



# DIOMIS

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

SLOVAKIA



**Developing Infrastructure & Operating Models for Intermodal Shift**

December 2009

ISBN 978-2-7461-1736-5

### **Warning**

No part of this publication may be copied, reproduced or distributed by any means whatsoever, including electronic, except for private and individual use, without the express permission of the International Union of Railways (UIC). The same applies for translation, adaptation or transformation, arrangement or reproduction by any method or procedure whatsoever. The sole exceptions - noting the author's name and the source - are "analyses and brief quotations justified by the critical, argumentative, educational, scientific or informative nature of the publication into which they are incorporated".

(Articles L 122-4 and L122-5 of the French Intellectual Property Code).

© Copyright - Paris, 2009



## CONTENTS

<b>1. Socio-economic information on Slovakia .....</b>	<b>1</b>
<b>2. Current state of intermodal rail/road traffic in Slovakia .....</b>	<b>11</b>
2.1 - Intermodal actors .....	11
2.2 - Legal framework .....	15
2.3 - Overview of total intermodal market .....	15
2.4 - International unaccompanied traffic .....	16
2.5 - Equipment .....	19
2.6 - Rail and intermodal terminal infrastructure .....	20
2.7 - Conclusions .....	24
<b>3. Evolution of intermodal rail/road traffic in Slovakia     until 2020.....</b>	<b>25</b>
3.1 - Recent developments until 2009 .....	25
3.2 - Projections of national transport policy .....	26
3.3 - Analysis of impact factors .....	28
3.4 - Evolution of total intermodal rail/road traffic by 2020 .....	31
<b>4. Impact of evolution of intermodal traffic on infrastructure ...</b>	<b>33</b>
4.1 - Impact on rail network capacity .....	33
4.2 - Impact on terminal capacity .....	36
<b>5. Recommendations on intermodal strategy.....</b>	<b>39</b>
<b>List of Figures.....</b>	<b>42</b>



## 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 SLOVAKIA

Among the CEE states covered by this DIOMIS study, the Republic of Slovakia is, after Slovenia, the second smallest country (area). Its maximum extensions reach 410 km, from east to west, and 190 km from north to south (see also **Figure 1-1**). In Slovakia 5,455,407 (July 2008) inhabitants live on a surface of 49,035 km<sup>2</sup> (=110 inhabitants per km<sup>2</sup>).

**Figure 1-1: Slovakia**



Source: Website mygeo info

Slovakia is a mountainous region, which actually hampers traffic, in particular in the north-south direction. Only two cities have more than 100,000 inhabitants: Bratislava (424,000) and Košice (235,000). The number of inhabitants of the other major cities (Prešov, Nitra, Žilina, Banská Bystrica, Trnava) is between 70,000 and 90,000.

Bratislava, the capital and economic centre, is located less than 80 kilometres from Vienna and 330 km from Prague. Slovakian economic centres are clearly concentrated in the western parts of the country (corridor Bratislava – Žilina). In the eastern part, the only economic centre is Košice, where the US Steel plant with 15,000 workers is by far the dominant economic factor.

The Bratislava region alone generates 25 % of the Slovakian GDP and achieves approximately 140 % of the average GDP in the EU, making this region the second richest region in all CEE countries, after Prague. This is certainly due to the fact that after the fall of the iron curtain big multinational companies, in particular of the service industry (banking sector), were using Bratislava as a “bridgehead” to the CEE countries, profiting from the proximity to Vienna.

The relatively low average wages in Slovakia attracted especially the automotive industry (production plants are located in Žilina (KIA), Trnava (PSA), Bratislava (VW)), which has become the most important production sector. In proportion to the number of inhabitants, Slovakia is the biggest automotive producer worldwide.

Nevertheless, Slovakia suffers from the disparity between the highly developed western region and the poorer eastern parts. According to the Slovakian Central Statistical Office, the eastern regions generated only 20.8 % of the national GDP in 2005 (thereof 12 % the Košice region). The western regions (including Žilina), on the other hand, generated 70.8 % of the GDP in the same period.

This disparity explains why, according to **Figure 1-2**, Slovakia ranks only on the third last place after Croatia and before Romania and Bulgaria regarding GDP per capita. **Figure 1-2** presents a comparative overview of the most important socioeconomic key figures for Slovakia and the other CEE countries covered by the DIOMIS study.



**Figure 1-2: Comparative socio-economic figures for Slovakia and the other CEE countries of the DIOMIS project in 2006**

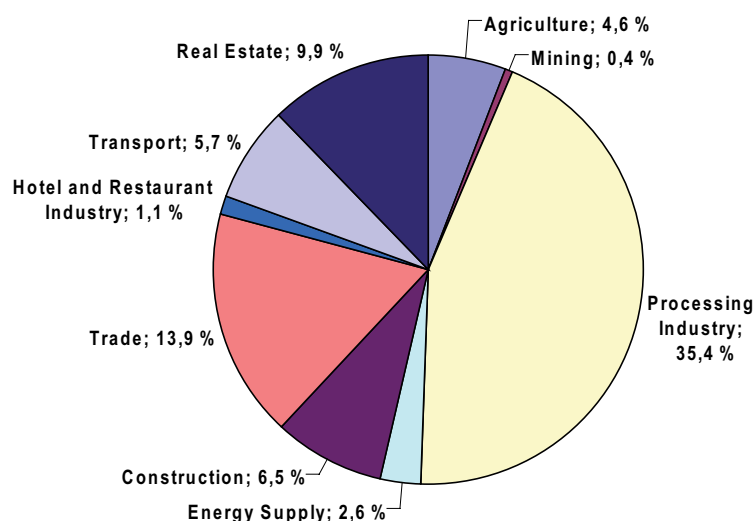
	Bulgaria	Croatia	Czech Republic	Hungary	Poland	Romania	Slovak Republic	Slovenia
<b>Geography</b>								
Area	100,994 km <sup>2</sup>	56,542 km <sup>2</sup>	78,866 km <sup>2</sup>	93,030 km <sup>2</sup>	312,685 km <sup>2</sup>	238,391 km <sup>2</sup>	49,034 km <sup>2</sup>	20,253 km <sup>2</sup>
Population	7,700,000	4,560,000	10,200,000	10,100,000	38,100,000	21,600,000	5,400,000	2,000,000
Pop. density	69 Persons/km <sup>2</sup>	81 Persons/km <sup>2</sup>	130 Persons/km <sup>2</sup>	108 Persons/km <sup>2</sup>	122 Persons/km <sup>2</sup>	90 Persons/km <sup>2</sup>	110 Persons/km <sup>2</sup>	99 Persons/km <sup>2</sup>
<b>Economy</b>								
GDP	19 billion €	26.4 billion €	78 billion €	66.9 billion €	228 billion €	57.4 billion €	29.9 billion €	25.9 billion €
GDP per capita	2.475 €	5.796 €	7.631 €	6.642 €	5.988 €	2.661 €	5.539 €	12.940 €
<b>Infrastructure</b>								
Road network	37,300 km	28,400 km	128,000 km	161,000 km	380,000 km	79,500 km	17,800 km	38,500 km
of which motorways	324 km	792 km	564 km	542 km	552 km		316 km	483 km
Rail network	4,320 km	2,730 km	9,610 km	7,670 km	20,300 km	11,100 km	3,660 km	1,200 km
Inland waterways	470 km	933 km	664 km	1,440 km	3,640 km	1,780 km	172 km	

Source: *prograns*

To sum up, Slovakia, in particular the western parts, belongs to the most economically developed CEE countries and benefits from an economic and political stability, which has been reinforced by the accession to the EURO zone on January 1<sup>st</sup> 2009.

In 2007, Slovakia's GDP was mainly generated by the industrial sector (the processing industry alone generated approx. 35 % of the GDP) and the service industry (approx. 60 %) (**Figure 1-3**).

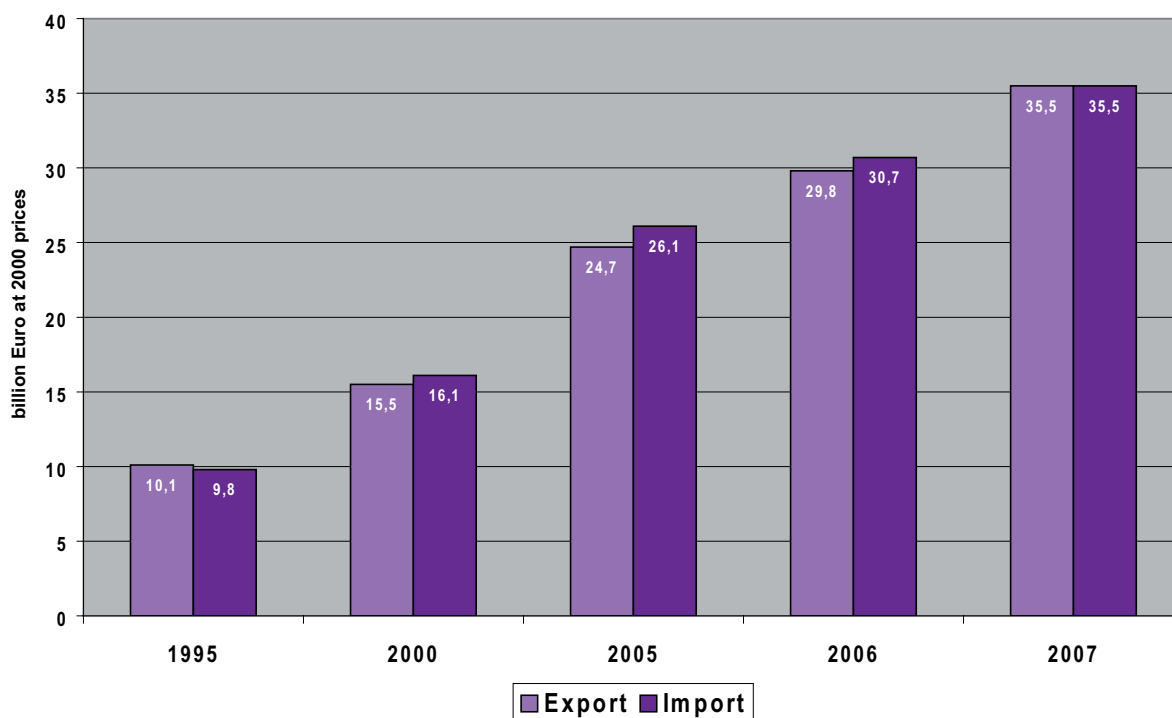
**Figure 1-3: Share of GDP by categories of resources in 2007**



Source: *German-Slovakian Chamber of Commerce, Slovakian Central Statistical Office*

Slovakia's economy is to a large extent dependent on the external trade. As is shown by **Figure 1-4** hereafter, the foreign trade of Slovakia trebled between 1995 and 2007. In monetary terms overall import and export is relatively balanced, with a slight deficit in the balance of payment in the period between 2000 and 2006, whereas 2007 figures show a balanced situation.

**Figure 1-4: Development of Export / Import 1995-2007 in billion Euros (2000 prices)**



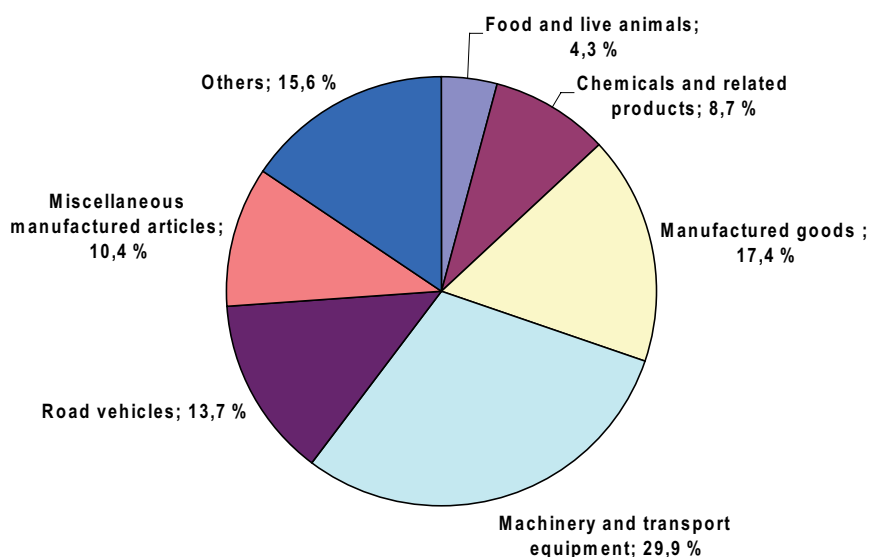
Source: *prograns*

The following **Figures 1-5 and 1-6** present the commodity structure in monetary terms of imported and exported goods in 2007. Road vehicles, other transport equipment and machinery represent nearly 50 % of total imports. Together with manufactured goods and articles these stand for more than 70 % of all imported goods.

**Figure 1-6** emphasizes even more the dependency on the automotive industry and the related sectors. Exports of road vehicles alone amount to approx. 30 % of total exports. More than 50 % of all exports concern the sectors automotive, transport equipment and machinery, directly or indirectly.

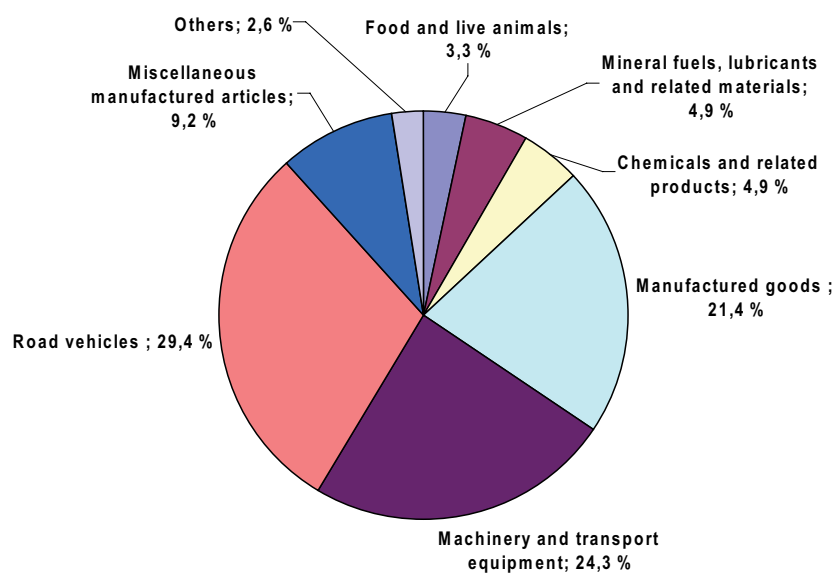
This dependency on the automotive industry has become a major threat for the national economy of Slovakia and the resulting demand of transport, in particular during the current economic crisis.

**Figure 1-5: Share of imported goods by main commodities in 2007 in monetary terms**



Source: German-Slovakian Chamber of Commerce, Slovakian Central Statistical Office

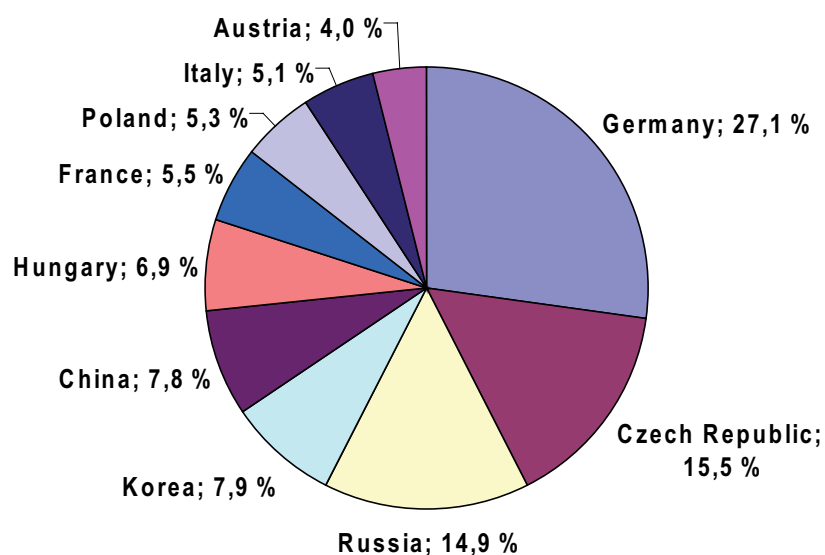
**Figure 1-6: Share of exported goods by main commodities in 2007 in monetary terms**



Source: German-Slovakian Chamber of Commerce; Slovakian Central Statistical Office

**Figure 1-7** finally presents Slovakia's most important foreign trade partners in 2008. It becomes obvious that Germany plays a major role: One quarter of the Slovakian foreign trade is done with Germany. The Czech Republic and Russia represent other 15 % each, followed by Korea and China (nearly 8 % each). The high rank of Korea is due to the KIA activities in Žilina. The remaining part concerns other European countries, i.e. Hungary, France, Poland, Italy and Austria.

**Figure 1-7: Share of main foreign trade partners of Slovakia by 2008**



Source: German-Slovakian Chamber of Commerce; Slovakian Central Statistical Office

The German-Slovakian Chamber of Commerce has recently carried out a SWOT analysis of the Slovakian national economy. **Figure 1-8** below presents an extract of the results, as far as they are of interest in the context of the DIOMIS project.

**Figure 1-8: SWOT Analysis of the Slovakian economy (extract)**

Strengths	Weaknesses
Strong increase in economic performance Favourable production costs Highly skilled and motivated workforce High availability of local suppliers	Strong dependency on exports Shortage of skilled workers and high fluctuation Lack of efficient infrastructure in middle and eastern Slovakia
Opportunities	Threats
Bridgehead for Eastern Europe Cost-efficient industrial real estate High availability of industrial surfaces	High dependency on export Too much focussed on automotive industry Ongoing shortage of skilled workers and rapidly increasing wages Increasing imbalances between eastern and western Slovakia

*Source: German-Slovakian Chamber of Commerce; Germany Trade& Invest*

To summarize the analysis of the Slovakian national economy, Slovakia on the whole is well developed and economically and politically stable, and offers good opportunities for the future. Nevertheless, the crisis revealed that Slovakia's dependency on the export-dependent automotive industry is increasingly becoming a threat.

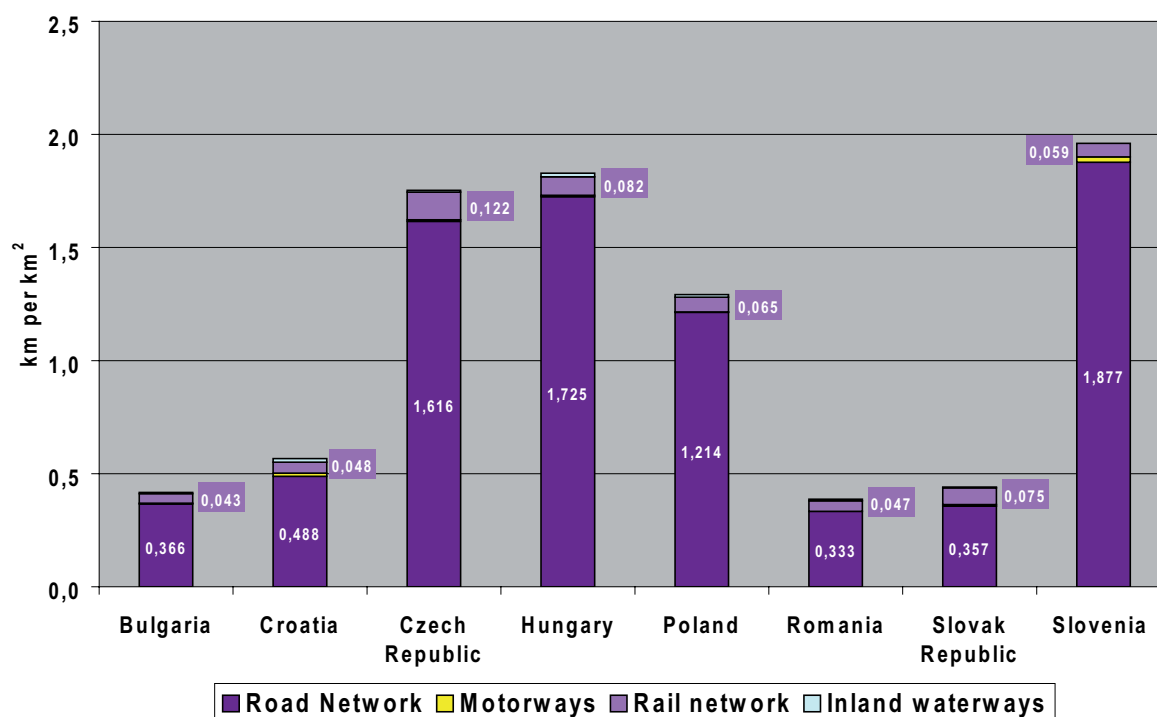


With regard to the traffic infrastructure in Slovakia, **Figure 1-2** above presents the following key figures:

- Total length of the road network 17,800 km, thereof 316 km motorways
- Total length of the rail network 3,660 km
- Total length of the inland waterway network 172 km

**Figure 1-9** presents a comparison of the respective network lengths in km per km<sup>2</sup> for the CEE countries covered by the DIOMIS study.

**Figure 1-9: Infrastructure network density (km per km<sup>2</sup>) for the CEE countries covered by the DIOMIS study in 2007**



Source: progtrans, K+P Analysis

As can be seen from this figure, Slovakia's road network shows a relatively low density (0,357 km per km<sup>2</sup>) compared to all other countries analysed. This is partly due to the topographic obstacles, in particular in the regions covered by the Carpathian Mountains.

Regarding the motorway network, it becomes obvious that, due to the fact that they are collected only for 316 km of motorways (*see also Figure 1-2*), tolls have a negligible impact on the door-to-door prices of road transport.

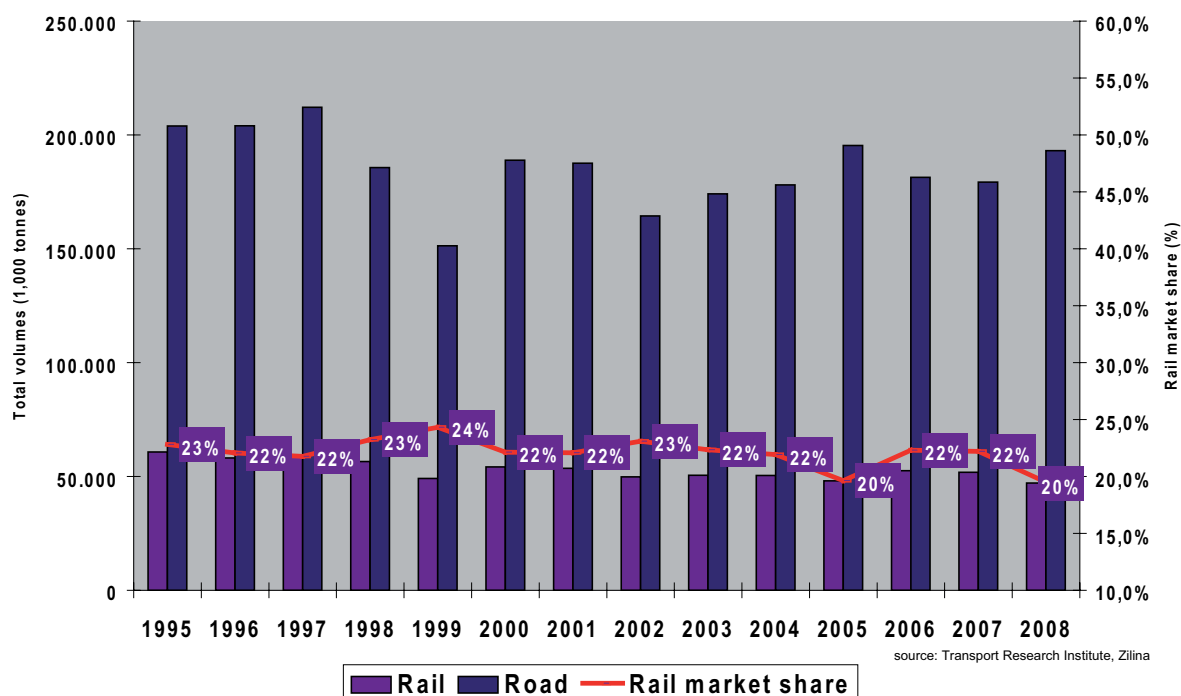
Regarding the railway network, Slovakia benefits of a relatively dense network (0,075 km per km<sup>2</sup>).

Inland waterways are existing in Slovakia on a distance of 172 km (the river Danube forms partly the border between Slovakia and Hungary). The share of the inland waterway in the total transport volume, however, is negligible; hence this mode will not be included in this analysis.

**Figure 1-10** presents the market shares (measured in tonnes) of road and rail freight traffic, which can be summarized as follows:

- In the decade between 1995 and 2005, the total volume of road traffic fluctuates between 150 – 200 million tonnes per year, showing a constant increase from 2002 on.
- During the whole period, the market share of rail freight is relatively stable around 20 to 24%.

**Figure 1-10: Development of transport modes (rail & road) in thousand tonnes (left axis) and rail market share (right axis) 1995 – 2008**



Source: Ministry of Transports, Posts and Telecommunications of the Slovak Republic; Transport Research Institute Žilina

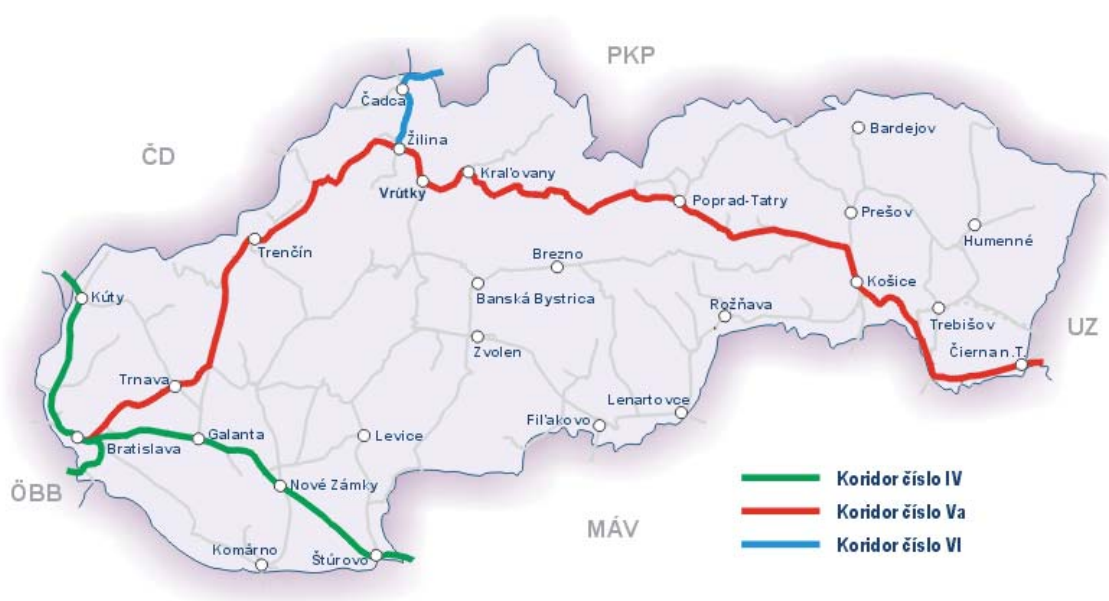
Three pan-European corridors pass the territory of Slovakia (**Figure 1-11**).

Corridors N° IV (Dresden/Nürnberg - Prague - Vienna - Bratislava - Győr - Budapest - Arad - Bucharest - Constanța / Craiova - Sofia - Thessaloniki / Plovdiv – Istanbul)

Corridor N° V (Venice – Kiev) Branch A (Bratislava - Žilina – Košice - Uzhhorod)

Corridor N° VI (Gdansk – Katowice - Žilina)

**Figure 1-11: Pan-European (rail) corridors crossing Slovakia**



Source: European Commission



## 2. CURRENT STATE OF INTERMODAL RAIL/ROAD TRAFFIC IN SLOVAKIA

### 2.1 - Intermodal actors

#### Intermodal operators

The following intermodal operators are active in Slovakia:

- Metrans, a subsidiary of the German HHLA
- ERS
- Kombiverkehr
- CSKD Intrans, a subsidiary of Intercontainer Austria ICA
- Adriakombi
- SKD Intrans, a subsidiary of Intercontainer Austria ICA
- Argo

With the exception of the German Kombiverkehr, which only pass the country in transit (Germany –Hungary), all operators offer regular services to and from Slovakian terminals. **Figure 2-1**, provided by ŽSSK CARGO (Železničná spoločnosť Cargo Slovakia), presents the weekly services offered per operator (June 2008). For example, Metrans offers 6 weekly departures from Dunaská Streda to Praha Uhřetěves, and 7 weekly departures in the opposite direction. It must be understood that the **Figure 2-1** represents scheduled services, which means that the actual number of departures may differ. According to ŽSSK CARGO, however, the effective number of services in that period was even higher in most cases, since on the strongest relations additional spot trains were operated. **Figure 2-1** should therefore be interpreted as an indicator of the importance of the intermodal operators. According to these figures, Metrans is by far the most important operator offering 34 weekly services, followed by SKD Intrans, with 17 services, Argo (14) and Kombiverkehr (14 exclusively transit).

Figure 2-1: CT services offered in Slovakia, 2008

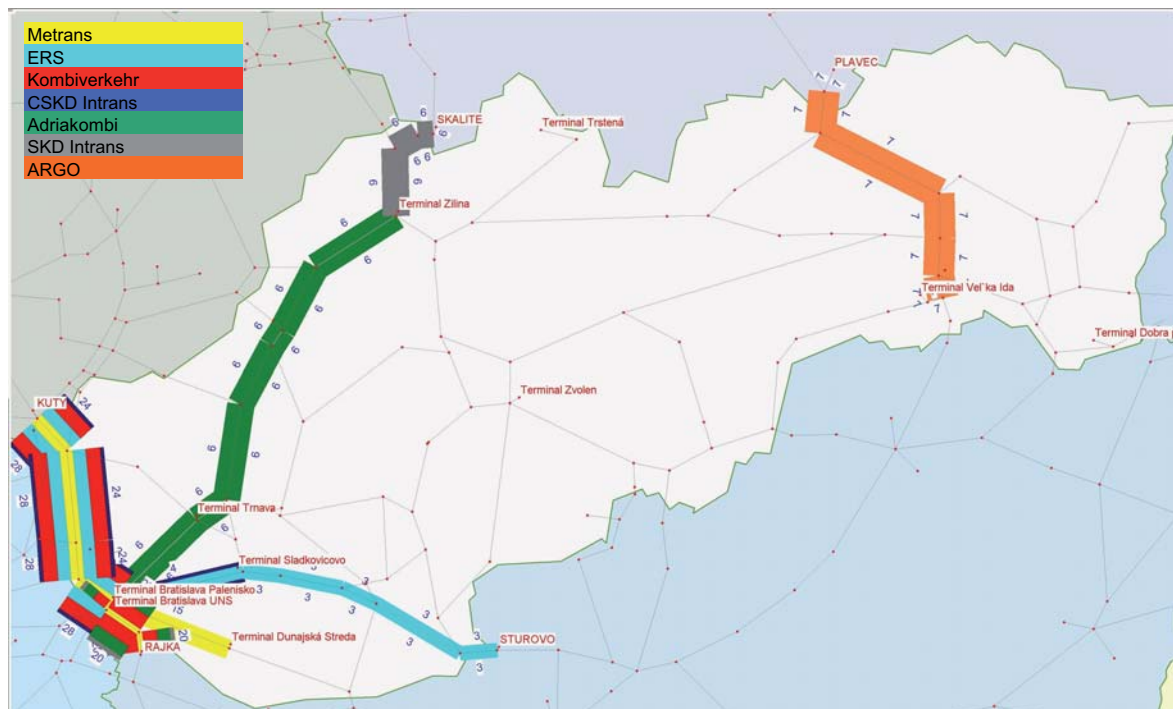
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Σ
1	Hamburg Walterssh.													5					5
2	Maschen									3									3
3	Alte Süderelbe HH									4									4
4	Bremerhaven									1				2	2				5
5	Praha Uhrineves													7					7
6	Praha Malesice																1		1
7	Melnik									2					1				3
8	Koper													5		2		6	13
9	Budapest Soroksár		7		1			2											10
10	Cernjachovsk																	6	6
11	Malaszewicze/Musz.												7						7
12	Vel'ká Ida / Kosice											7							7
13	Dunaská Streda	3			1	6			5										15
14	Bratislava Pál.				1			2											3
15	Bratislava ÚNS								2										2
16	Sládkovicovo						1												1
17	Zilina								6		7								13
Σ		3	7	0	3	6	1	4	13	10	7	7	7	19	3	2	1	12	
METRANS																			
ERS																			
Kombiverkehr																			
CSKD Intrans																			
Adriakombi																			
SKD Intrans																			
ARGO																			

Source: ŽSSK CARGO



**Figure 2-2** below translates the information of **Figure 2-1** above into an assignment plot in order to localise the itineraries on which the operators are active. It clearly shows the concentration of CT offers in the western parts of Slovakia. The only exception is the Argo service from Vel'ká Ida via Poland to Kaluga in Russia, which actually is a special service of CKD (completely knocked down) transports for the automotive industry. The concentration of CT in the western parts results in an average CT distance on the Slovakian network of only 84 km.

**Figure 2-2: CT services in Slovakia by operators, 2008**



Source: ŽSSK CARGO

### Infrastructure managers

The entire Slovakian rail network of 3,660 km is managed by ŽSR (Železnice Slovenskej Republiky), the state owned infrastructure manager. ŽSR is responsible for the train path allocation for all types of trains (freight and passenger). Infrastructure access fees are charged by ŽSR according to the guidelines fixed by the Ministry of Transport, Posts, and Telecommunications of the Slovak Republic.

Rail transport in Slovakia suffers from extremely high infrastructure access fees with an average of 6 € per train kilometre, which should cover fixed and variable costs. This is approximately three times higher than the overall average in Western Europe. Although CT benefits from a fifty percent reduction of these fees, the absolute amount is still higher than elsewhere in Europe.

In addition to that, the structure of the infrastructure access fee system is not consistent with European regulations. Currently, the state reimburses the total fees to the state-owned railway undertaking (ŽSSK CARGO), which, in turn, transfers the funds to the infrastructure manager (ŽSR). After implementation of far-reaching restructuring with a separation of fees into fixed and variable shares, the fixed part would then be directly paid by the state to the infrastructure manager. The railway undertakings would only pay the variable share of network access fees. In theory, this would considerably reduce the costs arising for the railway undertaking. One should however keep in mind that the present railway undertaking is a 100 % state-owned company, which means that the variable cost element is re-financed by the state, too. Only when the state-owned ŽSSK CARGO will be completely privatised, the competitive situation would be the same for all railway undertakings.

### **Railway undertakings**

Traction services for CT are exclusively provided by ŽSSK CARGO, a subsidiary of the state-owned Slovakian railway company ŽSSK.

### **Terminal operators**

In Slovakia all terminals are privately owned, with the exception of Bratislava ÚNS and the transshipment terminal between Ukrainian broad gauge and UIC standard gauge in Dobrá, operated by ŽSSK CARGO.

The terminals are operated by METRANS (Dunasjká Streda), SKD Intrans (Žilina, Veľká Ida / Košice) and Maersk (Bratislava Pálenisko). The terminal in Sládkovicovo, which is actually a dedicated terminal of Samsung, is operated by Green Logistics, a 100 % subsidiary of Samsung, and again SKD Intrans.

Each terminal will be presented more in detail later in this document, nonetheless it can be said that the Metrans terminal in Dunasjká Streda is by far the most productive and the most important in terms of tonnes handled. The Maersk terminal in Bratislava Pálenisko ranks second.

## 2.2 - Legal framework

EU legislation has been widely implemented in the following areas

- Authorisation of the road pre- and on-carriage to/from the terminals of intermodal load units (LU) on Sundays
- Authorisation of an increased gross vehicle weight (gvw) of 44 tonnes for the pre- and on carriage of intermodal LU
- Reduced taxes for road equipment exclusively operated in CT
- Authorisation of cabotage transports within the limits defined by EU regulations
- The principle of the non discriminating access to terminals, and to the railway lines

Even if the last point has been implemented in the national regulations, according to the statements of some intermodal operators, this is only true in theory. Almost all terminals are operated by private companies offering door-to-door services including pre- and on-carriage. This, in turn, means for third party operators that they are charged higher fees for using the private terminal facilities. According to some intermodal operators this is one of the main reasons for the fact that in Slovakia continental CT could not be established up to now.

CT is subsidised by the following programme: Decree (491/M-2006): 20 million crowns (= 665.000 €) support for new CT services limited to a maximum of 30 % of the eligible costs. A planned increase of the subsidy to 1.6 million € as of 2009, has been postponed due to the economic crisis.

In addition to the existing one, another program was planned to subsidise the purchase of CT equipment (wagons, ITU) to an extent of up to 15 % of the investment costs. For the same reason this programme has been cancelled for the time being.

## 2.3 - Overview of total intermodal market

CT from/to Slovakia is almost completely international maritime transport of ISO Containers to/from the ports of Koper, Hamburg, Bremerhaven and Rotterdam. Even though in **Figure 2-1** “continental” services are offered, e.g. Prague – Bratislava by Metrans, these are actually GATEWAY shipments from the northern seaports via terminals in Prague. Generally, the repartition of ISO Containers is 60 % 40ft and 40 % 20ft.

The only major exception of this general picture is the daily service between Vel'ká Ida and Kaluga via Poland operated by Argo Slovakia. As it was pointed out above, this is a special service of CKD ("completely knocked down") transports for the automotive industry. These loads are transported in continental containers owned by OJSC TransContainer, a subsidiary of the Russian railways (OJSC RZhD).

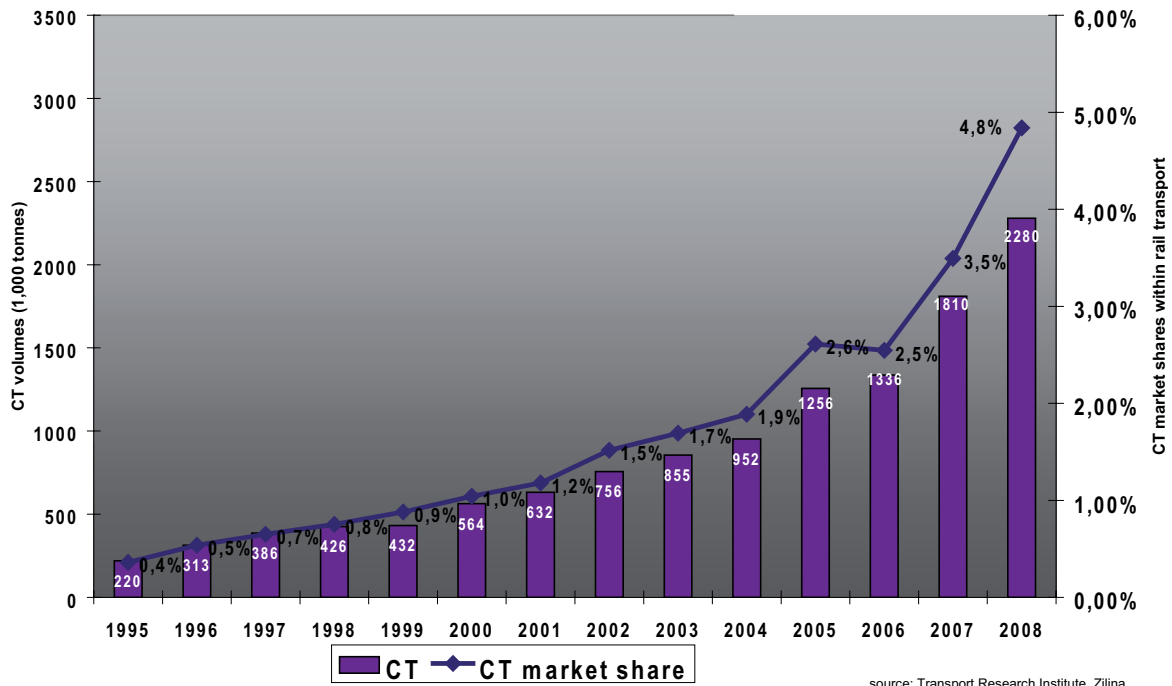
On the Slovakian network transit services appear between Kúty and Rusovce, operated by Kombiverkehr (Hamburg – Budapest), and between Kúty and Štúrovo, operated by ERS (Bremerhaven – Budapest and Mělník – Budapest).

According to the information provided by ŽSSK CARGO, more than 90 % of the CT is operated with block trains. In effect, some single wagon load services do exist, which are currently (2008) operated on domestic relations, in particular between Lubinec and Dunajská Streda or Bratislava Pálenisko. Domestic services, however, only represent less than 2 % of total CT transport volumes.

## 2.4 - International unaccompanied traffic

**Figure 2-3** shows the development of the – for the time being - only relevant CT market, the international maritime CT. It becomes obvious that CT has known tremendous growth rates during the last decade. In the period between 1995 and 2008, CT volumes showed a more than tenfold increase from 220,000 net tonnes in 1995 to approx. 2.3 million tonnes in 2008.

**Figure 2-3: Development of CT volumes 1995 – 2008 in Slovakia (net tonnes)**

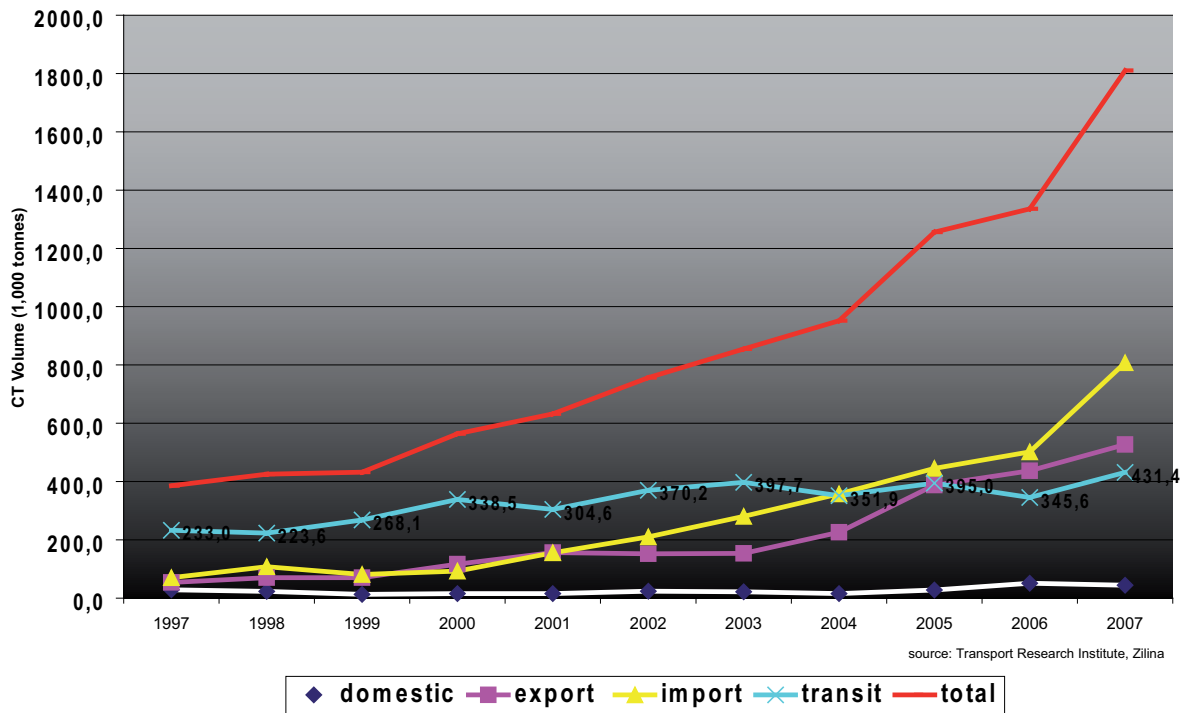


Source: Transport Research Institute Žilina

Besides the development of absolute volumes, **Figure 2-3** indicates the market share of CT in total railway volumes (blue line). Here again, a remarkable development can be observed. The market share, which in 1995 was only 0.4 %, reached nearly 5 % in 2008. Despite this extraordinary positive trend, it has to be kept in mind that a total volume of 2.3 million net tonnes only represents, for example, one third of Belgian domestic volumes alone.



Figure 2-4: Development of combined transport per type of flow, 1997 - 2007



Source: Transport Research Institute Žilina

**Figure 2-4** above reveals some interesting results. One can observe a decreasing transit share which was 60 % in 1997 and only 24 % in 2007. Taking into account the practically non-existence of the domestic market (represented in white), one can conclude that the development of combined transport in Slovakia is almost completely import and export driven. In other words, the extraordinary CT growth has directly been depending on the performance of Slovakia's economy, i.e. the automotive industry, up to now.

## 2.5 - Equipment

It goes without saying that the transport of ISO containers normally does not require highly sophisticated rail cars. This is even truer in a start up phase, as was the second half of the 1990ies. For this reason, CT in Slovakia has been operated with relatively outdated standard wagons, and still is in parts.

In the light of the enormous growth of this market, railway undertakings realised that significant investments should be initiated. Consequently, ŽSSK CARGO started a huge investment programme for railcars in 2008/2009.

**Figure 2-5** below presents the number of wagons in operation at ŽSSK CARGO in 2008. ŽSSK employs a total of 460 wagons in combined transport. It also becomes evident that since the investment programme had just only started, only 40 % of the wagons allow a maximum speed of 120 km/h.

As can be seen from this figure, ŽSSK CARGO rented 38 pocket wagons Sdgnss (max 120 km/h) to the Belgian TRW and – in return - leased 45 Sgs (max 100 km/h) wagons from TRW. This is due to the fact that for the time being there is no demand for this modern Sdgnss wagon in Slovakia

**Figure 2-5: Number by type of wagons in operation at ŽSSK CARGO**

Type	ŽSSK CARGO rolling stock	In operation by mid 2008	Remarks
<b>Sgnss 4575</b>	167	167	
<b>Sdgnss 4511</b>	60	22	38 wagons rented to TRW
<b>Sgs 4541</b>	7	52	45 wagons leased from TRW
<b>Sgs 4540</b>	21	21	
<b>Kbkks 3414</b>	170	170	
<b>Lgs 4425</b>	30	30	
<b>Total</b>	<b>455</b>	<b>462</b>	

Source: ŽSSK CARGO

## 2.6 - Rail and intermodal terminal infrastructure

### 2.6.1 - Rail infrastructure

The following figures describe the Slovakian rail network (see also **Figure 2-6**):

- Total length of the railway network: 3,658 km, thereof
  - single track lines: 2,639 km
  - double or more track lines: 1,019 km
  - 1,435 mm standard gauge: 3,509 km
  - electrified: 1,577 km (3,000V DC and 25,000V 50 Hz AC)

A specific case is the railway line between Uschhorod and Hutníky near Košice, approximately 80 km single track broad gauge line, which is used for transporting iron ore from Ukraine to the big U.S. Steel plant in Haniska near Košice.

**Figure 2-6: Railway network in Slovakia**



Source: Ministry of Transports, Posts and Telecommunications of the Slovak Republic

### 2.6.2 - Terminal infrastructure

When regarding the terminal infrastructure in Slovakia, it can be said that most terminals are relatively outdated in terms of loading track lengths, handling devices, information systems road and/or rail access. The only exception is the Metrans terminal Dunajská Streda, which is also the most important terminal with a volume of 660.000 net tonnes handled in 2008. Bratislava Pálenisko, operated by Maersk ranks second with approx. 259.000 t. **Figure 2-7** presents an overview of the volumes handled at the terminals in operation in 2007. Besides the terminals listed, a couple of terminals still exist but are currently out of operation. When analysing the terminal infrastructure, one has to keep in mind that, due to the relative proximity of the CT “hot spots” in western Slovakia to the Austrian and Czech border, volumes are handled in Austrian and Czech terminals and the load units are trucked to Slovakia. In contrast, the terminal Dunajská Streda, located at 20 km from the Hungarian border, handles a considerable number of containers destined to Hungary and vv.

The terminal in Dobrá at the Slovakian/Ukrainian border is a special case. This terminal is mainly a transfer point between the Ukrainian broad gauge and the standard UIC gauge. In November 2008, the Russian Transcontainer signed a 15-year lease contract for this ŽSSK CARGO terminal with the objective to use this underused terminal as a transfer point on the land bridge between Russia and the Mediterranean Seaports (Adriatic Sea), in particular Koper. The contract provides for an annual transfer volume of 250,000 TEU per year and 25,000 TEU in the starting phase (2009). Up to this moment, however, even this relatively modest goal has not been achieved. On the contrary, not a single container has been handled in this terminal so far.

**Figure 2-7: Net tonnes handled in terminals operating in 2007**

Terminal	Net tonnes handled in 2007
Košice	1,587
Bratislava ÚNS	17,944
Dobrá	21,677
Sládkovicovo	120,053
Žilina	139,491
Bratislava Pálenisko	258,515
Dunajská Streda	662,655
Veľká Ida	only in operation since 2008

Source: Ministry of Transports, Posts and Telecommunications of the Slovak Republic

The following **Figure 2–8** provides an overview of the technical characteristics of the terminals currently in operation. This table is a proof of the general statement that most of the terminals suffer from insufficient technical opportunities. In particular this is true for the track length: many terminals only dispose of a less than 300 meters of total track length. This means that block trains must be split and each part of train be handled separately, which creates unproductive additional handlings. Observing the number and type of handling devices alone hides the fact that a lot of the cranes and reach stackers are relatively outdated, too.



Figure 2-8: Technical characteristics of Slovakian terminals

Terminal	Owner	Operator	State of activity	Area (m2)	Store-area (m2)	Handling equipments	Number and length of tracks
Bratislava ÚNS	Building: ŽSR/ZSSK Cargo, a. s. Tracks and cranes: SKD Intrans, a. s.	SKD Intrans, a. s.	In operation	34 500	16 000	1 portal crane 32 t 1 side stacker 1 reachstacker Kalmar 1 stationary ramp Rola	3 tracks (290 m, 297 m, 325 m)
Bratislava Pálenisko	SPaP, a. s. Bratislava	SPaP, a. s. Bratislava (Maersk)	In operation	21 000	11 000	5 portal cranes, 2 x 16 t, 2x20 t and 36/32 t, 2 reachstackers LUNA 45 t 1 stationary ramp RoRo	2 tracks (150 m, 300 m)
Rusovce	ŽSR	RoLa	Out of operation			entry road	2 tracks (480 m)
Trstená	ŽSR	ZSSK Cargo a. s.	Out of operation	8 500	8 000	1 mobile front ramp Rola	1 track (310 m)
Žilina	ŽSR, leased to SKD Intrans, a. s.	SKD Intrans, a. s.	In operation	5 976	3 000	2 reachstackers Kalmar	1 track (470 m)
Dobrá transshipment terminal	ŽSR ZSSK Cargo, a. s.	ZSSK Cargo, a. s.	In operation	180 750	2 640 2 450 covered	2 portal cranes 50 t, 1 reachstacker LUNA 45 t	8 tracks 4 UIC standard gauge; 4 broad gauge (570m, 595m/735m, 684m) (593m, 588m, 812m, 802m)
Čierna nad Tisou (KP Biel)	ŽSR		Out of operation	6 000	1882	1 container portal PKJ 36	4 tracks 2 UIC 2 broad gauge 2 tracks (120 m, 120 m)
Ružomberok	ŽSR	ŽSR	Out of operation	35 372		1 portal crane 32 t	2 tracks (120 m, 120 m) 3 tracks (310 m, 2 x 320 m)
Dunajská Streda (new)	Metrans Danubia, a. s.	Metrans Danubia, a. s.	In operation			3 portal cranes, 3 reachstackers	5 tracks (650 m, 629 m, 727 m, 2 x 655 m)
Nové Zámky	OZON s.r.o. in bankruptcy	RoLa	Out of operation		30 000		2 tracks (423 m, 437 m)
Košice	ZSSK Cargo a. s./SKD Intrans a. s.	SKD Intrans, a. s.	In operation	14 820	2 600	2 rubber-tyres cranes 19 t, 12 t, 2 side stackers 35 t	2 x tracks (180 m)

Source: Ministry of Transports, Posts and Telecommunications of the Slovak Republic

Although the terminals are in a rather bad condition, this does for the moment not hamper the development of CT in Slovakia, since the terminals mostly haven't reached their maximum handling capacity yet. Nevertheless it should be pointed out that, in the view of an ongoing growth of CT, investments into terminal facilities are inevitable.

## 2.7 - Conclusions

To sum up the observations made in the above chapters, it can be said that

- the share of CT in total rail transports has remained comparatively stable and this on a relatively high level of approximately 20 %;
- of all transport markets CT shows the most remarkable evolution with a more than tenfold growth in the period from 1995 to 2007;
- since the share of transit services in total CT continuously decreased from 60 % in 1997 to only 24 % in 2007, and the domestic market is practically non-existing, CT market in Slovakia is completely import and export driven;
- geographically CT concentrates in the western parts of the country, on a relatively limited area. Hence the overall average distance of CT services in Slovakia amounts only to 84 km;
- out of seven CT operators in Slovakia, Metrans is the most important with a market share of 33 %;
- with the exception of CKD transports between Vel'ka Ida and Kaluga, CT in Slovakia belongs, up to now, to nearly 100 % to the maritime market;
- the Slovakian production system works with 90 % block trains in international CT;
- terminals in Slovakia are relatively outdated, except for Dunjaská Streda;
- comparably high infrastructure access fees still hamper the development of CT in Slovakia, although CT benefits of 50 % reduction. Plans for a complete restructuring of these fees have been postponed.

Even if CT is definitely the most dynamic transport market in Slovakia, the current "state of maturity" seems relatively low, considering the technical conditions of rolling stock and terminals, the dependency on maritime transports and the non-existence of a continental market.

Exactly these are the fields of action where the ministry, the railway undertakings, infrastructure managers and intermodal operators should take a joint effort to pave the way for the predicted ongoing growth of CT in Slovakia.

### 3. EVOLUTION OF INTERMODAL RAIL/ROAD TRAFFIC IN SLOVAKIA UNTIL 2020

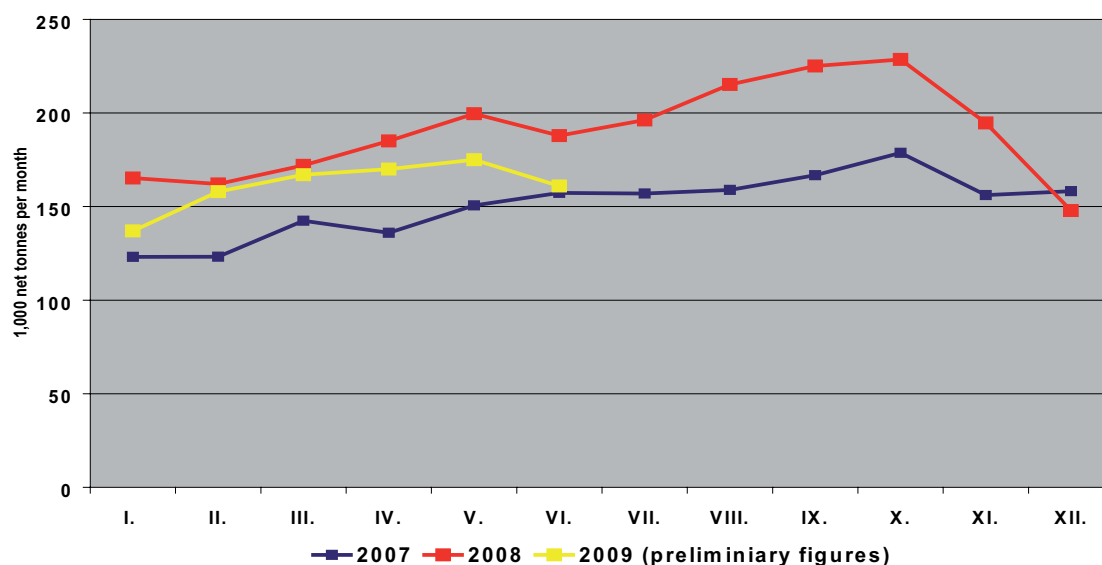
#### 3.1 - Recent developments until 2009

All observations made in chapter 2, in particular regarding the enormous growth of combined transport, refer to the situation before the economic crisis. It goes without saying that CT has also been hit by the recession.

**Figure 3-1** presents a monthly comparison of CT volumes in Slovakia. It is obvious that, in the period between January and October 2008, monthly volumes were constantly above the comparable figures of 2007. Only in November and December 2008 volumes considerably dropped due to the crisis. This situation led to still positive results for the whole year 2008, with an absolute growth of +27 % compared to the previous year.

The preliminary figures for the year 2009 (represented in yellow) reveal that volumes recovered in February and March to almost 2008 levels. Since then, they lagged slightly behind prior year figures with a modest decrease as of May. As can be read from **Figure 3-1** total monthly volumes are 10 % below 2008 figures, but still 16 % higher than the values recorded in 2007. Estimated for the whole year 2009, this would mean that losses could be maintained at a relatively modest level. This in turn would mean that the above conclusions continue to be valid, and that there is no reason to slow efforts down on the background of the crisis.

**Figure 3-1: Comparison of monthly CT volumes 2007 - 2009**

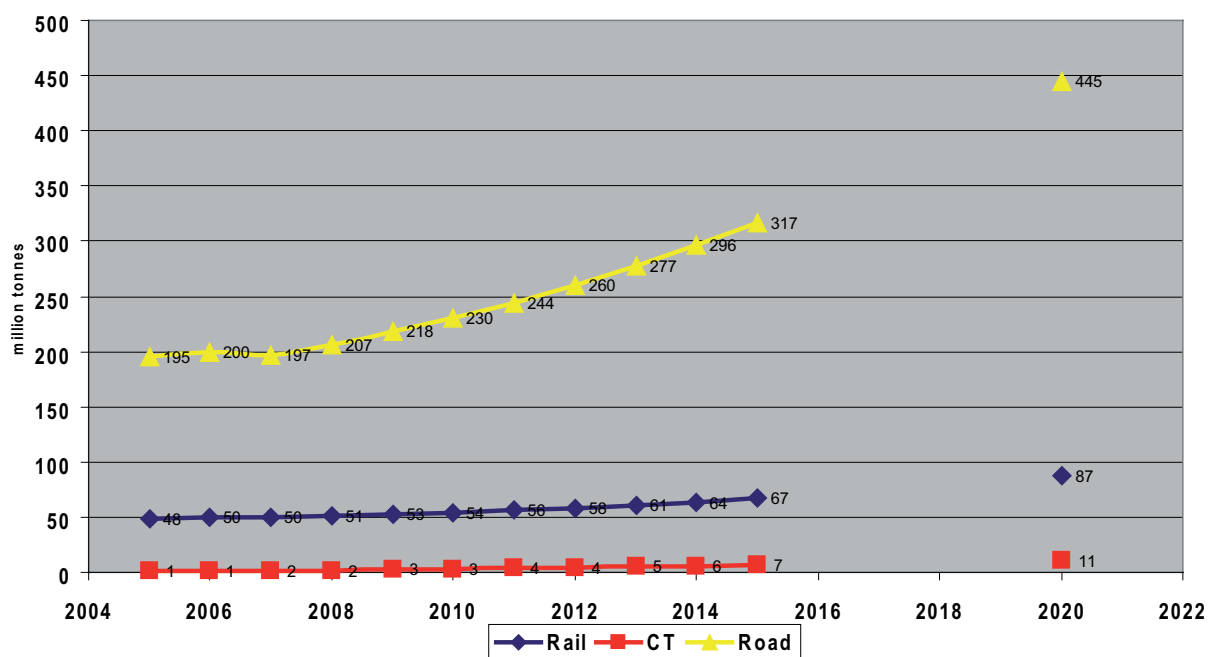


Source: Ministry of Transport, Posts and Telecommunications of the Slovak Republic

### 3.2 - Projections of national transport policy

In the year 2006, the Transport Research Institute Žilina presented a multimodal forecast for the freight transport in Slovakia. According to this forecast model, the institute expects, in a so-called 'realistic scenario', an absolute growth (measured in tonnes) in road transport of +128 % to 441 million tonnes by the year 2020. Growth figures for conventional rail freight were estimated at +117 % (87 million tonnes). As combined transport is concerned, their expectations are even more optimistic, since they estimate a prolongation of the development observed between 1995 and 2008, with a 775 % increase between 2005 and 2020 to approx. 11 million tonnes. These forecast results are presented in **Figure 3-2**.

**Figure 3-2: Multimodal forecast of the Transport Research Institute Žilina**

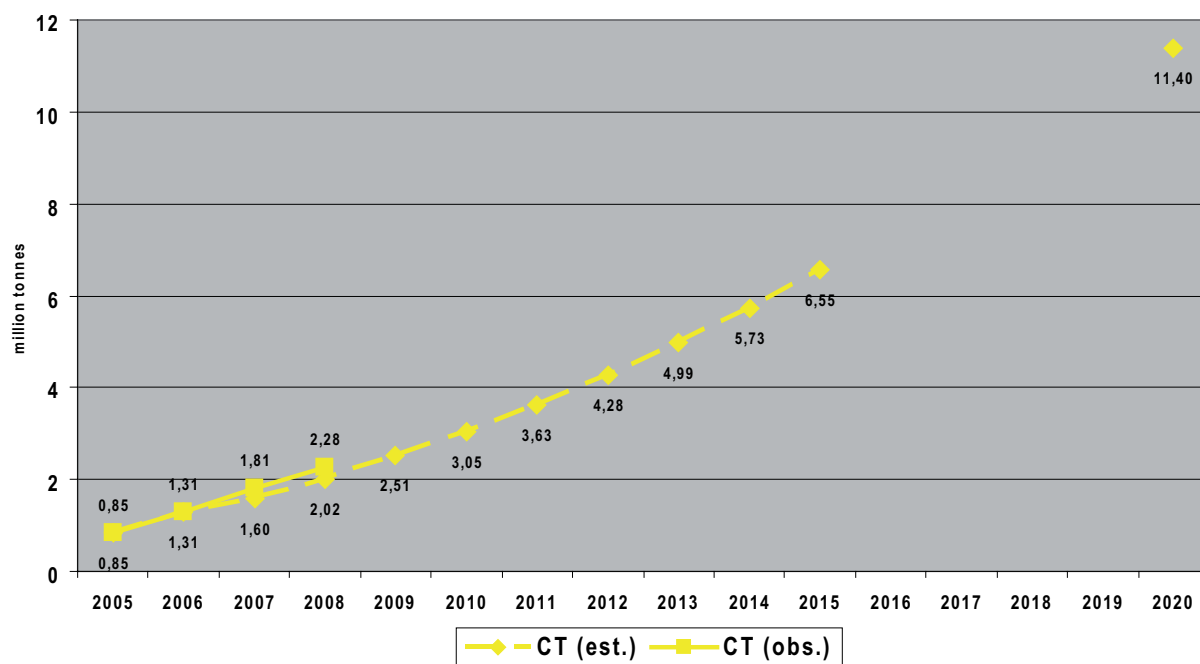


Source: Transport Research Institute Žilina

**Figure 3-3** below compares the CT development observed between 2005 and 2008 with this forecast. It becomes obvious that in 2007 and 2008 the CT volume observed in Slovakia was 13 % higher.

Even though this forecast cannot be regarded as an official national traffic forecast, it is used as a base for investment planning by the ministry.

**Figure 3-3: Comparison of observed and estimated CT in Slovakia 2005 - 2008**



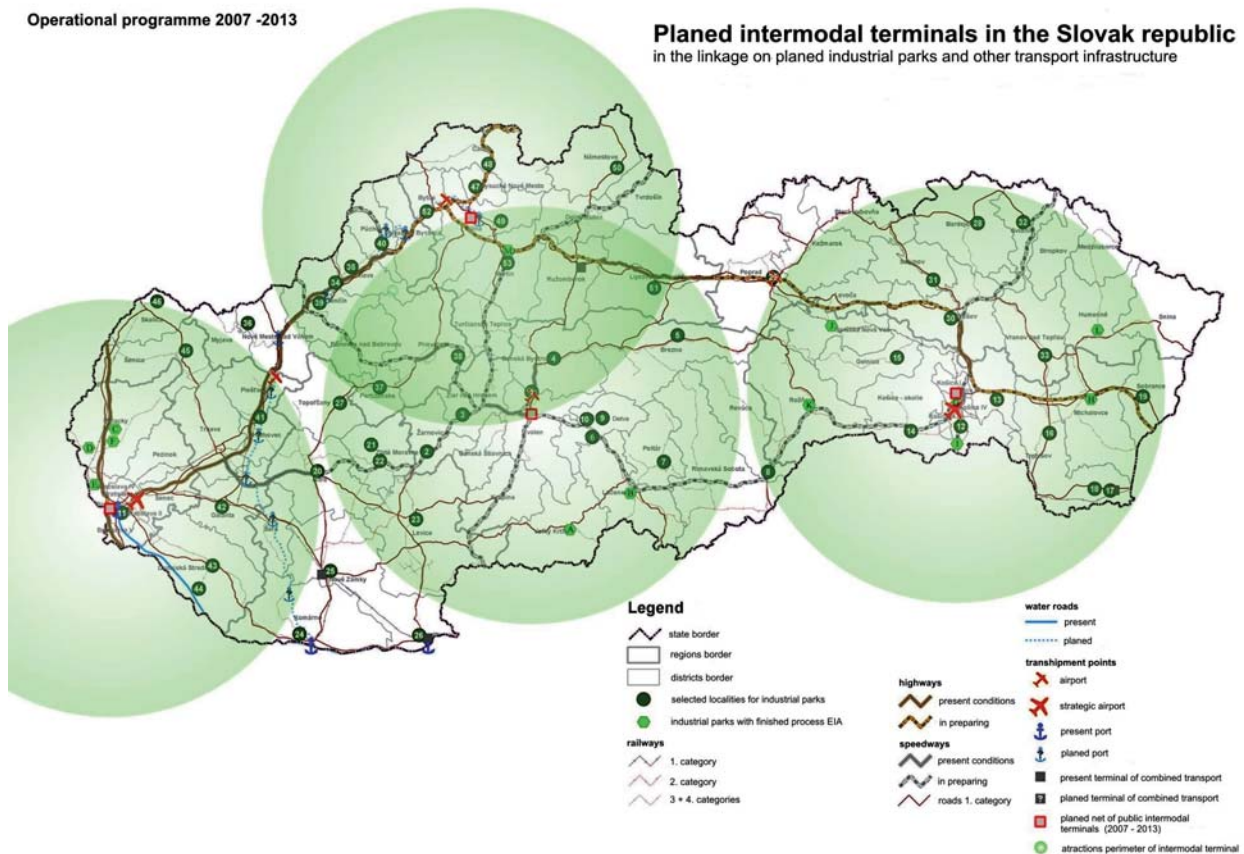
Source: Transport Research Institute Žilina, K+P Analysis

These growth projections seem achievable only under the following conditions:

- the establishment of a continental market in Slovakia;
- the construction of new terminals, replacing the mostly outdated terminals and allowing the handling of continental load units;
- these new terminals should grant open access to all intermodal operators and railway undertakings.

Starting from these ideas, the Slovak Ministry of Transports, Posts and Telecommunications launched a huge terminal investment programme, co-financed by the EU. This programme aims at covering the whole country with 4 new highly productive terminals in the Bratislava area, Žilina, Košice and Zvolen (**Figure 3-4**).

Figure 3-4: Terminal investment programme in Slovakia



Source: Ministry of Transports, Posts and Telecommunications of the Slovak Republic

### 3.3 - Analysis of impact factors

The preparation of a CT forecast in the framework of the DIOMIS project requires a comprehensive and consistent framework of general expectations concerning economic and logistic trends throughout Europe. This is crucial, since, as was pointed out in the previous chapters, the Slovakian combined transport is practically to 100 % dependent on the development of external trade in general, and maritime transport in particular. Therefore, the general expectations, the key drivers (opportunities) and the critical factors (threats) will be presented below:



For the forecast horizon 2020, we expect in general

- that intermodal traffic on international lanes between CEE countries and western Europe will grow faster than the market on the whole
- that container hinterland traffic will remain dominant in Slovakia due to increasing transcontinental trade
- that on medium-term horizon (> 2012) a significant growth of continental intermodal transport will take place due to an increasing division of labour volumes of international long-distance freight traffic of semi-finished and finished products
- that intra-CEE intermodal traffic's market share remains comparatively small
- increased integration of intra-CEE exchange of manufactured products into European supply chains
- growth of private consumption and state investments in CEE countries
- partly relocation of industrial production from Far East to CEE countries, primarily due to levelling out of total process costs and larger reliability and flexibility of supply chains
- ongoing improvement of rail infrastructure, as well as the construction and modernisation of terminals in Slovakia and the other CEE countries
- improved competitiveness of rail, due to a comparatively larger increase of road costs (drivers' working time, wages, fuel, Europe-wide implementation of toll systems)
- growing shippers' concern to secure durable supply chains
- industrialization of intermodal production:
  - standardization of processes and technology
  - employment of efficient rail production systems
  - advanced interface management
  - commitment to reliable and consistent services
  - interoperability
  - synchronization of processes between railways and operators
  - data interchange
  - tracking of shipments
- sufficient capacities on western European rail network and on "connectors" with CEE countries (border crossings; elimination of Achilles' heels) as a pre-requisite
- growing capabilities of CEE container ports in inter-regional competition and vis-à-vis the North Sea ports, which however will remain by far pre-dominant



- a change of attitudes of railways in CEE countries:
  - extending portfolio of services; not only focusing on “bread and butter” bulk cargo (comparable to situation of west European railways in 1980s/1990s)
  - facilitating transit traffic: take on responsibilities in co-operation with O/D railways
  - develop “own” products for regional collection/distribution

In addition to these general expectations, we observe the following specific opportunities for Slovakia:

- ongoing growth of foreign investments, in the long run (>2015) also in the eastern parts of Slovakia
- within the forecast period, the western parts of Slovakia (Bratislava-Žilina corridor) will stay economically dominant; however, the emergence of regional growth poles in the eastern parts are a pre-requisite for the implementation of point-to-point intermodal (block train) services
- due to its geostrategic position, Slovakian terminals can serve as a turntable between North Sea/Baltic Sea ports and Mediterranean/Black Sea ports, and as “bridgehead” to Ukraine, Russia (and, further east , to China).

Besides these opportunities, however, Slovakia faces the following threats:

- domestic intermodal traffic in Slovakia will be widely limited to distribution/collection of international shipments on national services via gateways but short distances between growth poles inside Slovakia, and between the country and its neighbours, hampers the implementation of hub/platform production systems to serve less-than-trainload trade lanes
- dependency on export and import
- ongoing concentration of the economic and logistic activity in the western part
- CT suffers from a monostructure focussed on the automotive industry and the maritime market
- existing terminal infrastructure requires upgrading and/or rebuilding
- for the time being non-discriminatory access to terminals not always guaranteed
- strong competition to road transport in combination with still high infrastructure access fees in Europe hampers the competitiveness of CT.

In addition to these issues, a specific plan has to be discussed more in detail: In May 2007, the President of the Russian Railway RZD and the Slovak Minister of Transports, Posts and Telecommunications signed an agreement on the construction of a broad gauge railway line from the Ukrainian border to Bratislava. And in November 2008, the railway undertakings of Russia, Ukraine, Slovakia and Austria signed a memorandum of understanding to initiate a feasibility study on a prolongation of the Ukraine-Bratislava line to Vienna. According to first estimates, the total investment for this project will be around 4 billion Euros.

The supporters of this plan bring forward the argument that this investment aims at establishing a competitive landbridge service between the Far East (China) and Western Europe, which would allow considerable savings of time compared to sea transport.

Opponents point out that a high capacity transshipment terminal, like for example the existing one in Dobrá, would allow a complete train to be transhipped in less than 2 hrs. So, the additional amount of time and money required for transshipment would be out of all proportion to the huge investments needed for a broad gauge railway transiting the whole Slovakia from the east to the west.

### 3.4 - Evolution of total intermodal rail/road traffic by 2020

Condensing the general expectations, the opportunities and the threats presented, we have developed the following forecast by 2020 for the Slovakian Combined Transport (**Figure 3-5**).

**Figure 3-5: Evolution of total intermodal rail/road traffic per market segment by 2020 (TEU/year)**

2007			2020			
Intermodal market segment	TEU	%	TEU	%	Total growth	Annual growth
Unaccompanied traffic	427.498	100,0%	1.061.758	100,0%	148,4%	11,4%
Domestic	maritime	-	-	-	-	-
	continental	-	13.500	1,3%	-	-
	Subtotal	-	13.500	1,3%	-	-
International	maritime	291.286	683.459	64,4%	134,6%	10,4%
	continental	3.429	83.147	7,8%	2324,8%	178,8%
	Subtotal	294.715	766.606	72,2%	160,1%	12,3%
Transit	maritime	125.057	205.680	19,4%	64,5%	5,0%
	continental	7.726	75.972	7,2%	883,3%	67,9%
	Subtotal	132.783	281.652	26,5%	112,1%	8,6%
Accompanied traffic						
Total intermodal traffic	427.498	100,0%	1.061.758	100,0%	148,4%	11,4%

Source: K+P Analysis

This forecast can be summarized as follows:

- Total intermodal traffic in Slovakia will more than double (+148,4 %) until 2020 and reach more than 1 million TEU.
- As in 2007, there will be no accompanied services in Slovakia in 2020
- With a market share of 80 %, maritime traffic will continue to be the most important market also in 2020. Its market share in international traffic, however, will decrease from 68 % to 64 % and its share in transit traffic from 29 % to 19 %.
- By 2020, continental traffic will multiply its market share from 2.6 % to 16.3 % (international, transit and domestic), which is a more than a fifteenfold increase, and thus be the most dynamic market with an average annual growth of 178.8 %).
- Domestic traffic will be negligible also in 2020 (1.3 % market share).

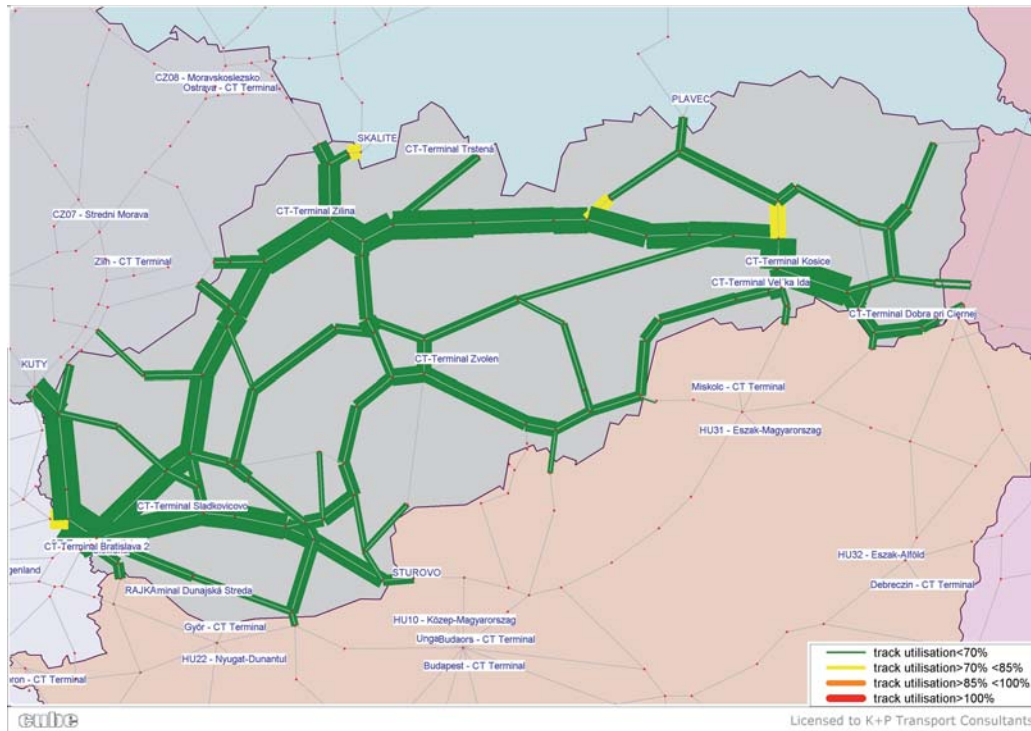


## 4. IMPACT OF EVOLUTION OF INTERMODAL TRAFFIC ON INFRASTRUCTURE

### 4.1 - Impact on rail network capacity

The following **Figure 4-1** shows the load on the Slovakian rail network as well as a capacity analysis for the year 2007. This assignment was based on the same method which has already been used successfully in the other DIOMIS studies: In a first step, the network was loaded with conventional freight trains and passenger trains. The relevant data for each track was supplied by ŽSR, the Slovakian infrastructure manager. In a next step, CT trains were assigned to the network. The capacity analysis was prepared on the assumption that a double-track electrified line offers a maximum theoretic capacity of 144 train movements per day and direction. The corresponding value for one-track lines is 40 train movements per day and direction. As can be seen in **Figure 4-1**, there were practically no capacity shortages throughout the rail network in 2007 and by far the major part of the network was loaded with a capacity utilisation of less than 70 %. Only on some short sections, a capacity utilisation of 70 – 85 % can be observed. In summary, it can be said that, in the current situation, practically no capacity bottlenecks do occur on the Slovakian network

**Figure 4-1: Train load and capacity utilisation of the Slovakian network in 2007**



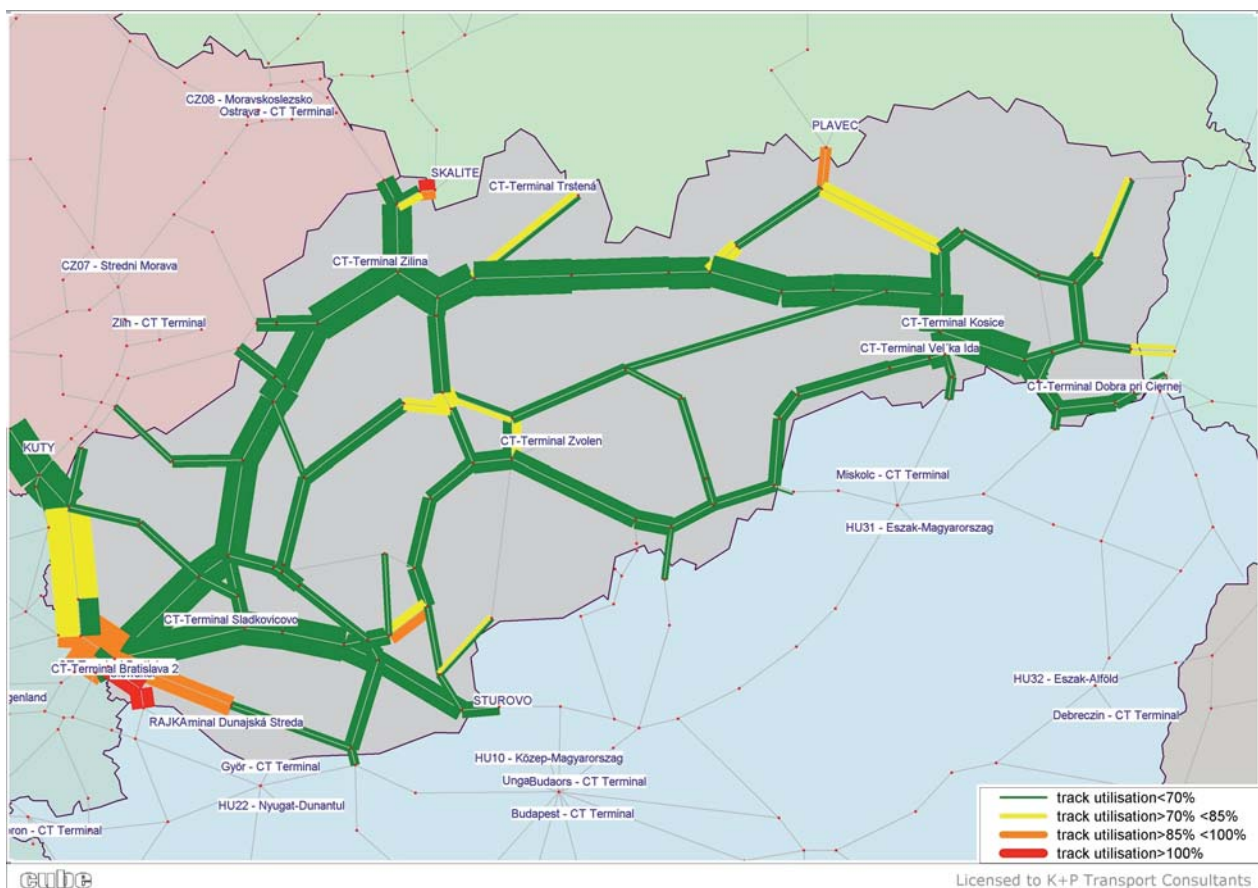
Source: K+P Analysis

The capacity analysis 2020 has been prepared as follows: Our starting point was the assumption of a +26 % increase in conventional rail transport (on the basis of the forecast prepared by progtrans). We have to point out that this is a very conservative approach, compared to the figures published by the Transport Research Institutes of Žilina which expect an increase of approx. +70 %. The second assumption can also be regarded as very conservative: the number of passenger trains on the network was assumed to remain constant. Then, the following infrastructure investments planned for the Slovakian rail network have been implemented in the network model:

- Nové Mesto nad Váhom - Púchov
- Žilina - Košice
- Púchov - Čierna nad Tisou

Finally, the CT trains forecasted in **Figure 3-5** were assigned to the network. The result thereof can be seen in **Figure 4-2**.

**Figure 4-2: Train load and capacity utilisation of the Slovakian network 2020**



Source: K+P Analysis

**Figure 4-2** clearly shows capacity bottlenecks (capacity utilisation > 85 %) for the Bratislava region in the year 2020. For the rail section Bratislava – Rajka to the Hungarian border **Figure 4-2** even reveals a capacity utilisation of more than 100 %. According to this projection, capacity bottlenecks must also be expected for the lines to the Slovakian – Polish border crossings at Skalite and Plavec.

We would like to point out again that the assumptions for the growth of conventional freight transport and passenger transport, on which these projections are based, follow a very conservative approach.

#### 4.2 - Impact on terminal capacity

As already explained in chapter 3-2 (**Figure 3-4**), the Slovakian Ministry of Transport plans the construction of 4 new terminals. The terminals will be located in the Bratislava region, in Žilina, in Košice, and in Zvolen. In view of the current state of planning, the terminals in Žilina and in Košice, which are designed to replace the old and insufficient ones, will be implemented within a relatively short time. Metrans had even planned to start construction of an own terminal in Košice in 2009. In the course of the recession, however, Metrans dropped these plans. The exact location of the new terminal in the region of Bratislava has not yet been decided. The fourth new terminal projected (Zvolen), will probably only be realised in the long run. With the already existing private terminals, the following terminals will be in operation by 2020 (**Figure 4-3**).



**Figure 4-3: Terminal handling capacity in Slovakia by 2007 and by 2020**

Terminal	Net tonnes handled in 2007	Capacity 2007	Capacity extensions
Košice	1,587	141,300	New terminal planned
Bratislava ÚNS	17,944	536,900	
Dobrá	21,677	2,413,700	
Sládkovicovo	120,053	not available	
Žilina	139,491	526,900	New terminal planned
Bratislava Pálenisko	258,515	264,900	
Dunajská Streda	662,655	1,301,000	
Veľká Ida	only in operation since 2008		
Bratislava Region			New terminal planned
Zvolen			New terminal planned
Total capacity		5,185,100	

*Source: Ministry of Transports, Posts and Telecommunications of the Slovak Republic, KC/K+P Analysis*

**Figure 4-3** also presents the results of the estimation of the technical capacity available in 2007. The estimation was based on a calculation model considering the capacity of the handling devices and the length and the number of tracks. According to this estimation, the terminals currently under operation offer a total handling capacity of approx. 5.2 million gross tonnes. In comparison with **Figure 3-5** and the assumption of an average load of 9.2 gross tonnes per TEU, the current capacity seems to be sufficient for the present capacity requirements (**Figure 4-4**).

**Figure 4-4: Terminal handling capacity currently available and required in 2020**

Total handling capacity available in 2007	(gross tonnes)	5,185,100
Total CT volume (without transit)	(TEU)	294,715
total CT volume (without transit)	(gross tonnes)	2,710,941
Use of capacity	(%)	52
Handling capacity required in 2020	(gross tonnes)	7,175,816
Use of capacity in 2020 disregarding capacity extensions	(%)	138
Capacity required in 2020 disregarding capacity extensions	(gross tonnes)	1,990,716

Source: K+P Analysis

Regarding the situation in 2020 **Figure 4-4** shows that the predicted CT volumes according to **Figure 3-5** would require additional handling capacity of nearly 2,000,000 gross tonnes. This result clearly demonstrates that the planned terminal investment programme must be launched. Otherwise the lack of terminals capacity would be a limiting factor for the development of combined transport in Slovakia.

When analysing these figures, it should be kept in mind that most of the existing CT terminals are outdated and, in addition, offer currently no possibility for handling and storing continental load units.



## 5. RECOMMENDATIONS ON INTERMODAL STRATEGY

To resume the analyses and forecasts presented and discussed in the foregoing chapters, the following key points can be developed, which may serve as a guideline for an intermodal strategy in Slovakia:

Currently, the CT in Slovakia is geared a 100 % towards the maritime market. According to our forecast, maritime CT will remain predominant in the future but the continental CT market will grow much more dynamically. Currently the intermodal operators active in the maritime market offer door-to-door services, with the pre- and on-carriage organised by themselves. In principle, it is true that continental load units could be transported and handled also by these operators. Since the continental market can be seen as an alternative to road-through transport, road hauliers however fear that the maritime-oriented operators will then be in competition to them. This is one of the reasons why the continental market has not been developed yet.

On this background it is of utmost importance that continental transport benefits of non-discriminating access to CT. This in turn would clearly mean that the terminals must be operated by independent operators in order to guarantee this.

Another aspect in this context is that the organisation of the internal flows and the storage of load units is completely different for maritime and continental terminals. Hence, in view of the expected growth of the continental market this would mean that new terminals for this market are to be built.

Consequently, the above analysis clearly shows that open access to these terminals must be guaranteed as a pre-requisite. Taking into account all these reflections, the terminal investment programme of the Slovak Ministry of Ministry of Transports, Posts and Telecommunications, which covers the construction of at least three new terminals and their operation by neutral operators, seems to be an appropriate way to develop the continental market.

Moreover, the planned terminals will be highly productive in terms of layout, length of tracks, handling devices and road and rail access. The coupling of these terminals with logistic platforms in the neighbourhood will generate an additional demand for sophisticated logistic solutions including combined transport.


Even if the area of Slovakia seems to be too limited to generate 'real' domestic traffic, it seems to be possible to establish gateway services. For example, the new terminal in the Bratislava region or in Žilina could serve as a 'turntable' for load units between Western Europe and their final destination in the Košice region.

Due to its geographical position, Slovakia can also serve as a European turntable for CT flows, e.g. from the Adriatic ports to Poland and the Baltic Sea ports or between Western Europe and the southern CIS countries, Russia, or even further China. The obstacle of different rail gauges (e.g. between Slovakia and the Ukraine) could be surmounted by highly productive transshipment points, as exist, for example, in Dobrá, allowing the transshipment of one block train in less than 2 hours.

As it was pointed out above, Slovakian combined transport is suffering from one of the highest infrastructure access fees in Europe, which amount to approximately 6 € per train kilometre. Even though combined transport is benefitting from a fifty percent reduction, these access fees are still hampering the development of CT in Slovakia. This is even truer since CT has to face a fierce competition with road transport, which in particular affects continental combined transport. A complete restructuring of the (access fee) system, which was to be implemented in 2009, is currently not pursued due to the lack of funds.

Our capacity analysis has clearly shown that, even under very pessimistic growth assumptions for conventional rail freight and passenger transport, considerable bottlenecks, in particular in the Bratislava region, will occur by 2020. These bottlenecks will make this region the real Achilles' heel in Slovakia. Furthermore, according to this forecast, bottlenecks on the border crossing links to Poland and Hungary should be removed.

It goes without saying that these investments require international co-operation and co-ordination with Poland and Hungary. It should be underlined at this point that this is one of the key issues throughout the DIOMIS project as a whole.



Concluding, we can say that the central fields of action for the development of combined transport in Slovakia are threefold:

- development of the continental CT market,
- a transport policy geared towards supporting the development of combined transport, in particular rail access fees, terminal investment programme coupled with a regulation guaranteeing open access to terminals and, finally,
- an internationally coordinated bottleneck removal programme on the border crossing links between Slovakia and Poland.

## LIST OF FIGURES

Figure 1-1: Slovakia.....	1
Figure 1-2: Comparative socio-economic figures for Slovakia and the other CEE countries of the DIOMIS project in 2006.....	3
Figure 1-3: Share of GDP by categories of resources in 2007 .....	3
Figure 1-4: Development of Export / Import 1995-2007 in billion Euros (2000 prices).....	4
Figure 1-5: Share of imported goods by main commodities in 2007 in monetary terms ..	5
Figure 1-6: Share of exported goods by main commodities in 2007 in monetary terms ..	5
Figure 1-7: Share of main foreign trade partners of Slovakia by 2008 .....	6
Figure 1-8: SWOT Analysis of the Slovakian economy (extract) .....	7
Figure 1-9: Infrastructure network density (km per km <sup>2</sup> ) for the CEE countries covered by the DIOMIS study in 2007 .....	8
Figure 1-10: Development of transport modes (rail & road) in thousand tonnes (left axis) and rail market share (right axis) 1995 – 2008 .....	9
Figure 1-11: Pan-European (rail) corridors crossing Slovakia .....	10
Figure 2-1: CT services offered in Slovakia, 2008.....	12
Figure 2-2: CT services in Slovakia by operators, 2008.....	13
Figure 2-3: Development of CT volumes 1995 – 2008 in Slovakia (net tonnes) .....	17
Figure 2-4: Development of combined transport per type of flow, 1997 - 2007 .....	18
Figure 2-5: Number by type of wagons in operation at ŽSSK CARGO .....	19
Figure 2-6: Railway network in Slovakia.....	20



Figure 2-7: Net tonnes handled in terminals operating in 2007 .....	22
Figure 2-8: Technical characteristics of Slovakian terminals .....	23
Figure 3-1: Comparison of monthly CT volumes 2007 - 2009 .....	25
Figure 3-2: Multimodal forecast of the Transport Research Institute Žilina .....	26
Figure 3-3: Comparison of observed and estimated CT in Slovakia 2005 - 2008 .....	27
Figure 3-4: Terminal investment programme in Slovakia .....	28
Figure 3-5: Evolution of total intermodal rail/road traffic per market segment by 2020 (TEU/year) .....	31
Figure 4-1: Train load and capacity utilisation of the Slovakian network in 2007 .....	34
Figure 4-2: Train load and capacity utilisation of the Slovakian network 2020 .....	35
Figure 4-3: Terminal handling capacity in Slovakia by 2007 and by 2020 .....	37
Figure 4-4: Terminal handling capacity currently available and required in 2020 .....	38





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

December 2009

Dépôt légal December 2009

ISBN 978-2-7461-1736-5 (English version)



Sandra Géhénat  
Tel: +33 (0) 1 44 49 20 84  
Fax: +33 (0) 1 44 49 20 79  
[www.uic.org/diomis](http://www.uic.org/diomis)  
e-mail: [gehenot@uic.org](mailto:gehenot@uic.org)



International Union of Railways  
16, rue Jean Rey - F 75015 Paris  
Tel: +33 (0) 1 44 49 20 20  
Fax: +33 (0) 1 44 49 20 29  
[www.uic.org](http://www.uic.org)



EDITIONS TECHNIQUES FERROVIAIRES  
RAILWAY TECHNICAL PUBLICATIONS  
EISENBAHNTECHNISCHE PUBLIKATIONEN