 2015 – 2020: 1.7

Considering the economic crisis, which is having a considerable impact on the average GDP growth rates, the *Progtrans* forecast on the development by 2015 appears to be realistic. We, however, do not agree with the assessment that growth will decline after 2015. According to our own economic analysis of Romania there is a large potential of unsatisfied consumer demand and opportunities for extending the industrial production base, which will in turn reinforce integration into the European and world economies, and this will continue after 2015 (please see sections below). Against this background we determined the following average growth rates:

- 2005 – 2015: 5.0%
- 2015 – 2020: 5.0%

As – unlike *Progtrans* - we had access to the data on the actual evolution of Romanian GDP up to 2008, which showed a higher growth rate than expected, we applied the above growth rates as of the year 2008 and calculated the development until 2020 (see ***Figure 3-4***).

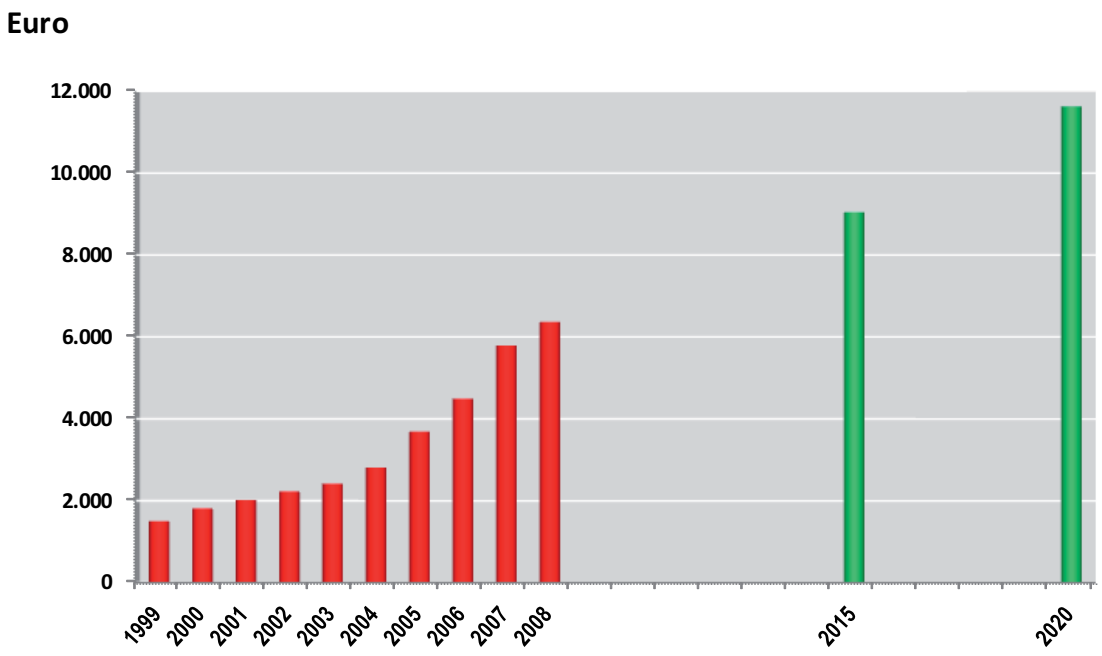
Figure 3-4: Evolution and forecast of Romanian GDP (at current prices)



Source: Progtrans; KombiConsult calculations

GDP per capita in Romania amounted to €5,800 in the reference year 2007 and grew by 10 per cent up to €6,400 in 2008. By applying the forecast of population and GDP growth calculated previously respectively, the potential development in GDP per capita by 2020 can be derived (see ***Figure 3-5***).

Figure 3-5: Evolution and forecast of real GDP per capita in Romania



Source: Progtrans; KombiConsult calculations

Based on the evaluation of the Romanian economy and the evolution of population (see chapter 3.2.2) we determined the following average growth rates:

- 2005 – 2015: 9.4%
- 2015 – 2020: 5.1%

To identify potential markets for intermodal services regional distribution of GDP growth is much more important than the general development of the GDP. Here we assume that the larger Bucharest area will remain the centre for Romanian's population and its economic centre concerning production of added value as well. Other regions may also develop in this direction, however, such as Arad, Timisoara, Craiova or Iasi.

3.2.4 - Evolution of manufacturing industry and foreign investments

It is obvious that the growth potential of intermodal traffic is determined by the future development of those industries generating the transport of cargo through the procurement of supplies and the distribution of commodities. Apart from the wholesale and retail sectors, whose evolution in Romania will be analysed in conjunction with the assessment of private consumption, it is primarily the manufacturing industry which is expected to influence potential demand for intermodal services.

Some main industrial sectors for Romania of the total gross value added are as follows:

- Automotive
- Chemicals
- Foodstuffs
- Electronics
- Textile industry
- Tobacco industry

The overwhelming majority both of supplies and products of these industries can essentially be regarded as potential markets for intermodal services – though this, of course, depends on transport distances.

The strength of the manufacturing industry is based on, initially, long-standing competences of Romania's economy, which, secondly, have heavily contributed to attracting substantial flows of foreign direct investment (FDI). Romania has in fact become one of the favourite locations in Central and Eastern Europe both for establishing new production sites and "off-shoring", i.e. transferring intermediate processing stages from Western European countries.

International companies had built up a capital stock of €41bn in Romania by the end of 2007. About 49 per cent of investment was allocated to the manufacturing industry. Dutch companies account for almost 19 per cent of all foreign direct investment and thus rank top ahead of Austria (13 per cent) and Germany (10.5 per cent).

Many renowned multi-national companies focusing on industries mentioned above have invested in Romania; amongst them are for example Ford, Nokia, and Renault. Apart from the electronics and textiles industries the automotive sector plays a key role in Romania.

In addition to the building of production sites of automobile companies such as Ford and Dacia-Renault, many automobile suppliers benefit from this boom in Romania. For example. ACAROM, the association of automotive manufacturers of Romania, currently brings together 136 companies. Current activities in this market are, for example:

- Ford, new plant in Craiova, for production of vehicles and motors; building of Ford Transit Connect, a new commercial vehicle for the Romanian market, reaching an annual production of 200.000 cars.
- Investments of about 100 million in the automotive industry in Slatina C are planned.
- Expansion of the Pirelli tire factory in Slatina C by 50% by 2009.
- Pitesti, building of Renault-Dacia Logan, production shall be increased to up to 1 million vehicles beginning from 2010; expansion of the export logistic centre to the world's largest sui generis.

According to industry officials the main reasons for choosing Romania are the skilled and well-trained work force, low labour costs (e.g. 2007: 7% of German level in the automotive sector) and a good production quality-cost ratio. Romania's geographically favourable location in the centre of the Eastern, Central, and Western Europen markets, able to offer other plants in an integrated production network, which facilitates a reliable supply chain for components or semi-finished goods are also often seen as crucial points in the selection of Romania.

What virtually no company mentions, but nevertheless influences investment decisions involving many millions of Euros, are subsidies as grants, tax discounts or other benefits, e.g. the possibility for companies to transfer all profits to other countries. However, there is no clear picture as to whether the international rivalry for attracting foreign investment through granting subsidies was advantageous for Romania or not.

3.2.5 - Evolution of private consumption

In recent years the propensity of Romania's private households to consume was very strong. The boom in the national economy obviously enabled a growing proportion of the population to satisfy "accumulated needs". Consequently Romania's private consumption rose considerably by 11.6 per cent from 2006 to 2007; and continued to grow even from 2007 to 2008 by another 9.1 per cent. Due to the current economic crisis it is expected to

decline in 2009 and 2010 (-3.7 per cent and -0.3 per cent respectively), but to rise again in 2011. Concerning long-term forecasts, once again we established our own assessment on the basis of the *Progtrans* report. *Progtrans* expects Romania's private consumption (at 2000 prices) to rise by 59 per cent in the period 2005-2015 and by 79.7 per cent in the period 2005-2020. This corresponds to following average growth rates:

- 2005 – 2015: 4.7%
- 2015 – 2020: 1.2%

Once again however, we do not agree with the assessment that growth will decline after 2015. According to our own economic analysis of Romania's large potential of unsatisfied consumer demand, high growth will be sustained after 2015. Against this background we determined the following average growth rates:

- 2005 – 2015: 4.7%
- 2015 – 2020: 4.7%

The international community of economic advisors obviously considers that Romanian consumers have yet to reach their limits. This is at least what is suggested by the result of our investigations. Most professionals expect private households' consumption to increase in the future as it did before the economical crisis interrupted growth. *Progtrans,* for example, anticipates that this, the largest component of GDP, will gain a further almost 10 per cent of share of real GDP by 2020 against 2005.

Considering the economic crisis, which considerably impacts on average private consumption rates, the *Progtrans* forecast on the development by 2015 appears to be realistic. It is certain that private consumption in Romania is currently suffering from the impacts of the current economic crisis and will continue to do so in the near future. However, in a medium-term perspective the prospects for consumer demand can greatly improve.

Romanian private households in total – as is the case in virtually all CEE countries, though to a different extent - still have tremendous "accumulated needs". Owing to the current size of their available income they cannot afford to buy many items now for sale in local branches of multinational retailers. What is clear is that most of them would like to if they had the financial resources to do so. Thus we may assume that with increased household purchasing power (increased disposable income) and improved social security many households will try to improve their standard of living and acquire state-of-the-art items for their homes.

A further increase in private expenditure will also generate a push for freight transport systems. For the time being, consumer goods - if they were not merchandise containerised overseas - are usually transported by trucks which serve the distribution centres or shops of wholesalers and retailers in Romania. We expect that, at first, road will be able to secure a large portion of additional freight volumes as the road logistics industry is well experienced in supplying appropriate services.

But there is no reason why consumer goods should not also be shipped on intermodal services. Basically the transportation of these goods is not particularly demanding logistically. In most cases they are full-truckload or part-load shipments. They do not have to be moved particularly fast but cost-efficiently and must be delivered reliably on-time. The intermodal industry must design and ensure a service profile matching these requirements.

3.2.6 - Evolution of external trade

In the period from 2003 to 2008, Romania's external trade grew at an outstanding rate. The total volume of goods and services traded increased by over 144 per cent from €36.8bn to €89.9bn at current prices. This corresponds to average annual growth of 19.6 per cent. The Romanian import economy grew even faster and raised revenues by 165.7 per cent to €56.3bn while exports achieved a plus of 115.4 per cent to €33.6bn. Owing to the boost in imports, Romania has a trade deficit.

The two main trading partners for both export and import are Germany and Italy, considerably ahead of other countries. In terms of exports these two are followed by France, Turkey, Bulgaria and United Kingdom (see ***Figure 3-6***). For Romanian imports, Hungary, Russia, France are the next key trading partners after Germany and Italy.

Figure 3-6: Romania's external trade: top 11 countries, 2008

Exports

Rank	Country	share
1	Germany	16.5%
2	Italy	15.4%
3	France	7.4%
4	Turkey	6.5%
5	Hungary	5.1%
6	Bulgaria	4.1%
7	UK & Northern Ireland	3.3%
8	Netherlands	2.9%
9	Ukraine	2.4%
10	Spain	2.3%
11	Others	34.1%

Imports

Rank	Country	share
1	Germany	16.3%
2	Italy	11.4%
3	Hungary	7.4%
4	Russian Federation	5.9%
5	France	5.7%
6	Turkey	4.9%
7	Austria	4.9%
8	Kazahstan	4.5%
9	China	4.3%
10	Netherlands	3.7%
11	Others	31.0%

Source: Germany Trade & Invest, gtai.de

To a large extent Romania's main trading partners are European Union countries. In 2008, EU Member States accounted for about 71 per cent of both Romanian exports and imports.

According to *Progtrans* forecasts Romania's external trade will basically lose its dynamic in coming years. Exports are expected to increase by a mean annual growth rate of 9.7 per cent between 2005 and 2015, growth will then slow down to 2.7 per cent until 2020. For Romanian imports the corresponding rates are 8.9% and 2.1% respectively. So *Progtrans* anticipates that exports will grow slightly more strongly than imports. The report, however, does not indicate the basis for this assessment nor why external trade is going to slow down around 2015.

Owing to the current downturn in economic activities in Romania and virtually all other European countries, which *Progtrans* could not anticipate to this extent, the path of economic development in Romania is likely to be substantially different. While the average growth of Romania's external trade will be lower than *Progtrans* forecasted in coming years, especially in terms of exports, it will be much higher in the second half of the next decade. Moreover we rate the long-term evolution of the economy significantly more positively than *Progtrans*. On this basis we have established the following assessment:

Exports:

- 2005 – 2015: + 3.7%
- 2015 – 2020: + 8.7%

Imports:

- 2005 – 2015: + 3.1%
- 2015 – 2020: + 7.9%

Based on our findings concerning the evolution of the Romanian fiscal situation, industrial production, private consumption and foreign investments (see previous sections) we expect the following detailed developments in Romania's external trade:

(1) The main driver for Romania's exports and imports will be the EU Single Market. This applies to both the current and also prospective new Members such as Turkey, already an important trading partner. According to our evaluation of trends, the integration into intra-European trade will actually be reinforced in the last years of the next decade. We consider the following factors to be crucial for this development:

- A more stable legal and economic framework will facilitate and foster foreign investments in Romania and contribute to increasing exports and imports.
- The Romanian population will seek to achieve Western standard of living and consequently demand for consumer goods produced to a certain extent in the EU will increase. We would like to emphasise, however, that in the medium term it is likely that Romanians will cover their consumption needs ever more with products imported from the Far East and non-European countries in other regions.
- All manufacturers and retailers are subject to increasing competition for market shares. In order to tap the full potential of productivity gains, the international division of labour will continue to be extended and therefore reinforce the establishment of integrated European-wide and global production chains. In the competition for locating new production sites or distribution centres, Romania can score well with several comparative advantages explained above.
- Given the international integration of production, increased production in Romania will drive the volume of international long-distance freight transport and increase the inbound and outbound transport of supplies, components, semi-finished and finished products with Western markets. There is no reason why the traditionally strong relationships

between Romania and their main trading partners should end.

- A trend already evident in Romania, that trade with CEE countries grows faster than with Western European countries, will be reinforced. Increasingly, the intra-CEE exchange of manufactured products will be integrated into European supply chains. We particularly expect trade lanes with Bulgaria, Hungary and Turkey to expand rapidly.
- The enhancement of infrastructure in CEE countries improves the position of European production within global competition. In this respect Romania occupies a particularly favourable position at the crossroads of Europe and Asia.
- Romania can also benefit from the partial relocation of production chains particularly from Asia to Europe as explained above.

(2) In spite of the expected strength of the EU Single Market we expect that "globalisation" in terms of transcontinental trade owing to the economic benefits of a global division of work, and the "off-shoring" of production to low-cost countries will continue to shape trade and logistics structures over the next decade. The containerisation of commodities, though already at an incredibly high level compared to prognoses from 20 years ago, will also continue to progress.

What will be the effect on maritime container traffic to and from Romania if the expected economic development as explained in previous sections is taken into account?

Once the global economy recovers, container traffic will grow once more. However, even if volumes rose by double-digit rates it would take some years to compensate for the effects of the current downturn. Based on the findings of our market survey we expect the following average annual growth rates of total container traffic, including all modes of transport:

- 2007 – 2015: +3%
- 2015 – 2020: +9%

3.2.7 - Intermodal competition

While the previous sections examined the potential development of total all-mode transport including size and structure of trade and transport volumes of Romania's economy, this and the following sections will investigate the opportunities and competitiveness of intermodal traffic in Romania compared to road transport.

Romanian road operators offer some of the lowest prices in Europe. Although their equipment (trucks and spare parts) is not generally cheaper than that of their Western European counterparts, they can offer considerably lower rates. This is practically solely due to lower labour costs.

Against this background this section is intended to analyse how the terms of competition on cost between truck operators and intermodal traffic are likely to develop and whether intermodal services have a chance of catching up with road. It highlights the following issues:

- Energy costs
- Staff costs
- Access to infrastructure costs
- Allocation of social costs

(1) Recent years witnessed a tremendous increase in energy prices. Particularly the price of oil and its derivates such as diesel fuel soared. The global economic downturn seems to have stopped a further upward movement and calmed prices. There is, however, no expert who entertains any doubt that fuel prices will rise again. It is simply a question of when the next jump will hit the economy and to what extent prices will skyrocket.

Even if intermodal transport will not be able to escape a rise in energy prices completely they will not be hit as violently as the diesel-reliant road transport business. This could be observed during the last oil price rally when market prices for road traffic more or less exploded. It is not only that the electricity supply for electric locomotives is less dependent on fossil fuels than trucks, but also that energy as a share of total transport cost is also considerably smaller – about 10 versus 30 per cent. Thus in future the comparative cost relationship is likely to change to the benefit of intermodal rail traffic as electric locomotives can be employed in Romania to a large extent on intermodal services to/from and through Romania.

(2) For some years the costs of driving staff in road transport have been increasing considerably, improving the competitiveness of intermodal traffic where personnel costs remained rather stable. There were three reasons for this development:

- In Western European countries a shortage of truck drivers compared to demand has arisen. This results initially from the fact that the armed forces, a “natural” trainer for

truck driving licenses, have reduced the number of draftees. Secondly, more and more truck drivers do not want to spend their lives on motorways. They prefer jobs in regional or local traffic.

- The accession of the CEE countries to the EU has "saved" Western European road-based logistics because many CEE residents were willing to work as low-cost truck drivers in Western Europe instead of being unemployed at home. Yet the more the economy in CEE countries prospered the more truck drivers changed to more pleasant industrial jobs in their home countries. It seems as if this development has yet to affect Romania. But if the economy recovers more comprehensively within the next five years we expect that many Romanian drivers may also turn their backs on trucks.
- The strongest and most sustainable impact on road cost can be expected from the new EC regulation on drivers' working and resting times and the obligatory application of the digital tacograph ("blackbox"). Both measures reduce the effective working time per driver and require road operators to employ more drivers for the same scope of services. Forwarders estimate that personnel costs in road transport have increased by between 10 and 25 per cent depending on the level of compliance with current rules. Considering that driver costs make up about 30 per cent of total road transport cost the market price level is due to rise by 3 to 8 per cent.

(3) The reduction of the effective drivers' working time in the long run will have another posi-tive effect for intermodal services. It means that a driver complying with the regulation will not generally be capable of performing a round trip on a route of about 300 to 350 km in one shift, loading/unloading included. Even if road operators elaborate smart operational solu-tions such as new relay systems of interchanging trucks or drivers, the working time regime is likely to lead to a significant increase in transport costs and result in reducing the cost equality distance between intermodal and road.

(4) Regarding infrastructure charging, road operators are still in a better position than rail freight services. Even if some countries have introduced road tolls for using motorways the level, in general, is comparatively low. This means that, in Romania, road operations can be carried out at very low cost which does not reflect the cost of wear and tear imposed by a heavy vehicle on the road.

In contrast to this, railway undertakings – and consequently intermodal operators and their customers – have to pay track access fees for the use of virtually any European network.

(5) While intermodal service are currently penalised in terms of infrastructure access charging when compared to road operations, they could considerably benefit from a regime to ensure that social costs resulting from each mode of transport are allocated and paid for. Any calculation shows that rail is causing much lower social costs per tonne-kilometre than road, especially with regard to air emissions and non-covered costs of accidents.

Our analysis provides evidence that two of the major cost drivers for road freight transport, fuel and personnel cost, are due to rise noticeably in coming years. If the plans to allocate social cost to those causing them were enforced, in due time intermodal services could gain an additional benefit and thus could compensate – at least partly – for the cost disparity in the infrastructure access charging systems. In total we expect that, in contrast to the past 20 years when we saw a continuous decline in market prices, road freight rates will increase by a mean annual rate of 1.5 to 2.0 per cent to 2015. If authorities, however, felt that the trans-port industry is not doing enough to reduce its carbon and ecological footprint they might even tighten measures and increase the “price” on road traffic.

3.2.8 - Sustainable logistics

Climate policy may, in responding to the threat of a change in world climate, become key leverage for moving shipments from road to more environmental-friendly supply chains. Intermodal traffic could particularly benefit from this.

During our market survey we identified several companies examining how they could reduce the ecological footprint of their logistics systems. What is remarkable or even spectacular is that it is not only the chemical industry, which traditionally has quite an affinity to rail, but other industries, which, to date, have been comparatively “road-minded” and distanced themselves from rail.

Recently several major European wholesalers and retailers have started driving sustainable, “green” logistics. They have started to examine where, in their own logistical system, they could reduce the environmental impact of their supply chains for foodstuffs and non-food consumer goods. But, in addition to this, they are requesting that their suppliers contribute to this objective. We learnt that the big producers of food and non-food consumer goods have particularly understood the message. It has immediately become obvious that the majority of them are generally looking for solutions to shift current road-based tonnage to intermodal services. They are analysing which of their trade lanes match existing intermodal

services, and if there are none, they require intermodal operators to design an appropriate service.

What is suddenly driving these industries to care about the climate impact of their logistics and transport? According to our analysis the following influences are a key to this move:

- The major driver of green logistics is economics. The companies anticipate that in the near future social costs will be allocated to those causing them either fully or partially. This will definitely make road-based operations much more expensive. So they are looking for more cost-efficient alternatives, which they assume can deliver a comparable service level, and this solution is intermodal traffic.
- Wholesalers and retailers have observed changed consumer values and recognised that the revenues from organically produced products are increasing more than the average, even if their share is still modest at less than 10 per cent. Customers who buy those products are a minority but they are an “avant-garde” and influence public opinion. For supermarket owners it is clear that these customers will at some stage also require “politically correct” transport for organic products. The affected companies are trying to anticipate this development by restructuring parts of their logistics.
- Finally, more and more shareholders are asking the management of corporations what they are going to do to respond to the challenges of climate change.

If the intermodal industry responds appropriately to the requirements of shippers concerned about their ecological footprint and ensure reliable and cost-efficient service, we expect that climate policy will effectuate a tremendous push towards intermodal traffic and raise volumes. According to our findings both shippers and intermodal operators will be interested in making the first steps on Western European corridors. Provided that they are successful, we anticipate that shipments to and from Romania may be integrated in the second stage. The corridors with Romania provide several favourable conditions, involving long transport distances, which enable large environmental savings effects.

3.2.9 - Rail and terminal infrastructure

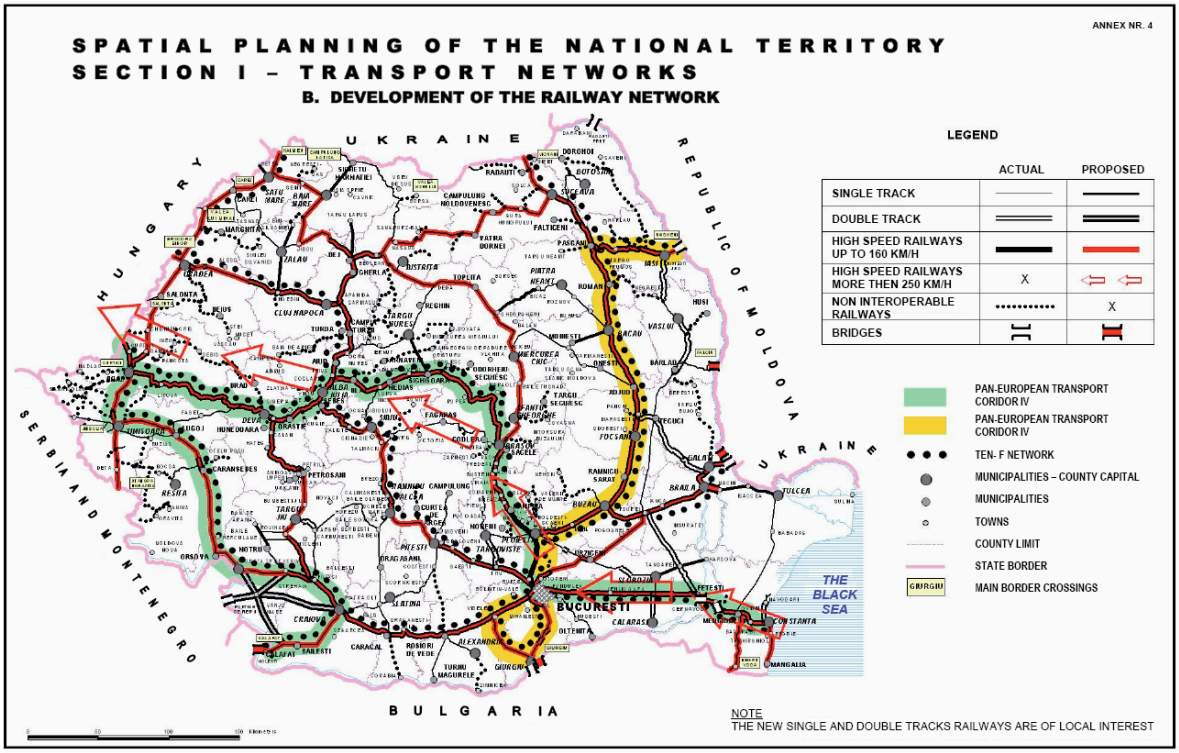
In the course of Romania’s integration into the EU, the government has issued a law on the approval of the Spatial Planning of the National Territory, in which there is a section for Transport Networks and in particular for the modernisation of rail infrastructure.

It comprises priorities defined by the policy of transforming the country into a transport bridge on the West-East and North-South axes. Here are some examples of specific infrastructure measures:

- Bucharest - Constanta railway line on Corridor IV; modernisation of 225 km double electrified line to achieve speeds of 120 km per hour for freight trains; total cost: €823 million; to be completed by February 2010.
- Campina - Predeal; rehabilitation of 48 km of double electrified rail lines to achieve average speeds of 90-100 km per hour for freight trains; total cost: €287 million.
- Curtici - Simeria on Corridor IV; rehabilitation to achieve higher speed for freight trains of 120 km per hour on one section and 80 km per hour one another section; total cost: €353 million; to be completed by 2013.

The modernisation of railway infrastructure generally primarily foresees the upgrading of Pan-European Corridors IV and IX, and a few lines of national importance (see ***Figure 3-7***). The Pan-European Corridors are mainly those railway lines of paramount importance for bilateral and transit intermodal services, but also of national importance. Whether there will truly be more capacity for intermodal services, however, depends on the mix of passenger and freight traffic on the line and, particularly with respect to transit services, whether neighbouring countries enhance their network at the same time.

Figure 3-7: Development of the railway network in Romania



Source: Spatial Planning of the national territory, law no. 363

Two studies have been carried out to develop strategies for the Romanian transport sector, specifically:

- Halcrow study: Assistance to Elaborate a Strategy Regarding the Positioning of Freight Logistics Centres (Freight Village) on the Romanian Railway Network – Final Report – February 2006.
- General Master Plan for Transport. It is a strategic document, which will serve as a basis for all investment planning activities in the Romanian transport sector for 2008 to 2025.

An intermodal terminal strategy is integrated into these plans. It is stated that, due to the fact that there is an extensive network of inland terminals in Romania, which is a disadvantage when volumes are low, the number of terminals should be drastically reduced. We support this. It recommends the rationalisation of the terminal network and concluded that only five terminals countrywide would be sufficient to satisfy demand, which seems realistic.

The backbone of intermodal transport is the hinterland traffic from the port of Constanta. Therefore one large terminal around Bucharest would be required to serve this area, maybe a tri-modal terminal near the river Danube. A second large terminal should be located in the West-Northwest of Romania, for example in Arad, in order to consolidate import and export cargo to and from Romania, as well as transit cargo from the port of Constanta. This fits perfectly with the recent development that a new private terminal has just been built in Arad where the first intermodal services were able to start in 2009. Arad is a very interesting place as the area of Timisoara is said to be one of the most important regions of Romania, benefiting from one of the largest shares of foreign direct investment in Romania.

The terminals in Bucharest and Arad together with the port of Constanta shall be the backbone of Romania's intermodal terminal network. It is recommended by the studies that the development of other terminals is left entirely to private initiatives, for example another terminal which is already planned by the company Trade Trans in Pitesti. In Pitesti there are, alongside many automotive companies such as the Renault-Dacia production plant, several chemical factories.

According to our investigations (e.g. under point 3.2.4), some other terminals where more detailed investigations could be appropriate are:

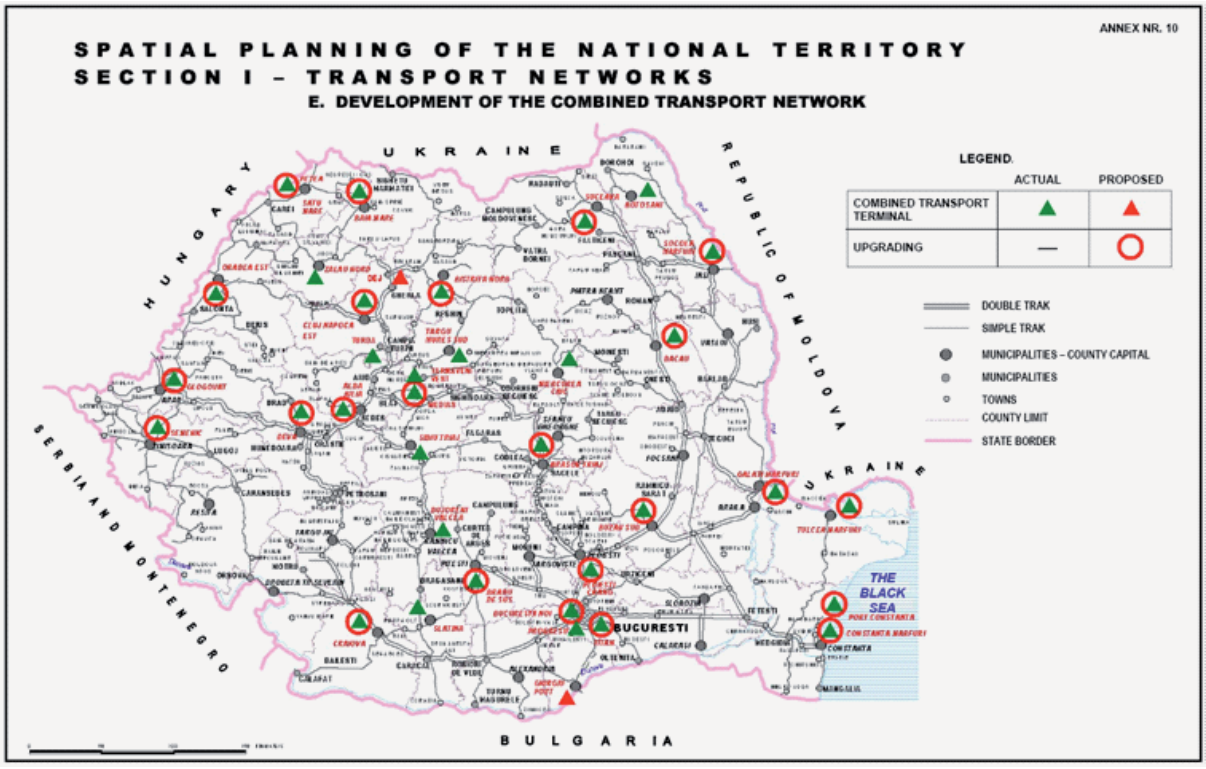
- Craiova, Ford invested in a new plant for building vehicles and motors to serve the European market in 2008.
- Slatina, investments of about 100 million in the automotive industry in Slatina C are planned in near future, e.g. a 50 per cent expansion of the Pirelli tire factory by 2009; due to its proximity to Craiova, they could be combined.
- Cluj, Nokia has investigated in a new plant in 2008; additionally Cluj is one of Romania's boom regions.
- Iasi; Eurolog, a company running intermodal services between Italy and Romania, has mentioned further projects to be developed near the Moldavian border in Iasi. Iasi's catchment area could be of interest to Western investors as a bridge to former Soviet Union countries.
- Sibiu is said to be also one of the boom regions in Romania.

For all other existing terminals it has been recommended that further investment is avoided and that those with the lowest handling volumes are closed either immediately or when investment is necessary.

In contrast to this, the "Spatial planning of the National Territory" (law no. 363) foresees the maintenance of the existing network of intermodal terminals (see ***Figure 3-8***).

In light of the situation in other European countries and the economic behaviour of stakeholders concentrating on large balanced volumes which can be produced in block or at least group trains, the strategy of a wide spread network of small and less well performing terminals should be reconsidered.

Figure 3-8: Development of the intermodal terminal network in Romania



Source: Spatial Planning of the national territory, law no. 363

3.2.10 - Port development

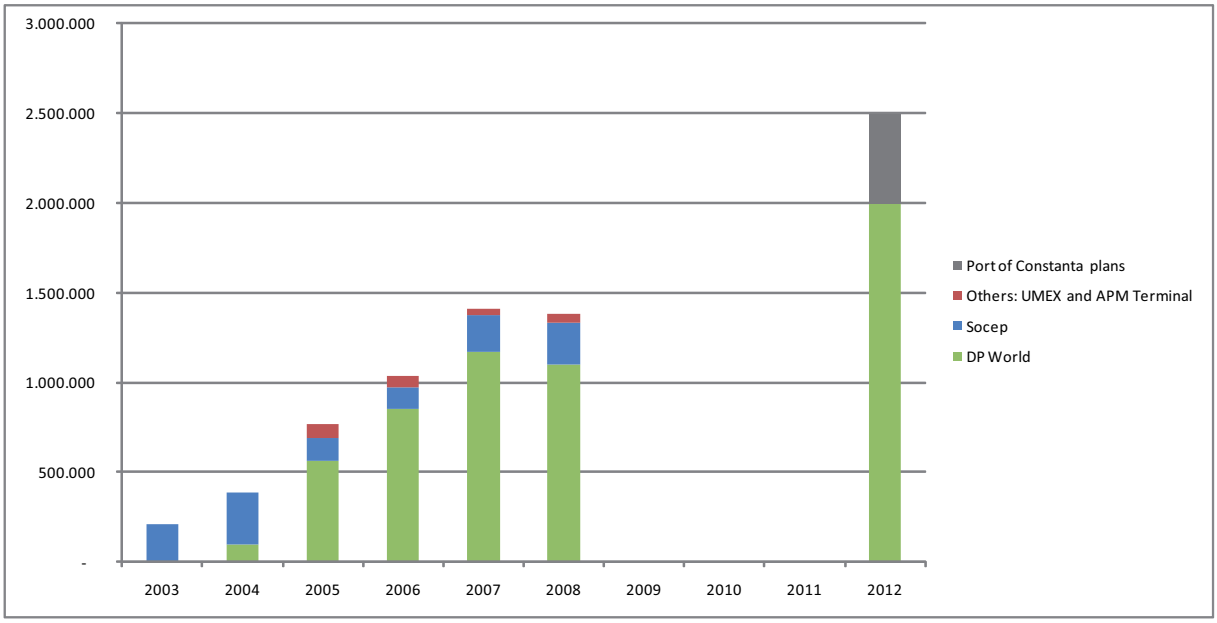
Domestic transport is dominated by maritime hinterland traffic to and from the port of Constanta. In total there are four container stevedore companies operating at Constanta, whereof two are currently relevant: Socep and the Constanta South Container Terminal (CSCT). CSCT has the largest share with about 80% of all transshipped containers in the port. It is operated by DP World Constanta, and only came into operation in 2004. Since then it has increased volumes by more than 1,000%, which is equal to over one million TEU transshipped in 2008. The share of all transshipped containers at Constanta that are distributed inland by road, rail or waterway is estimated at about 40%, of which waterway is negligible and rail has a share of about 45%, primarily dedicated customer trains for container stevedore companies. The other two container stevedore companies operating in Constanta but without significant market shares are UMEX and APM Terminal.

The port of Constanta has developed a Master Plan, a development strategy to 2020 and a short term development plan by 2013, including the following projects:

- Building a new container terminal, which will assure accommodation of big tonnage capacity vessels.
- Increasing the handling capacity of the DP World terminal to 2,000,000 TEU per year within the next years.
- Extension of the railway system in the river-maritime area of port of Constanta; linking the South port more efficiently and improving rail transit times considerably; additional lines shall be constructed to link the North to the South Port; building of a systematised railway complex.

Total handling volumes, according to the port authorities, are planned to be increased to 2,500,000 TEU as early as 2011/2012 (see ***Figure 3-9***), which is an increase of 81 per cent from 2008 levels.

Figure 3-9: Development plan for port of Constanta in TEU, to 2011/2012



Source: Spatial Planning of the national territory, law no. 363

3.2.11 - Evolution of intermodal industry

The previous sections have shown that influences outside of the intermodal industry are expected to create additional large market potential for intermodal services in the medium- and long-term. However, already today and even more so once the Romanian economy is on a path to recovery, the volumes of external trade and long-distance freight traffic offer ample opportunities for services. What is necessary to be competitive with Romania's low-cost road carriers now and in the future are cost-efficient and reliable services concentrating on principal trade lanes.

The question is whether the intermodal industry can and will develop capabilities, strategies and instruments to improve its competitiveness as well as what conditions are beneficial to this end. We have analysed the industry and drawn our conclusions on its likely evolution as follows:

(1) The freight volumes are concentrated to a very large extent on the Constanta, Bucharest and Arad areas. Traffic flows are increasingly balanced east-west. Such framework conditions facilitate the implementation of - multi-frequency - point-to-point intermodal block train services.

(2) However, it will be necessary to establish at least one or even two additional state-of-the-art terminals in those areas mentioned above in addition to the existing Railport Arad, Pitesti and CSCT, in order to ensure a fast and cost-efficient service between Constanta and the other areas.

(3) Current competition in the intermodal industry on the operator level has generally enhanced the competitiveness of international intermodal services to/from Romania. The expected competition at a railway level will enhance this further, as it would seem that intermodal stakeholders located in different fields of business are keen to maintain and improve the situation. This should contribute to an improvement in service quality and productivity and aid the development of new markets and trade lanes.

(4) In order to foster intermodal services on routes beyond Romania, which do not initially provide full-trainload volumes, it is necessary to establish hub-based rail production systems (gateway services). For this reason we expect a hub to be established in the Arad area for consolidation of continental export and import cargo in order to achieve economies of scale for ongoing train services. Such a hub would be suitable for serving trade lanes between Arad and boom regions in Romania such as Bucharest, Craiova or Iasi.

The prerequisites for such a hub terminal are, amongst others, sufficient interim storage space, competitive handling and interim storage rates, flexibility, and the capability to compensate for operational deficits of others e.g. delays caused during the rail trip.

3.3 - Evolution of domestic intermodal rail/road traffic by 2020

It is virtually impossible to forecast the total scenario of Romania's domestic traffic either to next year or to 2020. Given the enormous number of intermodal terminals, serving private sidings to a large extent, and the geo-economic conditions there are not too many opportunities to establish road-competitive domestic services from terminal to terminal other than on a single-wagon basis. Those decisions cannot be forecasted in the framework of a global assessment, only on relevant trade lanes between two catchment areas, as it was done and will be explained in more detail in international rail/road traffic evolutions (see chapter 3.4).

We expect that – as in 2007 – the largest portion of domestic volumes will be sourced from containers carried to and from the international black seaport of Constanta. We assume that domestic hinterland traffic between the seaport and inland terminals of Romania will furthermore benefit from the total container development of the port and at least maintain its rail traffic share, if not even increase it. As already mentioned above in chapter 3.2.9, there shall initially be a small network of three terminal areas, which are the terminals in the port of Constanta that shall be connected with inland terminals in the areas of Bucharest and Arad.

Due to the enormous number of intermodal terminals and the poor condition of their infrastructure, an increase in continental volumes of domestic intermodal traffic is not expected. It is in fact more likely to decrease, but we assume that, after two or three other inland terminals are developed, there will be a few domestic services that may run between those terminals and the ones in the Bucharest and Arad areas, especially the latter as a consolidation point for import and export cargo.

According to our calculations, the volume of domestic intermodal rail/road traffic will rise to a total of 373,500 TEU in 2020. Even though the volume was on a relatively high level in 2007, this corresponds to an increase of 51 per cent compared from 2007 to 2020. As continental volume will remain at its level, maritime traffic will increase its share from 73 per cent in 2007 to 82 per cent in 2020.

3.4 - Evolution of international intermodal rail/road traffic by 2020

In order to assess the development of the international volume of intermodal traffic of the countries involved in this study we analysed every relevant trade lane between two catchment areas based on whether, by 2020, it could provide potential, which:

- First of all, is sufficiently high to enable the implementation of a regular full-trainload (FTL) intermodal service, e.g. a direct or shuttle train;
- Secondly, we considered suitable for an intermodal service featuring an appropriate service profile.

For those trade lanes which matched both requirements, we “designed” a distinctive profile for an intermodal service particularly including the following items:

- Total train capacity;
- Average capacity load factor;
- Weekly and annual frequency of the service.

The input is mainly based on our expert knowledge of current services on the trade lanes in question – if there is a service – and the general economic conditions of intermodal trains, the forecasted goods and logistics patterns and the infrastructure parameters on the freight corridor by 2020. Through this comprehensive exercise we were able to determine the 2020 quantities of intermodal shipments (in TEU) for each trade lane. These results were assigned to the corresponding country-to-country pair. The consolidated volumes of all trade lanes between two countries deliver the total bilateral intermodal traffic.

Based on this methodology we have set up separate assessments of bilateral traffic to and from Bulgaria and transit traffic through the country. The latter market segment sees corridors between two other CEE countries involved in this comprehensive DIOMIS study but primarily traffic between “third countries”.

3.4.1 - Evolution of bilateral international traffic to/from Romania

Intermodal traffic on bilateral intermodal services with Romania is expected to grow by 695 per cent in the period between 2007 and 2020, and will thus displace domestic as the largest intermodal market segment. Total shipment quantities will rise from 74,700 TEU to 593,900 TEU (see 3.5).

The two main intermodal market segments will develop distinctively. Continental traffic will show an increase of 438 per cent equal to 327,200 TEU, whereas the volume of freight shipped on maritime services will start from zero in 2007 and is forecasted to reach a volume of 192,000 TEU in 2020. Based on our findings on the evolution of Romania’s external trade and the terms of competition between intermodal and road, continental intermodal traffic is expected to grow particularly strongly on trade lanes with the following countries:

- Austria
- Belgium
- Germany

- Hungary
- Italy
- Turkey
- Slovenia

Figure 3-10: Bilateral international unaccompanied intermodal traffic by corridor, 2007/2020

Romania from/to	2020			2007			% change on total
	Maritime	Continental	Total	Maritime	Continental	Total	
Austria	35,000	70,200	105,200	-	16,600	16,600	534%
Belgium	-	31,500	31,500	-	9,400	9,400	235%
Bulgaria	-	16,200	16,200	-	2,800	2,800	479%
Czech Republic	-	5,400	5,400	-	2,700	2,700	100%
France	-	29,300	29,300	-	-	-	n.a.
Germany	45,000	76,000	121,000	-	-	-	n.a.
Hungary	42,000	21,600	63,600	-	19,100	19,100	233%
Italy	-	43,200	43,200	-	9,700	9,700	345%
Netherlands	-	29,300	29,300	-	-	-	n.a.
Poland	-	16,200	16,200	-	-	-	n.a.
Russia	-	18,900	18,900	-	13,100	13,100	44%
Serbia	35,000	-	35,000	-	-	-	n.a.
Slovenia	35,000	6,300	41,300	-	300	300	13667%
Turkey	-	37,800	37,800	-	800	800	4625%
Others	-	-	-	-	200	200	-100%
Total	192,000	401,900	593,900	-	74,700	74,700	695%

Source: KombiConsult analysis

Continental intermodal traffic hereby will lose market share of bilateral international traffic, falling to 67 per cent from 100 per cent in 2007.

International maritime traffic to and from Romania is expected to see strong growth, although not as strong as continental, but as there was no existing maritime international intermodal traffic in Romania in 2007, it will nevertheless have gained a market share of 33 per cent in 2020 from zero in 2007. Hereby Romania's own seaport in Constanta will be the largest contributor to this kind of intermodal traffic.

At first glance the total and relative increase in bilateral traffic may appear not to be realistic. But the following aspects should be taken into account:

- Bilateral traffic starts at a low level.
- Bilateral international traffic primarily serving continental trades in 2007 was much less hit by the current economic crises than international maritime traffic.
- We do expect a considerable increase in external trade between the old and new EU Member States.
- The port of Constanta will grow enormously and rail hinterland traffic will at least retain its traffic share, whereof hinterland traffic from the port of Constanta will focus on international hinterland services more than previously.
- Most of the corridors, on which we assume intermodal traffic will show strong growth, have very long rail-oriented transport distances and are expected to provide potential for more than a daily full-trainload point-point freight.

3.4.2 - Evolution of transit traffic through Romania

Intermodal transit had the lowest share in 2007 at only 10 per cent of total intermodal traffic in Romania, equal to 37,500 TEU, and it will remains the market segment with the lowest share in 2020, although it could be increased up to 18 per cent with an volume of 215,300 TEU in 2020. The main reason for the growth is that we expect bilateral intermodal traffic between Western European countries, e.g. Germany, on one end, and Turkey, on the other end, to grow, also due to the fact that ever more intermodal players are seeking alternative transit routes to passing through Serbia. But the main point is that bilateral intermodal traffic between CEE countries is expected to grow substantially, such as between Bulgaria on the one end, and Hungary and Poland on the other end. The reason for the fall in traffic between Hungary and Turkey may be that Hungary will lose its function as a consolidation point for volumes going further South-East, where more direct bilateral intermodal services will be established in the future.

Figure 3-11: Unaccompanied intermodal traffic in transit through Romania by corridor, 2007/2020

Transit corridor		2020	2007	% change
Belgium-	Bulgaria	20,200	-	n.a.
Bulgaria-	Germany	48,600	-	n.a.
Bulgaria-	Hungary	16,200	-	n.a.
Bulgaria-	Italy	21,600	-	n.a.
Bulgaria-	Poland	10,800	-	n.a.
Germany-	Turkey	75,600	-	n.a.
Hungary-	Turkey	22,300	37,500	-41%
Total transit through Romania		215,300	37,500	474%

Source: KombiConsult analysis

At first glance the total and relative increase of the transit traffic may appear unrealistic. The following aspects should, however, be taken into account:

- Transit traffic is also starting at a very low level, lower than bilateral international and domestic traffic.
- Transit traffic through Romania, primarily serving continental trades, was much less hit by the current economic crises than international maritime traffic.
- We expect a considerable increase in external trade both between the old and new EU Member States and also between new Member States.
- Romania will benefit from the fact that routes to and from Turkey avoiding Serbia are required due to poor quality in Serbia.
- Each of the corridors, along which we assume intermodal traffic will grow markedly, has very long, rail-oriented, transport distances and is expected to provide potential for more than one daily full train load point-point freight.

Just like today, continental cargo will be the only transit traffic in 2020.

3.5 - Evolution of total intermodal rail/road traffic by 2020

We expect unaccompanied intermodal traffic in Romania to increase from 359,900 TEU in 2007 to 1,182,700 TEU in 2020. This is more than a tripling of the total volume.

Since international traffic to and from Romania is expected to be most dynamic during these years, this market segment will increase its share from 20.7 per cent to 50.2 per cent and thus overtake domestic traffic which is to fall from 68.9 per cent to 31.5 per cent.

Figure 3-12: Total unaccompanied intermodal traffic in Romania by traffic type, 2007/2020

Intermodal market segment		2020	2007	Total growth	Annual growth
Unaccompanied traffic		**533.300**	**95.500**	**458%**	**14,1%**
Domestic	maritime	70.200	2.300	2952%	30,1%
	continental	-	-	n.a.	**n.a.**
	Subtotal	**70.200**	**2.300**	**2952%**	**30,1%**
International	maritime	48.000	14.500	231%	9,6%
	continental	176.800	2.900	5997%	37,2%
	Subtotal	**224.800**	**17.400**	**1192%**	**21,8%**
Transit	maritime	-	-	n.a.	n.a.
	continental	238.300	75.800	214%	9,2%
	Subtotal	**238.300**	**75.800**	**214%**	**9,2%**
Total intermodal traffic		**533.300**	**95.500**	**458%**	**14,1%**

Source: KombiConsult analysis

The total (or annual) growth rates expressed in per cent might be surprising but the increase in absolute figures should be assessed in light of the currently underdeveloped intermodal transport in Romania, the relation to international road transport and the envisaged measures (see section 5) to further strengthen the intermodal industry.

4. IMPACT OF THE EVOLUTION OF INTERMODAL TRAFFIC ON INFRASTRUCTURE

4.1 - Impact on rail network capacity

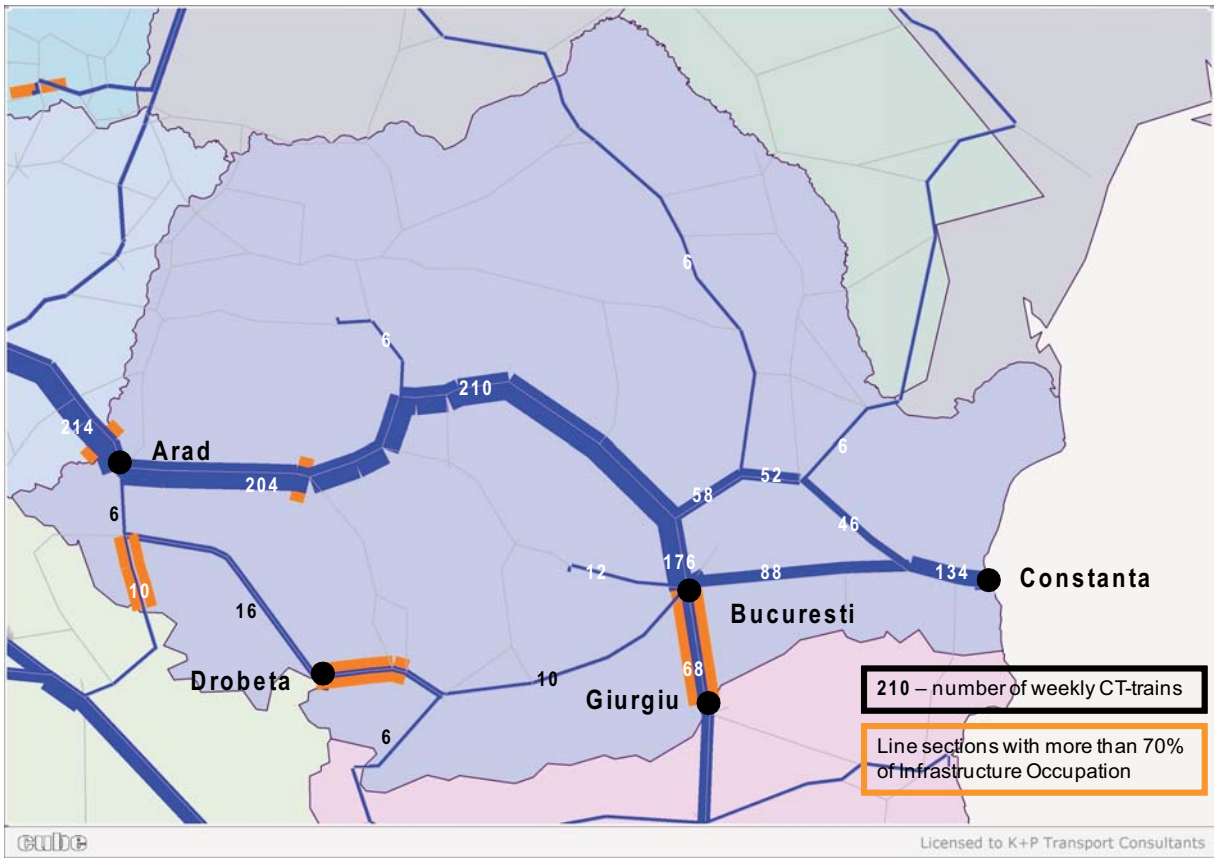
Figure 4-1 shows the approximate assignment of the 2020 transport programme of block train services to/from and through Romania resulting from our assessment of the evolution of unaccompanied intermodal traffic on the Romanian rail network. Since we expect the majority of intermodal shipments to be carried on international trains between Romania and the Western European countries of Austria, Germany and the Benelux states, the rail lines via Hungary (Curtici) which are part of the Corridor IV will bear the largest load of bilateral intermodal trains.

In spite of this substantial growth in intermodal trains to 2020 we do not essentially anticipate major capacity constraints on the Romanian network, even taking other freight and passenger trains into account. Considering ongoing construction works on several sections, e.g. on the Corridor IV to/from Constanta to be completed by the year 2020 at the latest, the situation will differ significantly from the present (see section 2.6.1). Nevertheless, even if large scale measures are implemented, parts of the network will still suffer from poor operating conditions due to insufficient financing for railway infrastructure development (UN ECE Report by the Government of Romania on Romanian Transport in 2008): maintenance, access border crossing Giurgiu / Ruse, new bridge Vidin / Calafat, which will remain bottlenecks.

However, as explained above, the routing, particularly of transit trains to/from Western European sources/destination to Bulgaria, Greece and in particular Turkey, is not only dependent on the timely completion of Romanian rail infrastructure projects and border crossing procedures but also on the behaviour of neighbouring countries' intermodal stakeholders in general.

This statement is basically confirmed by the ERIM 2020 study, which sees very few sections of the Romanian rail network occupied 70 per cent or more on average by 2020. It should, however, be qualified that this does mean that there will necessarily be sufficient capacity in the time-windows required by intermodal service suppliers and their customers.

Figure 4-1: Assignment of intermodal trains on the Romanian rail network, 2020



Source: K+P Transport Consultants

4.2 - Impact on terminal capacity

By 2020 intermodal terminals in Romania will require transhipment capacity for an annual volume of 810,100 TEU in unaccompanied traffic. This is the consolidated volume of the expected intermodal shipments on domestic and bilateral international services. Only these two market segments affect terminals located in Romania, since we assume that transit shipments will be carried between terminals in other countries and basically not handled at Romanian sites in the framework of gateway or hub systems.

In order to determine the handling capacity required to process the total transport volume of 1,182,700 TEU it is necessary to translate the amount of TEU into number of loading units (LU). Loading units are the objects which terminals physically lift and therefore the appropriate calculation units.

In this respect we need to distinguish maritime from continental traffic since the mix of loading units is expected to be quite different. Based on observable trends we expect that, by 2020, on container hinterland services with Romania, one loading unit will correspond to 1.6–1.65 TEU. For the further calculation we have set the ratio at 1.6 TEU.

Current continental intermodal services are strongly focused on the chemical industry and therefore move a large amount of 20' (1 TEU) and 30' (1.5 TEU) tank and bulk containers. For this reason, the TEU-loading unit ratio is comparatively low, lower than on maritime services. We, however, expect that over the next decade intermodal operators will be successful in making gains in the general cargo freight markets. Then we will see a significant change in the pattern of loading units employed. To carry general cargo such as foods, dry cargo domestic containers, semi-trailers and swap bodies are required. An equivalent of a full truckload of such a continental intermodal shipment corresponds to, on average, 2.3 TEU. We established a 1.8 TEU-LU-ratio as the weighted average of dry cargo and bulk units (see ***Figure 4-2***).

Figure 4-2: Conversion of TEU-related intermodal volume into handling loading units, 2020

Market segment	Volume 2020 (TEU)	TEU/LU ratio	Volume 2020 (LU)	Handling ratio	Handling 2020 (LU)
Domestic	373,500	1.60	233,400	2.00	466,800
International Maritime	192,000	1.60	120,000	1.00	120,000
International Continental	401,900	1.80	223,300	1.00	223,300
Transit	215,300	1.80	119,600	-	-
Total	1,182,700		696,300		810,100

Source: KombiConsult analysis

The calculation shows that by 2020 Romania's intermodal terminals will require handling capacity for 810,100 loading units to be able to process the expected domestic and international transport volume of 967,400 TEU (see ***Figure 4-3***). Currently total transhipment sites only provide for a consolidated annual handling capacity of about 522,700 loading units, which is 64 per cent of the required capacity.

But, according to our findings on the Romanian intermodal logistics market, we estimate that domestic intermodal traffic in particular will continue to serve private sidings to a large extend, where only a few single block train services between intermodal terminals will operate. Thus, those capacities could not be calculated.

The main volumes are concentrated in the Arad, Bucharest and Constanta area. In the respective areas the following terminals are to be found:

- Arad
- Arad (Railport Arad), Glogovat, Semenic (Timisoara)
- Bucharest
- Bucuresti CPB, Bucuresti Noi, Bucuresti Sud, Bradu de Sus (Pitesti)
- Constanta
- Constanta APM, Constanta CSCT, Constanta SOCEP, Constanta UMEX

According to these compositions, additional transhipment capacities would be required in Arad and the Bucharest / Pitesti area, whereby the newly built terminal in Pitesti in the Bucharest / Pitesti area has not been included as capacity details are not yet known. Nevertheless, this lack of capacity seems to be reasonable, also due to the fact that the terminals included are mostly relatively old and not in good condition. Thus, the recommendation is to build a small number of efficient terminals with safety and security features of current state-of-the-art terminals.

The table also shows that in the port of Constanta there seems to be sufficient capacity to cope with the required handling volume, but it must be mentioned that the most frequented terminal, the CSCT terminal of DP World Constanta, was, according to our calculations, almost at its limits in 2007. Thus, taking DP World's extension plans into account, additional capacity also seems to be required there, as it cannot be assumed that the other port terminals will make up the required volumes based on their current low throughput today.

Figure 4-3: Capacity need for terminals in Romania in 2020

Terminal	Annual handling capacity (LU) 2007	Capacity need 2020	? Capacity need 2020
	Calculated	(LU)	(LU)
Arad (Railport Arad - Curtici)	100,100	154,500	54,400
Bucharest / Pitesti area	127,200	208,800	81,600
Constanta ports	295,400	261,200	-
Others	-	185,600	185,600
Total	522,700	810,100	321,600

Source: KombiConsult analysis

5. RECOMMENDATIONS FOR INTERMODAL STRATEGY

(1) The key success factors for continental intermodal services to/from Romania and in transit with southern European countries are as follows:

- Time-schedules geared to the movement of consumer goods: buffer time in departure but early morning arrivals,
- 95% arrival punctuality rate,
- Consistency,
- Cost-efficient service,
- Fast dispatching at terminals ("fast lane") to ensure efficient round trip schedules for trucking companies.

(2) The key success factors for container hinterland services to/from Romania are as follows:

- Shuttle services with seaports, if possible several departures daily,
- Control and management of port-to-door chain,
- Flexibility: availability for additional trains; trucking container by road,
- Cost-efficient service,
- Empty container depot at competitive rates.

(3) The market potential on trade lanes to/from and through Romania is sufficiently high that intermodal operators, in cooperation with railway undertakings, should be able to industrialise intermodal production and thus realise major productivity gains, which in turn contributes to improve competitiveness with road:

- Standardisation of processes and technology,
- Employment of efficient rail production systems: multi-frequency shuttle systems,
- Advanced interface management,
- Commitment to reliable and consistent services.

(4) Grasp the opportunities climate policy creates

(5) Seamless international intermodal services:
Interoperability
Synchronisation of processes between railways and operators
Data interchange; tracking of shipments

(6) State shall ensure level playing field between road and rail concerning infrastructure access charging, and e.g. avoiding that excise on diesel used in rail/intermodal services is used to build roads.

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ETF
EDITIONS TECHNIQUES FERROVIAIRES
RAILWAY TECHNICAL PUBLICATIONS - EISENBAHNTECHNISCHE PUBLIKATIONEN
16 rue Jean Rey - F 75015 PARIS

http://www.uic.org/etf/

Printed by

RICOH

16, rue Jean Rey 75015 Paris - France

Layout and cover: Coralie Filippini/ © ETF Publication

January 2010

Dépôt légal January 2010

ISBN 978-2-7461-1771-6 (English version)

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