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Mapping of Logistics Infrastructure of Central and Eastern Europe for Automotive Industry

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Logistics and Transport Management
Master Thesis No. 2006:72
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ABSTRACT

Central and Eastern Europe as an emerging market has become very attractive for automotive OEMs, which are expanding rapidly in the region. Consequently, they are followed by the logistics service providers.

However, poor logistics infrastructure including transport networks and logistics services has become the biggest challenge. LSPs and OEMs are concerned by the situation as their activities and performance are hampered by undeveloped infrastructure and its consequences. The governments are trying to upgrade and expand national logistics infrastructure through numerous intensive investment plans with the help of different funds.

This thesis work is conducted on behalf of Volvo Logistics Corporation, which is the lead LSP of Volvo Group and some other external major OEMs, with the purpose of investigating and analysing the actual and future logistics and transport infrastructure aspects in CEE on regional and national levels.

The research has been carried out for 16 countries under three main headings: transport infrastructure, logistics market and transport policy. In addition, the region's integration and connection links with the neighboring countries and other important emerging markets, in particular Russia and China, are presented. The study covers road and rail transport modes and to some extent inland waterways which are the primary modes to move vehicles and parts within the region.

In order to analyse CEE's attractiveness for the automotive industry, the country-cluster matrix is developed. Research results indicate 4 clusters of countries with different potentials from the automotive and logistics industry perspectives.

Finally, the findings, conclusions and recommendations are elaborated with respect to Volvo Logistics Corporation's future operations and plans within the CEE region.

Key words: *Central and Eastern Europe (CEE), Automotive, Original Equipment Manufacturer (OEM), Logistics Service Provider (LSP), Logistics Infrastructure, Transportation, Volvo Logistics Corporation (VLC), Cluster Analysis.*

ACKNOWLEDGMENT

Throughout this thesis work at Volvo Logistics Corporation, we have had a priceless and incomparable experience. We have been delighted to cooperate with numerous professionals who have been very helpful to share their versatile knowledge with us.

We would like to take the opportunity to thank those who helped us to conduct this work successfully. First of all, we especially want to express our sincere gratitude to our supervisors:

Mats Boll, manager at Volvo Logistics Corporation, for his invaluable guidance, encouragement and professionalism and providing us with a peaceful working atmosphere at his office;

Leif Enarsson, professor at Göteborg University, for his support, advice and valuable feedbacks based on his knowledge and experience.

In particular, we would like to thank all the employees at VLC who at some moments have taken from their daily tasks to answer our inquiries. Special thanks go to the department of logistics development and *Dan Geyer* for his support, enthusiasm and valuable inputs. In addition, we would like to thank all the interviewees and local contacts in different countries for the information they provided.

Furthermore, we would like to thank the academic staffs at the departments of logistics and transport management at our universities, Göteborg University and Chalmers University of Technology, for their motivation and help. We are indeed grateful to *Arne Jensen* and *Johan Woxenius.*

Finally, but certainly not the least, we wish to thank our families and friends for their endless support and patience.

Irena Asakaite **Berk Celik**

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

3PL: *Third-party logistics*
AADT: *Annual Average Daily Traffic*
AC: *Alternative Current*
ACTS: *Advanced Container Transfer System*
AL: *Albania*
BA: *Bosnia and Herzegovina*
BG: *Bulgaria*
BiH: *Bosnia and Herzegovina*
CARDS: *Community Assistance for Reconstruction, Development and Stabilization*
CEE: *Central and Eastern Europe*
CEEC: *Central and Eastern European Countries*
CER: *Community of European Railways*
CF: *Cohesion Fund*
CIS: *Commonwealth of Independent States*
CR: *Croatia*
CT: *Combined Transport*
CZ: *Czech Republic*
D: *Germany*
DB: *Deutsche Bahn AG*
DC: *Direct Current*
DG: *Directorate-General for Transport and Energy*
EBRD: *European Bank for Reconstruction and Development*
EC: *European Commission*
ECMT: *European Conference of Ministers of Transport*
EE: *Estonia*
EIB: *European Investment Bank*
ERDF: *European Regional Development Fund*
ETCS: *European Train Control System*
EU: *European Union*
EU 15: *European Union before expansion in May 2004*
EU 25: *European Union after expansion in May 2004*
FDI: *Foreign Direct Investment*
FYR Macedonia (FYROM): *Former Yugoslavian Republic of Macedonia*
G8: *Group of Eight*
GDP: *Gross Domestic Product*
HU: *Hungary*
I: *Italy*
IFIs: *International Financial Institutions*
IMF: *International Monetary Fund*
IMO: *International Maritime Organization*
IPA: *Instrument for Pre-Accession Assistance*
ISO: *International Organization for Standardization*
ISPA: *Instrument for Structural Policies for Pre-Accession*
JS: *Joint Stock*
JV: *Joint Venture*
LLP: *Lead Logistics Provider*
LSP: *Logistics Service Provider*
LT: *Lithuania*
LV: *Latvia*
MK: *FYR Macedonia*

MoU: *Memorandum of Understanding*
NIB: *Nordic Investment Bank*
NMs: *New EU members*
OECD: *Organisation for Economic Co-operation and Development*
OEM: *Original Equipment Manufacturer*
OSCE: *Organization for Security and Co-operation in Europe*
PL: *Poland*
PPP: *Public Private Partnership*
R&D: *Research and Development*
REBIS: *Regional Balkans Infrastructure Study Regional Transport Network*
RO: *Romania*
RoLo: *Lift On/Lift Off*
RoRo: *Roll On/Roll Off*
SAP: *Stabilisation and Association Process*
SECI: *Southeast European Cooperative Initiative*
SEE: *Southern-Eastern Europe*
SEETO: *South-East European Transport Observatory*
SHP: *Polish Signaling System*
SI: *Slovenia*
SIFA: *Swedish International Freight Association*
SINGER: *Slovenian Intermodal Gateway to European Rail*
SK: *Slovakia*
SLO: *Slovenia*
SR: *Serbia*
SUW: *Polish track gauge changing system*
TACIS: *Technical Aid to the Commonwealth of Independent States*
TEM: *Trans-European North-South Motorway*
TEN: *Trans-European Networks*
TEN-T: *Trans-European Network for Transport*
TER: *Trans-European Railway*
TERFN: *Trans-European Rail Freight Network*
TEU: *Twenty-foot equivalent units*
TINA: *Transport Infrastructure Needs Assessment*
TIRS: *Transport Infrastructure Regional Study*
TR: *Turkey*
UA: *Ukraine*
UIC: *International Union of Railways*
UIRR: *International Union of Road-Rail transport companies*
UIT: *Unit of International Transport*
UITP: *International Union of Public Transport*
UN: *United Nations*
UNCTAD: *United Nations Conference on Trade and Development*
UNECE: *United Nations Economic Commission for Europe*
VAT: *Value added tax*
VLC: *Volvo Logistics Corporation*
VW: *Volkswagen AG*
WB: *World Bank*
WTO: *World Trade Organization*

1. INTRODUCTION

This chapter initially aims to give a general description of the topic with the background information. Further the problem is discussed and the research questions are presented. In addition, the purpose and the limitations of the thesis are stated.

1.1. General Background

The rapid development and growth of Central and Eastern European countries (CEEC) have accelerated the geographic transformation within the EU. Central and Eastern Europe (CEE) has become one of the most important emerging markets by attracting high level of investments from global companies. The region offers various opportunities of sourcing and manufacturing to investors.

Automotive industry has been attracted by the low production and labor costs, favorable business incentives, rapid GDP and transport growths of CEE and its proximity to the mature Western European markets. Although there are certain differences in the business environments of CEEC, the overall good economic performance, high productivity growth, availability of strong scientific and engineering capabilities, attractive tax regimes and trade unions will continue to make the region even more attractive for automotive industry. As a result, almost all major automotive OEMs plan to establish additional production facilities in the coming years. As OEMs expand in CEE, LSPs and major suppliers are following them.

However, poor logistics infrastructure including transport networks and logistics market remains the biggest challenge in the region. There are risks and constraints in some countries which hinder infrastructure development plans. Road networks and highways are underdeveloped and transport quality is low. Rail transport is unreliable and can not serve increasing automotive volumes due to its low capacity, shortage and obsolescence of equipment. Differences of electrical power, signals, brakes and gauges, safety and security standards cause big constraints among CEEC and other neighboring countries. The access to the sea, ports and warehousing facilities is limited. All these infrastructure deficiencies lead to congestions, border crossings and customs problems, longer lead time.

LSPs and OEMs are concerned about the situation as their activities and performance are hampered by underdeveloped infrastructure and its consequences. The governments are trying to upgrade and expand national logistics infrastructure for automotive industry through numerous intensive investment plans through different funds.

The growth of the automotive industry in CEE requires demands of enhancing logistics efficiency. LSPs have been making steady progress and expecting efficient logistics infrastructure in CEE to increase their industrial welfare, growth, and competitiveness. In this perspective, balance of logistics infrastructure with neighboring countries and its availability, accessibility and integration with all transport modes will be critical both from regional and global perspectives in the future.

1.1.1. Volvo Logistics Corporation

Volvo Logistics Corporation (VLC) is a wholly-owned subsidiary within the Volvo Group that designs, handles and develops comprehensive business logistics systems for automotive, commercial transport and aviation industries. It is the appointed lead logistics provider for the companies of Volvo Group. It also serves the global suppliers and other external customers like

Volvo Car Corporation, GM, Land Rover, Renault, Nissan, Ford, Jaguar, Aston Martin, and Boeing. Currently, Volvo Car Corporation is the largest external customer of VLC.

VLC is represented with approximately 950 employees and 30 offices throughout the world with its three major business regions namely VLC Europe, VLC North America, and VLC Scandinavia & Overseas. It provides logistics services and business solutions in inbound (material supply), outbound (distribution), emballage (packaging) and aviation (logistics within the aviation industry).

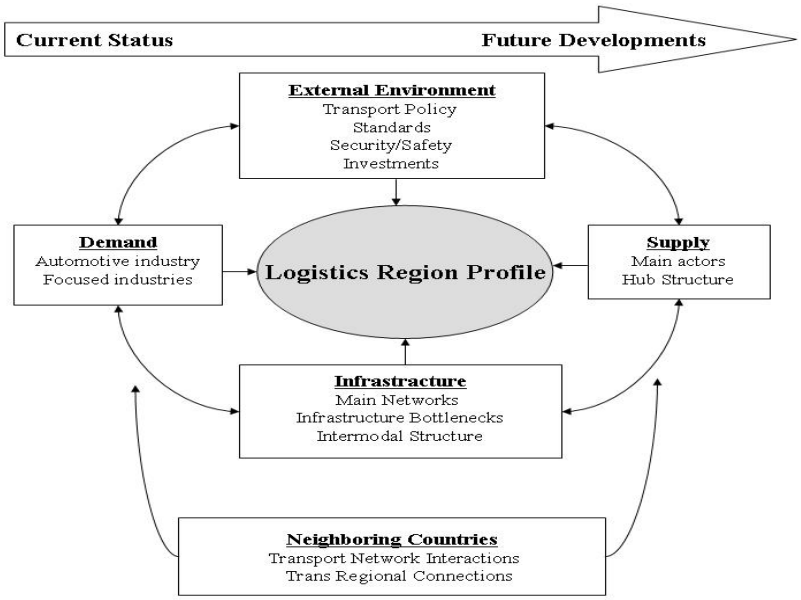
1.2. Problem Discussion

In addition to the proper manufacturing processes, one of the main requirements for the automotive industry development is good logistics infrastructure closely connected to different transport modes which are integrated with each other. In order to provide strong links between manufacturers, suppliers, assemblers and LSPs by decreasing transport time and costs, transport infrastructure and logistics services should be improved to meet the demand of automotive industry. In this context, transport policies, transport infrastructure, logistics markets and structures of countries in relation with transport networks from national and regional perspectives are crucial within the automotive industry.

Although automotive industry is currently one of the fastest growing sectors in CEE, the poor national logistics infrastructure aspects, which are mentioned above remain the biggest challenge for OEMs and LSPs operating in the region.

Logistics infrastructure is affected by four main items: transport infrastructure, logistics markets' structure, transport policy and transport networks. In order to map and analyse current and future status of logistics infrastructure of CEE for automotive industry, logistics infrastructure's interrelations with its main defined items are presented as follows:

Figure 1-1 Interrelations between the Factors Influencing Logistics Infrastructure



Source: Authors

1.3. Research Questions

The problem discussion section has enabled to form and investigate the main research question and research sub-questions. The research question reflects the purpose and specifies the direct issues to be investigated in detail throughout the research project. The specific findings obtained at the end of the research project are evaluated in details in the analysis section. The main research question has been stated as follows:

How do the logistics infrastructure of CEE and its relation with automotive industry look like?

In order to analyse logistics infrastructure of CEEC the aspects closely affecting it should be initially investigated. These aspects have been decided as transport infrastructure, logistics market and structure, transport policy, transport networks and their integration with neighboring regions. Mapping and analysing of all these aspects for VLC's current and future operations, which provides logistics services mainly for automotive industry, from national and regional perspectives are crucial. Automotive industry volumes in CEEC are related to logistics infrastructure analysis of each country.

In order to solve such an extensive research question, it is broken down into research sub-questions, as follows:

1. What are the transport policies of CEEC?

In order to find a satisfying answer to this research sub-question, current and future transport policies of CEEC are covered from EU, national and regional perspectives. Ongoing and planned infrastructure investments are also mentioned. In addition, information about transport safety/security and standards of each country is provided.

2. How does the transport infrastructure of CEE look like?

The intention of this question is to obtain the general status of transport infrastructure. The research is mainly focused on main transport networks and future projects, infrastructure related bottlenecks, intermodal structures within CEEC.

3. How do the logistics market and logistics structures of CEE look like?

This research sub-question investigates and presents domestic and international transport actors (LSPs, traditional carriers, etc.) operating in the region. Under the same sub-question the core industries of the CEE emerging markets are analysed. Besides, countries' logistics hub potential for automotive and other industries is investigated.

4. What are the transport connections of the CEEC with their neighboring countries and other emerging markets?

With this research sub-question brief perspective is presented to find out the relations and interactions of CEE with neighboring countries namely Western European countries and CIS countries. Main trans-regional connections with other emerging markets, particularly China and Russia are covered briefly.

1.4. Purpose

The purpose of the thesis is to investigate and analyse important actual and future logistics and transport aspects of CEE's logistics infrastructure with respect to VLC's future operations and plans within the CEE region.

With this purpose the findings obtained from the research are connected to the automotive industry which is the main business interest of the company.

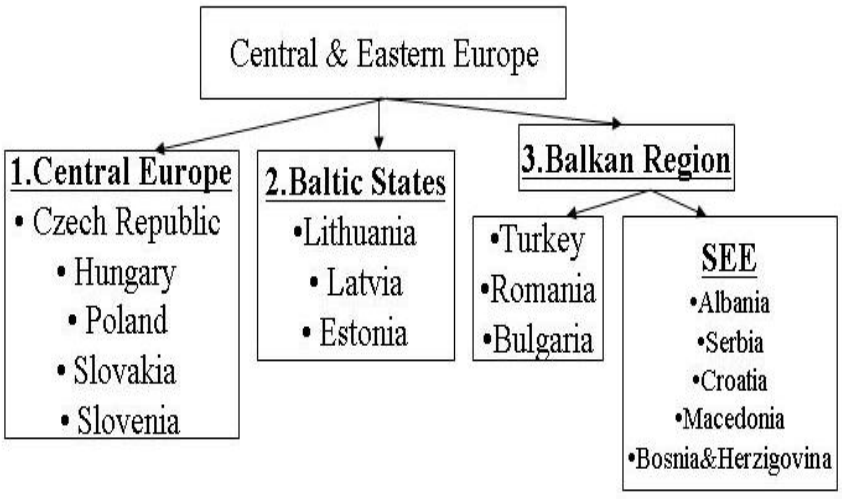
1.5. Limitations

As regards of the thesis purpose some limitations and definitions have been stated. The main factors which have set the limitations for the research are time, information accessibility, geographical, industrial and transport mode considerations. The time horizon of the research is set to seven months, spanning from June to December 2006 which implies that information available after this period has not been addressed.

VLC designs, runs and develops business logistics systems for automotive, transport and aviation industries. However, the findings of the research have been considered only for automotive industry which is the core industry of the company. Additionally, the research has been delimited by road and rail transport modes and to some extent inland waterways. Air and sea transport are not the areas of the research.

CEE is variably defined by different sources depending on the used context. In this project CEE is limited by 16 countries which are generally grouped under 3 regions: Baltic States, Central Europe and Balkans.

Figure 1-2 Central and Eastern European Countries by Region



Source: Authors

Rarely, the term South Eastern Europe (SEE) has been used for Balkan countries. Relations and interactions with other countries have been mentioned in related sections. However, they are not the focus of the research.

2. METHODOLOGY

The part presents the research methodology used for the thesis writing. Further the data collection process during the research is described and the method used for the analysis as well as the quality of the study is mentioned.

2.1. Research Approach

It is very important that the good design and approach are considered for conducting successful research. According to Gill et al.[1], there is no best approach, but the most effective approach for the resolution of a given problem depends on a large number of variables, among which the nature of the research problem itself.

The difference between inductive and deductive approach of gathering information is that the deductive approach uses the prior theory before the gathering the data and facts based on the theory. When using the deductive approach, the researcher tests theory which is chosen in order to find the data matching this theory[2]. Therefore, the approach used for this research is considered as deductive approach.

In addition, the study is also based on qualitative approach for better understanding of the problem. There are two main strategies which are used during the research: qualitative and quantitative. However, the importance of qualitative method should be stressed for deeper understanding of the research topic through data analysis[3]. It is not represented by numbers but focuses on the meaning and researcher's involvement into the process[4].

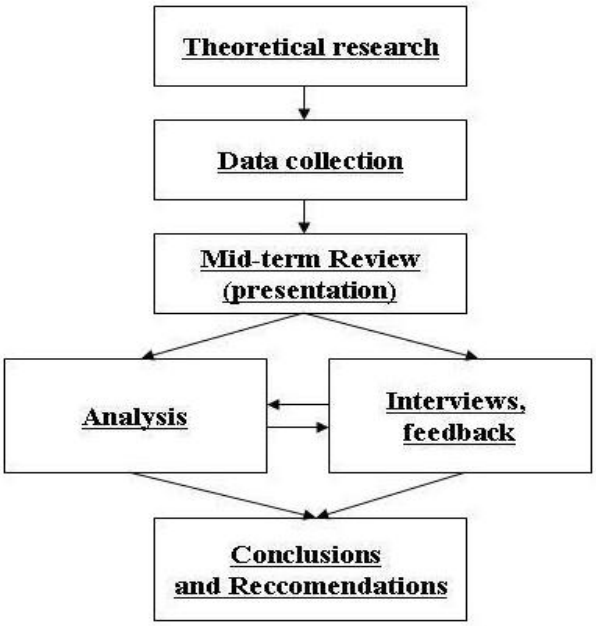
According to Sekaran[5] the quantitative approach is focused on numbers and provides hard empirical statistical results. Taylor[6] notes that the qualitative research is a method designed to give a real and stimulating meaning to the studied phenomenon. As to quantitative strategy, it measures objective facts by focusing on variables and involves many cases. For instance, there are statistical analyses that are independent of the context.[7]

2.2. Research Design

Research design is an approach to a problem that can be put into practice in a research program or process that could be formally defined as an operational framework within which the facts are placed so that their meanings may be seen more clearly. In addition, Yin[8] states that research design is a logical sequence connecting empirical data to the research's questions and conclusions.

[1] Gill J. et al , 1997
[2] Merriam S. B., 1998
[3] Strauss A. et al., 1990
[4] Taylor R. G., 2000
[5] Sekaran U., 2003
[6] Taylor R. G., 2000
[7] Neuman W.L., 1997
[8] Yin R.K., 1994

Figure 2-1 Research Design



Source: Authors

Basing on the main research questions and sub-questions the research is design following the deductive approach principle: from theoretical research to the data collection. Based on data collected the mid-term review of information is done, which provides the background for the analysis. The final conclusions are made considering the analysis findings and feedback from the interviews.

2.3. Data Collection Approach

2.3.1. Methods for Data Collection

The scope of the research, which covers large number of countries, requires not only well-organised data collection method but also a well-designed data collection approach on the systematic basis.

The set-up including local and internal contacts, official websites, is used for data collection. Based on these sources the substantial information covering EU and regional transport policies aspects, investments into infrastructure, as well as current and future status of infrastructure and transport market development in CEE countries are conducted via desk research. In addition, face-to-face, phone and e-mail interviews are carried out for analysis and recommendations parts.

As most of the data is gathered by combination of personal interviews and desk research, the research is based on the combination of two categories of data which is primary and secondary.

2.3.1.1. Primary Data Collection Approach

Primary data is collected by researches in order to solve a specific problem. It is new data that has not been used before and can be collected through observations, interviews or surveys. Primary data is collected by interviews mainly to support findings for recommendations and analysis parts as well as in cases when the secondary data is not available.

Interviews

Interviews allow the authors to collect specific information to the research problem data, when secondary data is unable to satisfy the research needs. There are different types of interviews and the most common is face-to-face people interview.

The type of interviews used during the research is semi-structured interviews. The semi-structured interviews capture the depth and spontaneity of an unstructured interview. At the same time a general structure is followed, whereby a list of rather more specific questions are presented to ensure that the interviewer covers the necessary areas and asks the questions in a similar way in all interviews.

The format of interviews is qualitative and the result of the survey is a combination of the respondents' answers, which are used during thesis writing. The interviews are conducted considering two different purposes: for transport market analysis and to support analysis and recommendation parts.

To collect the information about the transport market, the interviews are conducted with national freight associations. The questionnaire including the questions about main market players and their assets is developed and sent to national carriers' organisations.

The persons for interviews are usually contacted by e-mail and asked for half/hour phone or face-to-face interview as well as for some other useful contact information. The interviewed persons are selected based on their involvement and knowledge about CEE markets.

2.3.1.2. Secondary Data Collection Approach

Secondary data collection method can be described as the method using the data which is already collected, such as government statistics, previous reports, organizations databases, etc. It is important to be critical with such kind of data.

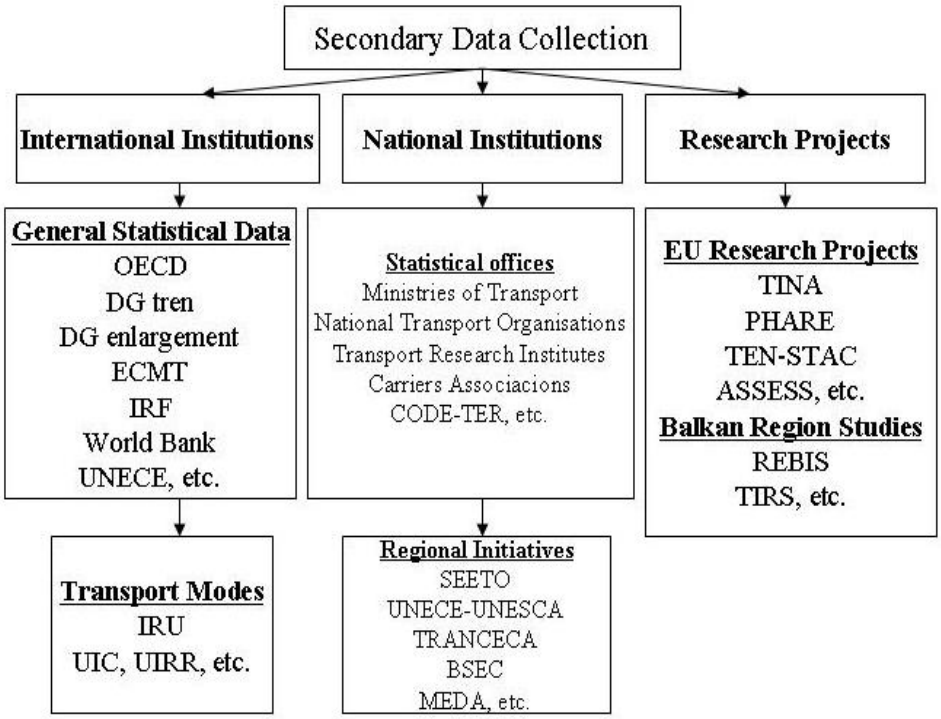
The discussion about the infrastructure status and development in the region principally relies on information collected from secondary sources, including national statistics, trade and transport ministries, chambers of commerce, freight associations.

The main advantage of using secondary data is that it is usually available and the researcher can immediately analyze it in order to find an answer to the research question. However, the secondary data is often doubtful in terms of validity and reliability.

This thesis is focused on the external secondary data (the data collected outside the company) and relies heavily on journal articles and official Internet-based information as these sources could be reached easily and provide wide spectrum of data. These sources are selected based on the reliability, validity and credibility. To ensure this, the authors gathered secondary data written by experts in the field of automotive logistics from well known magazines and newspapers such as Automotive Logistics, Automotive News Europe, Logistics Europe, etc. Except the external data, the internal sources were also used such as VLC intranet, internal documentation and presentations.

Internet-based sources are summarized in the Figure 2-2 below:

Figure 2-2 Secondary Data Collection Sources



Source: Authors

As CEE region consists of 16 different countries and there is no single source that covers all of them, mix of sources from different international and regional institutions are considered during data collection.

Also different kinds of existing reports are very helpful in supporting and summarizing the collected material, such as World Bank reports, official statistics reports, market and consultant reports in order to collect the latest data for the analysis. Regional initiatives, which are especially active in South-Eastern Europe, are useful for the research as well as different national studies, reports and documents at a country level. The information provided by the Volvo Library is used to describe the automotive industry trends.

For transport market assessment the companies' official websites are widely used. However, this source of information required some critical assessment to avoid the promotion tools influence.

2.3.2. Availability of Data

The availability of data varies significantly within the countries and for each transport mode. Although since May 2004 many of CEE countries have joined the EU, there are still some differences in data availability on different levels. The problem of recent statistics availability caused the difficulties in comparison and prolonged the research. There are some difficulties in finding the latest data as well as the future prognosis, since the most available data refers 2003. However, the latest available data is used for the research.

Accessibility to official information also differs considerably among the countries: from poor data offered by Balkan countries to more detailed in the Baltic region. Access to information is often limited (data not published or extra payable).

The other information barrier is the national languages and lack of information in English especially when it comes to non-EU countries. However, some publications are translated using authors' language skills.

There are also problems with data on national level connected to differences in data collection methods in respect to regional and national statistics systems. Some national data is not fully compatible with EU requirements.

Also it is rather hard to collect data about road transport market because of its high fragmentation. The most of data for this sector is collected via interviews and contacts with national freight associations.

2.3.3. Data Collection Strategy

Two main strategies for data collection could be defined as follows:

The data collection based on national sources. Different national statistics data bases are used as an information source in addition to the contacts with national agencies and companies. However, national data should be collected with a lot of care since it has a national basis for a simple reason. Another important aspect when using such strategy is that the information should be analysed based on independent criticism to define real potential projects from the information having the main goal to promote the region.

The data collection based on international sources. This strategy is necessary in order to make possible data comparisons within the countries to avoid the differences when dealing with national statistics. The statistics is also compared with the data in specialized trade and transport journals.

In order to benefit from the synergies of both approaches and to be sure of the reliability of data the combined strategy is used in the research. In addition, the information provided by previous regional studies is used. All the information is systematized, analyzed and presented in the report.

2.4. Data Analysis

The analysis for the research is built on the collected and interpreted data and is summarized in the analysis part.

After all the data concerning the transport policy, infrastructure and transport market as well as automotive industry presence in CEE region is collected including particular countries' profiles, the decision about the most potential markets should be taken for further analysis, conclusion and recommendations. To check whether these countries offer business opportunities for automotive industry the country-cluster scheme is developed classifying 16 countries of CEE in respect of their overall attractiveness for automotive logistics industry.

Cluster analysis is the identification of subgroups of data having similar multivariate profiles[9]. The main purpose of the cluster analysis is to define whether the variables compose individual groups (clusters) and to determine the interrelations within and between the clusters groups.

[9] Hamilton L. C. ,1992

The main advantages of the cluster analysis are flexibility and visibility as well as the ability to summarize variety of factors based on complex input. Therefore, this kind of analysis can suggest groupings that would not become apparent without complex analysis. This enables to target clusters instead of considering one general strategic approach. However, these attributes should be related with the case of each specific research since it can be affected by different specific factors. The result might contain uncertainty since such kind of analysis requires assumptions when there is lack of evidence in collected data.

The procedure of aggregation of information is developed after extensive discussions between the authors as well as based on some interviews.

2.5. The Quality of the Study

It is extremely important to evaluate the accuracy of the research concerning data collection methods and the findings of analysis. Each step is followed by data quality measurement in order to be logical in findings and come up with relevant analysis of high quality.

One of the most important factors influencing the research quality is the ability to evaluate critically. Therefore, the methods used to conduct critical evaluation include construct validity and reliability[10].

2.5.1. Validity

Validity reflects whether an item measures or describes what is supposed to be measured or described[11]. In other words, it shows whether all the changing factors are considered during analysis. Validity can be achieved through multiple sources of evidence or establishing chains of evidence, as well as data triangulation[12]. The data for analysis consists of the infrastructure aspects of CEE countries as well as the automotive industry presence in the region. Therefore cluster method is used for the analysis as it is mentioned above. The model summarizes all important factors for the chosen research area.

2.5.2. Reliability

Reliability means the extent to which a test or procedure produces similar results under constant conditions on all occasions.[13] The reliability is based mainly on two criteria: the use of the methods and a time dimension. When it comes to time it is rather critical factor since the transport industry is very dynamic as well as CEE markets are emerging and changing fast. The scoring method is based on the data collected during research. At the same time the total results of scoring are compared at the end with the global infrastructure index conducted by IBM and the difference is not significant, which proves the reliability of study.

[10] Yin R.K., 1994
[11] Bell J., 1999
[12] Yin R.K., 1994
[13] Bell J., 1999

3. THEORETICAL FRAMEWORK

This chapter explains the main concepts, theoretical aspects and terms that the research of the thesis is based on. Fundamental items of transportation and logistics are discussed. The framework defines transport infrastructure, modes, policy, bottlenecks and actors. Besides, intermodal transport and its relation with combined transport are elaborated. Finally, logistics centre (hub) and factors related to it are described.

3.1. Transport Infrastructure

Bannister et al[14] define the transport infrastructure as a part of the durable capital of the city or region in question and fixed in location. Transport infrastructure has the following characteristics: the parts make up networks; it forms an indispensable part of the total production costs of goods; it has substantial elements of natural monopoly; sunk/capital costs are high, but running costs are low. Infrastructure is traditionally a concern and responsibility of public sector, which can mean local, regional or state government.

According to Stock J. R. et al[15], there can be significant differences between the transport infrastructures found in countries throughout the world. Variations in each of the transport modes will exist throughout the world and must be examined by logistics executives distributing products in those areas. Differences in taxes, transport subsidies, regulations, government ownership of carriers, geography, and other factors can significantly influence the modes and carriers selected for inbound and outbound freight movements.

Enarsson[16] mentions that dependency on infrastructure is basic for all modes of transport and with an emphasis on the infrastructure the following aspects can be stated in an overall perspective:

- the infrastructure makes conditions and possibilities;
- there must be co-ordination between the different modes of transport;
- the infrastructure must be built on national perspective with international adaptation;
- the limited resources demand concentrated directives and hard priorities;
- the demand from the industry are of greater importance.

The railway infrastructure can be characterized nationally as well as internationally by the fact that it is considerably sparser than the road network. It is important to point out that the infrastructure of the railway was in many cases built over hundred years ago and that it was then adapted to the demands of that time. Furthermore, during a long period of time, many parts of the railways net have been closed down as a result of insufficient profitability. This is the fact that the railway net of today mainly contains a main net between the larger cities, with certain minor nets connecting to this frame.[17]

3.2. Transport Modes

3.2.1. Road

Highway transportation has expanded rapidly since the end of World War II. To a significant degree the rapid growth of the motor carrier industry has resulted from speed and ability to

[14] Bannister D. et al., 2000
[15] Stock J.R. et al., 2001, p 375
[16] Enarsson L., 2006, p 257
[17] Lumsden K. R., 2003, p 67

operate door-to-door. Motor carrier operations are characterized by low fixed and high variable costs. Labor requirements are also high due to driver safety restrictions and need for substantial dock labor.[18] It is more flexible and versatile than other transport modes. It offers customers fast, reliable service, with low levels of damage or loss.[19]

Lumsden[20] states that the heavy growth of road transport is to a great extent due to the conditions and characteristics that are a part of the basic idea of truck traffic and mentions these factors provided by trucks as small scale qualities, flexibility, safety, reliability, service, adaptability. The strength of these factors creates the basis for a continuing expansion of this means of transport and for the adaptation to constantly new institutional changes.

3.2.2. Rail

In recent years rail transport has become more specialized in terms of the traffic it carries, with the emphasis being given on low value, high-density, bulk products. Railways have a high level or proportion of fixed costs since they provide their own right-of-way and terminal facilities. The high level of fixed costs helps give rise to economies scale in the railroad industry, which can have a dramatic impact upon profits when the volume of traffic increases.[21]

Rail network is not nearly as extensive as the highway network in most countries. Therefore, rail transport lacks the versatility and flexibility of road carriers because it is limited to track facilities. As a result, it usually provides terminal-to-terminal service. It has disadvantages compared to road carriers in terms of transit time, frequency of service, equipment availability.[22]

Enarsson[23] claims that the conditions in general mean that railway transport is best suitable for transports between large companies, ports and warehouses and can be developed with intermodal transport.

3.2.3. Inland Waterways

Inland waterway transport, such as rivers and canals is one of the water transport categories. In Western Europe, it is much more important because of the vast system of navigable waterways and the accessibility to major population centers provided by water routes.[24] Water carriers compete actively for the movement of bulk liquid and dry/low-value, high-density items on the inland water systems. They use a limited variety of types of equipment and typically use public or shipper-provided terminals.[25]

Diesel-towed barges generally operate on rivers and canals and have considerably more flexibility. The slow transit time of river transport provides a form of product storage in transit that can benefit integrated logistics system design.[26]

[18] Boxersox D. J. et al., 2002, p 342
[19] Stock J. R. et al., 2001, p 323
[20] Lumsden K. R., 2003, p 51
[21] Coyle J. J. et al., 2000, p 143
[22] Stock J. R. et al., 2001, p 324
[23] Enarsson L., 2006, p 269
[24] Stock J. R. et al., 2001, p 327
[25] Coyle J. J. et al., 2000, p 167
[26] Boxersox D. J. et al., 2002, p 344

3.2.4. Modal Classification

Bowersox D. J. et al[27] ranks modal operating characteristics with respect to speed, availability, dependability, capability, and frequency.

Speed: It refers to elapsed movement time.
Availability: It refers to the ability of a mode to service any given pair of locations.
Dependability: It refers to potential variance from expected or published delivery schedules.
Capability: It is the ability of a mode to handle any transport requirement, such as load size.
Frequency: It relates to the quantity of scheduled movements.

Table 3-1 Relative Operating Characteristics by Mode

Operating Characteristics*	Rail	Road	Water
Speed	3	2	4
Availability	2	1	4
Dependability	3	2	4
Capability	2	3	1
Frequency	4	2	5
Composite Score	14	10	18

* Lowest rank is best.
Source: Bowersox D. J. et al.

3.3. Transport Policy

According to Coyle J.J. et al.[28], the purpose of transport policy is to provide direction for determining the amount of resources that will be dedicated to transportation and for determining the quality of service that is essential for economic activities. Transport policy provides the framework for the resources allocation to the transport modes. Transport policy is related to ensuring the safety of travelers, protecting the public from the abuse of monopoly power, promoting the competition, developing or continuing vital transport services, balancing environmental, energy, and social requirements in transportation, planning and decision making.

National transport policies are developed on various governmental levels and by different agencies. Government intervention is needed to design feasible routes, cover the expense of building public highways and rails, and develop harbors and waterways.

3.4. Infrastructure Bottlenecks

Bottlenecks differ from region to region, depending on infrastructure standards and traffic flows. They can be described in terms of technical, economic, political or environmental shortcomings, leading to bad accessibility to the system. A general definition of bottlenecks is *"transport conditions leading to too long travel times and/or causing delays for freight or persons"*.

Technical bottlenecks are for instance problems with regard to low standard in infrastructure, such as narrow winding roads, bad old-designed rails and poor access to ports and air ports. This means ineffective transport of goods with longer lead time.

Economic bottlenecks are, of course, not sufficient funds for infrastructure investments.

Environmental bottlenecks can be shortcomings in public transport facilities leading to unnecessary use of cars for commuting.

[27] Boxersox D. J. et al., 2002, p 346
[28] Coyle J. J. et al., 2000, p 69

Political bottlenecks can be border crossing problems due to complicated customs procedures.

When a region, due to political shortcomings in decision-making, cannot point out for instance one port to focus on, is another example of political bottlenecks.[29]

3.5. Intermodal Transport

Intermodal transport involves the use of two or more transport modes in moving a shipment from origin to destination, primarily through the use of the container[30]. As several transport modes are used, each one of them can be used where it is most efficient in point of view of customer benefit, resource utilization or environmental effects. A number of advantages can be achieved through a combination of multimodal transport and the utilization of unit loads.

Woxenius et al[31] state that there are different definitions of intermodal transport and the related concepts of combined transport and multimodal transport. The ECMT (European Conference of Ministers of Transport) and the European Committee for Standardization (CEN) use the following definition for intermodal transport: *The movement of goods in one and the same loading unit or vehicle which uses successively several modes of transport without handling of the goods themselves in changing modes.*

The EC definition goes beyond the ECMT/CEN definition, and corresponds with the ECMT/CEN definition of multimodal transport: *The movement of goods whereby at least two different modes are used in a door-to-door transport chain.*

Another definition of intermodal transport is given by Jensen[32]: The goods are loaded onto a load carrier at the sender and follow the load carrier to the receiver, where it is unloaded. The load carrier is transferred at least once from one means of transportation to another between the sender and the receiver.

3.6. Transport Actors

3.6.1. Traditional Carriers

Bowersox et al[33] define the most basic carrier type as a transport company that provides service utilizing only one of the transport modes. Focus on a single mode permits a carrier to become highly specialized. Although they are able to offer extremely efficient transport, such specialization creates difficulties for a shipper who desires intermodal transport solutions because it requires negotiation and business planning with multiple carriers. According to Stefansson[34], the carriers often own a significant part of their resources, are owners or leasers of the trucks and the equipment needed for their operation, and are in that sense asset-based operators.

[29] Baltic Tangent, Report on General Infrastructure Bottlenecks, 2006, p 4
[30] Coyle J. J. et al., 2000, p 212
[31] Woxenius J. et al., 2001
[32] Jensen A., 1990, Combined Transport – Systems
[33] Boxersox D. J. et al., 2002, p 347
[34] Stefansson G., 2004

3.6.2. Freight Forwarders

According to Bowersox et al[35] freight forwarders are for-profit businesses that consolidate small shipments from various customers into bulk shipment and then utilize a common surface or air carrier for transport. At destination, the freight forwarder splits the bulk shipment into the original smaller shipments. Local delivery may or may not be arranged by the forwarder. Stock et al claim that forwarders offer shippers lower rates than shippers could obtain directly from the carrier because small shipments generally cost more per pound to transport than large shipments. Freight forwarders can be domestic or international depending on whether they specialize in shipments within a country or externally to other countries.

3.6.3. Third Party Logistics Service Providers

Bowersox et[36] al believe that with the increasing emphasis on supply chain management, more companies are exploring the third-party option. For some firms, dealing with one third-party firm that will handle most of their freight offers a number of advantages, including the management of information by the 3PL, freeing the company from day to day interactions with carriers, and having the third party oversee hundreds or even thousands of shipments.

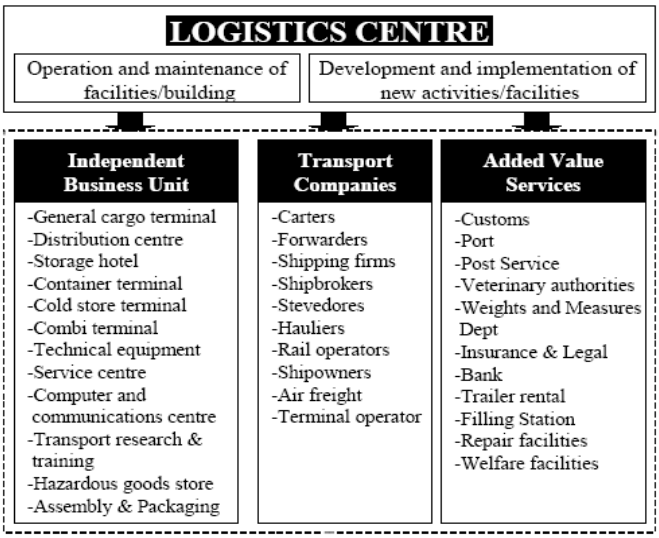
3.7. Logistics Centre and Hub

According to the current report, Best Practice Handbook for Logistics Centres[37], the concept of logistics centre has many different names and meanings. Some of the used names are: transport centre, freight village, intermodal hub, logistics platform, logistics node, intermodal terminal, interport etc. This thesis project adopts the definition given by the mentioned handbook:

A logistics centre is a centre in a defined area within which all activities relating to transport, logistics and the distribution of goods-both for national and international transit, are carried out by various operators on a commercial basis.

Figure 3-1 shows the spectrum of feasible functionalities and organizational aspects for a logistics centre.

Figure 3-1 Structure of Logistics Centre



Source: Best Practice Handbook for Logistics Centers

[35] Boxersox D. J. et al., 2002, p 353
[36] Boxersox D. J. et al., 2002, p 353
[37] Bentzen K. et al, 2003, p 18

3.7.1. Factors Determining Location and Service Structure of a Logistics Centre

According to the final report of NeLoC[38], in practice many factors have an influence upon the location and service structure of a logistics centre. As an effect of performed analyses, these factors have been classified into five groups:

- location of a logistics centre;
- functional structure of the logistics centre to carry out specific service tasks;
- configuration of a logistics network (surroundings of the centre), including the logistics centre customers;
- management system of the supply chain the logistics centre belongs to;
- policy of the authorities.

[38] Kondratowicz L. et al, 2003, p 49

4. TRANSPORT POLICY

Transport policy plays an important role for the transport infrastructure and logistics market development. In this perspective, this chapter discusses national transport polices of CEEC. As all of them are European countries, it starts from the EU perspective towards the CEEC's transport policies. Additionally, transport safety/security issues are covered and infrastructure standards for road and rail are provided. The chapter ends with extensive information about ongoing investment into transport infrastructure.

4.1. EU PERSPECTIVE

This part discusses the EU transport policy and its reflections on CEE countries. In connection with EU perspective, the White Paper and some other legislations of the European Commission, including acquis, have been covered.

EU has great influence on transport policies of all CEE countries, especially on the NMs and candidates. Being the main trade partner, EU also participates actively in the transport infrastructure investments in the region, especially in funding the infrastructure through TEN-T systems. According to its estimations 20 000 km of roads and 30 000 km of rail should be built or improved in the new member states by 2015. The importance of infrastructure development is obvious taking into account EU enlargement and traffic flow growth.

4.1.1. EU Transport Policy

Directorate-General for Energy and Transport, based in Brussels is the main agency involved in EU transport policy. EU transport policy has multi-dimensional characteristics, which includes the development of infrastructure (the main focus is TEN-T), the transport market liberalisation, transport technology modernization, the development of sustainability, transport security improvement, harmonization, etc.

The main directions of EU transport policy are stated in the EU White Paper, which constitutes an action plan aimed to improve the quality and efficiency of European transport.

According to the White Paper, EU transport policy includes the following objectives[39]:

- Shifting the balance between the modes of transport by improving the quality of the road transport sector, revitalizing the railways, promoting inland waterways and intermodality, etc;
- Eliminating bottlenecks by building TEN;
- Placing users at the focus of transport policy by improving road safety, implementing effective charging for transport, recognizing users' rights and obligations, developing clean efficient transport;
- Managing the globalization of transport.

Moreover, nowadays the EU Transport Policy is facing three main challenges stated as follows:

- Congestion and bottlenecks (delays, traffic jams, economic cost to society, etc.);
- The environment (greenhouse emissions, noise pollution, visual intrusion);
- Enlargement which is connected to infrastructure needs. In most cases existing infrastructure in CEE countries is not suitable for future needs.

[39] EC, 2001, White Paper: European transport policy for 2010: time to decide.

Concerning the congestion there are two groups of challenges in EU: reducing congestion and increasing accessibility. While congestion is more important issue for EU 15, the accessibility is the main concern for the CEE countries.

In June 2006 EC published the Communication, "Keep Europe Moving - Sustainable mobility for our continent", which is a mid-term review of the White Paper. The review highlights that the context defining Europe's transport policy has changed over the past five years and that the EU needs new tools to face challenges [40] such as enlargement, globalization, global warming, energy shortages and security issues. The review also stresses that modal shift principle has not met expectations and is tuned down.[41] Focus now is put to the concept of co-modality (optimization via improved logistics).

Trans-European Networks

As it is stated above, in 1992 the EC presented a White Paper on the "Future development of the common transport policy" which has the goal to promote Trans-European Transport Networks (TENs). The main aim of TEN policy is to turn the national networks into a single network by eliminating bottlenecks and adding the missing links. During Essen summit the priority projects were selected in road and rail sector. Agenda 2000 suggests also extending financial aid to cover combined and "intelligent" transport systems.

The EU interest in infrastructure outside the enlarged EU is different and focused mainly on the infrastructure integration issues: management of border crossings, well functioning customs posts, bottlenecks elimination, especially with countries which are close to EU borders.

The Acquis Communautaire (acquis)

The EU transport policy towards the CEEC defers according to the following groups of countries:

- *New EU members* (Latvia, Lithuania, Estonia, Czech Republic, Slovakia, Slovenia, Poland, Hungary);
- *Acceding countries***,** which are new EU members from 2007 (Romania, Bulgaria);
- *Candidate countries* (Turkey, Croatia, FYR Macedonia);
- *Potential candidate countries* (Albania, Bosnia and Herzegovina, Serbia). The progress of being recognized as candidates for these countries depends on their engagement in the Stabilisation and Association Process (SAP).

In order to join EU all the countries should implement in time all the requirements of acquis as well as change the national laws, which are often connected with changes in the administrative bodies. From the first day of membership in EU, countries should apply the common EU legal framework, which includes chapters concerning customs, administration, transport policy, standards and technical requirements, IT policy, etc.

The acquis have been divided into 31 different chapters for the enlargement negotiations with acceding countries. Each chapter should be closed by the candidates in order to join the EU. The transport issues are covered by Chapter 9 ("Transport Policy") of the acquis communautaire. This chapter is very complex and forms about 10% of the European acquis.

[40] EU Information Website: Transport policy looks set for U-turn.
[41] Stefan Back, SIFA, 2006

For the further negotiations with Croatia and Turkey all the acquis was divided into 35 chapters. In order to achieve the better balance between the chapters, the part "Transport policy" was divided into two chapters: "Transport policy" and "Trans-European networks". The "TEN" chapter focuses on development and upgrading the transport infrastructure of candidate countries with the EU financial assistance. It requires preparing a list of priorities, identifying major national corridors which are connected to the European corridors.

The transport chapter was opened with all the countries and was closed with Estonia, Latvia, Lithuania, Hungary, Poland, Slovenia, Slovakia and Czech Republic in December 2002 and with Romania and Bulgaria in December 2004. In September 2006 the chapter "TEN" was closed with Croatia.[42] The status of Acquis Requirements of Chapter 9 ("Transport policy") with CEE countries is described in Appendix 1.

Road Acquis

The road sector is one of the most sensitive issues and acquis requirements cover the wide area of fiscal (fuel and infrastructure payments), technical, social (driver age, working and rest time, control procedures), safety, environmental and other aspects. EU proposes the open access to the road market which is connected with high competition growth. However, internal road market framework is established quite well and by 2009 the cabotage should be opened in respect of all NMs. The predominance of small companies and the impact of the competition of the considerable differences in fuel tax levels are important factors that will influence future development.[43]

However, there is a possibility to request transitional period for NMs, which restricts the access to national markets for 2-3 years. In addition, Member States can notify the EC about the prolongation of transitional period for maximum of two years. In some cases the period could be prolonged further for a year. Furthermore, countries which have not prolonged the transitional period may apply safeguards up to the end of the fifth year. In the road transport sector, some requests for limited transitional periods have been accepted in the cases of Bulgaria, Latvia, Lithuania, Hungary, Poland and Romania.[44]

Rail Acquis

The rail market framework is expected to be completed by 2007 and it is more focused on liberalisation of the sector for all the EU members. However, EU needs to solve the remaining structural bottlenecks, especially when it comes to technical barriers as low level of interoperability, weak infrastructure coordination, interconnections of IT systems, problems of single wagon loads and mutual recognition of rolling stock and products.

All the countries except Hungary and Poland, for which EU has proposed provisional closure of transport chapter, are close to rail acquis implementation. For the market access of these two countries limited transitional period was accepted.

4.1.2. EU Transport Policy towards SEE

EU is the main promoter of the regional transport policy of SEE, which stresses the important of region's transport system integration. EU approach is supported by the strong presence of IFIs in

[42] Ministry of Sea, Tourism, Transport and Development, Croatia
[43] Mid-term review of White Paper, 2006
[44] European Commission Official Website

the region. Balkans is the region where regional stability depends on the stability of every component country.

SEE transport system is highly fragmented with about 5 000 km of borders.[45] In spite of the fact that transport infrastructure network in SEE is of high density, the transport services are inefficient and networks are under-utilised.

The work of EC on SEE infrastructure development includes the selection of limited number of the rail and road projects of regional importance. For this purpose bilateral agreements were signed almost with all the countries. However, the work on regional agreement is still in process due to the political challenges in the region. (status of Kosovo, separation of Serbia and Montenegro, etc.).

"The 5-year Multi-Annual Regional Plan 2006-2010" was signed by Western Balkan countries for regional coordination, which aimed to develop and implement the common transport policy of the region. It contains a list of 145 infrastructure projects which were reduced to 22 projects of regional importance and 20 regional so-called "soft" projects (technical standards harmonization, border crossing simplification, etc.). As rail mode is more affected by regional fragmentation, the rail strategy is developed for the whole region in addition to the national strategies to open access to transport infrastructure.

The regional CORE network, which was defined during REBIS study, includes main rail and road networks between five capitals, other main cities (Banja Luka, Podgorica, and Pristina), neighboring countries and Adriatic Sea and Danube ports.

[45] Tilling, C. The EU common transport policy for south-east Europe, South-East Europe Review 1/2006

4.2. REGIONAL PERSPECTIVE

This part discusses the regional and national perspectives of CEE countries' transport policies and interrelations with EU transport policy. There is a special focus on new EU members which face rapid developments following the EU expansion.

When it comes to regional policies of CEEC it is important to understand that the instruments used in transport policy of these countries differ from the Western European as well as their economic situation. Among the main changes started in transport sector from 1990s there are modal split changes (shift from rail to road transport from 1997, except Estonia and Bulgaria), railway sector's decrease (reduction of railway lines especially in Lithuania, Poland).

Implementation of EU transport policy in the CEEC is usually influenced by other international obligations that are adopted or to be adopted (membership in UN, OECD, etc.) in addition to specific countries' conditions and needs.

4.2.1. EU New Members and Candidates

Nowadays, the long term strategic goal of the majority of NMs is to provide a safe, efficient, multimodal, balanced, environmentally friendly and competitive transport system integrated into the EU transport system. This means that regional policies of these countries should correspond to the EU transport policy very well.

The main reasons that CEE regional policies are becoming similar to the policies of Western Europe are as follows:

- The wish to join EU and the harmonization of transport policies is a priority of the EU;
- Accession countries already started adapting the policies to the EU requirements in the 1990s as a pre-condition for approval as EU members.

As it is stated above, all the members have been obliged to introduce the acquis communaitaire when joining EU (the status of acquis requirements see Appendix 1). However, many CEE countries started to implement acquis communaitaire much earlier by starting from Association Agreement and the White Paper in 1995. After the release of White paper in 2001 the countries revised their national policies (the list of the national transport policies in Appendix 1) according to it. Different transport policy documents and other related programs have been prepared in accordance with EU transport policy. However, it is interesting to mention that in case of Turkey there are no national transport policy objectives (concerning accessibility and speed, transport costs, environmental impact and safety). Normally, the annual plans are followed and there is no long-term transport master plan in Turkey right now.

Main Transport Policy Priorities

The main transport policy priorities of NMs and candidates correspond to the EU transport policy and can be summarized as follows:

- Transport sector deregulation and privatization;
- Modal shift controlling;
- Infrastructure development;
- Investments into the important international networks, local and regional systems;
- Development of technological innovations;
- Safety and efficiency;
- Sustainable development.

However, taking into account globalisation and EU enlargement more flexible transport policy framework could be needed.

Transport Policy Goals and Objectives Hierarchy

As EU transport policies affect normally long-distance transports as north-south and east-west TEN programs, there are always some specific priorities in the transport policies connected with the national needs. As an example the following priorities could be defined for Baltic States:

- To increase attractiveness of the countries as a transit region;
- Via Baltica, Rail Baltica and East-West corridors' development;
- Development of road and rail infrastructure access to the ports, including railway junctions for intermodal transport development, customs simplification;
- Development of regional road infrastructure and its links with motorways[46];
- Combined transport promotion and logistics centers concept development;
- Cooperation within the Baltic Sea region;
- Development of the transit operations with Russia.

As it was mentioned above, the transport policy priorities of NMs and candidates are more or less similar except the hierarchy of the goals depending on transport market conditions, geographical aspects, area, economy, etc.

The EU ASSESS[47] study defines the level of consistency between EU and national priorities:

Table 4-1 The Level of Consistency between EU Objectives and National Priorities

Transport policy objective	CZ	EE	HU	LV	LT	PL	SK	SI	BG	RO	TR
Improving quality in the road transport sector	2	1	2	1	2	2	3	2	2	2	2
Revitalizing the railways	2	3	2	2	2	2	2	2	2	2	1
Promoting transport by sea and inland waterway	4	3	4	4	3	3	4	4	2	2	2
Turning intermodality into reality	3	3	3	3	2	2	2	2	4	4	2
Building TEN	1	2	1	1	1	1	2	1	1	1	1
Improving road safety	1	1	1	1	1	1	3	1	1	1	2
Adopting policy on effective charging for transport	3	3	2	3	3	3	3	2	2	4	4
Putting research and tech. at the service of clean efficient transport	3	1	3	1	3	3	3	3	3	3	4
Meaning: 4 – insignificant goal; 3 – secondary goal; 2 – important in national policies; 1 – fully consistent priority.											

Source: Authors, based on ASSESS.

From time to time the barriers for policy implementation in CEEC occur because of different conflicting interests such as competing transport corridors and modes, cross-border problems, business secrets, partner selection, etc.

To sum up, it can be stated that EU requirements affect the organizational structure and economic performance of the local transport systems which promote competition. However, CEEC can benefit from using Western European experience in improving service quality and etc.

Analysing specific transport objectives of EU 15 and CEE countries, the differences between priorities could be seen. In CEE the most important objective seems to be the technical upgrading of transport infrastructure with a focus on road sector. The other main goal is full

[46] Program of the Government of the Republic of Lithuania for 2004-2008, 2004
[47] ASSESS, 2005

liberalisation of transport market. The congestion is still not a big problem in CEE comparing to EU 15.

Improving quality in the transport sector

Practical implementation of the policy concerns mainly international road companies including road infrastructure, road users and the vehicles. The implementation of the objective has already started in all the NMs. It is rather effective in majority of CEEC, excluding Poland and Slovakia. In the following years the quality in transport sector is expected to improve and this situation will lead for further demand increase in the sector.

Revitalizing the railways

The concept means that competition should be allowed in the railway sector which is a long process. Poland, Latvia, Hungary and Czech Republic have already shown the progress in this area. Baltic States are still working on their railway harmonization to the EU standards. However, Estonia is a good example of improvement in rail freight transport modal split share.

NMs are still behind the EU average when it comes to the rail market. According to the rail liberalization index[48] none of them was classified as "on schedule", while Czech Republic, Hungary, Latvia, Poland, Slovakia, Slovenia classified as "delayed" and Estonia with Lithuania as "pending departure".[49]

The main problem here is that at the beginning of the transformation period the railway sector was not defined as a priority for national transport policies since in CEE the railway transport historically kept higher modal split share before the transformation compared to Western Europe. The dramatic decrease has forced some governments to start to be active in this field. However, the barriers are still strong especially in the Baltic States and Poland because of strong trade unions.

The instruments for rail transport development are mainly aimed to stop the existing diminishing trends. The main goal is the development of regional railways through service quality, tracks and rolling stocks improvement, operations' separation and etc. There are currently no programmes to improve rails and the main focus is on international corridors.

Promoting Transport by Sea and Inland Waterways

The level of implementation of this objective depends on the role of waterways in the region. For example, Hungary has historically well-developed inland waterways. The promotion of this mode seems a little bit difficult because of strong barriers. Bulgaria, for example, still needs to complete legislative alignment to set up an Inland Waterways Fund and adopt legislation on the technical requirements for vessels. In Romania technical requirements are also an issue for concern.

Turning Intermodality into Reality

Further development of the area requires the growth of combined transport terminals' capacity. Most of NMs members are involved in the Marco Polo projects (I and II), but the implementation is still slow. Unfortunately, in most of CEEC there is no long-term strategy for

[48] The rail liberalization index classifies EU countries into 3 groups by the degree of their rail market liberalization as follows: "on schedule", "delayed" and "pending departure". (IBM, 2004)
[49] Rail Liberalization Index, IBM, 2004

combined transport development in spite of the fact that intermodal transport development is included almost in all national transport policies. Main problem of intermodal transport promotion in CEE is poor quality and low flexibility of railway sector.

TEN Building[50]

TEN building is one of the main objectives for national transport policies. The main goal of the policy is to remove bottlenecks in road and rail networks and develop the priority routes.

Poland, Czech Republic, Slovakia and Hungary have concentrated their transport policies on massive motorways construction through TEN programmes. However, the length of motorways has not grown too much in Hungary and Poland. Baltic States put the priority on the rehabilitation of the roads.

The main problems of TENs promotion are the allocation of funding and ecological concern. Ecological conflicts exist in Bulgaria, Czech Republic, Hungary, Poland and Slovakia. The promotion of TEN-T could slow down the development of regional and local infrastructure.

Transport Safety

The transport safety is one of the most important national policies objectives (see Table 4-1). It is partly connected with the traffic accidents and congestion growth. During the acceding process all the candidates harmonised their legal acts with the EU Directives on vehicle registration, driver qualification and roadworthiness tests. In Baltic States the great attention is also paid to the maritime and port safety.

The character of safety policy differs in CEE comparing to EU 15 as the road safety in these countries is closely connected to the infrastructure condition and fleet quality. Therefore, the main directions of the CEE policy intend to eliminate old vehicles and improve infrastructure.

Adopting the Policy on Effective Charging for Transport

The main purpose of this policy is to reduce congestion, environmental effect and improve safety. Almost all CEE countries have included this aspect in national policies but only few of them have really applied it. For example, Bulgaria in 2004 introduced a vignette system for road infrastructure charge collection. Also, road tolls are used in Turkey which can not be seen as measures to cover environmental external cost.

However, the implementation of this policy has not also been fully completed on the EU 15 level and therefore is not defined as a high priority within NMs. The other reason is the lack of experience in implementing such kind of reforms in CEE.

Putting Research and Technology at the Service of Clean, Efficient Transport

The research is conducted in all CEEC, but there is no research coordination on the European level and it is not treated as a priority. Transport management was based on the transport strategies developed during the mid 1990's and there was not so much attention to environmental and congestion questions. The main direction was focused on the rapid development of extensive road networks without considering multimodal alternatives.

[50] ASSESS, 2005

4.2.2. SEE Transport Policy

The common transport policy implementation started in 1999 from Stability Pact for SEE. The policy is based on various levels of cooperation between the organisations and programmes:

- Pan European networks programme (pan-TEN corridors and international convention of navigation on the Danube);
- EU legislation and TEN-T framework. The EU policy "Transport Infrastructure Development for a Wider Europe" is also influencing transport infrastructure development in SEE as it concerns the connections between the enlarged EU and new neighboring countries;
- Cooperation under the MoU[51] concerning SEE regional planning process of core network;
- National legislations concerning networks planning, standards, ect;
- Regional planning of secondary roads.

The governments also try to adapt their national legislations to the acquis requirements for better integration towards EU.

At present, there are two main policy-making and implementation levels. The first one is *Infrastructure Steering Group* run by EC and World Bank Office for SEE (Brussels) that is made up of EC, World Bank, Council of Europe Development Bank, EBRD, EIB and Stability Pact for SEE. And the second is the *South East European Transport Observatory (SEETO)* which is the main monitoring structure for the implementation of the regional transport policy in SEE and includes the EC, the Banks (IMF, WB, EIB, EBRD) and representatives of Western Balkan countries.[52]

Strategic Objectives for SEE Regional Transport

National transport strategies consider regional transport as a sine-qua-non condition for the economic development and include the development of sufficient networks, good infrastructure and high quality transport operations as well as simplification of border crossing and customs procedures.

Almost all national programmes support the pan-TEN development on the SEE territory and the implementation of infrastructure investments projects. More specific regional transport objectives are defined by the MoU:

- Promotion of the regional and international transport;
- Development of infrastructure on the multimodal SEE Core Regional Transport network;
- Promotion of the most efficient and environmentally friendly transport mode on the regional level;
- Harmonisation and standardisation of technical standards and administrative bodies affecting the transport flows according to EU requirements;
- Customs and border crossing procedures' harmonisation.

Regional Cooperation for Transport Sector Development

SEE countries are aware of the fact that there are necessities for further planning, transport links prioritization, technical standards and border crossing procedures developments in the region.

[51]Memorandum of Understanding on the development of a SEE CORE Regional Transport Network, Jun. 2004
[52]Tilling, C., The EU common transport policy for SEE, South-East Europe Review 1/2006

The EC strategy paper "Transport and Energy Infrastructure in SEE"[53] was prepared together with the SEE representatives, international agencies and IFIs. It constitutes the framework of the process to promote regional cooperation that allows adequate prioritisation of the regional infrastructure investments.

Following the paper a regional cooperation process was started in 2004 by signing the *Memorandum of Understanding on the Development of a South East Europe Core Regional Transport Network*. The MoU also provides the setting up for a regional mechanism for the regional coordination. The main purpose of it is to supervise and promote the implementation of the Core Network. The Committee is assisted by SEETO headquartered in Belgrade.[54]

A SEE regional programme for infrastructure development does not exist so far. The REBIS project[55] has made great contribution in creating the proposal of short and long term investment programmes. The project was focused on the core network development based on the earlier regional study, TIRS[56].

[53] EC, Oct. 2001, Transport and Energy Infrastructure in SEE
[54] EC, WB, 2005, Regional Infrastructure Strategies and Projects in SEE
[55] REBIS, 2003
[56] TIRS, 2002

4.3. TRANSPORT SAFETY AND SECURITY

This part reflects the general situation of transport safety and security in the CEE region. Information about the countries' future safety policies and national transport safety programs is provided. The main focus is on the rail and road transport modes.

4.3.1. Road Transport Safety

Road safety continues to be a major problem in CEEC. Road accidents and fatalities are at very high levels and almost three times higher than EU averages. They are very high in Latvia, Estonia, Lithuania, Hungary and Poland. There is a rapid increase of motorization which worsens the situation. In addition to that poor road infrastructures and road facilities, driving behavior, attitude of road users, insufficient control of alcohol and speed limits are other common reasons.

In order to improve road safety and reduce accidents, many programs and initiatives have been introduced. However, currently they are not enough to solve the problem. All the NMs started new rules and judgments concerning vehicle registration, driving tests and driver qualification during the EU candidacy period. Countries have indicated different approaches on the implementation of these new applications. Czech Republic, Poland and Latvia have showed constructive results as accidents have been decreased. However, in Hungary the effects of new rules and judgments have been at lower levels in spite of the fact that road safety initiatives had been started earlier. In general in all the countries road fatality rates have been reduced with the introduction of stringent speed limits, vehicle and infrastructure safety standards.[57]

Table 4-2 Road Accident Statistics[58], 2005

Country	Accidents	Injuries	Fatalities	Fatalities per Mln inhabitants	Cars per 1000 inhabitants (passenger cars and light duty vehicles)
CZ	25239	34254	1286	126	400
EE	2306	2851	168	124	124
HU	20957	28050	1278	127	320
LT	7877	8497	772	216	480
LV	5081	6416	442	220	324
PL	48100	58149	5444	140	360
SI	12721	18723	258	137	500
SK	8443	11190	600	111	300
BG	7612	n.a.	957	121	280
RO	6811	6811	2641	109	160

Source: Authors, based on OECD, ECMT, Ministries of Transport of CEEC, CARE, July 2006

4.3.1.1. National Safety Policies

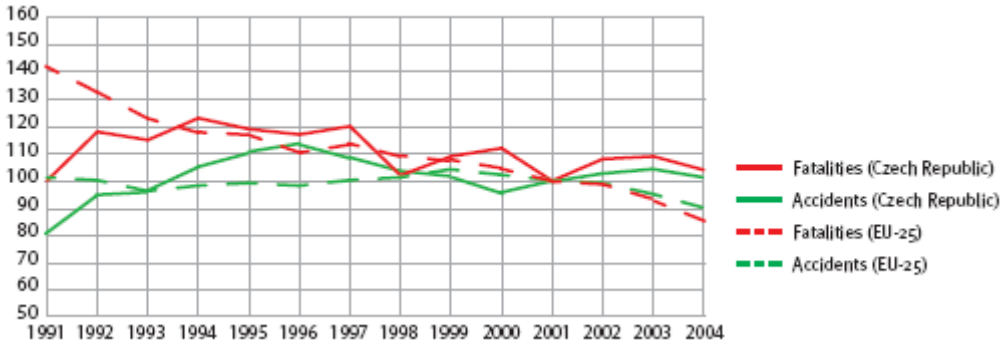
The objectives related to the road safety were set in Verona Declaration adopted in October 2003 with the attendance of ministers of transport of Europe. All the CEEC are tying to improve road safety by implementing the objectives set by the Verona Declaration.

[57] ASSESS, 2005
[58] Based on 2005 data

Czech Republic

Road traffic accidents continue to be a serious problem in the Czech Republic. The road traffic fatality rate was 141 fatalities in road traffic per million inhabitants in 2003, which was twice as much as in Sweden or the UK. In 2005 the situation seems better but it is still a big concern. Road safety is estimated to cause socio-economic costs of 1,6 bln. EUR annually. The government approved the national strategy on road safety in April 2004 with the main goal of reducing the number of fatalities by 50 % by 2010.[59]

Figure 4-1 Annual Safety Developments in Czech Republic[60]



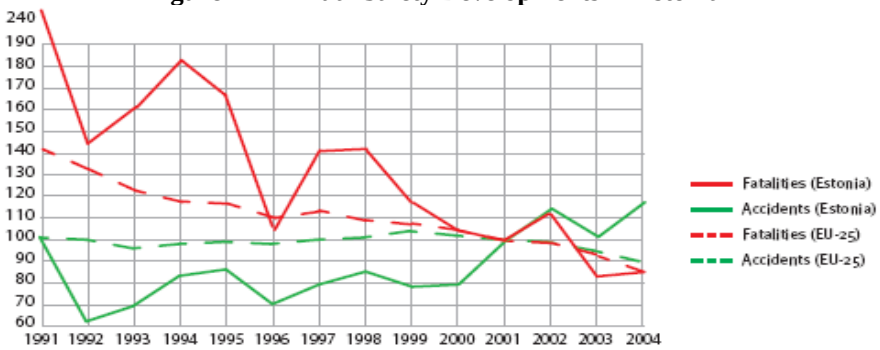
Year 2001=100

Source: CARE project data

Estonia

The Estonian National Traffic Safety Programme 2003-2015 aims to reach the objective of maximum of 100 fatalities in road accidents by 2015. The main priorities of the programme are education, reduction in the incidence of intoxicated driving, reduction of speeding, increased use of passive safety measures, improvement of road infrastructure and improved safety for vulnerable road users.[61]

Figure 4-2 Annual Safety Developments in Estonia



Year 2001=100

Source: CARE project data

Hungary

In the current transport policy, the Hungarian authorities' objective is to reduce the number of crash victims on Hungary's roads as follows:

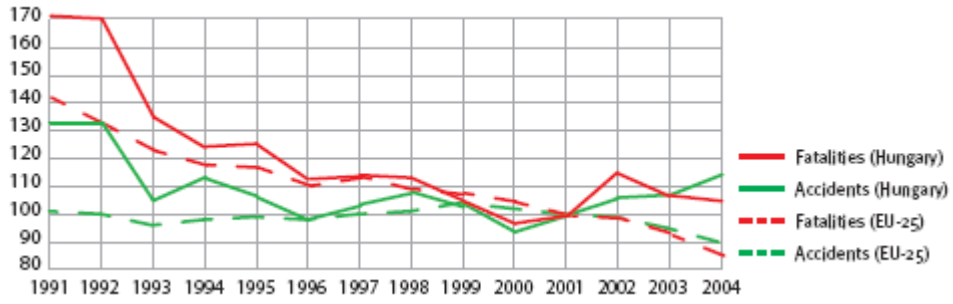
- From 2001 to 2010 personal injury and road deaths by 30%

[59] EC CARE: Czech Republic, Road Safety Country Profile
[60] year 2001=100
[61] EC CARE: Estonia, Road Safety Country Profile

- From 2010 to 2015 personal injury and road deaths by 50%

The Ministry of Economy and Transport has launched a ten point road safety plan beginning in 2006, based on the current road safety programme of the EU.[62]

Figure 4-3 Annual Safety Developments in Hungary



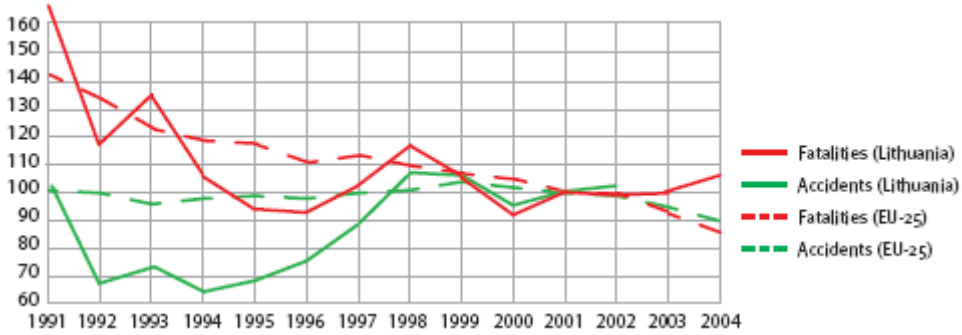
Year 2001=100

Source: CARE project data

Lithuania

"Complex traffic safety development programme until 2010" is the current national action plan concerning the road safety. It follows the previous strategy named "The Road Safety Programme 2001-2005". The main target is a 50 % reduction in road fatalities and 20 % reduction in road injuries from 2004 to 2010.[63]

Figure 4-4 Annual Safety Developments in Lithuania



Year 2001=100

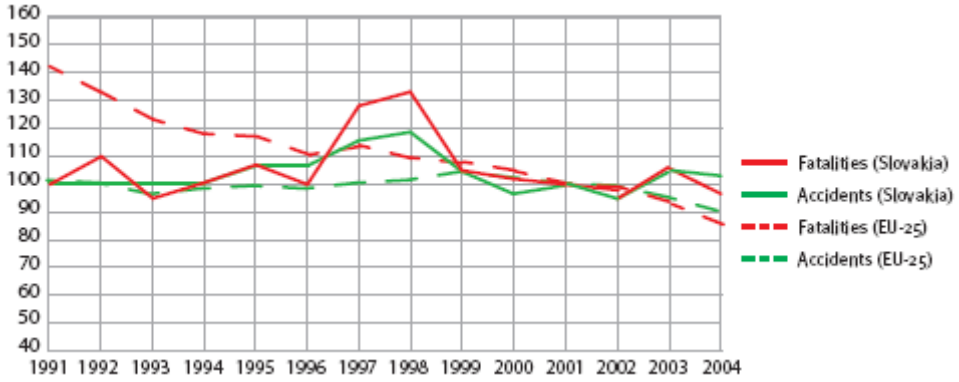
Source: CARE project data

Slovakia

The first Slovakian national road safety plan has been in action since May 2005. In Slovak Republic, there is a general target to reduce by 50% the number of road fatalities between 2002 and 2010. Currently, there are no more specific targets, but these will be introduced in the next National Plan.[64]

[62] Global Road Safety Partnership Official Website
[63] EC CARE: Lithuania, Road Safety Country Profile
[64] EC CARE: Slovakia, Road Safety Country Profile

Figure 4-5 Annual Safety Developments in Slovakia



Year 2001=100

Source: CARE project data

Bulgaria

Bulgaria has the aim of reducing road fatalities by 50% by 2010.

Romania

The risk in terms of number of fatalities/billion vehicle-km is 68, which is 7 times higher than the UK. The World Bank has been supporting road safety developments in Romania via consecutive roads projects, which are implemented by the Ministry of Transport, Construction and Tourism (MTCT).[65]

To reach the EU target of fatality reduction by 50% between 2001 and 2010, the Transport Ministry, the Police and the Administration Ministry adopted in 2003 "Road safety strategy for 2004-2007 for motorways and highways" with the objective of reducing by 30% the number of road fatalities.

Turkey

Traffic safety is one of the most serious problems of the Turkish transportation system. Turkey's road accident rates are 3 to 6 times above those of the EU. The Government has carried out a "Road Improvement and Traffic Safety Project", financed by World Bank loans and domestic funds. The overall target of the project is to reduce the amount of fatalities and injuries in traffic accidents by at least 40 % within a 10 year period from the start of the project's implementation.[66]

The general target of the country is to decrease by 40% the number of fatalities and injury accidents between 1999 and 2011 (on the road network operated by the Police). In addition, there is a specific target of decreasing the number of fatalities among vulnerable road users by 20%.[67]

SEE Countries

SEE countries are also approving new rules and policies to increase level of road safety. However, they are not as successful as NMs and candidates in this aspect.

[65] Global Road Safety Partnership Official Website
[66] ASSESS, 2005
[67] OECD, ECMT, 2006, Country Reports on Road Safety Performance

Table 4-3 Road Accidents Statistics in SEE Countries[68]

Country	Fatalities	Trends 2005/2004
Albania	308	- 2.2%
Bulgaria	957	+ 1.5%
Croatia	597	- 1.8%
Czech Republic	1 286	- 7.0%
Estonia	168	- 1.2%
FYR Macedonia	143	- 7.7%
Hungary	1 278	- 1.4%
Latvia	442	- 14.3%
Lithuania	772	+ 2.7%
Poland	5 444	- 4.7%
Romania	2 641	+ 9.2%
Serbia & Montenegro	841	- 11.8%
Slovakia	600	- 1.3%
Slovenia	258	- 5.8%
Turkey	4 525	+ 2.2%

Source: OECD, ECMT Official Websites, October 2006

4.3.2. Railway Safety

National safety rules for railways, which are based on national technical standards, have been gradually replaced by rules based on common European standards developed with Technical Specifications of Interoperability (TSI) and other safety standards common for the entire EU railway network.[69]

Responsibility for investigation of the accidents also shows significant variation between the countries. In a number of countries (5, see Table 4-4) rail safety authorities have the responsibility for accident investigations. This is for example the case in Czech Republic and Latvia. In some cases the responsibility for accident investigations are done by railway authorities (7). However, the most common structure for accident investigation is done in other ways than already stated. This covers two main forms: the cases where the operator is responsible for accident investigation (e.g. Hungary, Slovakia) and the cases where a special commission or general transport accident investigation commission is set up (e.g., Bulgaria, Lithuania).

Table 4-4 Overview of Organisations Responsible for Safety Regulation in CEEC

	Certification of rolling stock and railway undertakings		**Investigation of accidents**
Infrastructure manager (2)		Infrastructure manager (0)	
Rail safety authority (8)	LV, LT, HU, BG	Rail safety authority (5)	CZ, LV
Railway authority (10)	CZ, EE, PL, SI, SK, RO	Railway authority (7)	EE, PL, RO, SK
Ministry of Transport (6)	LU	Ministry of Transport (4)	
Other (1)		Other (11)	LT, LU, HU, SI, BG

Source: Authors, based on European Railways Administrations Institutions and Legislation (ERAIL)

A research had been done to determine whether railway undertakings were required to have safety certificates in order to be allowed to operate. The results are shown in Table 4-5. Latvia and Hungary are the countries with no safety certificates.[70]

[68] Based on 2005 data
[69] Rail Safety and Standards Board Official Webpage
[70] EC, DG Transport and Energy, Final report country monographs (ERAIL)

Table 4-5 Safety Certificates for Railway Undertakings in CEEC

Country	Safety certificates	Country	Safety certificates
CZ	All railway undertakings have safety certificates	**BG**	Bulgarian State Railways (BDZ) has a safety certificate
EE	All railway undertakings have safety certificates	**LV**	All operating companies have safety certificates, except LDZ cargo
PL	All railway undertakings have safety certificates	**LT**	LG does not have a safety certificate.
SI	Main operator has safety certificate	**HU**	No decisions on safety certificates have been taken yet.
SK	ZSSK (main operator) has a safety certificate	**RO**	Yes

Source: European Railways Administrations Institutions and Legislation (ERAIL)

Table 4-6 Rail Accident Statistics in CEE

Country	Number of Accidents	Country	Number of Accidents
Lithuania	24 (2003)	**Latvia**	23 (2001)
Slovenia	37 (2002)	**Hungary**	80 (2003)
Estonia	48 (2005)	**Bulgaria**	629 (2003)
Czech Republic	688 (2005)	**Turkey**	369 (2001)
Slovakia	514 (2004)		

Source: Authors, based on EC, DG Transport and Energy, ERAIL Monograph

Table 4-7 Persons Killed in Rail Accidents

Country	Persons killed in rail accidents incl. at railway crossings (year)	Country	Persons killed in rail accidents incl. at railway crossings (year)
CZ	249(2005)	**BG**	55 (2003)
EE	18(2005)	**SI**	6 (2002)
LV	11(2001)	**TR**	165 (2001)

Source: Authors, based on European Railways Administrations Institutions and Legislation (ERAIL)

4.3.3 Transport Security

The terrorist attacks in the USA and Spain, respectively in 2001 and 2004 and most recently in London, showed transport security should be considered as a serious problem. With this consideration CEEC aim to strengthen their transport security measures with respect to relevant global procedures and controls. Transport and logistics activities can be hindered by illegal freight movements, terrorist attacks.

In NMs national and international transport security policies have been established in close relations with EC's transport policies since they joined EU in May 2004. Acceding countries, Bulgaria and Romania, are rapidly approving EU regulations and policies as well. Turkey, Croatia and FYR Macedonia which are holding the status of candidates' countries are also approving EU transport policies. However, in these countries and non-EU countries of the CEE region, Albania, Bosnia and Herzegovina, Serbia international organizations and national transport institutions have more dominant role on security policies.

The EC's new European rules proposals for better freight transport protection against terrorist attacks and secure supply chain in land transport will be crucial for the future of CEE. In this perspective works and initiatives of international organizations like ECMT, IMO, UIC, ICAO, G8, OSCE, UITP, OECD will be very important as well.

4.3.3.1. Road Transport Security Policy

ECMT gathers the transport ministers of 43 European countries including all the CEE countries. Common tools for risk assessment, security audits and international cooperation have been

developed in the CEE region. Progress had been made recently on the security laws regarding the terrorism issues on the agendas of the ministers of transport of each country. Steering groups and committees including ministers and members of CEE have mainly focused on crime in freight transport. More specifically, the following areas were determined as topics of priority for further exploration and study[71]:

- Security and terrorism in transport;
- Attacks on drivers of lorries and trains;
- Fraud in road transport and transit systems;
- Improvement in data on crime in transport;
- Insurance coverage in transport;
- Container transport security across modes.

European Agreement on International Carriage of Dangerous Goods by Road (ADR)

Transportation, classification and standards related to labeling and packaging of dangerous goods are done by ADR which is based on UN recommendations. It has the purpose of increasing international transport by road and facilitating trade. It organizes the international carriage of dangerous goods by road on the territory of contracting countries except two cases. These cases are when the carriages of dangerous goods are totally forbidden and when the carriage is regulated or prohibited for reasons other than safety. In CEE, except Albania and Turkey the rest of the countries are among present 38 Contracting Parties to ADR.[72]

4.3.3.2. Rail Transport Security Policy

NMs have taken several measures for the improvement of security of railways at national levels. Railways cooperate with local governments, rescue boards, security directorates, armed security services, accident relief services for further security progress. Senders and operators at the stations have been provided with better security situations at the stations due to the better overview of the wagons standings when extremely hazardous loads are standing side by side. Walking security patrols, video surveillance and fences around the stations increase the level of security. Many projects are going on to construct fire water supply system. Cross-border bilateral cooperation on rail security is also growing between CEEC and Western European countries. A bilateral accord between Deutsche Bahn AG and the Polish Railways PKP signed in October 2003 aimed to improve this cooperation is one of the most important ones.[73]

International Union of Railways (UIC)

The International Union of Railways (UIC) is a global organization for international cooperation among railways and promotion of the rail transport mode. In addition to its other tasks, it is responsible for defining common provisions and recommendations on security issues intended for its members among which are CEE countries. UIC has already put forward its work to the EU and had numerous contacts with the new security directorate for the protection of assets and facilities of the EC Directorate General for Transport and Energy.[74]

[71] ECMT, Programme of work activities of different Working Groups
[72] UNECE Official Website
[73] ECMT Official Website
[74]International Union of Railways (UIC) Official Website

Group of Heads of Security and Railway Police Departments (COLPOFER)

In 1980, some railway companies and railway police forces founded a European organization with the name COLPOFER. It is associated as a special group to the UIC. Following its foundation and the enlargement of the EU, further CEEC railway companies and railway police forces have joined the COLPOFER Association.[75] As a result of the European integration, activities should be done on international level instead of national. In this perspective COLPOFER has an importance to protect railway companies' properties, facilities and rail operations in CEE.

Schengenrail Project

With the entry of the CEEC into the EU, two different rail transport systems occur at the Eastern border of EU. There are now identified with different track gauges (1435 mm and 1524 mm), electric and signaling systems, operating techniques and legal systems concerning freight transportation in CEE.

Rail transport security at the borders has emerged as a concern. On 7 April 2004 in Warsaw UIC started the project named as Schengenrail that is organized jointly with railway companies and the national authorities to review the criteria for implementing the Acquis Schengen (Border points and recommendations for implementing a security policy in rail transport) within the rail sectors of the new EU member states. Polish State Railways (PKP) leaded the steering committee. The coordination of the project was done by UIC Security Unit with the support of East-West Task Force.[76]

[75] International Union of Railways (UIC) Official Website
[76] UIC, 2006, The Schengen acquis, border points and recommendations for implementing a security policy in rail transport.

4.4. TRANPORT STANDARDS

This part consists of three headings: infrastructure standards, driving times and working times. Infrastructure standards will give information about the rail and road standards. (Gauge width, signaling, electrification, truck dimensions, weights, speed limits etc.) Driving and working times discuss the legislations and statistics concerning CEE countries.

4.4.1. Infrastructure Standards

Trade and business between CEE and Western Europe has increased rapidly, especially after EU expansion. This situation has increased the demand for better infrastructure and logistics facilities. Common infrastructure standards, driving and working times would obviously improve operations between the countries. However, CEE and Western Europe consist of countries with different standards.

4.4.1.1. Rail Standards

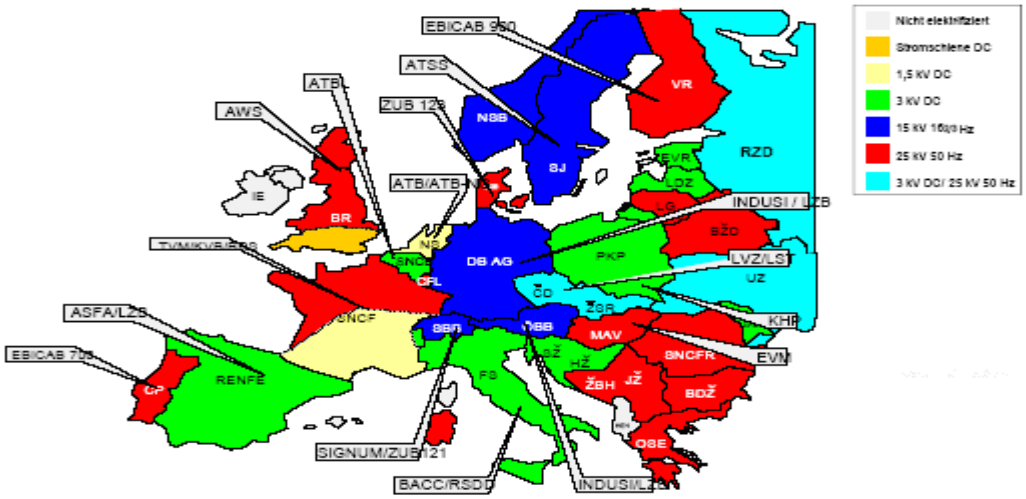
Signaling, electrification standards are varied in CEE railways. Direct currents of 1.5kV, 3kV, and alternative currents of 15kV, 25kV are used. Some of the countries railways (Croatia, Czech Republic, Slovakia) use both DC and AC. At the junctions between countries, where different electrification systems are present, generally locomotive is changed or multi system electrical locomotive is used.

Table 4-8 Track Gauge and Electrification Standards in CEE

Country	Track gauge (mm)	Electric Current	
		DC volts	AC volts
Albania	1435	Not electrified	
Bosnia and Herzegovina	1435		AC 25000, 50 Hz
Bulgaria	1435		AC 25000, 50 Hz
Croatia	1435	DC 3000 V	AC 25000, 50 Hz
Czech Republic	1435	DC 3000 V	AC 25000, 50 Hz
Estonia	1524	DC 3000 V	
FYR Macedonia	1435		AC 25000 , 50 Hz
Hungary	1435		AC 25000, 50 Hz
Latvia	1524	DC 3000 V	
Lithuania	1524		AC 25000, 50 Hz
Poland	1435	DC 3000V	
Romania	1435		AC 25000, 50 Hz
Serbia	1435		AC 25000, 50 Hz
Slovakia	1435	DC 3000 V	AC 25000, 50 Hz
Slovenia	1435	DC 3000 V	
Turkey	1435		AC 25000, 50 Hz

Source: Authors, based on Community of European Railways CER, National Railway Companies Official Websites

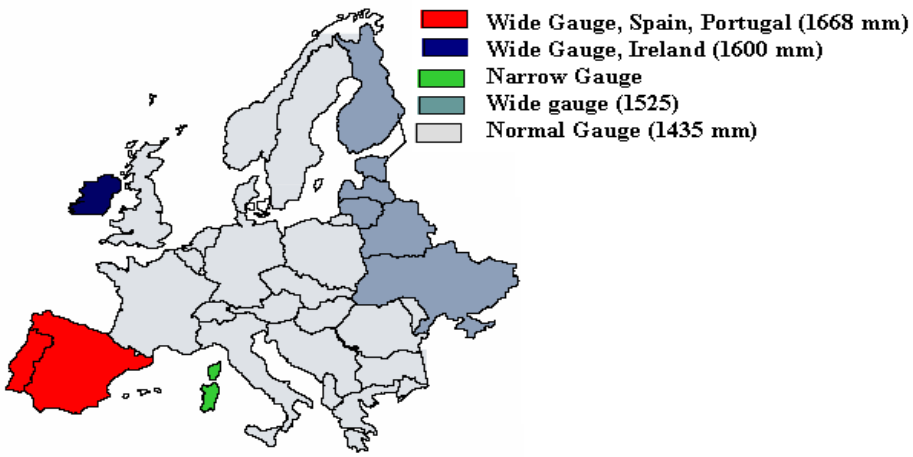
Figure 4-6 Signaling and Electrification Standards



Source: Swedish International Freight Association, SIFA

Most of the CEEC have rail infrastructure with normal gauges, which is 1435 mm. Baltic States, Estonia, Lithuania and Latvia, have wide gauge. New applications and systems have been developed at the borders with different gauges. SUW 2000, automatic wheel-gauge changing system, developed by Polish State Railways is one of these.

Figure 4-7 Railway Gauges in Europe



Source: Authors, based on Swedish International Freight Association, SIFA

European Train Control System (ETCS)

Several signaling systems with different functionalities and technologies have been used by national railways in CEEC which reduces interoperability. European Train Control System (ETCS) is a signaling and control system designed to replace existing 14 incompatible safety systems currently used by European railways, especially on the high-speed lines. Some countries will have introduced ETCS to a considerable extent in their entire networks such as Bulgaria, Hungary, and Romania.[77]

An overview of the type, the functionality and the extent of the existing signaling systems of CEEC are shown on Table 4-9. The column, track equipped, shows the length of the tracks equipped with related signaling system (for double track lines the length is doubled). The column, vehicle equipped, shows the number of driver cabs equipped with signaling device.

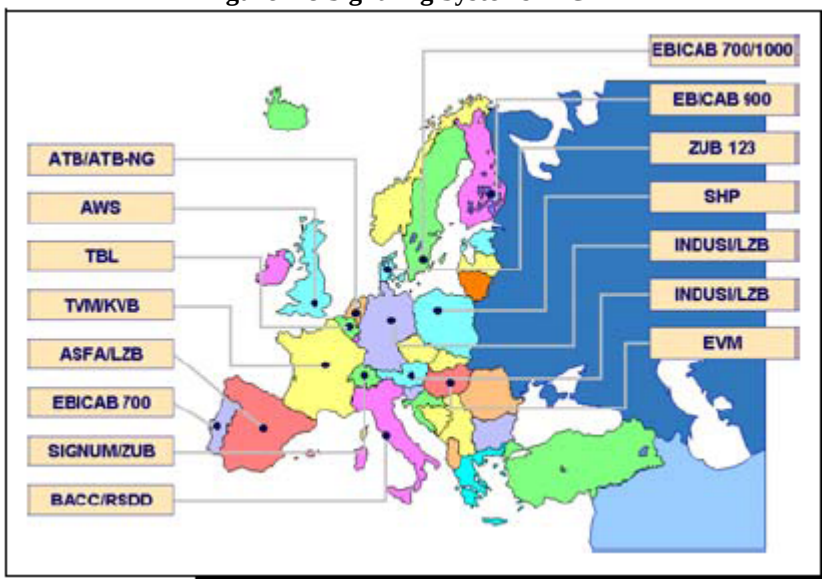
[77] UIC, Implementing the European Train Control System ETCS

Table 4-9 Signaling Systems in CEE Railways

Country	Signaling System (status 2003)	Functionality	Track [km] equipped	Vehicles equipped
Bulgaria	Ebicab	Continuous speed supervision	300	90
	ETCS L1	cab signaling	500	130
	not equipped	no protection	4 400	540
Czech Republic	LS	discrete speed supervision	2'730	2 700
	not equipped	no protection	13 570	600
Hungary	EVM	discrete speed supervision	2 800	700
	not equipped	no protection	5 300	100
Poland	SHP	Warning	17 500	
	not equipped	no protection	11 400	5300
Romania	PZB	discrete speed supervision	14 100	3 350
	not equipped	no protection		
Serbia	PZB	discrete speed supervision	4 400	100
	not equipped	no protection		850
Slovakia	LS	discrete speed supervision	1 400	460
	not equipped	no protection	3 300	1 090
Slovenia	PZB	discrete speed supervision	998	271
	not equipped	no protection	561	3

Source: Authors, based on UIC, "Implementing the European Train Control System ETCS".

Figure 4-8 Signaling Systems in CEE



Source: EC, Communication from the Commission to the European Parliament and the Council, 2005

4.4.1.2. Road Standards

European Conference of Ministers of Transport (ECMT) is the intergovernmental organization which tries to create integrated road transport systems in Europe with common standards. It gathers ministers of transports of 43 members including all CEEC. Standards concerning speed, blood, alcohol limits, vehicle weights and permissible maximum dimensions have been obtained from the sources of ECMT.

Table 4-10 Speed, Blood Alcohol Limit, Maximum Gross Vehicle Weight Standards

Country	Speed limit, cars (in general), km/h			Blood alcohol limit, grams of alcohol in 1 liter of blood	Maximum gross vehicle weight	
	Built-up areas	Outside built-up areas	Motorway		Articulated vehicle, tonnes	Road trains, tonnes
ALB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
BiH	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
BG	50	90	120	0.5	40	40
CR	50	90	130	0.0	10 per axle	n.a.
CZ	50	90	130	0.0	42	42
EE	50	90	n.a.	0.2	40	40
FYROM	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
HU	50	80	120	0.0	40	40
LV	50	90	110	0.5	40	40
LT	50	90	110-130	0.4	40	40
PL	50-60	90	130	0.2	40	40
RO	50	90	120	0.0	40	40
SR	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
SK	60	90	130	0.0	40	40
SI	50	90	130	0.5	40	40
TR	50	90	130	0.5	44	40

Source: Authors, based on National sources and ECMT

Table 4-11 Permissible Maximum Dimensions in Europe

Country	Height, m	Width, m	Length, m		
			Lorry or Trailer	Road Train	Articulated Vehicle
Albania	4	2,50	12	18.35	16.50
Bosnia-Herz.	4	2,50	12	18	17
Bulgaria	4	2,55	12	18.75	16.50
Croatia	4	2,55 (1)	12	18.35	16.50
Czech Republic	4	2,55 (1)	12	18.75	16.50
Estonia	4	2,55	12	18.75	16.50
FYR Macedonia	4	2,50	12	18.50	17
Hungary	4	2,55 m (1)	12	18.75	16.50
Latvia	4	2,50	12	18.75	16.50
Lithuania	4	2,55 (1)	12	18.75	16.50
Poland	4	2,55 (1)	12	18.75	16.50
Romania	4	2,55 (1)	12	18.75	16.50
Serbia	4	2,50	12	18	16.50
Slovakia	4	2,55 (1)	12	18.75	16.50
Slovenia	4	2,55 (1)	12	18.75	16.50
Turkey	4	2,55 (1)	12	18.75	16.50

Source: Authors, based on ECMT 1: Refrigerated vehicles

Table 4-12 Permissible Maximum Weights

Country	Weight per bearing axle, tonnes	Weight per drive axle, tonnes	Lorry 2 axles, tonnes	Lorry 3 axles, tonnes	Road Train 4 axles, tonnes	Road Train 5 axles and + , tonnes	Articulated Vehicle 5 axles and +, tonnes
ALB	10	n.a.	18	25	40	44	38
BiH	10	n.a.	18	26	40	40	40
BG	10	11.5	16	26	36	40	40
CR	10	11.5	18	26	36	40	40
CZ	10	11.5	18	26	36	42	42/48
EE	10	11.5	18	26	36	40	40
FYROM	10	11.5	21.5	33	36	40	40
HU	10	11	20	24	36	40	40
LV	10	11.5	18	26	40	40	40
LT	10	11.5	18	26	36	40	40
PL	10	11.5	18	26	36	40	40
RO	10	11.5	18	26	36	40	40
SR	10	n.a.	18	24	36	40	40
SK	10	11.5	18	26	40	40	40
SI	10	11.5	18	25	n.a.	40	40
TR	10	11.5	18	25	36	40	40

Source: Authors, based on ECMT, 2005

4.4.2. Driving Times

In NMs EC rules apply to drivers of most vehicles used for the carriage of goods where the maximum permissible weight of the vehicle, including any trailer or semi-trailer, exceeds 3.5 tonnes. In rest of the CEE countries, Bosnia and Herzegovina, Bulgaria, Croatia, FYR Macedonia, Romania, Turkey, Serbia, AETR rules (European Agreement concerning the Work of Crews of Vehicles Engaged in International Road Transport) apply. Exemptions from the EC and AETR rules occur under some special conditions.

Table 4-13 EC Rules on Driver's Hours for Good Vehicle

Maximum daily driving	9 hours 10 hours on 2 days in week
Maximum weekly driving	56 hours 58 hours if the 6 daily driving periods straddle two weeks
Maximum fortnightly driving	90 hours
Maximum driving before a break	4½ hours
Minimum breaks after driving	45 minutes or other breaks of at least 15 minutes each to equal 45 minutes
Minimum daily rest (normally)	11 hours
Reduced daily rest	9 hours on up to 3 days per week (must be made up by the end of next following week)
Split daily rest	The 11-hour rest period may be split into two or three periods - one at least 8 hours, the others at least 1 hour each: total rest must be increased to 12 hours
Minimum weekly rest (normally)	45 hours once each fixed week
Reduced weekly rest	36 hours at base - 24 hours elsewhere (any reduction must be made up en bloc by end of the third following week)
Rest on ferries/trains	Daily rest may be interrupted once only if: - part taken on land - no more than 1 hour between parts - drivers must have access to a bunk or couchette for both parts of rest - total rest must increase by 2 hours

Source: Authors, based on EU, Regulation 3820/85/EC "Explanatory Memorandum to the Community Drivers' Hours and Working Time Regulations", 2006

According to the regulation (Regulation 561/2006) the drivers' record rules are being amended to implement the mandatory fitment and the use of digital tachographs. These changes have taken effect since 1 May 2006. The replacement of the existing driving hour rules will take effect from 11 April 2007. [78] (See Appendix 2).

4.4.3. Working Times

The analysis of the various factors related to the working times in CEEC leads to three main conclusions:

- Working hours are considerably longer than in the EU. Workers in the CEE countries, particularly women, have longer working days and weeks.
- Part-time work is less common in CEE than in the EU. It is distributed equally between men and women.
- Night work and shift work are more common. Work hour restrictions in some countries hinder some companies to reach their key customers in a timely manner within the network that they operate.

Distribution of working weeks in a country differs widely from country to country. Two countries have a higher frequency (over 10%) of shorter working weeks (less than 30 hours a week): Romania (13%) and Poland (12%). However, in these countries, over one-fifth of the population claims that they work more than 60 hours in a week. In Slovenia, Slovakia, Estonia and the Czech Republic, very long working weeks are far less frequent. The 40-44 hour week is the norm in six countries: Bulgaria (53%), Estonia (63%), Hungary (62%), Slovakia (59%) and the Czech Republic (54%).

Table 4-14 Length of Working Week by Country

	EU 15	BG	EE	LT	LV	HU	PL	RO	SI	SK	CZ
Less than 10 hours, %	2	2	1	1	1	1	3	2	1	1	1
10-19 hours, %	6	1	1	2	2	1	3	3	3	1	2
20-29 hours, %	9	4	3	6	5	3	6	8	5	4	4
30-39 hours, %	35	7	6	9	9	5	7	9	35	5	12
40-44 hours, %	28	53	63	48	45	62	38	34	33	59	54
45-59 hours,%	14	21	17	17	24	17	22	24	17	24	21
60-80 hours,%	6	13	8	17	15	10	21	20	5	6	8

Source: Authors, based on European Foundation for the Improvement and Working Conditions, 2003

Table 4-15 Number of Working Hours per Week, by Country

	BG	EE	LT	LV	HU	PL	RO	SI	SK	CZ
All workers	43.9	42.4	44.8	44.4	42.9	45.2	45.9	39.8	42.9	42.4
Self-employed Without employees	53.5	49.8	65.0	47.9	47.2	55.8	52.0	52.0	49.0	46.1
Self-employed with employees	49.6	52.6	51.4	55.5	49.4	48.6	61.0	49.9	49.0	54.6
Employees	42.4	41.7	41.3	43.5	41.8	40.9	44.3	39.5	42.2	41.2
Men	45.9	44.2	47.5	46.1	44.7	47.3	44.0	40.8	44.8	44.2
Women	39.7	42.2	42.6	40.7	35.1	49.0	38.6	40.8	40.0	43.3

Source: Authors, based on European Foundation for the Improvement and Working Conditions, 2003

The difference between countries for frequency of Sunday work is 23%. It is most frequent in Estonia (45%) and Latvia (45%) and less frequent in Slovenia (15%). There is even greater difference between countries for Saturday work (36%). Poland and Romania are the countries

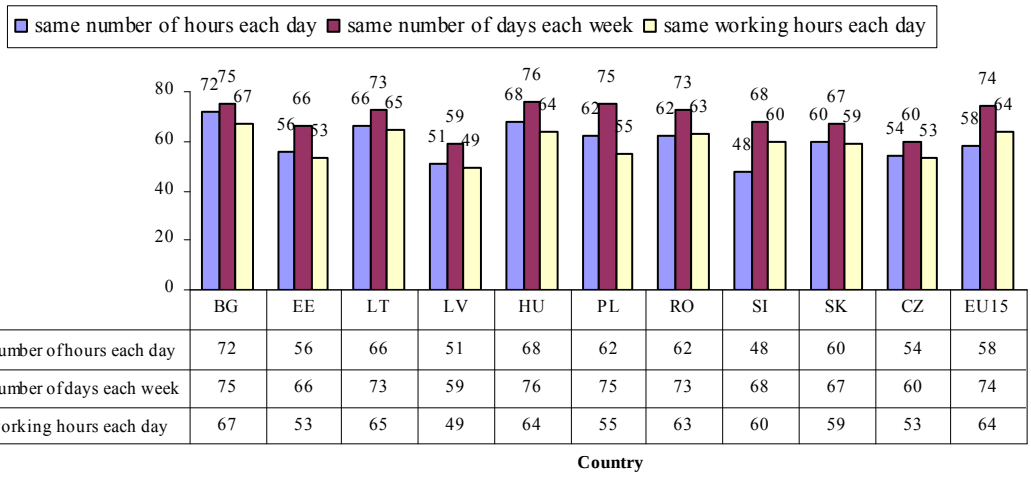
[78] EC, 2006, Regulation No.561/2006 FTA Members' Briefing Note

where this type of work concerns more than two thirds of workers. On the other hand, in Slovakia only one-third of workers are involved.

There are wide variations (16%) between the countries concerning working days of more than 10 hours (at least once a month). These long working days are most frequent in the Czech Republic (48%), Estonia (47%) and Latvia (47%) and least frequent in Hungary (25%).

There are substantial variations between countries regarding the number of working hours per day. Regularity of working times by country is presented in the Figure 4-9.[79]

Figure 4-9 Regularity of Working Times, by Country



Source: Authors, based on European Foundation for the Improvement and Working Conditions

4.4.4. Regional Perspectives

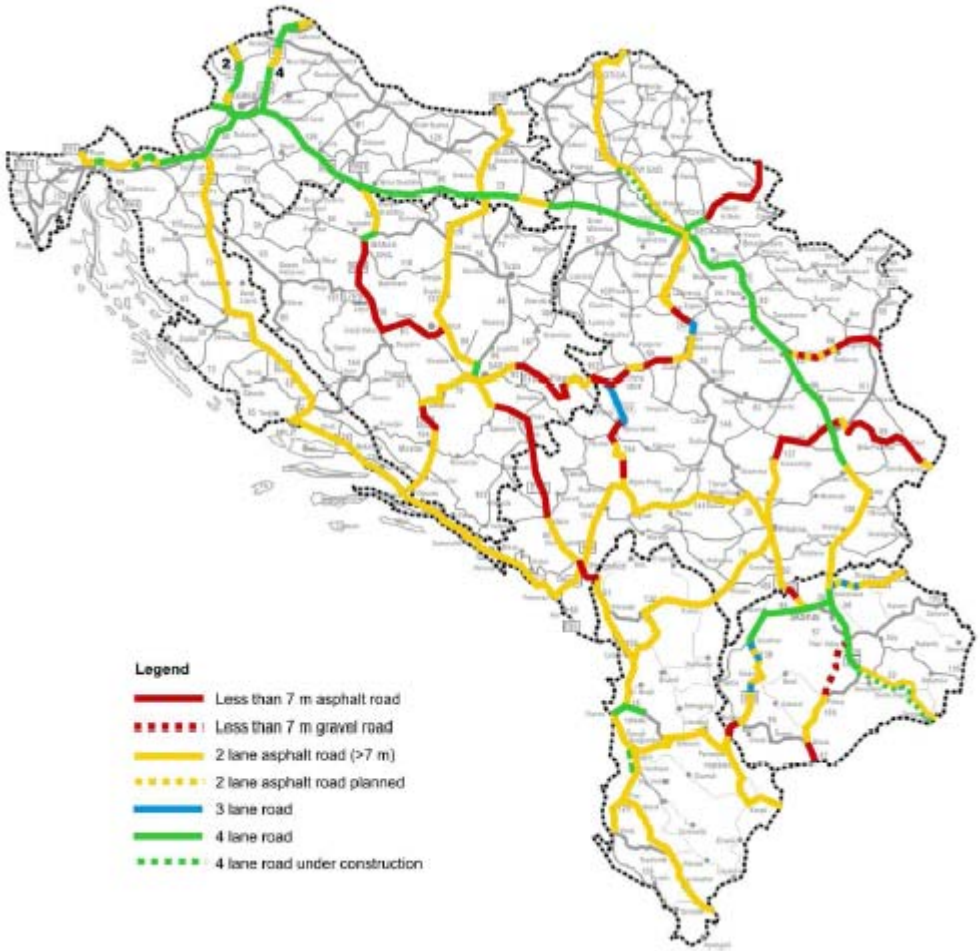
4.4.4.1. Balkan Countries

Road Standards

Most of the national road networks have low design standards. In general, many of the road networks are not compliant with the conditions included in the European Agreement on Main International Traffic Arteries (AGR). In most of the areas there are 2-lane roads. At main links there are also 4-lane roads and motorways. Almost all of the roads are able to carry present traffic but more than 70% of roads need pavement repairs.[80] Bridges and other road facilities (signaling, lighting, pavements etc.) are technically designed with low standards.

[79] European Foundation for the Improvement and Working Conditions, 2003
[80] REBIS

Figure 4-10 Road Standards in Southern Eastern Europe



Source: European Commission, Regional Balkans Infrastructure Study – Transport

Rail Standards

Railway networks in Balkan countries are not integrated with each other properly. Most of the existing networks are formed by patches of links which are forming missing links. Rolling stocks, signaling systems are obsolete due to the lack of repair works. Railways of Serbia, FYR Macedonia, Croatia, Bosnia and Herzegovina, which originated from Former Yugoslavian railways, have the same standards including electrification and signaling systems. Normal track gauges (1435 mm) is alike for all the countries including Bulgaria, Romania and Turkey. AC 25000, 50 Hz is common for all the countries. Croatia is the only country utilizing both DC 3000 V and AC 25000, 50 Hz. In the region 86% of the network has single track and 59% of the network is electrified.[81]

[81] REBIS

Figure 4-11 Technical Conditions of Railways in Balkans

Source: European Commission, Regional Balkans Infrastructure Study – Transport

4.4.4.2. Baltic States

Road Standards

The technical specifications used for trucks have the same characteristics with most Western European countries. The majority of roads have asphalt pavement. Concrete or bituminous pavements also occur.

Rail Standards

Russian standards dominate in the Baltic region since the railway gauge was built during Soviet Union period. The width of the tracks is 1520 or 1524 mm, which differs from most of the Western European countries where the width of the tracks is 1435 mm. The narrow rail gauge is used as well but only for passenger transport. A small part of railways have electric power supply and the rest is diesel powered. Many wagons are old and in need of replacement. The former Soviet Union's signal system is still used.

4.4.4.3. Central Europe

Road Standards

The geometrical characteristics of the roads show differences in the countries of the region but in general they are very close to Western European standards: 4 m of height, 2.55m of width, and 12 m of lorry/trailer length are the most common permissible maximum dimensions for trucks.

Rail Standards

Many investments have been made on tracks and signaling systems to catch up with EU standards. Almost all the railway has European standard gauge (1435 mm). There exist a few instances of narrow gauge lines. Different railway cross sections are applied for different categories of lines. Main lines have better cross sections than local lines.

Numerous types of wagons are used. The old ones started to be replaced by standardised EU wagons. Covered cars are the biggest share of rolling stock. There are locomotives capable of running on 3kV DC and 15kV 16.7 Hz AC as both of the electrification systems are common in the countries.

4.5. INVESTMENTS

The aim of this part is to analyse the investments into the transport infrastructure of CEEC by referring to the road and rail transport sectors. As the investments into infrastructure are usually refer to long-term projects, the investment periods considered in the part are rather long.

As transport is a large business in CEEC the spending on this sector typically represents 12-15% of GDP, including value added aspects, the cost of operating vehicles and own-account transport.[82]

As it is stated previously, regional transport policies of CEE are influenced by EU and supported financially (mostly in the loan form) by different IFIs and EU funds. The main investment sources are EIB, EBRD, World Bank and EU, including Cohesion Fund, Structural Funds, TEN-T funds, ISPA, PHARE frameworks. NIB (Nordic Investment Bank) is an investments provider for Baltic States. It is also common to finance projects via PPP (Public Private Partnership).

The majority of the investments are directed to road and air sectors while railways and intermodal transport received much less attention. Moreover, the railway investments were mainly covering the financial debts of the railway companies and closing the railway lines that can lead to the further decrease in the performance instead of development.

The heavy investments are focused basically on TEN corridors needs when the domestic needs have basic priority mainly for safety reasons. The exception to this trend is Baltic States as they concentrated on the maintenance and rehabilitation of existing networks.

By 2015 about 90 million EUR should be invested into the CEE for the construction of 18030 km of roads, 20290 km of railways, 38 new airports, 13 seaports, 49 river ports and for the development of 4000 km of inland waterways.[83]

The other problem is that sometimes institutions provide investments directed to the environmentally harmful or economically doubtful projects: 50% of main funds for transport go to the roads and building new motorways while railway sector received only 29% between 2000 and 2006.[84]

4.5.1. Investment Requirements

The following tables describe the investments need into the transport networks proposed by TINA up to 2015.

[82] EBRD, Industry Sector Analysis
[83] Jura - International Business Magazine
[84] CEE Bankwatch Network, Threats and opportunities of EU funds in CEE

Table 4-16 Transport Network Investment Proposed by TINA up to 2015

Country	Rail network		Road network		Other modes, mil. EUR	Total network, mil. EUR
	km	mil. EUR	km	mil. EUR		
BG	*2,095*	*2,130*	*2,025*	*2,263*	*885*	*5,278*
CZ	*2,341*	*3,711*	*1,842*	*5,829*	*662*	*10,202*
EE	*657*	*259*	*1,000*	*290*	*79*	*628*
HU	*2,727*	*4,030*	*1,448*	*4,632*	*1,504*	*10,166*
LV	*1,343*	*942*	*1,520*	*376*	*672*	*1990*
LT	*1,100*	*1,317*	*1,617*	*517*	*488*	*2,322*
PL	*5,529*	*14,612*	*4,723*	*17,550*	*4,261*	*36,423*
RO	*3,163*	*5,192*	*2,524*	*5,139*	*880*	*11,211*
SK	*1,400*	*1,914*	*949*	*4,603*	*26*	*6,543*
SI	*569*	*3,011*	*565*	*2,576*	*187*	*5,774*
Total	***1246***	***1237***	***1531***	***1226***	***3885***	***2706***

Source: TINA

When it comes to SEE, investment requirements for the priority projects for the era of 2006-2010 were defined approximately as 1.85 bln. EUR over the five years:

Table 4-17 Investment Requirements for Core Network Development in SEE

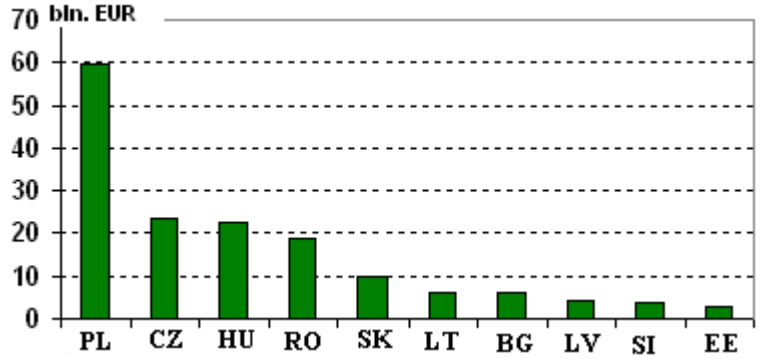
Country	2006	2007	2008	2009	2010	Total, mln. EUR
Albania	0,0	68,17	75,29	73,81	7,13	224,40
Bosnia and Herz.	0,0	7,50	99,89	139,87	130,84	378,10
CR	0,0	7,50	57,87	62,01	40,32	167,70
FYR Macedonia	0,0	69,94	119,94	86,27	50,00	326,15
Serbia	3,6	60,40	176,39	176,42	123,79	540,60
Montenegro	0,0	13,75	41,09	33,57	33,59	122,00
UNMIK/Kosovo	0,0	0,00	28,79	28,81	28,79	86,39
Total	**3,6**	**227,26**	**599,26**	**600,76**	**414,46**	**1,845,34**

Source: SEE Core Regional Network Development Plan 2006-2010, 2006

4.5.2. EU Funds

The EU assists in funding CEE road and rail projects in the priority corridors both indirectly, through the EIB and the EBRD, and directly, through the EU Structural and Cohesion Funds and the TEN budget.[85] About 8 bln. EUR are allocated to NMs per year by EU Structural and Cohesion Funds for different projects, including the transport infrastructure development.

Figure 4-12 EU Fund Allocations for CEE Countries in 2007-2013



Source: "Threats and opportunities of EU funds in CEE", CEE Bankwatch Network

[85] Pucher, J. et al., 2005, Transport Policies in CEE

The money amount for 2007-2013 is expected to be more then double for Czech Republic, Slovakia, Poland and Hungary. At the same time the competition will increase from new comers. After Bulgaria and Romania join the EU, the amount of the EU fund will increase to 22.5 billion a year.

The Cohesion Fund (CF)

The Cohesion Fund finances major environmental and transport infrastructure development projects in the less developed countries of the EU, including railway transport, road traffic, inland waterways, combined transport.[86]

Table 4-18 Allocation of Cohesion Fund, 2004-06

Country	Cohesion Fund	Share (%)	Total, Structural Funds, mln. EUR
Czech Republic	*936,05*	*36*	*2621,19*
Estonia	*309,03*	*44*	*695,06*
Hungary	*1112,67*	*35*	*3207,36*
Latvia	*515,43*	*44*	*1164,29*
Lithuania	*608,17*	*40*	*1537,70*
Poland	*4178,60*	*33*	*12809,70*
Slovakia	*570,50*	*32*	*1757,39*
Slovenia	*188,71*	*41*	*456,31*
Total	***8419***	***35***	***24249***

Source: Authors, based on EC Official Website

The data presented in Table 4-19 is selected from CF national strategic documents for 2004-2006 and shows mainly investment plans into the road and rail sectors. Generally, real allocations from CF for transport infrastructure are smaller than it is stated in national papers. All CF's projects should contribute to the long-term goal of closer integration into European transport system.

Table 4-19 Priorities for Cohesion Fund (2004-2006) by Support Areas

	Total eligible costs (million EUR)	% of total eligible cost
Poland		
Motorway construction	1099,4	44,7%
Modernization of railway lines	1053,4	42,9%
Expressway construction	210,6	8,6%
Reconstruction of national roads	1404,6	3,9%
Czech Republic		
Railway rehabilitation	1253	44,4%
Waterway rehabilitation and development	990,7	35,1%
Motorway construction	317,2	11,2%
Slovakia		
Motorway construction	211,2	61,1%
Railway rehabilitation	134,3	38,9%
Hungary		
Road projects (MO motorway, different sections)	388,9	
Railway projects	140,3	
Motorway between Mako and Szeged (in reserve)	280,5	
Railway projects (in reserve)	136	
Estonia		
Waterway construction/rehabilitation	100,8	45,9
Road construction/rehabilitation	91,1	41,5
Railway construction/rehabilitation	2,7	1,2

Source: "Heading down dead ends Transport sector financing in CEE", CEE Bankwatch Network

[86] EC Official Website

As it could be seen from Table 4-19 during 2004-2006 period 11% of CF funding was planned to be allocated for motorway construction, 44% for railway sector and 35% for waterway development. Poland, Slovakia and Hungary are more focused on motorway construction investments while Czech Republic invests more on railway and waterway development and Baltic States concentrate on road rehabilitation and maritime shipping development.

Structural Fund

While Cohesion Fund is focused more on large scale transport projects, the Structural funds finance smaller scale transport projects such as bottlenecks removement, transport costs, lead time and congestion reduction, transport network capacity and service quality improvement. Funds work with the state owned roads and rails, small ports and airports in order to improve local links for regional access.

4.5.2.1. Pre-Accession Funds

Pre-Accession Funds are EU financial instruments aimed to assist applicant countries in the preparation process for the EU accession. Transport related projects are mainly financed through ISPA-instrument.

PHARE (2000-2006)

Phare has been the main instrument for the candidate countries in preparing for EU membership. About 1,56 bln. EUR annually was allocated for all the countries in 2000-2006 budget plans. The transport sector was included in to the "infrastructure" part (including energy and telecommunications). The large programme was run by Phare to eliminate the bottlenecks in international transport, including border crossing procedures. However, almost in all the countries the implementation faced considerable delays.

One of the major Phare projects is the Transport Infrastructure Needs Assessment (TINA) conducted from 1995 to 1999. It identified the networks similar to TENs to be completed by 2015. Phare programme also provides grant aid for those countries in Southeastern Europe, which are not included within the accession process, namely Albania, FYR Macedonia, and Bosnia and Herzegovina.[87]

ISPA (2000-2006)

ISPA is aimed to finance major long-run transport and environmental projects. After a country joins EU, the Cohesion Fund replaces ISPA: The system which was aimed to make ISPA sources payable will make the CF's grants payable. ISPA is pre-accession instrument functioning on a project basis where each individual project and every stage of implementation has to be pre-approved by the EC. It finances large projects (over 5 mln. EUR). The projects are multi-annual and should be implemented over several years.

The allocation of ISPA sources varies from country to country. Romania and Estonia received most of the grants for road sector while Lithuania, Poland and Bulgaria received the similar amount for both rail and road sector. Czech Republic, Latvia, Hungary, Slovakia received the majority of ISPA financial sources for rail sector. Slovenia received up to 100% of sources for its rail sector. However, the direct impact from these investments was quite small because of the national policies. In Hungary, for instance, EU funding for rail sector was used for motorway construction. Some projects for road sector are in conflict with national environmental policies.

[87] Enlargement Chapter Fifteen EC INFORM – Transport policies of the EU

Overall, ISPA/CF support for the railway sector of the CEE countries is very positive.[88] The annual ISPA budget exceeds 1 bln. EUR for all the countries.

Table 4-20 Projects Decided in Transport Sector 2000-03

Country	No of projects	Total Eligible Cost, mln. EUR	Total ISPA contribution 2000-03	in %	Commitments 2000-03	in %	Payments 2000-03	% Paym/ Comm
BG	5	669 465 135	349 335 500	56,8	205 142 567	47,9	43 312 532	21,1
CZ	10	441 611 812	245 245 288	48,4	131 330 348	44,8	43 598 025	33,2
EE	9	100 725 771	75 644 328	41,9	59 240 748	49,7	21 124 457	35,7
HU	11	634 273 602	322 905 101	49,2	182 300 521	49,4	83 248 637	45,7
LV	11	232 134 336	174 128 028	56,1	97 652 468	50,1	30 727 128	31,5
LT	11	295 429 554	146 982 109	51,9	108 502 742	49,9	56 797 641	52,4
PL	24	1 733 766 544	1 300 474 927	50,3	725 338 370	49,9	243 502 273	33,5
RO	10	1 065 723 595	793 369 793	54,9	495 241 887	49,4	7 860 511	15,3
SK	6	317 779 000	173 739 200	48,0	97 505 370	49,9	44 091 330	45,2
SI	5	75 608 967	38 907 593	45,0	28 540 224	42,5	9 499 626	33,3
Total	102	5 566 518 316	3 620 731 867		2 130 795 245		583 762 160	

Source: Authors, based on ISPA mini-report 2000-2003

Table 4-21 Allocation of ISPA, 2004-2006

	2004	2005	2006	Total, mln. EUR
Bulgaria	135,5	146,8	158,2	**440,5**
Croatia	-	25	35	**60**
Romania	316,5	342,6	368,8	**1027,9**
Total	**452**	**514,4**	**562**	**1528,4**

Source: EC Official Website

IPA

IPA (Instrument for Pre-Accession Assistance) is going to replace for period 2007-2013 a number of programmes that were run in 2000-2006 period such as PHARE, ISPA, the Turkish pre-accession instrument and financial instrument for Western Balkan CARDS.

4.5.2.2. Community programmes

TEN - Trans-European Networks

High number of infrastructure projects receives EU financial support through the TEN-budget line and they are also supported by EIB through loans. Some components of these projects are also supported by CF, European Regional Development Fund (ERDF).

The budget for TEN-T is 600 mln. EUR per year for 2000-2006 period. Based on the recommendations of Van-Miert high-level group on the TEN-T (2003), EC defined a list of 30 projects to be started by 2010 (with a budget of 225 bln. EUR). The list takes into account the ongoing enlargement and includes sustainable mobility plans by focusing on rail and water sector developments. The highest share of investments between 1997 and 2001 were directed to Czech Republic (29%), Poland (19%), Slovenia (16%) and Hungary (13%). Next amount (20 bln. EUR) was allocated for 2002-2005 to Poland (29%) and Czech Republic (27%). As to the

[88] Heading down dead ends Transport sector financing in CEE, 2004

2006-2010 and 2011-2015 periods, the budgets planned for investments are 20,7 bln. and 4,5 bln. EUR. The received sums are expected to be higher.

The financing of the Pan-European Transport Corridors varies. There is a multitude of investment sources and the most common ones are national funds and budgets, EU funds and grants (TEN-T budget for the projects within EU member states, European Regional Development Fund, The Cohesion Fund, INTERREG III, ISPA, Phare, CARDS and TACIS) as well as EIB, EBRD, World Bank, other IFIs and PPP.

Table 4-22 Planned Investments in TEN-T Infrastructure

Country[89]	1996/97	1998/99	2000/01	2002/03	2004/05	2006/10	2011/15	Total, mln. EUR
BG	27,0	147,7	263,5	291,1	264,3	312,5	261,5	1 567,6
CZ	356,6	468,3	1 467,6	2 650,2	2,936,1	4,125,1	1 537,5	13 541,5
EST	2,9	118,8	106,2	169,3	177,5	195,9	0	770,7
HU	25,1	168,2	823,3	1 563,2	1 365,6	2,016,2	469,9	6 431,5
LV	14,0	63,4	39,1	37,6	68,0	149,2	37,1	408,4
LT	1,2	147,6	117,7	234,3	379,9	642,2	441,9	1 964,8
PL	162,3	490,4	833,8	1,463,3	4,365,7	9 503,1	39,8	16 858,4
RO	42,7	106,3	155,3	135,4	173,9	195,8	192,6	1 002,0
SK	56,9	48,7	18,5	885,6	1 312,3	2 459,2	1 313,0	6 094,3
SLO	291,7	412,3	572,2	680,2	717,1	846,2	174,4	3 694,.2
Total	980,4	2 171,7	4 397,2	6 646,9	4 458,6	1 404,1	3 154,7	

Source: Authors, based on Pan-European Transport Corridors and Areas Status Report, 2006.

However, the level of investments in transport infrastructure has decreased to less than 1% of GDP. The EU financial plans for 2007-2013 are also limited. Therefore, EU needs to focus TENs financial resources on the main bottlenecks of the priority projects and border-crossing sections. Joint initiatives like JASPERS (Joint Assistance to Support Projects in European Regions) could be good solution to support the projects. JASPERS is one of the main policy initiatives run by EC, EIB and EBRD which will assist NMs and acceding countries in major infrastructure project financing. Key areas for JASPERS can be stated as: TENs, the transport sector outside of TENs, including rail, river and sea transport, intermodal transport systems and their interoperability, management of road and air traffic, private public partnerships, etc.

As to Pan-European Transport Corridors, it is likely that the networks outside EU will only receive limited EC support and mainly will be financed through IFIs.

Marco Polo

The programme focuses on intermodal transport development and supports the rail, sea/river transports. However, some companies in CEEC seem to lack information about the programme's possibilities. Appendix 3 provides the Marco Polo funding (2004-2005) into CEE infrastructure. One of the interesting examples for automotive industry is the Italy-Poland rail project started by Fiat – GM – Powertrain in 2004.

4.5.3. International Financial Institutions (IFIs)

European Investment Bank (EIB)

EIB is considered as one of the main loan providers to the all Balkan countries with the aim of preparing them for EU membership and developing TENs.

[89] Including road, rail, IWW, ports and airports infrastructure

European Investment Fund

The major role of the institution is to provide loan guarantees for TEN projects.

European Bank for Reconstruction and Development (EBRD)

The EBRD is one of the largest single investors in the CEE. It cooperates with EU on the TEN developments and regional initiatives implementation like REBIS in Western Balkan and TRACECA as well as with other IFIs such as EIB, IMF, the World Bank Group and the regional development banks.

The aim of EBRD is to assist the transition countries to get closer for the market economy. Thus, in the infrastructure sector EBRD assists projects which promote involvement of private sector (under a PPP scheme). The countries of the bank's operation are divided into different categories based on transition level: Early Stage Transition Countries, Intermediate Transition Countries, Advanced and Transition Countries, and Russia. The Intermediate Transition Countries group includes Bulgaria, FYR Macedonia and Romania. The Advanced Transition Countries are NMs (Estonia, Latvia, Lithuania, Poland, The Czech Republic, Slovakia, Hungary and Slovenia) and Croatia. The EBRD plans to increase its share in Southeastern Europe by working with regional importance projects.

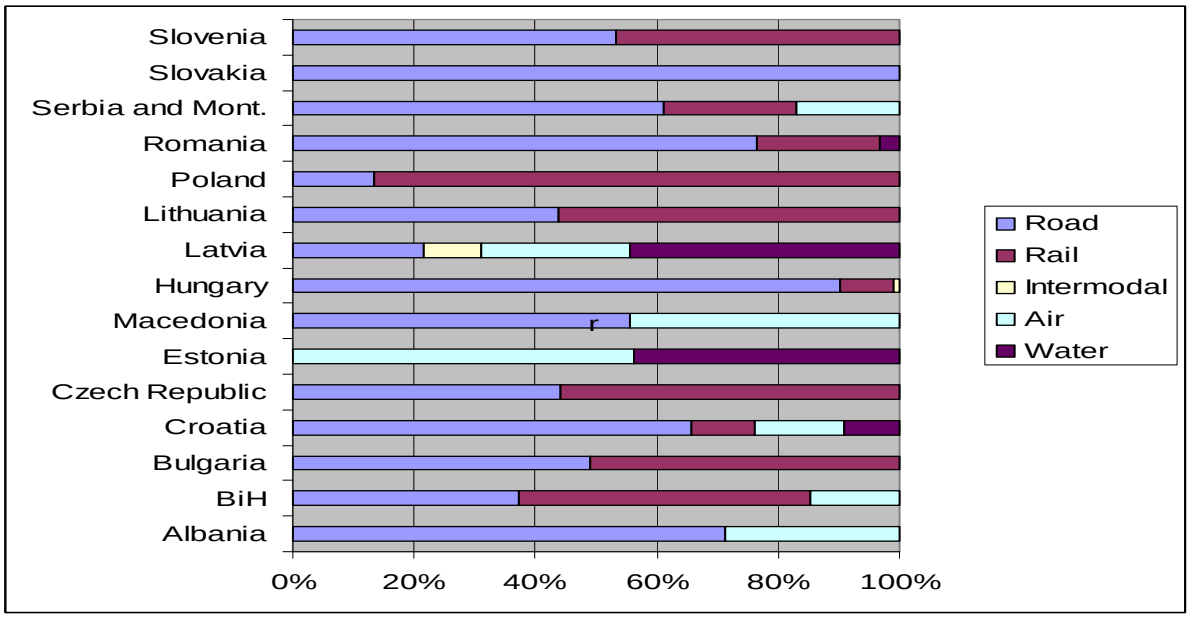
Table 4-23 EBRD Transport Investments in the CEE Countries, 1991-2005

Country	Road	Rail	Intermodal	Air	Water	Total, mln. EUR
AL	52 000	-	-	21 000	-	**73 000**
BiH	70 000	91 000	-	27 650	-	**188 650**
BG	36 344	37 618	-	-	-	**73 961**
CR	187 696	29 586	-	41 683	26 500	**285 464**
CZ	23 948	30 134	-	-	-	**54 083**
EE	-	-	-	24 504	19 163	**43 667**
MK	40 000	-	-	31 789	-	**71 789**
HU	418 984	40 000	4 739	-	-	**463 723**
LV	8 423	-	3 600	9 543	17 329	**38 895**
LT	35 587	45 647	-	-	-	**81 234**
PL	44 994	294 082	-	-	-	**339 077**
RO	389 341	104 476	-	-	16 000	**509 817**
SR	159 500	57 000	-	44 500	-	**261 000**
SK	150 000	-	-	-	-	**150 000**
SI	49 894	43 680	-	-	-	**93 573**
Total	**1 666 711**	**773 223**	**8 339**	**200 669**	**78 992**	**2 727 933**

Source: Authors, based on EBRD

The EBRD invested 2 727 933 mln. EUR from 1991 to 2005 in the transport sector of CEEC. The majority of the investments concerned the road sector (61%). The rail sector received 28%, and the intermodal transport received about 0.5% of the total transport investment.

Figure 4-13 EBRD Transport Investments in the CEEC 1991-2005
(% of transport sub-sectors in total of the transport sector)



Source: Authors, based on EBRD

On the basis of the information available in the bank's online project database, it is understood that the situation varies widely in terms of the distribution of the investments in the countries (Figure 4-13)Figure 4-13 EBRD Transport Investments in the CEEC 1991-2005. In Poland and Lithuania mostly the rail sector was supported while in Estonia EBRD activity concentrated solely on the air and water transport sector. In Slovakia, Hungary and Romania the road sector obtained most of the investments. The major recipient countries are Romania (18.5%), Hungary (17%), Poland (12.5%) and Croatia (10.5%). This partly reflects their relative size, population and length of infrastructure. There was also a general increase in average loan size.[90] The detailed information about the projects in road and rail sectors is provided in the Appendix 3.

World Bank Group (WB)

The World Bank transport sector portfolio in CEE consists of about 65% road projects and 8% rail projects. The Bank was especially active in providing loans for highway projects in the first part of the 1990s. In mid 1990s the loans for railway sector increased especially in Bulgaria, Romania, Croatia, FYR Macedonia and Poland.

CEEC with the exception of Baltic States and Poland have stopped using WB loans for the transport sector investments in 1995. The main reason is the availability of EIB loans, EU grants, Phare and ISPA funding lines. Therefore, the main receivers in CEE are the Balkan countries. Investment flows to the transport projects with private participation grew significantly while the number of projects remained stable.[91]

4.5.4. Investments from National Budgets and PPP

Infrastructure of CEE is financed also by the national budgets. The importance of national financing is growing as EU funds are rather limited and not enough to support all kinds of ambitious projects. The amount of national budget expenditures varies among countries. To

[90]CEE Bankwatch Network, Transport Sector Financing in CEE
[91] World Bank, 2006

illustrate, in 2005 in Lithuania 1.6% of GDP was planned for infrastructure investments whereas in Croatia the government planed to earmark about 7% of GDP for this purpose.

However, the governments are also unable to provide large sums of money. Involvement of PPP in infrastructure financing is often the best way to start running the priority projects and it will remain a major issue for many governments in the forthcoming years. Hungary was the first CEEC which decided in 1991 to rely on PPP for its highway development. Croatia also has a lot of PPP projects comparing with its small size economy.

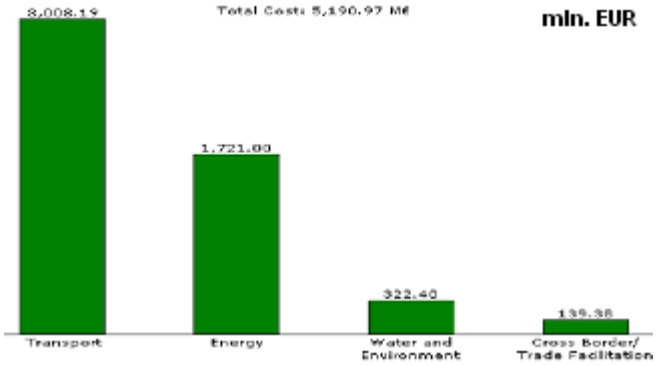
It is difficult to attract private investors as they prefer to invest into projects with high profitability. To make it possible to use Public Private Partnership (PPP) in railway projects, it is necessary to split railway truck ownership from services. As to TENs, they have rather low estimated rate of return (about 3-8%), which is hard to forecast and more than 6 years nonprofit period. Therefore, the PPP is the best compromise where the advantages are risk splitting and early stage project design and implementation. The so called "user pays" principle is expected to increase infrastructure revenues and motivate the private investment.[92]

4.5.5. SEE Investments

EU provides financial and technical assistance for SEE countries. Mainly the projects include development of physical links and networks, the backbone of which is formed by the ten Pan-European Transport Corridors. The main focus is on the railway rehabilitation due to the war damage repairs and also to accomplish further regional integration in SEE. 83 projects are based on REBIS study for short term implementation (2004-2009). The total cost of these investments amounts to 2.3 bln. EUR, which includes 1.2 bln. EUR for road and 800 mln. EUR for railway projects.[93]

As it could be seen from the Figure 4-14 higher share of financed projects (58%) belongs to the transport, especially road sector which represents about 32 different projects.

Figure 4-14 Ongoing Infrastructure Projects in SEE, 2005



Source: Regional Infrastructure Strategies and Projects in SEE.

[92] Euroscope Reports Efficient Transport System - Prerequisite for Integration
[93] Infrastructure Steering Group, 2003, Implementing Regional Transport Priorities in the Western Balkans

5. TRANSPORT INFRASTRUCTURE

This chapter covers transport infrastructures of CEE region under three titles. First part starts with the main transport networks of the countries. Then it continues with the ongoing and planned infrastructure projects. The second part discusses the infrastructure related bottlenecks. The final part puts emphasis on intermodal transport systems in CEE countries. All the parts are elaborated from national and regional perspectives.

5.1. TRANSPORT NETWORKS

This part consists of two sections: ''Main Transport Networks in CEE Countries'' and ''Ongoing and Planned Infrastructure Projects''. The first section discusses the general status of the CEE infrastructure with respect to the transport modes of road, rail and inland waterways. It presents the main national and international transport corridors passing through the each country. The second part focuses on the ongoing and future projects of CEE that are expected to make considerable impact on the countries.

5.1.1. Main Transport Networks in CEE Countries

According to Agenda 2000, the TEN transport network[94] of NMs and candidates consists of 19000 km of roads, 21000 km of railways, 4000 km of inland waterways and 58 inland ports. In contrast to the rail network, with the exception of Slovenia, the motorway network of all NMs and candidate countries is less developed than that of Western Europe. Inland waterways are not developed but have enough capacity and potential in the region. Two of the inland waterways transport corridors are crossing CEE: the East-West Corridor (Poland and Czech Republic) and the Danube Corridor (Slovakia, Hungary, Croatia, Serbia, Romania and Bulgaria).

5.1.1.1. Baltic Region

The Baltic States transport network is developed rather well but comparing with the EU-15 there is a drawback in technical level of already existing infrastructure. Rolling stock is in quite poor condition and long transit Russian cargo trains create extra pressure for marshalling yards. Baltic States compete with each other for sea cargo shipments. However, most of Baltic ports operate below capacity. In Latvia and Estonia there are no relevant commercial inland navigation systems whereas Lithuania has low-scale systems.

Lithuania

Road

The network density is developed quite well. There are 6 European motorways crossing the country[95] that includes 4 TENs:

[94] All the statistics related to road and rail infrastructure by country see in Appendix 4
[95] Lithuanian Road Administration Official Website

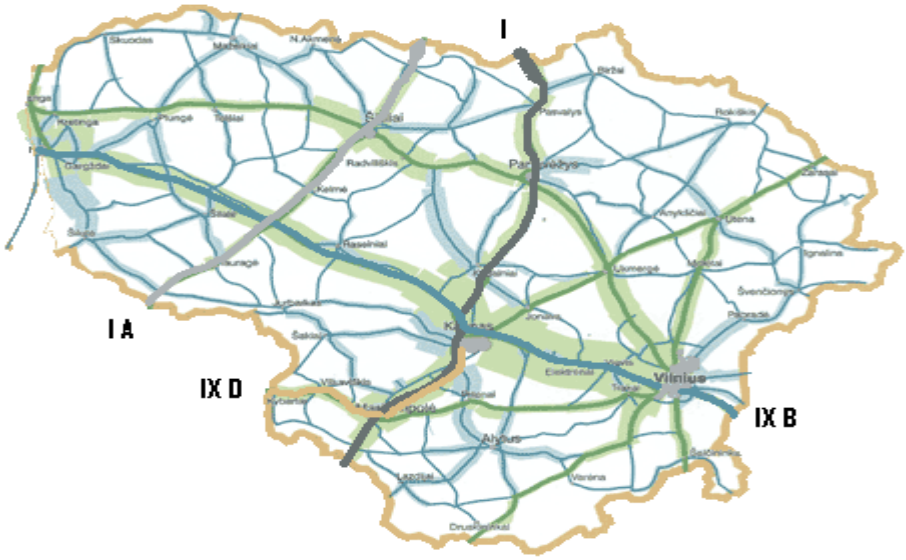
Table 5-1 TEN Road Networks Crossing Lithuania

	Direction	Name of the Corridor	Corridor's Description
1	**North-South**	Corridor I (Via Baltica)	Tallinn (EST)-Riga (LV)-Kaunas (LT)-Warsaw (PL)
2		Corridor IA (Via Hauseatica)	Riga (LV)-Siauliai (LV)- Kaliningrad (RUS) – Gdansk (PL) – Lubeck (D)
3	**East-West**	Corridor IXB	Moscow (RUS) – Minsk (BY) – Vilnius (LT) – Kaunas (LT) – Klaipeda (LT)
4		Corridor IXD	Kaunas (LT) – Kaliningrad (RUS)

Source: Authors

The main transport flows are going through corridor IXB from Russia through Belarusian border to Kaliningrad and Lithuanian port Klaipeda, as it shown on the Figure 5-1.

Figure 5-1 Traffic Volumes on Main and National Roads in Lithuania [96]



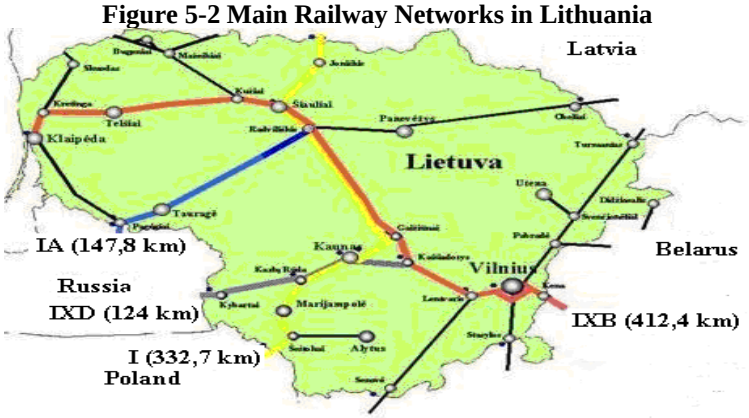
Source: Authors, based on Lithuanian Road Administration

Rail

Lithuania has the highest percentage of transit rail traffic in the Baltic region. The railway network includes 126 stations but only some of them are used for wagons marshalling and freights transshipment. The infrastructure needs modernization and development. The largest transport flow is going via Sestokai station where the wide gauge (1524mm) is connected to European standard gauge (1435mm).

[96] Green lines reflect main roads, while blue lines reflect national roads

Figure 5-2 Main Railway Networks in Lithuania



Source: Authors, based on Ministry of Transport and Communications, Lithuania

The directions of railway TENs crossing Lithuania are same as for road transport:

Table 5-2 TEN Rail Networks Crossing Lithuania

	Direction	Name of the Corridor	Corridor's Description
1	**North-South**	Corridor I (Rail Baltica)	Tallinn (EST)-Riga (LV)-Kaunas (LT)-Warsaw (PL)
2		Corridor IA	Riga (LV)-Siauliai (LV)- Kaliningrad (RUS) – Gdansk (PL) – Lubeck (D)
3	**East-West**	Corridor IXB	Moscow (RUS) – Minsk (BY) – Vilnius (LT) – Kaunas (LT) – Klaipeda (LT)
4		Corridor IXD	Kaunas (LT) – Kaliningrad (RUS)

Source: Authors

In the east-west direction Corridors IX and IXD are the main rail routes as along Corridor IXB from Klaipeda through Kaunas to Belarus 21% of traffic is transported and along Corridor IXD from Russia to Kaliningrad constitutes 65% of traffic.

Inland waterways

For freight transportation could be used Nemunas River (on the part Kaunas – Klaipeda 278,3 km)[97] and the track in the Kurshiu Marios. It connects Kaunas through Klaipeda port or through Kaliningrad (RUS) to international routes. The main river ports are Kaunas, Jurbarkas, Klaipeda and Kurshiu Nerija. However, the role of inland waterways in the Lithuanian transport system is insignificant.

Latvia

Road

The density of railroads in Latvia is quite sufficient and current infrastructure status corresponds to the current volumes. The road network of Latvia has a central organization where Riga is a hub. There are 5 main roads going from Riga to other main cities: Vientspils and Liepaja (important ports), Jelgava, Daugavpils, Rezekne and Bauska. The main traffic flow is focused in Riga.

[97] UN inland water route E-41 and E-70

Figure 5-3 Road Network in Latvia

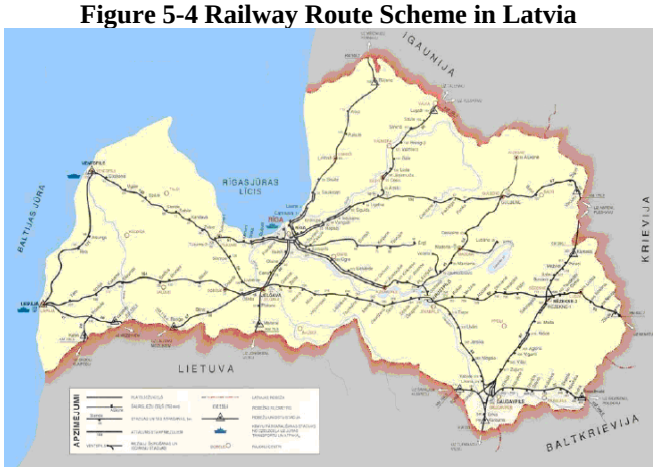
Source: Latvian Road Administration

Latvian road system provides good access to the East (Russia and CIS) and South-West (Central and Western Europe). The ports are also well connected to Finland and Sweden. According to DFDS Transport Latvija SIA, it takes 3 days to transport goods through Riga to Moscow (RUS) or Budapest (HU).

Rail

As it is the case in road network design, Riga is the central node for national railway network. There are two main roads crossing the country on east-west direction and connecting the major ports (Vientspils and Liepaja) with Russia and Lithuania. Another important node is Daugavpils from which branches are originating to the railway connections with southern countries of Central Europe. However, the most important connection is the link from Latvian ports to Russia and Far East, Warsaw (PL), the Black Sea.

Figure 5-4 Railway Route Scheme in Latvia



Source: Latvian Railway

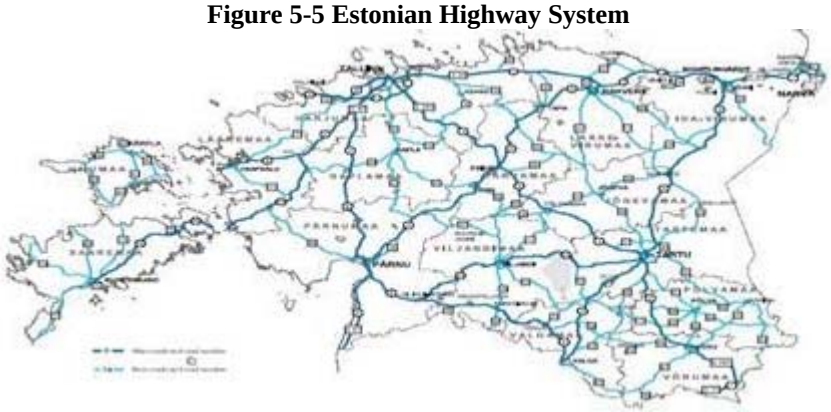
The main cargo intensity is going to Ventspils and Riga from Belarus and Russia. Currently, the main cargo flow is concentrated on the direction Belarusian border-Krustpils-Ventspils, which is expected to be the busiest route in the future. There is also an increase in the container traffic from Latvian ports to Russia and Kazakhstan; however, it is still in early development stage.

Estonia

Road

There is almost no motorway in Estonia. Following EU enlargement, the national road Tallinn-Tartu-Luhamaa joins to the E-road network.[98] Therefore, the length of E-roads in Estonia is currently 677.4 km.

Figure 5-5 Estonian Highway System

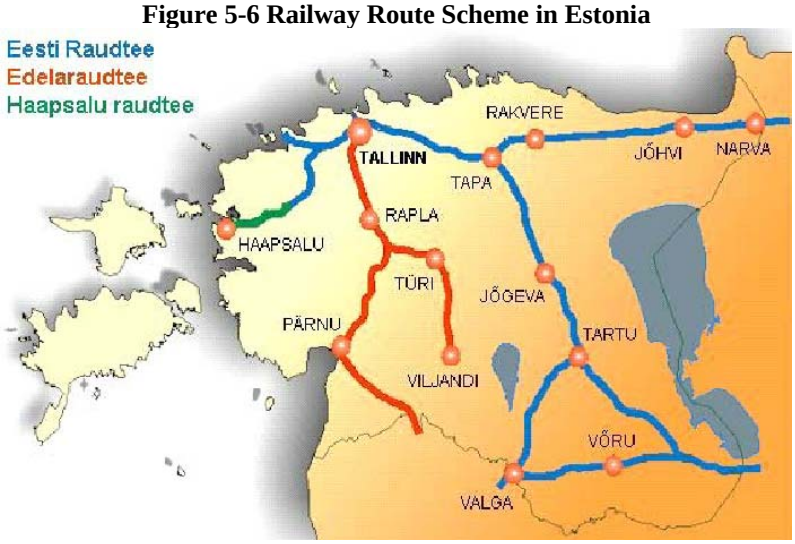


Source: Ministry of Economic Affairs and Communications, Estonia

Rail

Main rail network connects Tallinn and Narva with St. Petersburg (RUS), Tartu with Pskov (RUS) and Parnu with Riga (LV). One of the most developed transit corridors connecting CIS countries is passing through Estonia but it still lacks investments into the rolling stock and rail infrastructure. Estonian railway infrastructure is divided among different actors as it can be seen from the Figure 5-6.

Figure 5-6 Railway Route Scheme in Estonia



Source: Estonian Railway

The main cargo flows go in east-west direction: from Russian border through Narva to Muuga port which is close to Tallinn. Another important corridor (83% of transit traffic) is Petseri-

[98] E263

Valga-Riga used mainly for oil transit. As the traffic is increasing, there occurs the lack of capacity of the rail lines, especially at the eastern border stations.

5.1.1.2. Central Europe

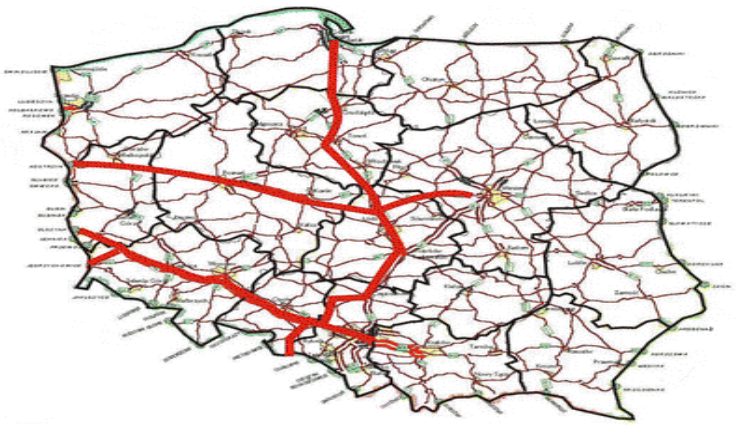
Poland

The status of the infrastructure is bad comparing with European standards. The number of highways is insufficient and rail networks are in need of modernization. The ports are inadequate in cargo handling and have poor integration with other modes.

Road

The Polish road network is under continuous development but still the density is low compared to EU average. There is a lack of coherent road networks that could link major cities and industrial areas. The existing quality and capacity of roads can not handle growing traffic volumes. Only 5% of roads is suited for 115 kN axle load.

Figure 5-7 Network of Highways in Poland



Source: General Directorate for National Roads and Highway (GDDKiA)

Four Pan European Corridors passing through the country are as follows:

Table 5-3 Pan European Corridors Crossing Poland

1	**Corridor I**	Helsinki-Tallinn-Riga-Kaunas-Warsaw
2	**Corridor IA**	Riga-Kaliningrad-Gdansk
3	**Corridor II**	Berlin-Warsaw-Minsk-Moscow
4	**Corridor III**	Berlin-Katowice-Zylina: via Grudziadz-Poznan and via Czestochowa-Katowice-Ostrava

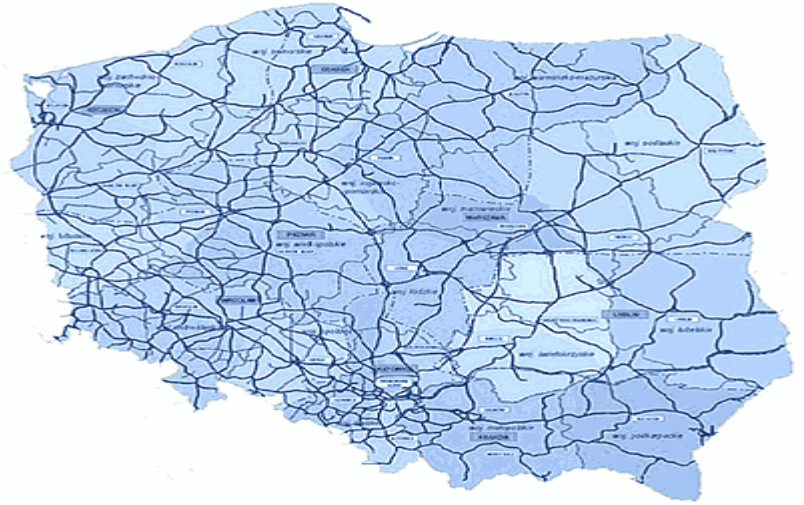
Source: Authors

Rail

Poland has one of the biggest rail network sizes but its quality is low. Inadequate infrastructure hinders also development of seaports and airports. Only 2,300 km allows the speed of 120 km/h or higher. [99] The wide gauge allows good connection to Russia and CIS countries.

[99]UNECE, Transport situation in Poland in 2005

Figure 5-8 Polish Railway Network



Source: PKP

Inland waterways

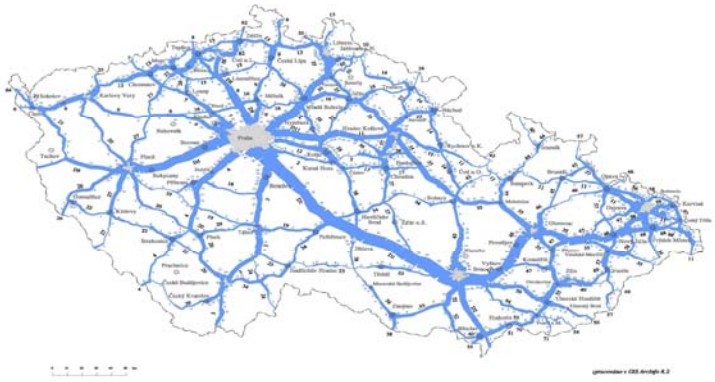
There is a possibility to use the inland waterway network from Swinousjscie, Szczecin to Berlin. There is a link to Baltic region from Dnepr by the way of Szara through Lithuania and Poland. Main commercial seaports are Gdansk, Gdynia, Kolobrzeg, Szczecin-Swinoujscie. A major project called as "Program for Odra 2006" is designed to improve the Polish inland waterway transport.

Czech Republic

Road

Currently, there are 7 highways crossing the country and additional ones are being constructed. The Czech Republic has already the best road network in the region but still as a whole it remains underdeveloped compared with EU-15.

Figure 5-9 Czech Republic Road System

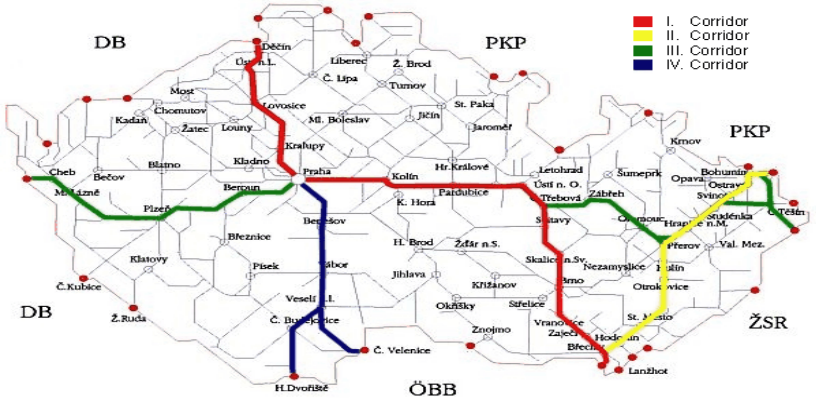


Source: Czech Motorways

Rail

In contrast to the road infrastructure, railway network is even more developed and its density usually exceeds twice of the EU members' average. The country has the highest density of rails within the EU. Its northern part's track density is higher than that of the southern.

Figure 5-10 Main Railway Corridors in Czech Republic



Source: Czech Railways

The Czech Republic has four transit railway corridors that are undergoing a priority modernization:

Table 5-4 Main Railway Corridors Crossing Czech Republic

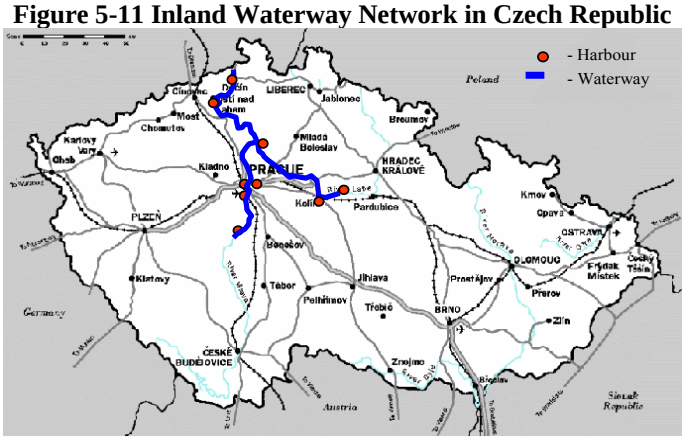
1	**Corridor I**	(D)–Decin–Prague–Ceska Trebova–Brno–Breclav–Viden (A)/Bratislava (SK)	**476 km**
2	**Corridor II**	Viden (Austria)–Breclav–Prerov–Ostrava–Katowice (Poland)	**320 km**
3	**Corridor III**	Nurenberg (D)–Cheb–Plzen–Prague–Olomouc–Ostrava–Zilina (SK)	**693 km**
4	**Corridor IV**	Berlin (D)–Decin–Prague–Veseli and Luznici–Horni Dvoriste–Linz (A)/Ceske Velenice – Viden (A)	**473 km**

Source: Authors

Inland waterways

The most important inland waterways corridor is Elbe-Vltava as it is the link with Hamburg, Rotterdam and Antwerp. This waterway includes 303 km of Elbe river section from Chvaletice to the Czech border and the Vlatava river section from Slapy to Melnik where it connects with Elbe. There are also 8 harbors owned by Czech Harbors Company.

Figure 5-11 Inland Waterway Network in Czech Republic



Source: Ministry of Transport of the Czech Republic

The main problem of this connection is unstable level of Labe between Usti nad Labem and German border. The Holesovice harbor is important from the transshipment point of view. The importance of the Radotin Harbor is also expected to grow with the completion of Prague Ring Road.

The inland waterway transport supports trade with Belgium (10% import and 15% export) and Netherlands (10-20% import and 10% export). There is also a potential to reach Switzerland and some parts of Poland and France.

Hungary

Hungary has good geographical location with the transport networks linking the Adriatic seaports to the Ukraine, Western Europe to the Balkans, etc. All these allow the country to position itself as an important intermodal hub.

Road

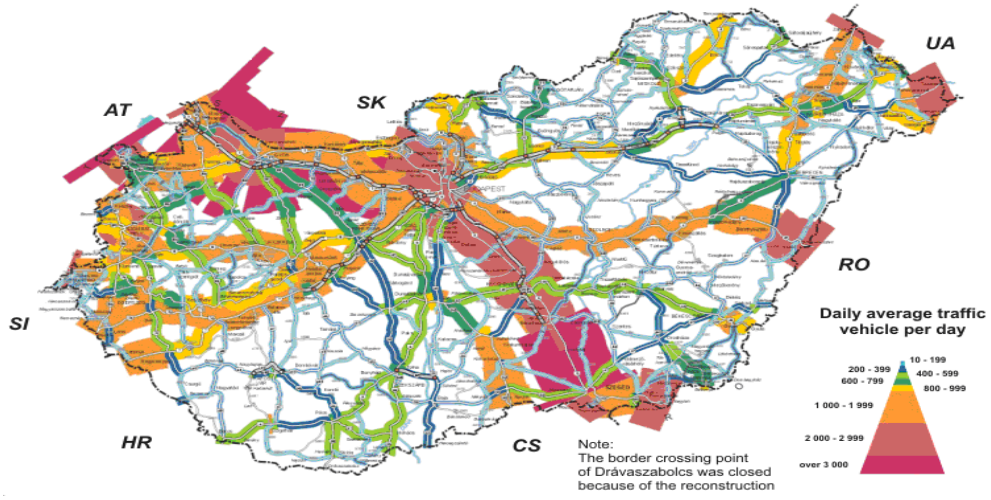
Hungary has been investing heavily in upgrading and extending its road network. The density of its network exceeds EU average but the quality is still low. Seven of eight major highways start from Budapest and all of them link up with the TENs.[100] The major routes crossing Hungary are as follows:

Table 5-5 Main Road Corridors Crossing Hungary

1	**Corridor IV**	A/SK border-Budapest-RO/YU border; From North-West Berlin connects to Black Sea, Greece, Turkey
2	**Corridor V**	SI/CR border-Budapest- UA border; From North-East to South-West connecting Adriatic region with Ukraine.
3	**Corridor XB**	Budapest-CR border (Eszek) To Thessalonica through Serbia

Source: Authors, based on Hungarian Investment and Trade Development Agency

Figure 5-12 Road Network in Hungary



Source: KTI, Institute for Transport Science, Hungary

[100] Hungarian Investment and Trade Development Agency

Rail

The railway network covers the whole country and is an integral part of the international railway network.[101]

Figure 5-13 Railway Network of Hungary

Source: KTI, Institute for Transport Science, Hungary

Table 5-6 Main Rail Corridors Crossing Hungary

1	**Corridor IV**	A/SI border-Budapest-RO/YU border; The track leads through Hegyeshalom and Gyor approached from Austria towards Budapest and Szolnok, then through Bekescsaba it reaches the Romanian border at Bakoshaza.
2	**Corridor V**	SI/CR border-Budapest-UA border; The track in Corridor V reaches the country from Slovenia near Nagykanizsa and lead towards Budapest via Szekesfehervar. There are alternate lines for Corridor V through Gyekenyes (Corridor VB) and Megyerboly (Corridor VC) from Croatia. These lines meet at Dombovar and run towards Budapest to join the main line (Corridor V). From Budapest the route leads to Ukraine through Szolnok, Debrecen, Nyiregyhaza and Zahony.
3	**Corridor X**	Budapest-CR border; The track leads from Budapest to Kelebia at the Yugoslavian border and from Yugoslavia there is an alternate route towards Osijek (CR).

Source: Authors, based on Hungarian Investment and Trade Development Agency

Inland Waterways

Hungary is landlocked country but it has access to the Black and North Sea via the Danube River (Corridor VII) which is the only intermittently navigable river. The navigation is affected by the lack of development of inland waterways and unsolved case of hydroelectric station at Bos-Nagymaros. The main reason of limitation is that it does not comply with the 2.5 m minimum sinking depth requirement.

The traffic on Hungarian riverbank of Danube has been drastically decreased since the beginning of war in Yugoslavia. Currently, the main river ports and harbors are Budapest Csepel Freeport, Dunaujvaros, Baja, Gyor-Gonyu, Mohacs. Main transit goes through Frankfurt. The Danube-Rhine-Main channel has made export-import traffic along the Rhine and the maritime ports in the North possible since 1992.

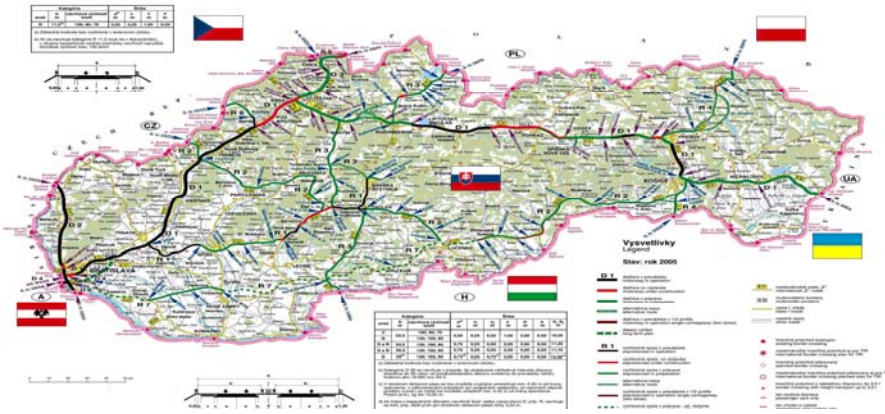
[101] Hungarian Investment and Trade Development Agency

Slovakia

Road

Despite its favorable location for international trade, the mountains running from east to west and valleys from north to south make the east-west transport slow and limit the cross-border linkages with Poland.

Figure 5-14 Road Network of Slovakia



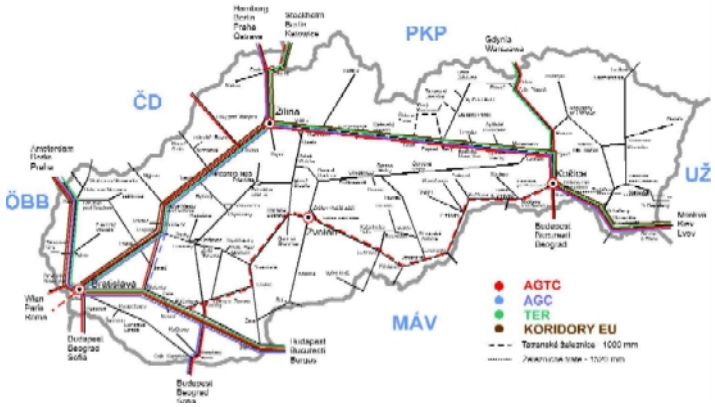
Source: Ministry of Transport, Post and Telecommunications, Slovakia

The former road network was oriented towards the links with the former Yugoslavia rather than with Hungary and Western Europe. This situation is changing under the national motorway construction programme. There are two main north-south corridors crossing Slovakia: Central Corridor (Martin-Zvden-Sahy-SK/HU border-Budapest) and Eastern corridor (SK/PL border-Vyshny Komarnik-Aestov-kosice-Milhost-SK/HU border).

Rail

The current Slovak railway network forms triangle with the main lines Kosice-Zilina, Zilina-Bratislava and Bratislava-Zvolen-Kosice. The rest of the lines are the branch lines.

Figure 5-15 Railway Network of Slovakia



Source: Ministry of Transport, Post and Telecommunications, Slovakia

Inland waterways

Inland waterway transport connects Slovakia to the North and Black Sea via European corridors. Main ports are Bratislava, Sturovo and Komarno with good connections to the rail and road networks.

Slovenia

Slovenia has one of the most developed infrastructures of CEE which is at comparable level with EU-15.

Road

Main transport corridors going through Slovenia territory are as follows:

Table 5-7 Main Road Corridors Crossing Slovenia

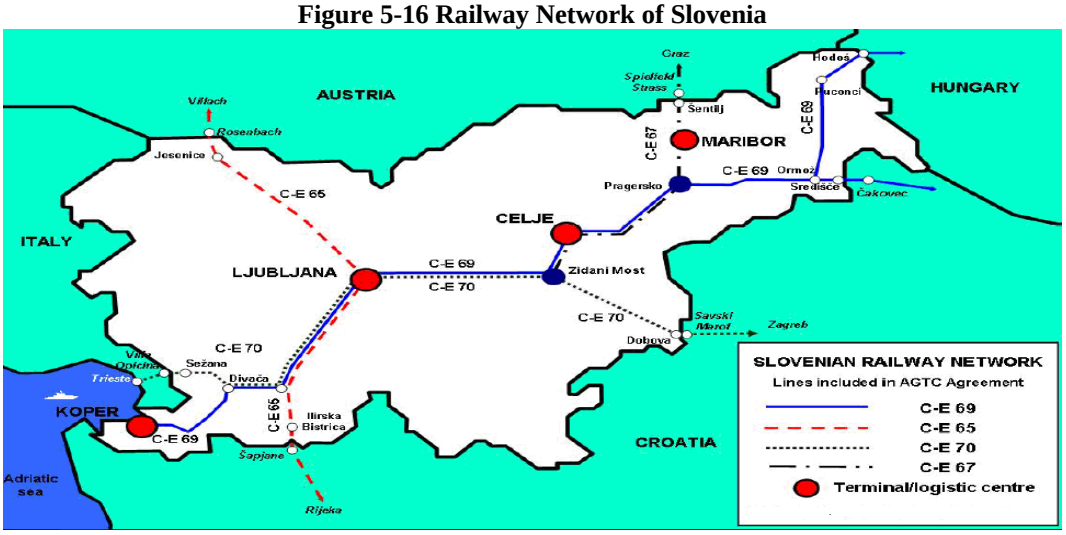
1	**Corridor V**	Venice (Italy) – Ljubljana-Budapest (Hungary)
2	**Corridor X**	Salzburg (Austria) – Ljubljana – Zagreb (Croatia)

Source: Authors

Rail

Railway network offers good connections to all destinations and provides the shortest transport route from east to west by avoiding the bottleneck of the Alps crossing. The connection between Port of Koper and Divaca is one of the busiest.

Figure 5-16 Railway Network of Slovenia



Source: Ministry of Transport of Slovenia, Railway Office

Main railway lines are as follows:

- E 65 Rosenbach - Jesenice - Ljubljana - Pivka - Rijeka;
- E 67 Spielfeld Strass - Sentilj - Maribor - Zidani Most;
- E 69 Cakovec - Sredisce - Pragersko - Zidani Most - Ljubljana - Divaca – Koper;
- E70 Villa Opicina - Sezana - Ljubljana - Zidani Most - Dobova - Savski Marof;

- T69 Ormoz - Murska Sobota - Hodos - Zalalovo.[102]

5.1.1.3. Balkan Region

Romania

Road

Due to the traffic growth the capacity of a large number of roads has been exceeded and bottlenecks often occur. The continuation of the works of construction and the rehabilitation of the road network are necessary, especially the construction of new motorways.[103] Romania is crossed by three Pan European Corridors:

Table 5-8 Main Road Corridors Crossing Romania

1	**Corridor IV**	*"North Route"*: Nadlac-Timisoara-Lugoj-Deva-Sebes-Sibiu-Pitesti-Bucharest-Lehliu-Fetesti-Cernavoda-Constanta *"South Route":* Lugoj-Caransebes-Drobeta Turnu Severin-Craiova-Calafat	West-East from Nedlac (HU border) to Constanta for one branch; North West-South East from Timisoara to Vidin, where it crosses Danube
2	**Corridor IX**	Albita-Marasesti-Buzau-Bucharest and Giurgiu (across the Danube from Ruse)	North-South from the Moldavian-Romanian border to Giurgiu and Ruse in Bulgaria

Source: Authors, based on TIRS

Other international routes have been defined during the TINA exercise and are stated as follows:

• E81: Sebes-Alba Julia-Cluj Napoca;
• E60: Cluj Napoca-Oradea-Hungarian border;
• E81: Cluj Napoca-Satu Mare;
• E85: Marasesti-Bacau-Suceava-Ukrainian border, towards Cernivici in Ukraine;
• Craiova-Bucarest through Caracal and Alexandria (not an E road).[104]

Figure 5-17 Road Network of Romania

Source: World Bank

Many of the roads are in poor condition due to the insufficient funding. Road density is the lowest among all the EU candidate countries.[105] Only in the Bucharest-Ilfov region there is a

[102] The Network Statement of the Republic of Slovenia 2007
[103] Transport Situation in Romania in 2005
[104] TIRS
[105] Global Road Safety Partnership

higher density. Many national and European roads have insufficient capacity leading to congestion. The 211 km motorway network comprises the following sections:

• A1 Bucharest – Pitesti 95.8 km west from Bucharest,
• A2 Fetesti – Cernavoda 17.5 km across the Danube between Bucharest and Constanta,
• A2 Bucharest – Drajna 97.3 km east from Bucharest.

Of the total national road network, 5,868 km (37.3%) is classified as European roads and, particularly suitable for international traffic, but long sections of this network are not compliant with the conditions included in the AGR. However, it is agreed that by the date of accession (1st January 2007) all the roads classified as being on the TEN-T are opened to vehicles compliant with EC Directive 96/53 on weights and dimensions, including the trucks of 11.5 tonnes standard axle loads.

Rail

The technical condition of the railway network, which is generally bad, implies low average speeds compared to the situation in the neighboring countries. There is no connection to the motorway networks of the existing EU member states.[106] The railway network in Romania consists of the following corridors:

Table 5-9 Main Rail Corridors Crossing Romania

1	**Corridor IV**	**North route:** Hungarian border-Curtici-Arad-Simeria-Alba Iulia-Sighisoara-Brasov-Ploiesti-Buchares; Bucharest Fetesti-Medgidia-Constantza **South route:** Curtici-Arad-Timisoara- Lugoj-Caransebes-Drobeta Turnu Severin-Craiova; Craoiva-Calafat	**880 km**
2	**Corridor IX**	Ungheni (Moldavian border)-Iasi; Iasi-Pascani-Bacau-Focsani-Buzau-Ploiesti-Bucharest; Bucharest-Giurgiu	**568 km**

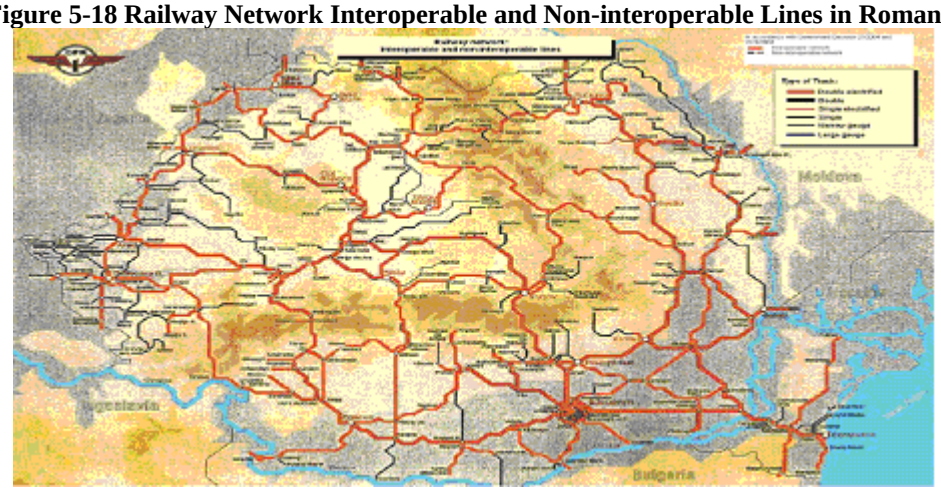
Source: Authors

The other links are Pascani-Suceava-Cernivici (Ukraine); Buzau-Braïla-Galati-Tighina (Moldavia); Craiova-Bucharest; Giurgiu-Videle; Alba Julia-Cluj Napoca-Oraddea-Satu Mare.[107]

The following map shows the railway network planned to become interoperable together with the rest of the network:

[106]Ministry of Transport, Romania, Sectoral Operational Programme 2007-2013
[107] TIRS

Figure 5-18 Railway Network Interoperable and Non-interoperable Lines in Romania



Source: MTCT

Inland Waterways

On the Danube River part between 863 km (Iron Gates II) – 175 km (Braila) there are navigation bottlenecks due to the variable flow regimen and during the low water periods due to the low depths of 1-1.5 m, much lower than the recommended minimal depths, of 2.5 m. Such phenomena occur in periods of 60 to 150 days/year.[108]

Bulgaria

Road

Road building in Bulgaria is generally difficult and costly as 40% of the country's territory is mountainous. More than 28% of main roads are in very poor condition and they together with the lower grade roads cause serious problems. In order to meet EU requirements, about 30% of roads need to be reconstructed.[109]

Bulgaria is crossed by 5 Pan European Corridors. Four of them are roads: corridors IV, VIII, IX and X. Corridor IV links CEE with Turkey, the Near East and Asia. Corridor VIII connects Adreatic Sea with the Black Sea, Russia and Central Asia. Corridor IX connects the North Eastern European countries through Romania and Bulgaria with the port of Alexandroupolis on the Aegen Sea. Corridor X is at the traditional North-South direction to Balkans.

Table 5-10 Trans-European Road Corridors Crossing Bulgaria

Corridor	Section	Total length
Trans-European Corridor IV There is a ferry service between Calafat (RO) and Vidin for vehicles	Vidin-Sofia-Kulata (Greek border) – IVA and IVB Vidin-Sofia-Kapitan-Andreevo (Turkish border) – IVC	446 km 558 km
Trans-European Corridor VIII	Gjuesevo-Sofia-Plovdiv-Burgas-Varna	639 km
Trans-European Corridor IX	Ruse-Stara Zagora-Makaza/Svilengrad	598 km
Trans-European Corridor X	Kalotina - Voluiak – Sofia	59 km

Source: "Sectoral Operational Programme – Transport (SOPT) 2007-2013", Ministry of Transport, Romania

[108] UN Economic and Social Council, 2006, Monitoring of developments relevant for the Pan-European transport corridors and areas

[109] SEEDA, Opportunities and Challenges of EU Enlargement

The following international roads cross the territory of the country: TEM (E80) - total length 370 km, of which 170 km is motorway; E79 - Romania - Vidin - Kulata - Greece; E83 - Romania - Ruse - Sofia; E871 - Sofia - Gueshevo – FYR Macedonia; E772 - Sofia - Varna (Iablanitza - Shumen); E70 - Romania - Ruse – Varna; E85 - Romania - Ruse - Veliko Tarnovo – Stara Zagora - Khaskovo- Greece; E87 - Romania - Durankulak - Varna - Burgas - Malko Tarnovo - Turkey; E773 - Burgas - Popovitza (Sofia - Serbia).[110]

Rail

The railway network was reduced according to railway transport optimization programme. The railway density and network is quite well but the terminals, wagons are in need of modernization. The main railway links are between the biggest cities: Sofia, Plovdiv, Philipovo, Dimitrovgrad, Stara Zagora, Chestovo and Pleven.

Inland waterways

There is Corridor VII crossing Bulgaria (Rein-Main-Danube) 2,300 km long. The two major ports on Danube are Ruse and Lom. Ruse includes an intermodal terminal serving the traffic to Germany and Ukraine. The Port of Vidin is the third largest port along the Bulgarian section of the Danube River. Despite the relatively well-developed harbour infrastructure, only up to 1.4% of the freight transportation passes through the Danube water channel.[111]

Turkey

Turkey has a strategic position as a bridge between continents. Connecting the Black Sea region to the Mediterranean, and linking Europe to the Middle East and the landlocked Central Asian and Caucasian nations, Turkey is likely to become a very important transit country in the future.

Road

The cities in Turkey are linked by a good network of highways. Motorway construction has been given emphasis as a part of the national policy. The western part of the country comparatively has denser road networks than the eastern part. The Pan-European Transport Corridors IV and X already extended to Istanbul. Turkey is also participating in the TRACECA project (Transport Corridor Europe-Caucasus-Asia) and the route of the corridor through Turkey has been defined. There are 1892 km of motorways and 31446 km of highways.[112]

Figure 5-19 Road Network in Turkey

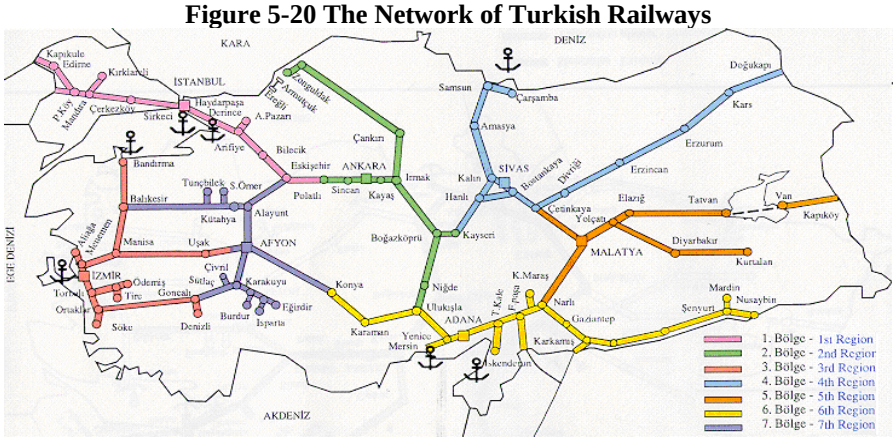
Source: General Directorate of Highways, Turkey

[110] Stability Pact Watch Group, 2004, Balkan Transport Blueprints
[111] Stability Pact Watch Group, 2004, Balkan Transport Blueprints
[112] General Directorate of Highways, Turkey, Official Website

Rail

The Turkish railway network is relatively underdeveloped. There are currently 6693 km of non electrified and 1564 km of electrified main lines. The existing railway network is concentrated on a few major routes. This makes transportation by rail possible only in certain areas and between certain cities. The railway network is old and has suffered from lack of investment. The railways are state-owned and operated by the government.[113] In Turkey, great importance is attached to increasing the share of combined transport. This will definitely improve the status of railways.

Figure 5-20 The Network of Turkish Railways



Source: Ministry of Transport, Turkey

Inland waterways

Turkey has about 1,200 km of inland waterways and they do not offer a vital line of transportation because of physical condition of rivers. Navigable inland waterways are limited. Small volume of traffic is carried out on the Van Lake and in lakes of some dams. Turkey is participating in Danube Commission.[114]

South-Eastern Europe

The road network is dominated by 2 lane highways that have not been improved since regional infrastructure suffered from the war effects. There are still damaged parts of the networks in need of repairs. For instance, before the war traders between Turkey and Europe were using road transport through the former Yugoslavia. However, according to a recent estimate 30% of Turkish trucks prefer completely bypass the sub-region using Ro Ro ferries between Turkey and Italy.[115]

The railway network is 9,296 km and the density is close to the western standards. However, there is a significant difference between particular countries. The highest densities are in Serbia and Croatia while the lowest belongs to Albania, Bosnia and Herzegovina and FYR Macedonia. Both railway and road network is not integrated in good way and characterized by missing links (ex. between Albania and FYR Macedonia). The EU Strategic Rail Network in the Balkan Region includes the following international corridors[116]:

[113] ASSESS, 2005
[114] The Republic of Turkey, 2006, Agenda Item III: Inland Waterways
[115] World Bank, 2002
[116] REBIS

5-1 Pan-European Transport Corridors Crossing SEE

Corridor	Description
Corridor X	Slovenian border- Zagreb-Belgrade-Skopje-Greece border
Corridor XB	Hungarian border – Novi Sad – Stara Pazova
Corridor XC	Nis – Bulgarian border
Corridor VB	Hungarian border – Zagreb – Slovenian border
Corridor VC	Hungarian border – Sarajevo – Ploce
Corridor VIII	Bulgarian border – Skopje - Durres

Source: Authors

Additional network consists of the route Zagreb – Split; Belgrade – Bar; Belgrade - Border to Romania; Kraljevo - Skopje.

There are many congested parts on the core network on Corridor X, especially around Belgrade. This corridor is the most important element of the core transport network as it links the countries from Turkey and Greece to Austria through Bulgaria, FYR Macedonia, Serbia, Croatia and Slovenia. The E 75 is a 4-lane motorway with the highest density (127,000 AADT) section on Belgrade. Almost 25% of this traffic is regional and international. In addition to Serbia, E 75 also passes from Croatia and FYR Macedonia.[117]

The region's inland navigation is dominated by the Danube and its tributary the Sava which is in Serbia, Croatia and Bosnia and Herzegovina. In addition to all these countries, Danube flows in Romania, Bulgaria, Ukraine, Germany, Austria, Slovakia and Hungary. It connects many countries from Central Europe till Black Sea. Its main international ports in the region are Belgrade and Novi Sad. It has big potential for freight transport in all Balkan countries except Albania and FYR Macedonia. It is crucial for the trade between SEE, Central Europe and CIS, particularly Russia and Ukraine. The German road transporter Betz, which operates barges regularly between Passau (border of Germany and Austria) and Vidin (BG), is a good example. 50 trucks per barge could be loaded for 1,400 km river transportation. Despite the difficulties at the Serbian section, the traffic consists of around 200 trucks per week.[118]

Albania

Road

Albania shows the widest variation in road quality. The roads in are either in good condition without any problems or in an extremely bad condition requiring reconstruction. Albania is using Italian standards for construction of new roads. Building 4 lane roads with 1 m hard shoulder on each side and with level crossings is a good example of this situation. The main regional and international networks are focused around two axes: the North–South and East-West Highways. Pan European Corridor VIII follows mainly the line of the East-West Highway. Currently, the country has no E-roads but already joined E-road cooperation.[119]

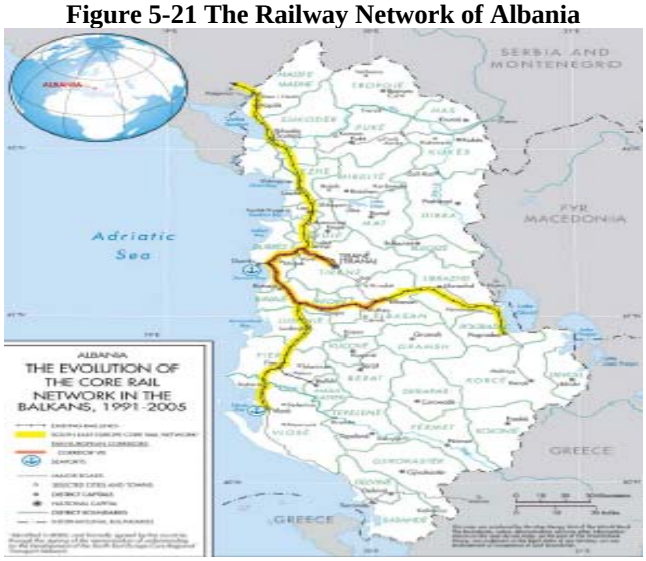
Rail

Generally, the rail infrastructure is in poor condition as it was damaged during the conflicts in the early 1990s. Tirana-Durres line is abling good service while all the other lines are in poor condition. Some of them are even planned to be closed. Although there are still some missing

[117] SEE Core Regional Network Development Plan 2006-2010
[118] TIRS
[119] UNECE, Regional Commissions, 2006

links, the railways from Durres to Pogradec, which lies on Corridor VIII is important. The railway that connects Albania with Montenegro at the Habi-i-Hotit border was opened again and is a part of the international railway network.[120] The freight traffic is mainly carried on the the lines of Pogradec-Elbasan-Durres, Durres-Vlore, Ballsh-Durres and Durres-Tirana.[121]

Figure 5-21 The Railway Network of Albania



Source: World Bank

Bosnia and Herzegovina

Road

There are not many investments on new road constructions due to the financial difficulties. One of the branches of Corridor V, Branch C is the only route which is a part of Pan-European Transport Corridors. It passes through the biggest cities, Sarajevo, Mostar, Doboj and Zenica and provides north-south connection. Modernization works could offer links to Egnatia Highway in Greece which has a parallel east-west link to Corridor VIII. E73, E661, E761 and E762 are the international E-roads passing through BiH.[122]

The core networks in the country generally consist of 2-lane roads of which 300 km is narrow. There are about 16km of 4-lane road close to Banja Luka. Many motorway construction projects with 4 lanes are going on near the capital, Sarajevo. The highway at the north of Banja Luka is close to the motorway standards. Other crucial international or national routes are the followings:

- Northwest-southeast axis crossing BiH from Velika Kladusa through Bihac, Jajce, Travnik and Sarajevo towards Foca Srbinje and Montenegro;
- North-south route from Bosanska Gradiska on the Sava River towards Split on the Adriatic Sea through Banja Luka, Bugojno and Livno;
- East-west axis from Banja Luka to Zvornik at the Serbian border through Derventa, Doboj and Tuzla;

[120] World Bank, 2005, Railway Reform in the Western Balkans
[121] REBIS
[122] UNECE, Road Transport, 2006

- Two branches passing from Sarajevo: One of them serves to Tuzla and Orasje and the other to Visegrad and FYR Macedonian border.[123]

Rail

The rail network of the country was damaged during the conflicts and war. Even though there have been rehabilitations, especially supported by EBRD loans, the railways are not competitive enough. There are more than 1000km of working rail tracks of which Corridor VC is the most important. It provides links to Banja Luka, Sarajevo, Mostar and Ploce.[124] There are currently adjacent rail connections to Serbia and Croatia but the rail bridges crossing the Sava River at the border with Croatia are in need of repairs. The most important freight stations are Tomasica, Banja Luka, Zvornik Novi, and Prijedor. The main railway lines for freight transport are the followings[125]:

• Podlugovi - Kakanj (coal transport from mine to the power plant);
• Zenica - Kakanj (coal and metal products);
• Banovii - Tuzla (coal transport from mine to power plant);
• Plo_e - Capljina-Sarajevo (wheat, petroleum);
• Mostar - Plo_e (bauxite, aluminium);
• Banja Luka - Prijedor - Volinja (clay);
• Tomasica – Zvornik - Novi Brasina (iron ore).

Figure 5-22 Railway Network of Bosnia and Herzegovina

Source: World Bank

Croatia

Road

It has been investing heavily on the infrastructure and has one of the modern infrastructures of CEE. The construction works, particularly for motorways, are rapidly going on. Most of the freight flows are going through Zagreb as it is the main city. Croatia's crescent shape is the other reason of this situation. The road density is higher at the flat lands at the northern part. Several other routes provide links between the Pan European corridors as well as serve to the Adriatic

[123] TIRS
[124] EBRD Official Website
[125] TIRS

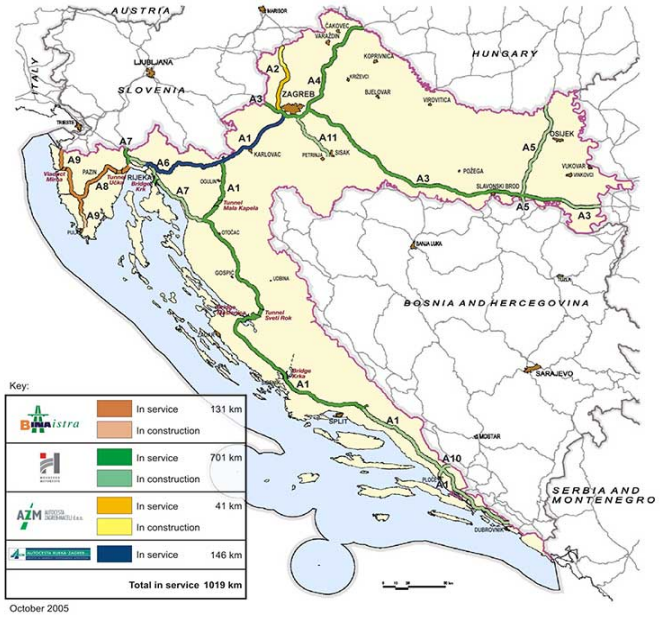
Coast. Tourism is very important for the national economy and investments on highways are triggered very much by it in the last years. Three main routes correspond to the Pan European corridors VB, X and VC.

Table 5-11 Main Road Corridors Crossing Croatia

Corridor	Description
Corridor VB	Runs from the Hungarian border at Gorican through Zagreb and down to Rijeka on the Adriatic coast. The route is practically a motorway over its entire length: Between Gorican and Zagreb (96km) there is however a 23 km gap in the motorway (from Varazdin to Breznicki Hum). The parallel route which enables the closure of the gap has been resurfaced and is in very good condition.
Corridor X	Runs from Bregana on the Slovenian border to Lipovac on the Yugoslavian border, in a West to East direction.
Corridor VC	The Corridor is part of the itinerary which will link Budapest to Sarajevo and Ploce on the Adriatic coast. The Croatian sections are: Udvar (Hungarian border)-Osijek-V. Koipanica-Bos. Samac (Bosnian border); Metkovic (Bosnian border)-Ploce North of Osijek, the link is 2 lanes substandard. In the south and between the Bosnia Herzegovenian border and Ploce, the link consists of a standard 2 lane highway.[126]

Source: Authors, based on TIRS

Figure 5-23 Road Network in Croatia



Source: Ministry of Transport, Croatia

The corridors with highest traffic are Macelj-Zagreb-Knin-Split, Gorican-Zagreb-Rijeka-Pula, Kastel-Buje-Pula-Opatija-Matulji, Zagreb-Sisak-Hrvatska Kostajnica-Dvor, Kraljevica-Krk-Baska, Bregana-Zajeb-Slavonski, Brod-Bajakovo, Zagreb-Vrbovec-Bjelovar-Durdevac/Krizevci-Koprivnica, Knezevo-Osijek-Slavonski Samac, Metkovic-Opuzen, Vukovar-Vinkovci-Zupanja, and Pasjak-Rijeka-Zadar-Split-Dubrovnik-Karasovici.[127]

[126] TIRS
[127] World Bank, Republic of Croatia Policy Directions for Transport

Rail

The railway network varies from medium to good. The busiest parts of the network (until the war) are the lines that correspond to Corridor VB and Corridor X. There has been a traffic decrease on the Corridor X and Corridor VB as a result of the bottlenecks at rail movements. There are rail connections Serbia, Bosnia and Herzegovina, Slovenia and Hungary.[128]

Figure 5-24 Railway Network of Croatia

Source: World Bank

Table 5-12 Main Rail Corridors Crossing Croatia

Corridor	Description
Corridor X	Savski Marof-Zagreb; Zagreb-Dugo Selo-Ivanic Grad-Novska; Zagreb-Sisak-Novska: single electrified track; Novska-Slavonski Brod-Vinkovci-Tovarnik (FRY border);
Corridor VB	Zagreb-Ogulin-Rijeka; Zagreb-Koprivnica-Botovo-Hungarian border;
Corridor VC	Beli Monastir (Hungarian border)-Osijek-Dakovo-Strizivojna/Vrpolje – (Bosnian border).

Source: Authors, based on TIRS

Other important lines are as follows: Ostarije-Knin-Split; Rijeka-Sapjane-(Slovenian border); Pula-Pazin-Buzet-(Slovenian border) in Istria; Kotoriba-Cakovec-Sredisce linking corridor V to the branch VB; Cakovec-Varazdin-Koprivnica-Osijek: single track; Knin-Split; Perkovic-Sibenik. In addition, line Sisak-Sunja-Volinja-(Bosnian border-Bihac-border)-Knin, which crosses the Croatian-Bosnian border several times between Bihac and Knin and is in poor condition.[129]

Inland waterways

The Danube River, the Save, and Drava River are international waterways in Croatia. These rivers with Kupa, branch of the Sava form the inland waterway system of the country. The main ports are situated in Vukovar, Osijek, Slavonski Brod and Sisak. Considering its location, Vukovar has the best potential for future growth. In addition, after implementation of the project of the construction of Danube-Save canal, it could become strategically important in river transit transport because it will provide the shortest route connecting Western and Eastern Europe.[130] There is a need of upgradition from class III to class Vb at the section Sava (E 80-12) from

[128] Croatian Railways Official Website
[129] TIRS
[130] CARDS Projects, Development of Investment and Business Climate in Croatia

Serbian/Croatian state border to Sisak. The missing link on Danube-Sava Canal (E 80-10) is from Vukovar to Samac.[131] The main international harbors are Vukovar (Danube), Sisak (Sava), Slavonski Brod (Sava) and Osijek (Drava). [132]

FYR Macedonia

Considering the location, the intensity of traffic and goods transiting through the country, as well as the investments in infrastructure in FYR Macedonia the transport infrastructure is not good enough and falls behind the European standards. The existing traffic is low and the capacity of the majority of the roads is insufficient.

Road

Road transport infrastructure is in need of investments. Road links with the main cities of neighboring countries are comparatively better. E-65, E-75, E-852, E-871 are the E-roads in the country.

Table 5-13 Main Road Corridors Crossing FYR Macedonia

Corridor	Description
Corridor X	Runs from Tabanovce at the Yugoslav border up to Bogorodica at the Greek border, through Kumanovo and Veles (176 km), which has been progressively upgraded to motorway status, on a total of 109 km. Sections that remain to be done are: 6.5 km up to Demir Kapija, then the whole section from Demir Kapija to Gevgelija (44.3 km) towards the Greek border, and 7.4 km in the north, from Tabanovce to the entry of Kumanovo;
Corridor XC	from Veles to Medzitlija, at the Greek border, through Bitola, a wolane highway, which is the most trafficked section;
Corridor VIII	from Kafasan at the Albanian border up to Deve Bair at the Bulgarian border, through Struga, Gostivar, Skopje and Kumanovo, with a stretch in common with Corridor X, from Miladinovci to Kumanovo. Part of this liaison has already the motorway status, either constructed on a new alignment, section Gostivar-Tetovo, or upgraded are mentioned above; section Tetovo-Skopje (construction underway). Other sections have the regular standards of a two lane highway, with a crawler lane when necessary, with the exception of the section Struga-Albanian border and at the other end of the section Rankovce-Deve Bair.
Corridor VC	

Source: Authors, based on TIRS

The so-called Central Route of Corridor VIII is an alternative route to the northern route with the connection Ohrid-Bitola between the two corridors and the connection Veles-Kocani-Delcevo which is directed to Bulgaria and Corridor IV. Both of these connections are 2-lane highways. The connection called Skopje-Blace which is at the Kosovo has poor conditions and standards although the traffic on it is quite high (4000 veh. per day).[133]

Rail

There are rail connections with Serbia and Greece but not with Albania and Bulgaria. Most of the rail lines constitute small branches with dead ends and blind sidings. The main rail lines are the followings[134]:

[131]UN. Economic and Social Council, 2006, Monitoring of developments relevant for the Pan –European transport Corridors and areas

[132] Republic of Croatia policy directions for transport, Infrastructure Sector Europe and Central Asia Region

[133] TIRS

[134] TIRS

• Tabanovci-Gevgelija, through Skopje and Veles, corresponds to the main axis of Corridor X. It is prolonged in the north to Beograd, Zagreb and Ljubljana, and in the south to Port of Hessaloniki;
• Gorce Petrov-Kicevo, on Corridor VIII ending at 66 km of the Albanian Railway system at Q. Thanes, but with a rough terrain in between;
• Skopje-Deneral Jankovic, at the FRY border (Kosovo), continuing to Pristina and connected to the Serbian network;
• Veles-Bitola-Medzitlija, at the Greek border and connects further with the Greek system, but with secondary and low standard lines. It follows the branch D of Corridor X;
• Kumanovo-Beljakovce, towards the Bulgarian border to the East. It may be the first section of the link between the FYR Macedonian Railways and the Bulgarian Railways, on Corridor VIII.

Figure 5-25 Railway Network of FYR Macedonia

Source: World Bank

Inland waterway transport is not developed in FYR Macedonia. There is only lake transportation.

Serbia

The political problems are over in Serbia and the government puts much effort on infrastructure development. It has the same standards with Western Europe and better infrastructure networks among SEE countries. In order to go to Turkey and further east, it is necessary to cross Serbia.[135]

Road

Serbia has a key geographical position in the Balkans as it provides the quickest link from Western Europe to Middle East. Even though some parts are not easily accessible by road, the main cities are connected quite well by the roads. There are not enough motorways. The main focus for future investments are on Corridor X that run from Vienna through Serbia to Istanbul. Currently, about 30% of the roads have satisfying conditions.[136]

[135] Karlsson, A., Inkop & Logistik, May 2006, p. 29
[136] The Economist, EIU, Country Profile Serbia

Rail

The territory is generally mountainous. Rail transport density is low. There is a need to replace rail ties and trucks at about 40km in the north-south line. The line from Podgorica to Niksic is in poor condition and needs repair as well. There are rail links to Hungary, Romania, Bosnia and Herzegovina, Montenegro, Austria, FYR Macedonia, Bulgaria and Croatia. Corridor X is the one of main corridors and runs in the north-south direction by passing through Belgrade. EIB and EBRD investments on this corridor will important for Serbia in the future. Belgrade, Radinac, Svilajnac, Vreoci, Batocina, Pancevo are important rail freight stations on the network.[137]

Figure 5-26 Railway Network of Serbia

Source: World Bank

Inland Waterways

Inland water transport is conducted mainly on the Danube and the Sava. 589-km long section of the Danube and 206-km long section of the Sava flow through Serbia. Besides, the Drina flows at the border with BiH. There is a total of 587 km of waterways.[138]

[137]World Bank, 2005, Railway Reform in the Western Balkans
[138] World Bank, 2006, Trade and Transport Facilitation in SEE

5.1.2. Ongoing and Planned Infrastructure Projects

Procedural and technical difficulties are slowing down progress on some of the axes, notably on cross-border section, but the major cause of delay is the lack of funds.[139] However, EU contributes some funding for the projects but still the majority must come from national budgets and PPP.

In CEE countries main transport infrastructure developments are linked to pan-European corridors. More detail information about the future projects in addition to their costs and funds is provided. (See Appendix 3)

TEM and TER master plan

EC in 2006 prepared a TEM and TER master plan taking into account alternative scenarios of growth, bottlenecks and missing links as well as problems for the funding of transport infrastructure and border crossings. The implementation of these projects is long-term process which requires political and countries commitment. The report offers moderate and optimistic scenarios. The projects were divided into the four groups: priority I (funded and implemented up to 2010), priority II (planned for implementation up to 2015), priority III (up to 2020) and priority IV (to be implemented in the long term).

The UNECE TEM and TER Projects are sub-regional cooperation frameworks established by the governments of the CEE under the aegis of UNECE. The main aim of the frameworks are the development of coherent road, rail and combined transport infrastructure networks in the region, the facilitation of international traffic in Europe and the networks' integration in the Pan-European context.

5.1.2.1. Baltic Region

Baltic region has rather sufficient road infrastructure, therefore all road construction projects are focused mainly on road rehabilitation and widening as well as eliminating the bottlenecks (by passes of the cities, bridges reconstruction). Rail Baltica project is in the list of long-term priorities of all Baltic States and Poland.

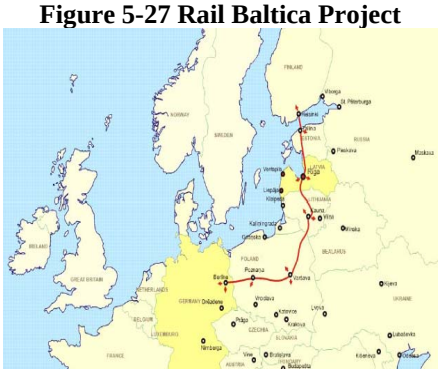
The most important projects in Baltic region are Via Baltica (Corridor I) and Rail Baltica. The creation and development of transport centers are also seen as a priority. Such a centre is under consideration now for Sestokai (Lithuania) along the Warsaw - Vilnius/ Kaunas corridor. The railway corridor Warsaw - Kaunas - Daugavpils - Pskov - St. Petersburg has no priority in the EU concept until the year 2010. The same applies for the road corridor with the segment Kaunas - Pskov.

Rail Baltica (priority axis 27: Warsaw-Kaunas-Riga-Helsinki)

The project includes upgrading and renewing the north-south rail network in Baltic States and Poland, which received the priority status by EU and could be divided into the following steps: Warsaw-Kaunas section (by 2010); Kaunas-Riga (by 2014) and Riga-Tallinn (by 2016). The new standards will be interoperable with the Polish and German networks, which should reduce the delays on the LT/PL border, increase speed and improve intermodal transport potential as the road network Via Baltica was already renewed.

[139] EC, 2005, TEN-T priority axes and projects 2005

Figure 5-27 Rail Baltica Project



Source: Ministry of Transport and Communication of the Republic of Latvia

The link will connect Berlin via Warsaw towards Minsk and Moscow. The project implementation depends on close cooperation between Baltic States and Poland. Total cost of the project is 2650 mln. EUR. Rail Baltica route is compatible with European standards. However, there still exists some political pressure from Russia as the Rail Baltica project will have the European track width, which is different from the currently used Russian track width. This situation could harm the competitive position of Russian ports such as St-Petersburg.

Lithuania

There is a need to renovate the tracks and modernize the infrastructure to the extend that average speed could be increased to at least 120 km/h (Single Programming Document for Lithuania 2004-2006). The main rail sector projects planned in Lithuania are the rehabilitation of Kaunas tunnel (Corridor IX)[140], the development of Klaipeda railway hub, the construction of grade intersections on the line Vilnius – Kaunas and the modernization of hub stations on the Corridor IX (Radviliskis - Vaidotai). One of the strategic goals is the development of Kaunas as a hub center.

Latvia

The cargo flows of the two main corridors are expected to rise 2-3 times by 2015 and the greatest increase is expected through Krustpils (BY border). [141] Among the rail projects there is a construction of a new receiving facility at the Rezekne-II railway station.

Estonia

Estonia is in unfair competitive situation compared to Latvia and Lithuania when it comes to the railway projects since the Lithuanian and Latvian railways can apply for EU finance as they are publicly owned. The reconstruction of Tallinn bypass on the line between Paldiski port (in the north-east) and Narva border station (in the north-west) will allow to connect Paldiski port to the Tallinn-Narva railway line and to form Tallinn railway bypass, which creates sufficient connection to Tallinn by allowing trains running on the Tallinn-Narva line to run towards Paldiski passing through Tallinn. Estonia and Russia signed a deal to build a new border bridge over the River Narva, which aims to speed up traffic flow across the EU's often congested eastern frontier.[142]

[140] EBRD, Transport operations policy 2005-2008
[141] Ojala, L. et al., 2005, TTFBS
142 EU Business, Transport Official Website

5.1.2.2. Central Europe

Railway priority axis N6: Lyons–Trieste–Divaca/Koper–Divaca–Ljubljana–Budapest–Ukrainian border

The extension of the axis to Slovenia and Hungary makes it one of the key east–west routes in the TEN-T. The project could be divided to: Divaca–Koper-Ljubljana (by 2012) and Ljubljana–Budapest sections (by 2015). In 2001, the new Hungarian–Slovenian rail line (Hodos–Zalalovo) was opened for traffic. Reconstruction of the Zalalovo–Zalaegerszeg–Boba line was started in 2002 and will be finished in 2007.

The project should be finished by 2020, which involves the modernisation and electrification of the Trieste-Ljubljana-Budapest railway, the elimination of one level crossing of railway and road, the construction of a second railway line in the section Divaca -Koper, coastal motorways and a South-East European motorway. The government has given priority to the construction of the second railway line between Koper and Divaca to ensure a solid connection between the sea and land.

A feasibility study for the cross-border Venice-Trieste-Ljubljana section was completed in 2000. The Koper-Divaca-Ljubljana priority section should be finished by 2012. The Ljubljana-Hodos section requires modernisation of signaling and safety devices, and modernisation of the line. The work is due to get started by the end of 2006. The European train control system (ETCS) has been put into operation between Zalalovo and the Hungarian border.

The other two projects on the TENs list are on list three (projects for territorial cohesion contributing to the economic and social cohesion) and involve cross-border connections: railway line Maribor-Graz and motorway (Ljubljana)-Maribor-Pince-Zamardi-(Budapest). There is an existing railway line between Maribor and Graz but the project seeks improvement by adding an extra line. The motorway between Ljubljana and Maribor needs to be constructed. Currently, the majority of the motorway already exists but there is about 30 km missing link.

Motorway axis: Igoumenitsa/Patras–Athens–Sofia–Budapest

The axis connects the ports of Patras, Igoumenitsa, Athens (Piraeus), Thessaloniki and Constanta to the Central Europe. The first branch of these extensions runs from the Greek–Bulgarian border at Promahon to Sofia along pan-European corridor IV, linking Sofia to Thessaloniki.
A second branch of the *Pathe* axis leads from the outskirts of Thessaloniki to Evzoni on the Greece–FYR Macedonia border and then north to Skopje. This branch forms the last section of pan-European corridor X, connecting Skopje to Thessaloniki.

Two branches will join at Nadlac on the Hungarian–Romanian border. One of them runs in the direction of the port of Constanta, via Bucharest, while the other runs south to Sofia and towards Thessaloniki and Athens. These sections will complete a route on which Bulgaria and Romania have already made considerable investments through the ISPA programme by improving the links to Central Europe and the rest of the EU. These links will provide more reliable transport for the whole region. With the enhanced links to five ports, eight airports and nine other major roads, the scheme will boost trade in the region. The upgrade of the roads to the motorway standard is also expected to reduce significantly road accidents along these axes. The project will also provide considerably faster connections between neighboring countries in the region – Greece, Albania, FYR Macedonia, Bulgaria, Romania and Turkey. Thessaloniki–Sofia stretch will not be wholly in use until 2010.

Railway axis: Paris–Strasbourg–Stuttgart–Vienna–Bratislava

The project will improve the connection between Vienna and Bratislava, both north and south of Danube by 2010-2012, which is major concern of both cities and their airports.

Railway axis: Athens–Sofia–Budapest–Vienna–Prague–Nuremberg/Dresden

The railway axis forms the backbone of the railway network in Eastern Europe, which connects three ports (the ports of Athens (Piraeus), Thessaloniki and Constanta) to the centre of enlarged EU. It also allows the connection between Baltic and Black Seas together with a second rail axis (N23).

The project could be divided to the following priority sections: Greek/Bulgarian border-Kulata-Sofia-Vidin/Calafat (by 2015); Curtici-Brasov (by 2010-2013); Budapest-Vienna (by 2010); Bjeclav-Prague-Nuremberg (by 2010-2016) and Prague-Linz (by 2016-2017).

Following the accession of Romania and Bulgaria, this axis will be the only connection from SEE and Greece to the heart of the EU by running wholly in the EU territory. An additional branch from Prague to Linz will improve north–south connections in the area and prepare EU for a future extension with SEE countries.

The Thessaloniki–Kulata–Sofia line has been rebuilt and electrified. It operates with the speeds up to 120 km/h. Further improvements to increase speeds, double the track and introduce ETCS signaling systems are planned. The 280 km Sofia–Vidin section is electrified but two thirds is single track and speeds are below 100 km/h. A second Danube bridge (Vidin–Calafat) between Bulgaria and Romania is expected to be completed by 2008 and will be key a project for Bulgaria and for this axis. Upgrading works on the Calafat–Craiova line in Romania will also be required. The main Romanian branch Curtici–Brasov–Bucharest–Constanta is electrified double track in good condition but with relatively low speeds.

Railway axis Gdansk–Warsaw–Brno/Bratislava–Vienna

This line is of particular interest from the European point of view as it carries a high share of international transport and crosses the industrialised areas. The project is included in the national development plans of the Czech Republic, Poland and Slovakia and could be divided to the following priority sections: Gdansk-Warsaw-Katowice (by 2013-2015), Katowice-Breclav (by 2007-2010) and Katowice-Zilina-Nove Mesto (by 2010-2015).

This axis mainly involves modernisation and upgrading of the rail route, a part of pan-European transport corridor VI. The plans also include the construction of an access link to the port of Gdansk as a new container and ferry terminal (with an expected annual capacity of one million 20-foot equivalent units) are due to be added to the port. The overall capacity of the line will increase by 20 %. Travel time from Gdansk to Warsaw will be reduced from 3 hours and 30 minutes to 2 hours and 40 minutes. Besides, the cost of transporting freight will be cut by 15 %.

Motorway axis: Gdansk–Brno/Bratislava–Vienna

The route is of particular interest from the European point of view since it already carries a high share of international transport. As Poland has one of the least developed motorway networks of the NMs, the existing road infrastructure has limitations for trucks with European standard weights and dimensions. Building this motorway will allow the improvement of road safety, reduce congestion and thereby facilitate trade. The project could be divided to the following

priority sections: Gdansk-Katowice motorway (by 2011); Katowice-Brno/Zilina motorway, cross-border section (by 2010) and Brno-Vienna motorway, cross-border section (by 2009-2013). The motorway projects are included in the respective national development plans of the participating countries.

A new route from the Baltic Sea to Central Europe could provide a long-term alternative to the existing saturated north-south axes from the North Sea. This axis involves the construction of a new motorway with two lanes in both directions from Gdansk to Vienna through Lodz in Poland and Brno in the Czech Republic. On some sections between Katowice and Brno/Zilina, existing roads will be upgraded. The project includes the construction of an access link to the port of Gdansk where a new container and ferry terminal (with an expected annual capacity of one million 20-foot equivalent units) are planned. The route is part of pan-European transport corridor VI.

Rhine/Meuse–Main–Danube inland waterway axis

The Rhine–Main–Danube axis is a major freight route connecting the North Sea (port of Rotterdam) to the Black Sea (in particular the port of Constanta). Several sections have navigability problems since the draught is less than 2.8 metres at some times of the year. To give access to vessels of up to 3 000 tonnes a minimum draught of 2,5 m is required along the entire length of the waterway. The project can be divided to the following sections: Vienna-Bratislava (by 2015), Palkovicino-Mohacs (by 2014) and bottlenecks in Romania and Bulgaria (by 2011).

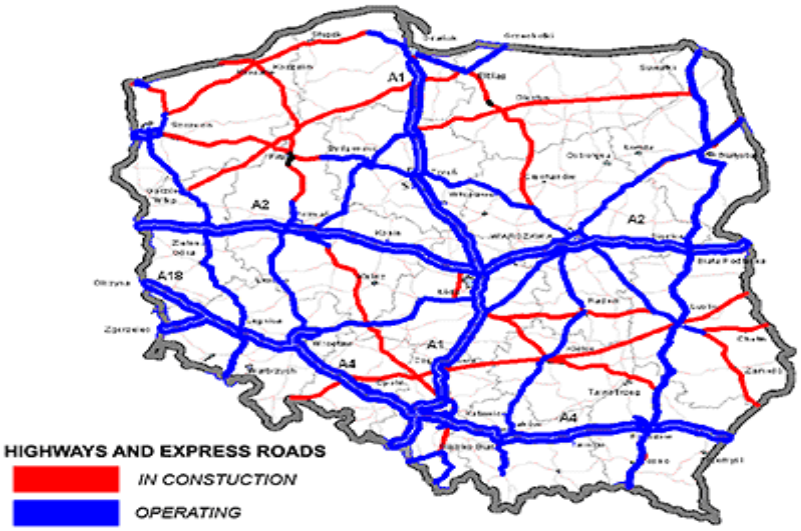
Removing bottlenecks on the Rhine–Main–Danube corridor will improve its navigability by favoring the transfer of freight traffic from road to waterways on this increasingly congested route. The construction work on various stretches of the Danube in Germany, Austria, Slovakia, Hungary, Romania and Bulgaria should ensure the minimum draught during the year.

The Hungarian and Slovak authorities aim to establish joint guidelines for the work on the common section of the Danube. Romania has implemented some works to improve navigability and asked for technical assistance from the EU to prepare a comprehensive study for the project in its territory by financing 75 % of the costs by the ISPA (pre-accession structural assistance) fund.

Poland

Polish government chose the improvement of the infrastructure as one of the priorities. By 2013 it is expected that Poland will have 2,085 km of highways and 5 466 km of express roads. As stated above the main projects can be listed as: priority axis N 23 (runs through Poland (North-South) includes an access link to port Gdansk); priority axis N 25 (motorway Gdansk-Brno/Bratislava-Vienna), which offers a new route from the Baltic Sea to Central Europe (port of Vicor) and Rail Baltica. In Poland all the routes are planned to be adapted to 11,5 t per axle load. Also attention is paid on bypasses improvements.

Figure 5-28 Highways and Express Roads in Poland after 2013



Source: Polish Information and Foreign Investment Agency.

For inland waterways some projects are under discussion including the improvement of Warta, Odra, Wista waterways, link to the Boug and further to the Pripyat in Belarus and in Finland (northwards from Kotka). The main focus is put to the German network (Odra-Havel canal). In spite of the fact that the projects are of international interest (Germany-Kaliningrad-Belarus), economic viability has not been done yet.[143]

Czech Republic

The modernization of the four railway transit corridors is on the way and the development of combined transport has been supported. Road and rail represent comparable percentages of total investments. [144] Three priority axes cross Czech Republic: N22, N23 and N25. The upgrading of axes N22 on the Breclov-Brno-Prague line is almost completed while the upgrading on the Praue-Plzen-Cheb section is ongoing. Rail project N23 is included in national development plans. As to axes N25 the section between Brno and Czech-Austrian border has not been decided yet as it crosses a Natura 2000 area and could be delayed to 2013.

Hungary

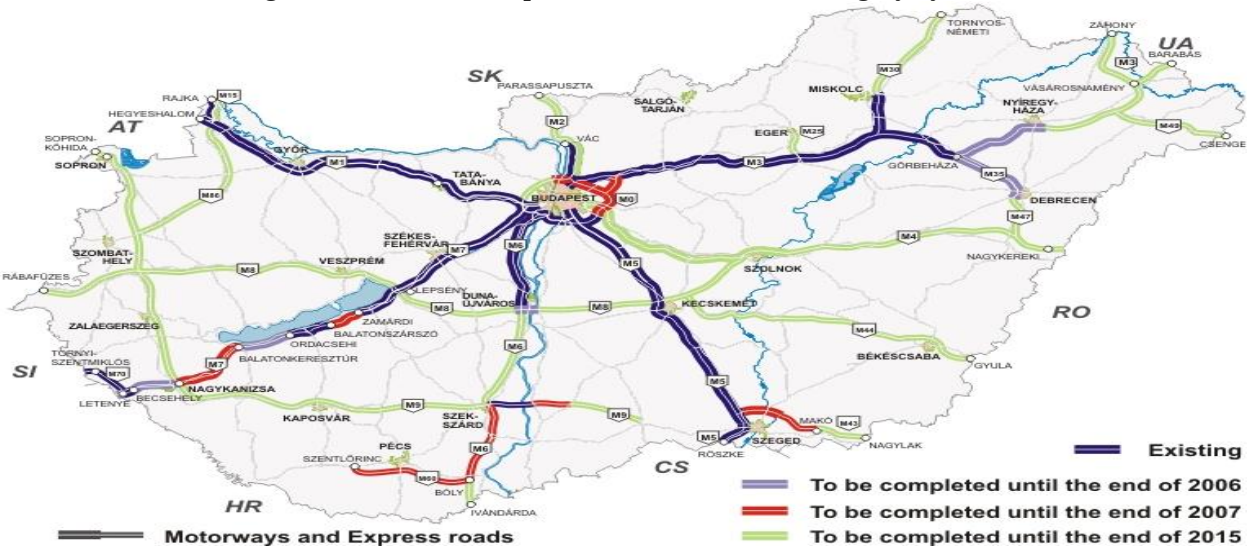
The Hungarian government has developed an ambitious motorway construction program in order to extend the length of four-lane highways, which currently only covers a part of the country (2,530 km by 2015). Road sector finance in Hungary has been in line with EU standards but the quality of secondary roads remains poor and PPP structures are being considered for their development.[145] The improvement of the highway network and four lane motorways linking all the major cities in Hungary will result in an approximately 40% decrease of driving times on the main routes.

Project N6, one of key east-west routes in TEN-T, will link French and Italians high-speed networks. In 2001 new Hungarian-Slovenian rail line was opened for traffic. The upgrade of the Ljubljana-Budapest rail line should be finished by 2015. Project N7 focused mainly on improvements in south-east European network. However, the Hungarian section (Budapest-Naddlac) is not among priority sections. Under the project N22 the line between Vienna-

[143] VASAB 2010
[144] TEM and TER master plan, 2006.
[145] EBRD, Industry Sector Analysis

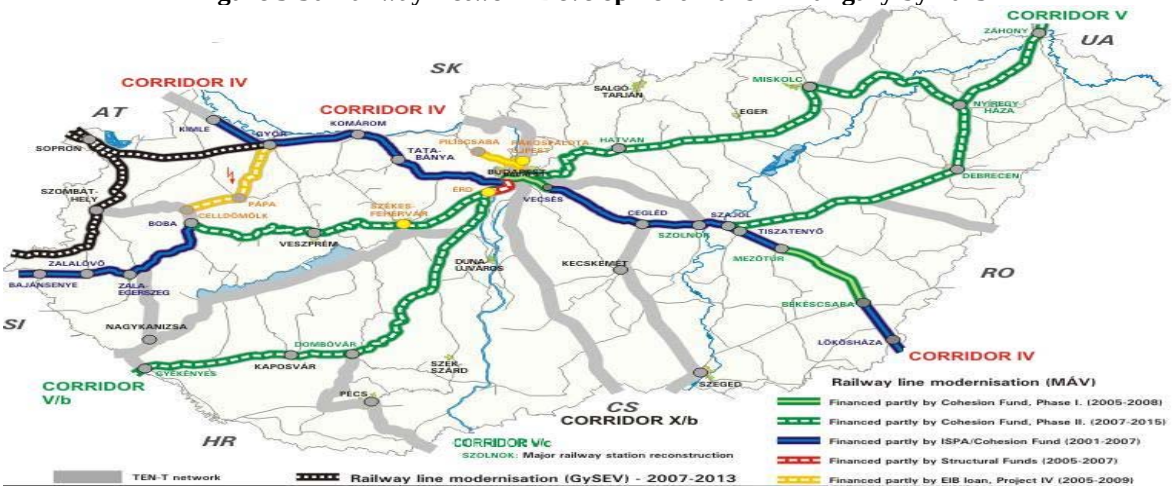
Budapest will be upgraded during the era 2006-2010. Currently, it operates at 10-140 km/h. Under the project N18 (Rhine-Main-Danube corridor), the section Palkovicovo-Mohacs is scheduled for 2007-2014.

Figure 5-29 Road Development Network Plans in Hungary by 2015



Source: Ministry of Economy and Transport, Hungary

Figure 5-30 Railway Network Development Plans in Hungary by 2015



Source: Ministry of Economy and Transport, Hungary

Among other priorities are building of by-pass and congestion-reducing road sections, increasing capacity by widening to four or more lanes, as well as the construction of climbing lanes for slow vehicles and overtaking lanes, the construction of missing border crossings and improvement of existing ones. As to the rails by 2013, the trunk network should be reconstructed to 10-160 km/h: Pan-European Corridors IV, V, VB and in the long-term Corridors VC and XB. Renovation of the northern railway bridge in Budapest was planned.[146]

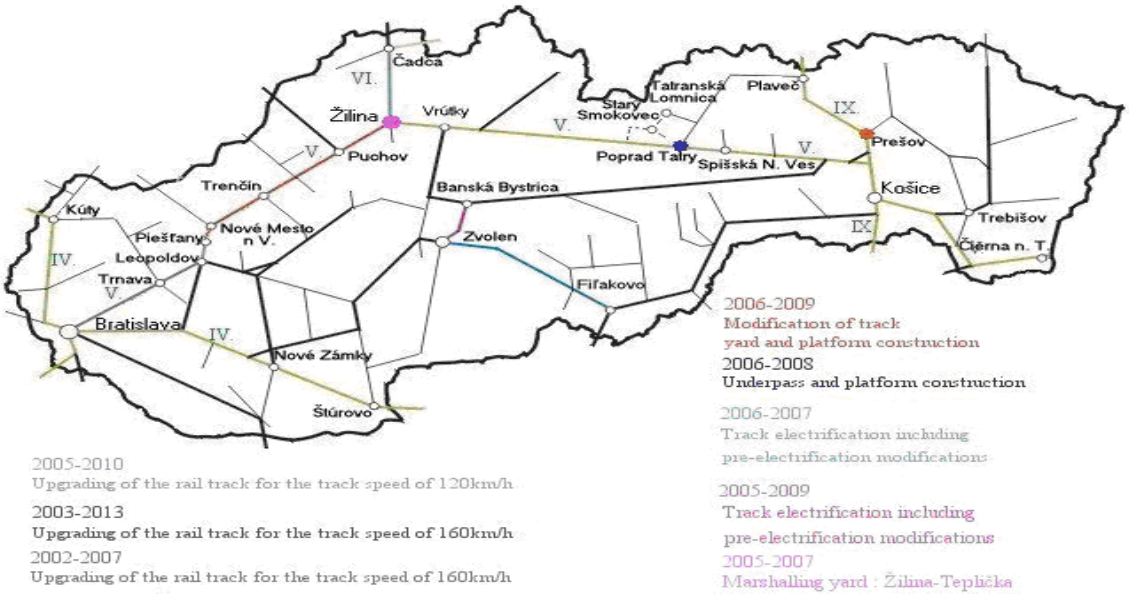
Slovakia

Vienna-Bratislava cross-border section is a priority section on the TEN-T N 17. Project N 22 forms the backbone of the railway network of Eastern Europe. The Budapest-Vienna connection is a priority section running through Slovakia (by 2010). One of the branches of project N 23

[146] Ministry of Economy and Transport, 2005, Transport Infrastructure Development in Hungary

ends in Slovakia. Although the Slovak section is not among priority sections, it is included in the national development plans of Slovakia. One of the branches of N 25 that ends in Slovakia is included in the national development plan and is largely completed. The Danube between Vienna and Bratislava on one hand and between Palkovicovo and Mohacs on the other hand are priority sections of priority axis N 18.

Figure 5-31 Upgrading of the Rail Tracks by 2013, Co-financed through EU-funds



Source: Slovak State Railways

Large infrastructure investments are necessary, especially in transport links, to contribute to the development of the eastern parts of the country and to benefit from EU funds. The selection of a location by Hyundai-Kia for its plant illustrates the critical importance of good transport links to foreign investors. The choice of Zilina in the north-western part of the Slovak Republic was a good decision for the construction of a 40-kilometre-long motorway section. Peugeot-Citroen also cites the proximity of quality transport links as one of the critical factors in its picking Trnava in the west of the country.[147]

Slovenia

Slovenia has an access to a wide range of financial sources including international financial markets thanks to its economic success and stability.[148] Investments into infrastructure are mainly oriented for bottlenecks reduction. 3 TEN-T priority projects located in Slovenia. The major undertaking was the continued modernization of railway infrastructure on Pan-European Corridors V and X.[149] The realisation of TEN, especially second railway line between Koper and Divaca as well as the line between Maribor and Graz will open more possibilities for combined cargo transportation. In road sector Slovenia also concluded an agreement with Italy on the route of the future high-speed rail link Kenice-Ljubljana. By 2020 the construction of the mixed railway line (N6) is expected to be completed.

[147] EBRD transport operations policy 2005-2008

[148] EBRD, Industry Sector Analysis

[149] EC Inland Transport Committee, 2006, Review if the Transport Situation in UNECE Member Countries and of Emerging Development Trends

Figure 5-32 Motorway Construction Programme in Slovenia by 2013

Source: Pezdirc, B. Motorway Construction Programme in the Republic of Slovenia. Ljubljana, Slovenia

From 2005 to 2013, 223.6 km of 4-lane and 2-lane motorways are going to be constructed according to Motorway Construction Programme.[150] The railway projects are focused on the infrastructure upgrading for the existing Koper-Divaca rail link.[151]

Bulgaria

The rehabilitation of 800 km of 1st class roads on the four Trans-European Corridors is going on in Bulgaria. Additionally, it includes the repair of bridges, tunnels, viaducts, over and underpasses along these roads. The project claims to contribute to the road safety and achievement of international road standards. Significant investment is required in the country's physical infrastructure, particularly in regional transport links, in order to remove bottlenecks. Further opportunities will be pursued both in rail and the road sectors where private capital will be required for major highway developments to improve national and regional linkages.[152]

Romania

In order to become member of the EU, Romania must provide direct physical connection through the transport cross-European lanes. The national strategy drafted by the MTCT (correlated with international requirements) stipulates the Romanian highway network expansion. The following highways are to be constructed: Bucharest-Cernavoda and Nadlac-Arad-Timisoara-Lugoj-Deva-Sibiu-Pitesti (on the cross-European transport lane IV), Bucharest-Brasov highway, Brasov-Bors and Brasov-Târgu-Mures-Cluj-Oradea highways. The Ploiesti-Sculeni highway will be on the cross-European transport lane IX. Lane IV includes also other long-term alternatives: Lugoj-Caransebes-Drobeta-Turnu-Severin-Craiova through Calafat and Craiova-Caracal-Rosiori-Alexandria-Bucharest. One of the indicated highways shall make connection between lanes IV and IX crossing Romania: Halmeu-Dej- Vatra Dornei-Suceava or Halmeu-Sighetul Marmatiei-Vatra Dornei- Suceava.[153]

[150] Pezdirc, B., Motorway Construction Programme in the Republic of Slovenia
[151] EBRD transport operations policy 2005-2008
[152] EBRD transport operations policy 2005-2008
[153] Directorate of the Republic of Slovenia for Roads

In the road sector the attention has been paid to the construction of the Budapest-Odessa Corridor (1065 km) in collaboration with Hungary to connect Austira, Hungary, Romania, Moldova and Ukraine as well as to realize better possibility of connection of national and European roads. As to railway sector, in 2005 Romania started the transposition of second railway package of EU which is rather advanced comparing with other members. In inland waterways sector the modernization projects were supposed to start in 2006 and the programme for improving navigation conditions on the Romanian-Bulgarian section of the Danube should be promoted in addition to the operational improvements at harbors for combined transport development. The development and rehabilitation of port infrastructure will remain one of the transport infrastructure priorities.[154]

Turkey

The *Marmaray Project* includes the modernization of the commuter rail system on the direction Halkali-Gebze. The red lines on the Figure 5-33 bellow shows the railway parts, which are above the ground and the white ones reflects the new railway system, which is expected to be constructed in tunnels under the Istanbul. The project will upgrade the commuter rail system in Istanbul by connecting Halkali on the European side with Gebze on the Asian side with an uninterrupted, modern, high-capacity commuter rail system. This project is one of the major transportation infrastructure projects in the world at present. The entire upgraded and new railway system will be approximately 76 km long.

Figure 5-33 Marmaray Rail Tube Tunnel

Source: Marmaray Tunnel Official Website

In 1999 a funding agreement between Turkey and the JBIC was signed. In 2003 and 2004 discussions were held with the EIB for the purpose of making funding agreements for major the portions of the project.

5.1.2.3. South East Europe

The main projects aim the rehabilitation of SEE damaged routes and cross-border improvements. In the 2006-2010 Development Plan[155], the capacity is not seen as an issue since there is sufficient capacity on road and rail for traffic growth at 5%. Most of core road network is already in rehabilitation or upgrading process and bottlenecks continue to be eliminated, especially when it comes to the border crossings. The most important issue in the rail sector is the need to restore interoperability between the various rail networks as well as to reduce operational and administrative delays at the border crossings.

[154] EBRD, Industry Sector Analysis

[155] SEE Core Regional Network Development Plan 2006-2010

Corridor X – Road (Project 1): The completion of the Belgrade Bypass is the highest priority project which should be completed by 2010 to avoid the congestion and save about 20 minutes. The Bypass is also aimed to facilitate good intermodal links.

Corridor X – Railway (Projects 2, 3, 4): The current speed restrictions are now about 50% of the design speed. The transportation time on Thessalonica-Ljubljana (1,200 km) is now 22 hours including two hours for border waiting. The project should reduce lead time by 8 hours, which could increase the demand for the service and will complete the double-track route through Croatia, Serbia and FYR Macedonia. The number of train is also expected to be increased: from 70 to 100 daily trains by 2010 and to 140 trains by 2020. Serbian city of Nis has a potential to become the main regional logistic center.

Corridor VC (Project 5) includes road and rail routes from the port of Ploce to Bucharest via Mostar, Sarajevo and Osijek. Long-term plan includes the upgrading of the whole Bosnian section to the motorway standards.

Corridor VII – Inland Waterway (Project 6) includes the improvement of the Danube's channels, which are too narrow for vessels to pass due to the silting. The project is a part of the Danube Master Plan.

Corridor VIII (Projects 7, 8) connected with Albania's poor accessibility to the neighboring countries. It aims to improve the traffic through route between the Adriatic in Albania and the Black Sea in Bulgaria regions. The completion of the Rogozhine by-pass will reduce congestion on the route from the Durres port to Greece and FYR Macedonia.[156] The development of the Corridor VIII and expected the reconstruction of the Durres port will increase the rail transit through Durres.

The routes 1, 2B, 4, 7 (Projects 9, 16) aim to improve the links between Bosnia, Albania and Montenegro along the international Route 2B. However, the project is more focused on tourism development.

[156] SEE Core Regional Network Development Plan 2006-2010

5.2. BOTTLENECKS

Poor transport infrastructure is the main challenge in CEE and it causes many bottlenecks for efficient operations. This part defines the main infrastructure related bottlenecks and the factors of their origin from the regional and national perspectives.

5.2.1. Main Infrastructure Related Bottlenecks

Infrastructure related obstacles continue to be a major concern of governments in CEEC mainly because of insufficient capacities and low quality of transport infrastructure. Road and rail infrastructure requires huge investments in order to cope with growing transport demand. Some countries do not have road networks designed according to EU standards. The rail networks suffer due to the insufficient maintenance and the lack of necessary repairs. Moreover, national railway companies have inflexible organizational structures.

5.2.1.1. Low Standards

Road Transport

The standards of particular main roads' sections are low including design characteristics. Load bearing capacities of roads and pavements are also not sufficient. Although CEEC have initiatives to improve the standards and conditions of roads based on AGR agreement and other commonly accepted standards, still huge investments have to be done.

According to a study conducted for Balkan region, by 2015 most of the roads should have enough capacity and 13% of them will need widening while over 70% will need improvement or replacement of pavements.[157]

Rail Transport

Many terminals and railway networks in CEE do not satisfy the standards of efficient infrastructure facilities. Due to the technical differences in rail facilities there are border crossing problems on long international shipments between CEEC and Western European countries. During the last decades projects to improve rolling stocks of national railways were not efficient enough. The railway fleet is obsolete because of lack in investments. Some of them are even older than 30 years. Political reasons and differences in standards force national railway companies to operate domestically without crossing the borders. The main obstacles for railway transport developments are:

- *Different track gauges.* The change of the rolling stock is hard as different track gauges are used. This situation causes operational inefficiencies in CEE. Central European and Balkan countries railways have the standard gauge, 1435 mm, and railways of Baltic States originate from Former Soviet Union and have a gauge of 1524 mm;
- *Poor signaling systems.* In many of the CEEC the signal technology is outdated, especially in the Balkan countries. Some concrete measures are needed for technical improvements to have desired effects. Differences in electrical power, brakes cause constraints as well;
- *Non-competitive terminal equipment.* The terminal equipment in CEE is non-competitive including all technical facilities for handling and storing;

[157] REBIS

- *Lack of capacity.* Wagons, terminals, border crossing points do not have enough capacity, which causes delays for international freight transport flows between CEEC and other European countries. In addition to the delays, there are other problems as low railway speed, low traffic safety and poor environmental protection.

5.2.1.2. Border Crossing

International traffic suffers due to inadequate number of border crossing points. The main obstacles at border crossings have originated from infrastructure, customs procedures and staff. There are situations where illegal payments are asked for freight movements through national borders in Balkans and CIS countries. In order to overcome the geographic distances within the single EU market effectively and at low cost, it is important to have efficient infrastructure and border crossing facilities in CEE.[158] Infrastructure deficiencies that cause border crossing problems for road transport can be listed as follows:

- The unsuitability and insufficient capacity of border stations;
- Obsolete and poor quality control facilities;
- Inadequate computerisation and documentation;
- The absence of separate lanes for transit traffic and empty vehicles;
- Low capacity of roads and insufficient parking space at the borders.

Infrastructure deficiencies that cause border crossing problems for rail transport can be listed as follows:

- Insufficient border facilities;
- Obsolete rolling stock;
- Bad electrification and signaling systems.

CEEC, particularly those in SEE, are still at the early stages of reforms in standardization. Standards, technical and regulatory aspects and rigid administrative rules cause bottlenecks in trade and border-crossing procedures.

Language Problem

Although EU is a single market, it consists of different countries with different operating languages. There is no protocol arranging the language use on international flows in CEE. In Central Europe there are some initiatives to communicate with the language mentioned by the host infrastructure manager for rail transshipments.[159]

5.2.1.3. Increased Car Ownership

Car ownership in many of CEEC is a symbol of social status. There is a rapid shift from public transport to the private cars due to convenience, comfort, speed, flexibility they offer. However, the length of new roads does not increase so much. This situation generates rising roadway congestion, parking shortages, air pollution, noise, traffic crashes, road accidents, limited mobility and accessibility. Car use is promoted by motorway construction programs.[160] By 2015 personal mobility is foreseen to go up by 40-50% in the CEEC which is two times more than the forecast for EU 15. The same transport problems are expected to continue as the number of cars

[158] Gropas, R., 2006, Integrating the Balkans into the EU
[159] CER, 2006, Annual Report 2005
[160] CEE Bankwatch Network, Transport Sector Financing in CEE

is likely to be doubled and the performances of private transport may be even tripled by the same year.[161]

5.2.1.4. High Costs

Good infrastructure is a necessity for efficient logistics and distribution operations. In CEE infrastructure problems do not allow efficient freight operations. Profit margins are smaller due to the high costs occurred as a result of infrastructure deficiencies. Delays cause additional costs to other services and parts of the economy. Many logistics providers and forwarders in CEE claim that the national railway networks are very slow and inflexible and they are very expensive with respect to their performance.

High Rail Charges

The passenger transport is cross-subsidized from freight transport revenues and this leads to very high track access charges for rail in CEEC. The lack of public investments and frequent cross subsidizations show that track access charges are at the highest level in the CEE region. For a 1400 tons freight train, with the exception of Hungary (about 2 EUR per train-km), track access charges vary between 4 and 10 EUR per train-km which is higher than Western Europe. As an example this charge is only 0,5 EUR per train-km in Netherlands. This variation is an important barrier for the development of the rail freight services in the region.[162] Due to these high charges rail transport cannot compete with road operators for international freight transport in the region.

5.2.1.5. Transport Policy

Improper Policy

In most of the CEEC, there is a lack of independent regulators and reforms for rail operators. Even though a willingness or attempt to deregulate is shown, it is not turned into practice. Railways need to accelerate the restructuring processes and develop focused, market-oriented business strategies. All political attempts should be combined with rational solutions, cost reductions, eliminated unprofitable services. Cooperation of railway companies is critical to integrate rail networks, services and meet market demand. International rail transport corridors are highlighted by governments whereas there is no attention to regional lines.[163]

Road maintenance was neglected in the region since the priority was given to the upgrading and development of networks. The private sector participation in road and rail transportation remains very low.

Modal Shift

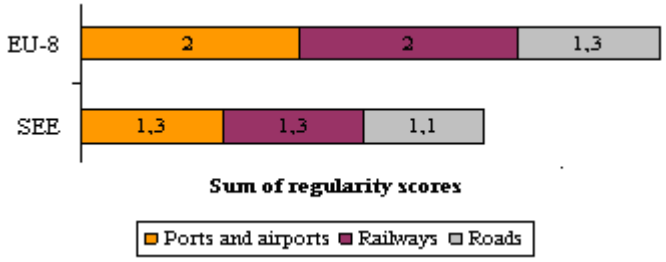
Although some governments of NMs are still eager to follow the goals of EU transport policy with its emphasis on a modal shift towards rail, there are serious concerns about the tendency in CEE to give priority to road investment. Currently, CEE railways' share of the modal split in freight transportation is still over 30%. In order to be able to maintain this share, rail infrastructure investments should go in parallel with road network expansion.[164] Also CEEC should stop to invest on motorway construction and focus should shift to maintenance of existing roads.

[161] Expert Panel on Sustainability, Environment and Natural Resources
[162] Study on sustainable CEE intermodal rail links for FINESSE Patner ports, 2006
[163] Study on sustainable CEE intermodal rail links for FINESSE Patner ports, 2006
[164] The Eastern Perspective DB Logistics and the EU's Eastern Enlargement

Low Privatization Level of Railways

Privatization and deregulation of transport services across CEE region are critical since private sector participation is important for operational improvement of the infrastructure. However, private sector involvement in CEE region has been limited. Privatization is especially important for NMs in order to promote competition between transport operators. EU, with the purpose of competitiveness, is against the situation where infrastructure providers operate the infrastructure. Naturally, level of privatization is higher among NMs compared to Balkan countries. [165] Estonia is the only country that has privatized its railway sector. The progress could be also seen in Poland, where Polish State Railways was restructured and turned into many trade companies.

Figure 5-34 Degree of Private Sector Participation in Infrastructure



Note: Scale: 1= no or negligible private sector participation; 5=sector fully privatized. *EU-8 are new EU member of CEE region*

Source: Authors, based on EBRD 2004

5.2.1.6. Inadequate Level of IT Infrastructure

Although the situation varies from country to country, technological level of the current infrastructure and IT is not good enough in many CEEC. There are no adequate electronic tracing systems in railway systems. In the rail, port, inland waterway sectors, the existing systems are mostly paper-based which hamper efficient utilization of data. Freight letters are retyped by each railway consuming a lot of time to cross the borders. Internet infrastructure is not sufficient as well. Data exchange between railways does not exist at all. Many working groups in CEE have tried to establish internationally adopted solutions for data transfers. Up to now there is no solid result. The practical failure on the international level has leaded to look for interim solutions. The coordination of schedules for trains is not good due to the poor data exchange.

The degree of computerization of the hinterland terminals is generally too low in CEE. However, modern container handling is not possible without adequate computer support for operative and administrative procedures, customs clearance. [166]

Telecommunication systems at the borders are inadequate and information systems are not sufficient to notify arriving trains from CEE to Western Europe. These problems affect data exchange for freight transportation.

[165] The World Bank, Trade Facilitation: Challenges and Oppurtunities in Eastern Europe and the Former Soviet Union, Chapter 5

[166] Euro-Asian Transport Union

5.2.2. Regional Perspectives

5.2.2.1. Baltic Region

There are many different kinds of bottlenecks in Baltic States but the common thing is that they all cause long lead time and delays for freight. Low road and rail standards, border crossing problems both result in time losses in transportation. Railway capacity in particular railway parts of Baltic States cannot meet demand.

The east-west connections are hindered by large shortcomings in the rail and road transport systems. The only land route from Baltic States to the west is through Poland which is currently without an effective international rail infrastructure. Baltic States have very high risk of long term infrastructure isolation due to the strong influence of former transport system.

Estonia

Transport infrastructure in Estonia is relatively developed and comparable to the Scandinavian countries with respect to density and spread of road and railway networks. Rail and road intersection which are not secure enough, traffic jams caused by railway traffic are main problems.[167] However, privatization of the railways is completed. Road transport is quite developed but there are not enough modern motorways. Some of the roads do not have enough capacity and need maintenance.

Due to the rapid traffic increase there is the capacity problem of main roads in *Tallinn Region*. The Tallinn-Tartu-Luhamaa road is reaching its maximum capacity. There are bottlenecks on the some sections during the peak hours.[168]

Latvia

Even though the density of the Latvian road network is considered to be sufficient considering the territory, road infrastructure in Latvia is old. In the last years planning and performing of the rehabilitation was not possible for asphalt pavements, gravel roads, bridges with the available financial sources. Construction of new roads is foreseen only for eliminating the bottlenecks. Insufficient funding for the maintenance and development of the rail system has caused to the obsolescence of the infrastructure and rolling stock. Significant investments, operational and organizational changes are required to improve quality and efficiency.

A specific bottleneck is the lack of high-speed transit roads in the Riga region. The quality of the road network in the region is not satisfactory. The technical conditions of roads are unsatisfactory and there is an incompliance regarding dimensions of the most significant routes. Almost half of the asphalt roads are in a bad or even critical condition, one third of gravel roads is in a bad condition as well.

The regional road system is also of poor quality and there is no junction between east-west and Via Baltica corridor with most populated areas in the region. The lack of arched railway junctions constitutes a bottleneck in the road infrastructure, as does the absence of a by-pass road of Riga to be used for freight transport.[169]

[167] Baltic Tangent, Report on general infrastructure bottlenecks
[168] World Bank Official Website
[169] Development issues of transport infrastructure in Riga Region

Lithuania

Formerly constructed roads do not allow high loads so that reinforcing the covering of roads that have the largest and growing load of heavy cargo vehicles is required. The development of Via Baltica will lead to the gradual elimination of some bottlenecks[170], as follows:

- Road and railway transport to the EU countries via Poland;
- Major Lithuanian cities have no by-passes;
- Congestion problems become more acute in major towns.

Insufficient electrification of railway network, rail links with EU with low interoperability and poor design are the main problems of rail transport development. At some points close to the Lithuanian-Polish border the speed limit is 40-60 km/h. Rail Baltica is the most important project for the country as it is expected to increase the rail network capacity, improve intermodal transport and provide accessibility to Western European countries.[171]

5.2.2.2. Central Europe

Roads with long distances, especially in the less developed regions of Hungary, Poland and the Czech Republic, are generally in very bad quality. Car use is gradually increasing which worsens the situation of limited and badly designed roadway networks. In addition, speeding and impassive driving has increased in the last years.

Slovenia

The condition of existing railway infrastructure is negatively affecting the railway transport. In 2005, the average delays increased from 33,3 to 57,7 minutes/100 train-km for freight trains. Problems due to insufficient number of locomotives have been solved by renting.[172]

There are permanent and temporary bottlenecks in Slovenia. Temporary bottlenecks are related to the cargo and passenger transport. They are likely to be solved with operational solutions. These are defined on the following railway sectors:

Table 5-14 Railway Sectors with Temporary Bottlenecks

Ljubljana – Jesenice	Maribor – Prevalje	Jesenice – Nova Gorica	Novo mesto – Metlika
Pragersko – Ormoz	Ljubljana – Kamnik	Divaca – Koper	Ljutomer – Hodos

Source: Authors, based on The Network Statement of the Republic of Slovenia, 2007

Long term secured cargo is the source of permanent bottlenecks and can be eliminated by modernizing infrastructure. Although modernization has been in progress, there are railway sectors with permanent bottlenecks.[173]

Table 5-15 Railway Sectors with Permanent Bottlenecks

Divaca – Koper	Pragersko – Ormoz – Ljutomer – Hodos
Ljubljana – Jesenice	

Source: Authors, based on The Network Statement of the Republic of Slovenia, 2007

[170] Baltic Tangent, Report on general infrastructure bottlenecks
[171] UNECE, Transport Situation in Lithuania in 2005
[172] UNECE, Transport Situation in Slovenia in 2005
[173] The Network Statement of the Republic of Slovenia 2007

Poland

There are lack of motorways between the big cities and industrial areas in Poland. Number of cars and traffic flows are increasing but the quality of the roads are not sufficient to handle this. Heavy industrial loads cause problems for the pavements of roads in Poland.

Safety, especially road safety is still a big problem. The number of fatalities is 3 times higher than the average of EU. Every year the looses of approximately 7,5 bln. EUR are estimated because of the road accidents. Road administration is inefficient since very low percent of yearly investment plans can be carried out. Investments related to rail transport have very high portion of the public funds but their quality and competitiveness are low. The speed of 120 km/h or higher is permitted only on about 2300 km of railway network.[174]

Czech Republic

It has one of the largest and densest railway networks of EU. Railways have already been split into infrastructure and services companies but still high level of modernization is required to catch up EU 15 level. The government has no plans to privatize the infrastructure networks but it has the plans to finance a huge investment program. In order to make cost savings only some sections of the rail networks are considered for modernization.

Hungary

Hungary, one of the most important transit countries for the freight transportation between Europe and Russia and between Europe and the Balkans has less than 400 km of freeways. Rail traffic development in Hungary closely depends on the track prices in Austria but still train access charges are one of the lowest in CEE.[175]

5.2.2.3. Balkan Region

Road Transport

The main obstacles for the development of road transport are insufficient capacity, poor conditions of road pavement on certain parts of the roads, congestions, poor traffic management and inadequate stock of freight vehicles. Maintenance of roads and construction of good quality of motorways are required in the Balkan region.

Rail Infrastructure

The collapses of former Yugoslavia, regional conflicts, reduction of activities within the mining and heavy industry sectors have affected the railway sector in the region. Investments and maintenance have been neglected. The railways were built and designed to carry more traffic than the current demand and have failed to fully adjust resources to the reduced production. As a result railway tariffs are generally very high in relation with offered service.

All railway companies are now facing severe financial difficulties. There are initiatives to reform them by reducing staff and costs operating costs are still increasing with exception of Albania and Macedonia. Companies have been losing money and even some of them became bankruptcy.[176]

[174]UNECE, Transport Situation in Poland in 2005
[175] EURIFT Official Website
[176] WB, 2005, Railway Reform in the Western Balkan

The Balkan railways suffer from bad rail infrastructure, obsolete rolling stock, poor resource productivity, overstaffing and outworn signaling. Rehabilitation of the present infrastructure and development of railway transport is low. All the railways use former Yugoslavian railway specifications which reduces competitiveness. All these problems have led to low speed and poor service quality. In order to develop rail transport sector most of the transport and clearance expenditures are needed to be reduced and some parts of the networks should be closed.[177]

Border Crossing

More than 5 000 km of new international border lines are created by dissolution of the former Yugoslavia. Transport flows and trends have changed and this situation affects utilization of the already established border crossings. Long waiting time, inefficient customs procedures, the necessity to make illegal payments started to worsen freight operations. Under some circumstances border crossings may take 24 hours in some Balkan countries.[178]

There are many road infrastructure deficiencies that cause border crossing problems. There are border crossing problems along Corridor X (Bulgaria, Romania, Albania, Bosnia and Herzegovina, etc.) related to inconveniency and insufficiency. Equipment for documentation and computerization is not sufficient, particularly in Bulgaria and Romania. X-ray inspection equipment and vehicle weighing devices are in bad condition and generally unsuitable as it is in Romania. There are not enough separate lanes and parking spaces for transit traffic and empty vehicles in some Balkan countries. Border crossing times in Balkans are extremely long:

- 7 hours between Bulgaria and Turkey;
- 4 hours at Serbia's borders with Hungary and FYROM;
- 3,4 hours between Romania and Bulgaria;
- 3 hours between Hungary and Romania.

Infrastructure deficiencies that cause border crossing problems in Balkans include:

- *Border facilities.* Lack of border facilities cause problems at the Serbian border with Croatia and FYR Macedonia. They cause shortcomings at the Turkish-Bulgarian border Greek border with the other Balkan countries. Container handling and convoy inspection equipment are other reasons of problems at Serbia's border with Bulgaria;
- *Rolling stock* which is generally obsolete in Balkans. Border crossings within the countries of former Yugoslavia and between them and Hungary, Bulgaria and Greece are problematic due to the obsolescence of the rolling stock. Traction units are not adequate in Bulgaria;
- *Electrification* which causes border crossing problems between Bulgaria and Serbia.[179]

Border Crossing: Country Perspectives

Albania

Border crossings procedures related to customs should be improved. Smuggling and corruption are important issues that need also be dealt with. Legislation problems cause waiting time problem mainly during the summer season.

[177] CER, EC Public Consultation on TEN-Tin Wider Europe
[178] Regional Cross-Border Trade Facilitation, SEE, 2005
[179] ECMT, Removal of obstacles at border crossing

Table 5-16 Border Crossings with Long Waiting Times, Albania

Qafe Thane	Kakavi
Kapeshtice	

Source: Authors, based on ECMT Removal of obstacles at border crossings

Bosnia

Facilities in many cases are poor and the locations of some border crossings have not yet been settled. There are ongoing programs for the development of border points.

Table 5-17 Border Crossings with Long Waiting Times, Bosnia

Vardiste (road)	Bosanski Samac/Samac (road and rail)
Doljani (road)	

Source: Authors, based on ECMT Removal of obstacles at border crossings

Croatia

Work concerning border facilities, laws, procedures and customs is going on. During the summer there are long waiting times. Government has financed the improvement of several border crossings in collaboration with CARDS and TTFSE.

Table 5-18 Border Crossings with Long Waiting Times, Croatia

Maselj	Karasovici
Bajakovo	Metkovic
Bregana	Slavonski Samac

Source: Authors, based on ECMT Removal of obstacles at border crossings

FYR Macedonia

Smuggling, corruption and long waiting times are the main bottlenecks. Laws and procedures should be improved

Table 5-19 Border Crossings with Long Waiting Times, FYR Macedonia

Tabanovce (road and rail)	Gevgilija (road)
Blace (rail)	Medzilidja (road)

Source: Authors, based on ECMT Removal of obstacles at border crossings

Serbia

In Serbia the procedures, unorganized responsibilities and organizations, inadequate infrastructures are the main problems. Some certain border crossings will become unable to handle increased traffic and waiting times.

Table 5-20 Border Crossings with Long Waiting Times, Serbia

Vrska Cuka (road)	Scepan Polje (road)
Djeneral Jankovic (road)	Sid Tovarnik (rail),
Vrbnica (road)	Vatin (road and rail)
Presevo (rail)	Kotroman (road)
Bozaj (road)).	

Source: Authors, based on ECMT Removal of obstacles at border crossings

Physical facilities and procedures are limited at the border crossing points between Serbia and Montenegro. Strict control procedures at the control points between Serbia and Kosovo cause traffic delays.[180]

Turkey

There are very long waiting times at the border with Bulgaria at the weekends and holidays in summers. After Bulgaria and Romania join EU in 2007 the custom control with these countries are expected to be strict.

Romania

Common declarations are signed with neighboring countries to improve border crossing railway traffic. One of them was signed with Hungary on 20th of October 2005 for trains with the purpose of facilitating of border crossings and control procedures on customs.[181] With Romania participation in EU the border crossing with EU member states is expected to simplify because of single market.

[180] REBIS
[181] UNECE, Transport Situation in Romania in 2005

5.3. INTERMODAL STRUCTURE

This part reflects the intermodal transport development and potential in CEE countries. In addition to the discussion from national and regional perspectives, the main intermodal terminals of the countries are presented. Generally, the integration of the rail and road transport modes is discussed. The information about the ports and inland waterways is also provided.

The enlargement of the EU has leaded to a significant transport growth increase. Currently, the use of combined transport systems using rail between Western Europe and CEE are not at the level to compete with road freight transport. Rail connections between Germany and Russia ("Eastwind") and in the opposite direction ("Westwind") and rail integration with the seaports hinterland traffic between the German North Sea ports and CEEC are some exceptions to this situation.

Dominant role of road transport, low quality and high railway services rates are main reasons of hindering intermodal development. The average market share of intermodal freight transport using railways in new EU and candidate countries are very small – 1,1–1,5 %. Only in Hungary it is much higher (12 %), which is comparable to EU-15 average.

International intermodal transport in CEE is more developed with the shares up to 80-90 % of total intermodal market. It is mainly conducted on the railways that are covered by AGTC agreement and along Pan-European Transport Corridors. Containers are used more frequently than swap bodies and semi-trailers. LoLo is the more widespread than RoRo and RoLa. [182]

There has been ongoing research to map the current status of intermodal transport infrastructure and systems in CEEC to determine current bottlenecks and possible ways of improving it. EU has been supporting and initiating various investment projects to develop intermodality. Forming tri-modal door-to-door transport chains that integrate the transport modes of road, rail and inland waterways along the corridors between the North and the South of Europe and SEE will contribute to the competitiveness of European intermodal freight transport.[183]

Almost all the NMs have revised their transport policies and added statements for the development of intermodal transport. They have participated in many intermodal projects including Marco Polo. However, required implementations are proceeding slowly. White Paper measures which aim the balance between transport modes are not at aimed level. There exist many EU activities and funds for CEE region but they do not satisfy the demand. Additional funds are required to develop sufficient capacities for combined transport terminals and modern intermodal centers. Regarding the present situation of the intermodal transport the following general conclusions can be made[184]:

- The intermodal flows within the EU and in relation with the CEEC are low and concentrated on a limited number of relations (4% in the EU15, 2-4% between the EU15 and the CEEC, 0,5% in the CEEC);
- Intermodal flows are mainly concentrated in the North – South direction crossing the Alps;
- The intermodal flows between EU15 and the CEEC fluctuate too much due to immature intermodal transport market in the CEEC;
- Intermodal statistics are not accurate and not complete (in general, but especially not for the CEEC).

[182] Sakalys, A. Et al., 2006, Development of Intermodal Transport in New EU States
[183] EC, European Transport Networks, Results from the transport research programme
[184] ECO4LOG-Analysis of Existing and Future Cargo Flows, Dec. 2005

5.3.1. Regional Perspectives

Considering the growth in trade and freight traffic with CEE, EU realizes the importance of the creation of intermodal solutions for efficient, integrated and sustainable transport systems within the whole Europe. However, transport infrastructure of CEE show regional differences, which necessitate regional perspectives for the development of intermodal systems.

5.3.1.1. Central Europe

Poland, Czech Republic, Hungary are considered to have good rail networks whereas less developed road networks. Some experts claim that current state of infrastructure will determine the intermodal trends in different European countries in the future. Multimodal solutions favoring road transport can be expected in Western European countries whereas it is likely rail related multimodal solutions will be developed in Eastern European countries. Multimodal transport solutions might provide cheaper routes between Central European countries and Western Europe.

A study[185] has been conducted in order to indicate the relations between European countries with very low shares of intermodal transport. All corridors between the Nordic countries and Poland and via Poland to the Central East European countries have the potential of promotion and development for intermodality. The results of the study have been presented with a saturation index which is formed according to the transport demand (overall non-bulk trade) and intermodal supply between countries. The lower the grade showing the relation between two countries, the more a potential exists for intermodal development.

Table 5-21 Country Saturation Index

	Italy	Germany	Switzerland	Austria	**Czech Republic**	Sweden	**Hungary**	**Poland**
Italy	-	27	10	4	1	23	1	5
Germany	22	-	7	4	12	13	22	7
Switzerland	15	12	-	1	0	37	0	0
Austria	2	6	0	-	0	0	2	0
Czech Republic	1	9	0	1	-	0	1	0
Sweden	10	10	12	0	0	-	0	0
Hungary	1	13	0	8	2	0	-	0
Poland	6	4	0	0	0	0	0	-
Slovenia	1	3	0	10	0	0	46	0
Denmark	27	3	20	0	0	0	0	0

Source: Authors, based on an Intermodal Freight Strategy for Baltic Gateway, 2006

Poland

There are considerable efforts to improve the intermodal transport. Developing an efficient intermodal transport system is important part of the national transport policy. Many improvements have been introduced for carriers using transport means used in combined transport since 2002. These are mainly related to infrastructure use and taxes. RoLa services are quite developed. New technologies related to horizontal transshipments integrating road and rail and wheel-gauge changing systems were improved as well. However, generally network of combined transport terminals in Poland is insufficient. Technical quality and facilities of the terminals are poor and require upgrading and extensions. The European Agreement on Important

[185] An Intermodal Freight Strategy for Baltic Gateway, 2006

International Combined Transport Lines and Related Installations (AGTC) supports 13 combined transport terminals.[186]

Table 5-22 Terminals in Poland Supported by AGTC

Gdansk	Gdynia	Gliwice	Krakow
Lodz	Malaszewicze	Poznan	Pruszkow
Sosnowiec	Szczecin	Winoujcie	Warszawa
Wroclaw			

Source: Authors, based on Ministry of Infrastructure Republic of Poland Sectoral Operational Program, 2004-2006

In Poland, Polish State Railways (PKP) provides rail transport mainly through its three terminals in Gliwice, Malaszewicze and Zurawica-Medyka which are characterised by extensive operational processes and long pick-up and delivery times. It uses containers for freight transport to Germany, Austria, Italy and other destinations. In order to reduce the burden on Polish roads and take over as much road transport cargo as possible, PKP Cargo is conducting the project ''Railways Instead of Ruts''. Terminals, Pruszkow in Warszawa, Gadki in Poznan and Wroclaw, which are operated by the private company named Polzug, have undergone an investment programme for modernization of equipment and extension. Another important main intermodal service provider, Spedcont is specialized in cargo transport at the ports in Gdynia, Gdansk and Szczecin. It carries containers domestically and internationally by rail from ports with special fast trains.

The amount of 31,6 mln. EUR was arranged for intermodal projects for 2003-2006 but this fund could not be used properly. Polish Transport Ministry plans to carry over it for the period of 2005-2008. Logistics centers and rail terminals will be also upgraded with some shares of this fund.[187]

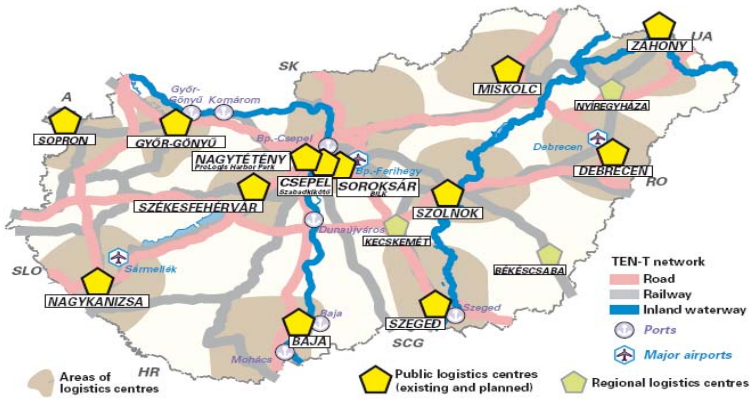
Hungary

Hungarian Government has supported the promotion and development of the combined transport which has been harmonized with the directives of the EU since the beginning of the 1990's. In order to provide intermodal solutions for freight goods transport new logistics centers have been opened. The country has been divided into 13 logistics centers in 11 regions, each with the obligation to construct port and railways links. Hungary's market share is much higher than other EU-8 and amounted to 12 %, which is comparable to an average European level. RoLa services are especially developed in Hungary. Besides there are new technologies concerning horizontal cargo transshipping machines.

Although Budapest Intermodal Logistics Centre (BILK) is currently under development, it is playing a vital role both in satisfying domestic demand and in increasing Hungary's share of transit traffic, and strengthens Hungary's links with other European logistics networks. In the BILK area further space for expansion has been reserved which will enable one module of 3 x 750 m tracks and 2 rail mounted gantries to be built. The total expected capacity will be then 300 000 loading units. MAV and Gysev (Raaber-Bahn) are jointly developing another gateway at Sopron, mainly to serve international trains.[188] Completion of similar centers in Szekesfehervar, Szolnok, Szeged and Zahony is crucial as well.

[186] Ministry of Infrastructure Republic of Poland, Sectoral Operational Program 2004-2006
[187] Logistics Turku Region, Dec. 2006, Poland: Intermodal faces obstacles to development
[188] Study on Infrastructure Capacity Reserves For Combined Transport By 2015

Figure 5-35 Intermodal Logistics Service Centers Network in Hungary



Source: Hungary Ministry of Economy and Transport

Table 5-23 Combined Transport Performance of Hungary in 2004

RoLa	79100 trucks transported (less than 10% of total transit in road freight transport)
Containers, swap bodies, semi-trailers	5.1 mln tons transported in 303.4 thousand units; (almost 15% of total rail freight transport)
RoRo	20.8 thousand units transported

Source: Authors, based on Hungary Ministry of Economy and Transport BIC Forum September 2005

Czech Republic

Intermodal transport is developing successfully only on the international long distance links to the large seaports. The entire system of intermodal transport with transshipment yards, technologies, transport-related logistics centers is part of Priority 2 of the operational programme for infrastructure. The Czech Republic also participates in Pan-European programs on developing and supporting intermodal transport. Technologies related to road-rail horizontal transshipments have been developed.

The intermodal terminals in the Czech Republic are mainly operated by private operators as Metrans in Uhrineves, Intrans in Ziskov and Maersk in Melnik. The largest site Uhrineves is used as a hub for all Metrans traffic. Praha-Uhrineves, which has a transshipment of containers around 300,000 TEU a year, is the most important terminal.[189] Intermodal transport in inland waterway is being used at present only in the Czech Republic, with a share of 0,2 % of the total traffic.[190]

Table 5-24 Combined Transport Infrastructure in Czech Republic

Total number of combined transport transshipment points: 12		Possibility of handling with loading units	
Types of combined transport		large containers	12
Rail-road	4	swap bodies	6
Rail-road-water	8	RoLa	0

Source: Authors, based on Czech Transport Research Centre, Annual report 2004

Slovenia

There are 1124,9 km of combined transport lines and 107 stations in Slovenia. Currently, there are not many solid achievements concerning intermodal transport. International intermodal transport is mainly conducted through rail and road terminals in Ljubljana that are operated by Slovenian railways and the Port of Koper. Slovenian Railways has been modernizing both terminals in Ljubljana and Koper by installing new gantry cranes.

[189] CEE Rail Market
[190] NAS-ITIP Project, 2006

Realisation of TEN, especially second railway line between Koper and Divaca as well as rail line between Maribor and Graz will open more possibilities for combined cargo transport (especially the first case - transport of goods from Koper and Trieste harbors). Piggyback trains currently run on the following routes: Ljubljana KT–Kiskundorozsma, Maribor Tezno–Wels CCT.[191]

Slovakia

Slovakia is served by 10 intermodal terminals which are built by private organizations. Only one of these terminals is used for water-road-rail combined transport. The remaining terminals are used for road-rail combined transport. Four combined transport terminals are of international importance and six of combined terminals have regional importance. AGTC routes are located on the main roads of international railway transport and trans-European corridors. They effectively allow freight delivery transport by intermodal systems.

Table 5-25 The Main Combined Terminals in Slovakia

Bratislava UNS	Bratislava port Palenisko
Zilina	Kosice
Dobra	Ruzomberok
Dunajska	Sladkovicoko
Trstena	

Source: Authors, based on Ministry of Transport Posts and Communications of Slovak Republic Combined Transport Department, 2006

Future Perspectives

Market shares and total transshipment volumes of intermodal transport are foreseen to increase significantly by 2015. However, capacity gaps are likely to arise in many of the terminals despite the fact that many enlargement plans are going on.

Table 5-26 Top Cities for Unaccompanied Combined Transport by 2015

Rank	Transport Area	Export (1000t)		Import (1000t)		Growth Rate	
		2002	2015	2002	2015	2015/2002	p.a.
1	Milan	4 402	11 477	4 908	12 566	158%	7,6%
2	Rotterdam	3 176	6 960	3 450	7 717	122%	6,3%
3	Koln	3 338	7 811	2 184	4 870	130%	6,6%
8	*Prague*	1 141	2 277	1 288	2 580	100%	5,5%
24	*Budapest*	408	749	553	1 051	87%	4,9%
25	*Ljubljana*	466	736	518	840	60%	3,7%

Source: Authors, based on Study on Infrastructure Capacity Reserves for Combined Transport by 2015

Table 5-27 Terminal Capacity Bottlenecks by Transport Area by 2015

Country	Transport Area	Capacity 2015	Total Volume 2015	Probable Capacity Gap 2015
CZ	Prague	200 000	288 000	128 000
HU	Budapest	300 000	263 000	23 000
PL	Gliwice	32 000	57 000	31 400
PL	Poznan	65 000	53 000	1 000
PL	Warszawa	60 000	79 000	31 000
SI	Ljubljana	150 000	87 000	

Source: Authors, based on Study on Infrastructure Capacity Reserves for Combined Transport by 2015

[191] Slovenian Railways Official Website

5.3.1.2. Balkans

Generally, multimodal transport is not developed in the region and constitutes small share of total freight transport. Many of the existing intermodal terminals are not utilized well, particularly the ones in former Yugoslavian countries. Imbalances, long distances, low and insufficiently organized traffic flows hamper the intermodal transport development. Land transport of maritime containers through the ports is the most common form of intermodality.

Balkans' intermodal operators are poorly equipped with regard to intermodal railway wagons. The existing container wagon fleet is mainly adapted to the transport of ISO containers. There is lack of road equipment, which can be handled by a TEU carrier (containers, swap bodies) for RoLa and RoRo techniques.

The Pan-European transport corridors crossing the Balkans (IV, V, VII, VIII, and X) offer a potential for the combined transport organization but some major improvements are needed, especially regarding the railway and road links on the east-west Corridor VIII and Corridor X. The existing terminal network links the major cities of the region show potential for the organization of a combined transport.[192] Most successful applications occur in Romania and Turkey. Some improvements are needed especially in Albania and FYR Macedonia.

According to the findings of IMONODE project, there is a potential for intermodal transport around 10% with envisaged increase to 15% until 2015 in the region. Bucharest, Constanta, Sofia will have block train potentials and Carinthia will have single wagon traffic potential.[193]

Bulgaria

In December 1997, the Ministry of Transport and Communications accepted a program for the combined transport development in Bulgaria by 2010. This program aims the enhancement of existing intermodal facilities by utilizing the existing national infrastructure and standards to the Western European ones. Bulgarian sections of the routes mentioned in European Agreement on important international combined transport lines and related installations (AGTC) as well as Bulgarian sections of the Pan-European transport corridors are covered under the program. In February 2003, the decree for combined transport as a part of the railway transport law was set in force. In addition, Bulgaria has concluded bilateral agreements on combined transport of goods with Albania, Armenia, Czech Republic, Croatia, Hungary, Lebanon, Slovakia, Slovenia and Yugoslavia. Agreements with other countries are to be signed in the near future.[194]

Romania

Intermodal transport in Romania is an important part of the rapidly increasing freight transport. Successful intermodal systems formed by combined traffic and ferryboat exist in harbor area at Black Sea region. However, generally Romanian river ports are poorly equipped for intermodal transport. The movement of maritime containers by rail between seaports and either intermodal terminals or private sidings are common. Good RoLa services are provided as well.

There are no facilities for the movement of trucks by rail, and there is very limited intermodal shipment of domestic freight. There is some potential for the inland waterway movement of maritime containers as it has been done on the Austro-Hungarian section of the Danube. A project concerning a rail/air interchange at Timisoara is also under consideration.

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[192] REBIS
[193] Schwetz, O., 2006, Common Meeting of the Steering Committees of Pan-European Corridors
[194] Balkan Transport Blueprints, 2004

More than 40% of containers moved inland from Constanta, one of the biggest ports of Europe, are carried by rail. However, about 80% of these containers have been destined for private sidings rather than intermodal terminals. Rail movement is also carried out in general trains rather than block trains.

Romania's network of intermodal freight terminals have been designed to a standard pattern. These terminals are owned and operated by a subsidiary of CFR Marfa, the main rail freight company. Marshalling yards and tracks under rail mounted gantry cranes; with storage rows for containers are used to service them. The cranes are obsolete. Generally, road vehicles at the terminals have to turn round before or after being loaded and unloaded not to block the road for other transporting vehicles. Terminals do not have secure lighting areas. Their average capacity is 16,800 TEU. (varying from 7,040 to 25,600 TEU per year). However, their utilization level is not high enough and they do not provide conditions for alternative freight to be handled. Table 5-28 shows the main problems defined by Ministry of Transport, Construction and Tourism of Romania.

Table 5-28 Problems of Intermodal Development in Romania

Inadequacy of existing terminal facilities	Traffic delays at the port of Constanta
Inflexibility of terminal operations	Poor security on terminals and trains
Poor availability of suitable wagons	Long, uncompetitive transit times
Lack of tracking or other information on consignment progress	Poor reliability of train services and connections
Non-existence of dedicated direct train services	Over-complicated documentation required by railway operators and/or customs authorities
Poor response from rail operators to business enquiries	

Source: Authors, based on *Ministry of Transport, Construction and Tourism of Romania Sectoral Operational Programme-Transport (SOPT), 2007-2013*

Turkey

In Turkey, intermodal transport plays an insignificant role in the domestic transport system - apart from the sea containers which are handled in several ports. Due to the long transport distances, Turkey seems ideally suited for the development of intermodal transport - provided that the rail infrastructure and services are sufficiently developed. Currently, Turkey does not have any special legislation related to combined transport system.[195]

Croatia

Croatia is one of the first countries in Balkans where a first decisive step towards the creation of a combined transport industry has been made. Container company AGIT and independent combined transport Crokombi are important for the development of combined transport. There is a good network of terminals in the country. The most important of these are Osijek, Split, Zagreb Vrapce and Rijeka Bradjica

Serbia

Serbia has three main container terminals namely Port of Bar, Port of Belgrade and ZIT inland terminal of Belgrade. The Port of Bar is an important import-export port. It covers 200 ha of area with a potential to be expanded to 600 ha. It also has good road and rail connections. The Port of Belgrade also has a container terminal and plays a special role for multimodal transportation

[195] ASSESS, 2005

system applications. It has the facilitates for reloading of containers from vessels, railway wagons on three tracks, and road vehicles in two traffic lanes. It has good railway connections but road transport links are not organized well enough as it is in the central part of Belgrade. The inland terminal of Belgrade, operated by the company ZIT, is provided with good roads and rail connections.

Bosnia and Herzegovina

The main container terminals are in Sarajevo, Mostar, Tuzla and Ploce. These are not modern terminals but they can satisfy the domestic demand. They can operate better with further improvement, especially the one in Sarajevo, which concentrates 50% of the total traffic. There are no important domestic container companies or combined transport operators in the country.

Albania

Intermodal transport is hardly developed in Albania. There are no initiatives from the government to promote it as the country faces other infrastructure problems. The private operators in Tirana and Durres are utilizing limited combined transport solutions. Container operator called Pelican, which is a part of the port authority, uses the main terminal. Generally, 40 tons gantry cranes or gears belonging to the ships are used for container handling.

FYR Macedonia

Currently, combined transport is not developed but there are some more applications with the participation of ICF. Direct trains are operating between its logistics centre in Sopron and the capital city, Skopje. There is a container terminal in Tovarna that is poorly equipped. It has one gantry crane and small storage area (600 TEU). It has the advantage of being close to the railway station but still its transshipment capacity is not enough. [196]

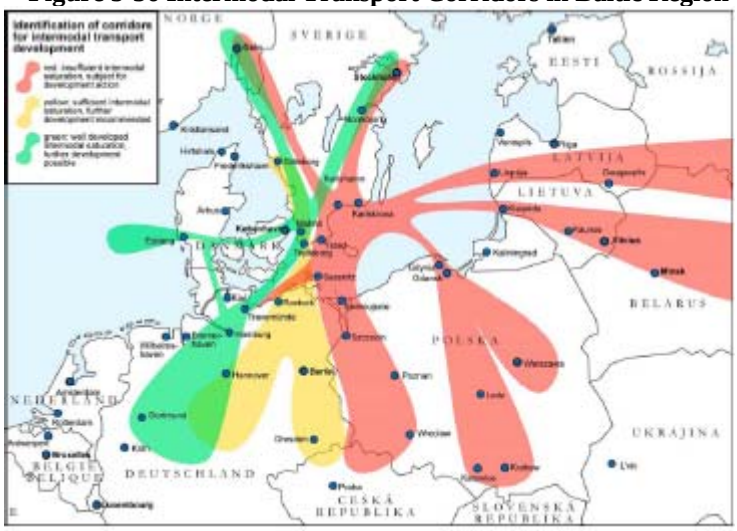
5.3.1.3. Baltic States

Following the EU accession, in Baltic States the directives and regulations related to promotion of intermodality have increased. However, there is still lack of political measures necessary for the development of intermodality. Bilateral agreements with neighboring countries, particularly Russia, concerning the border crossings, transport operators and authorizations are important for combined transport development. Differences of railway gauges and standards of the region from that of the EU is a big challenge for international intermodal systems.

There is a lack of intermodal transport options in spite of rapidly developing freight volumes in the corridors marked red in the Figure 5-36, i.e. in the eastern parts of the Baltic Gateway Area. In comparison, the other corridors are fairly well supplied, whereas there is still a substantial potential to be exploited. However, intermodal services in the eastern parts of the area consisting of Estonia, Lithuania and Latvia are less developed and the market forces are still weak.[197]

[196] REBIS
[197] Baltic Gateway Quick Start Programme, 2006

Figure 5-36 Intermodal Transport Corridors in Baltic Region



Source: Baltic Gateway Quick Start Programme, June 2006

Table 5-29 Ranking of Intermodal Terminals, Inland and Ports

Country	Name of Terminal	Function of Terminal	Classification
LIT	Klaipeda	Port	Primary
LIT	Kaunas	Inland	Secondary
LIT	Vilnius	Inland	Secondary
LAT	Liepaja	Port	Primary
LAT	Ventspils	Port	Secondary
LAT	Riga	Port	Primary
PL	Gdansk	Port	European
PL	Gdynia	Port	European
PL	Swinoujscie	Port	Secondary
PL	Szczecin	Port	Secondary
PL	Warszawa terminals	Inland	Primary
PL	Poznan	Inland	Secondary

Source: An Intermodal Freight Strategy for Baltic Gateway, Jan 2006

Lithuania

The market share of intermodal freight transport by rail is very small and amounted to 1,1-1,2 %. The share of intermodal transport units transported by short sea shipping is higher and amounts to 30 %. Currently, the most growing segment in combined transport is transshipment of containers and transport of goods in containers. The transportation of containers has shares of 85 % whereas swap bodies and semi–trailers amounted to 15 %.

Density of road network is much more extensive than that of railways and main freight volumes are much easier and quicker accessible by road than by railway transport. In addition to this situation, lack of terminals, technical and operational inadequacy of loading units, inefficient manual and engineering processes, IT problems hamper intermodal road-rail transport in Lithuania. However, a few initiatives related to new technologies have been started. Automatic wheel-gauge changing system named as SUW 2000 is one of these.[198]

Combined transport trains Viking (Klaipeda-Minsk-Odesa-Ilyichevsk) operating since February 2003 and Merkurij (Klaipeda/Kaliningrad-Minsk-Moscow) operating since July 2005 proved to be the best way to transport containers. In 2005 Viking carried 15 000 TEU in both directions. Klaipeda State Seaport volumes increased from 51 000 TEU in 2001 to 174 000 TEU in 2004, and to 214 000 TEU in 2005. Significant parts of these flows are carried by rail.

[198] Sakalys, A. Et al., 2006, Development of Intermodal Transport in New EU States

The Lithuanian Government approved The Long-term Development Strategy of the Lithuanian Transport System in 2005 that is planned till 2025. It aims to strengthen the integration of different transport modes and intermodal transport development by forming intermodal transport centers (freight villages) close to I and IX Pan-European Transport Corridors in the industrial areas. In this perspective, considering the recommendations of NeLoC project establishment of four intermodal freight villages in Kaunas, Klaipeda, Panevezys and Vilnius counties, respectively will promote Lithuania's position as a key player in east-west cargo transport offering intermodal solutions.[199]

Estonia

Combined transport has been presented for the first time with new Road Transport Act. Estonia joined Marco Polo projects. It is actively participating in the Motorways of the Baltic Sea development. There are many ongoing innovative solutions for intermodal transport systems. Completed restructuring of the railway sector allows operational efficiency in combined transport services between the main cities.

Latvia

One of the main objectives of the Ministry of Transport of Latvia is to promote the development of combined transport by forming an appropriate legislative and regulatory framework. Considering that Russia and other neighboring states are close geographically, intermodal transport will mainly serve between the ports of Latvia (Riga, Ventspils, and Liepaja) and other countries. The biggest growth of international intermodal transport can be expected with Russia. Currently, combined transport terminals are located within the ports and there are no developed inland combined transport terminals. Rate of infrastructure development, equipment, as well as rolling stock will influence the pace of intermodality in the country and its neighbors.

[199] Meidute, I et al., Significance of Logistics Centers for Development of Intermodal Transport Services in Lithuania

6. LOGISTICS MARKET

The first part of this chapter discusses transport markets in CEE countries. It gives detailed information about the companies utilizing road, rail and combined transport. It reflects LSPs' strategies operating in the region. The second part analyzes various business concepts in CEEC related to the logistics. Industrial cities, key and growing industry sectors are presented. In the final part the most important logistics centers of the countries are presented and countries' hub potentials are compared.

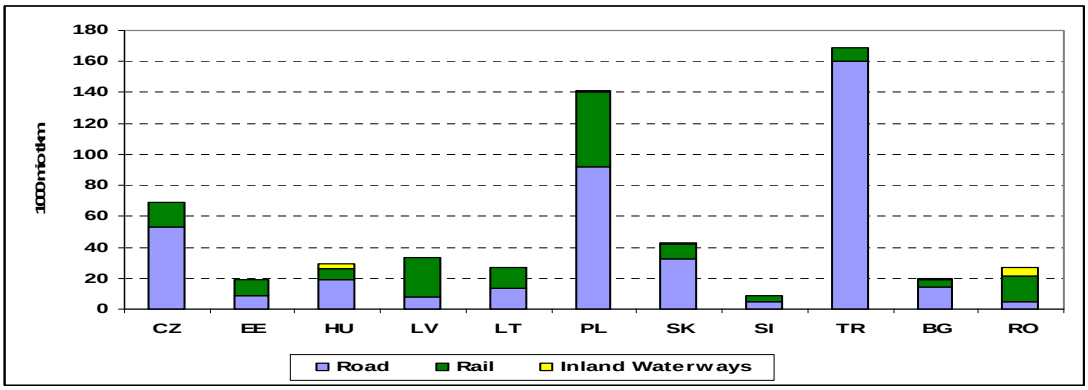
6.1. TRANSPORT ACTORS

This part consists of two sections: ''Main Transport Actors in CEE'' and ''International Logistics Providers Expansion to CEE''. The first section describes the main actors of CEE road, rail and combined transport market. Freights volumes are analyzed for the recent years with the purpose of presenting the modal shift. Besides, considerable information has been provided about the main domestic transport and logistics providers. The second section of this part elaborates the expansion strategies of global LSPs towards CEE market.

6.1.1. Main Transport Actors in CEE

Eastern Europe logistics market after EU enlargement

Figure 6-1 Freight Transport Performance of CEEC



Source: Authors, based on ASSESS, 2005

Road

CEE *road transport market* is characterized by high level of fragmentation.

Figure 6-2 General Cost Level of Road Transport

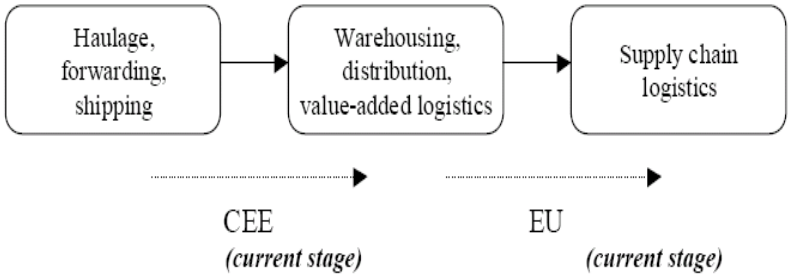
(The Netherlands = 100), 2005

Source: NEA Transport Research and Training

The logistics trends in CEEC are similar to those in EU-15. However, they are still on the earliest stage of the development with the lack of sophisticated logistics solutions.
Figure 6-3 bellow shows the position of CEEC before joining the EU. The EU enlargement had positive impact on logistics development in the region and the countries are developing very fast.

Figure 6-3 European Trends in Logistics

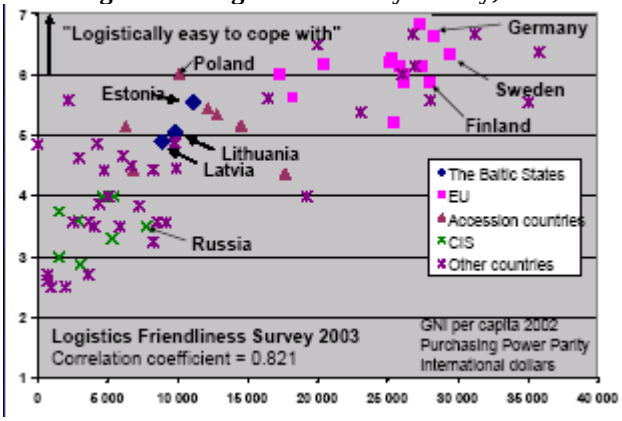
Stages of logistics development of markets



Source: L. Ojala, Advanced Logistics in the Baltic States (AD LOG)

According to Logistics Friendliness Survey, NMs have rather good position when it comes to logistics market.

Figure 6-4 Logistics Friendly Survey, 2003



Source: Ojala, L.(2006) "Logistics as a growth driver in the Baltic Sea Region and beyond"

Another positive trend in the market is the growing collaboration between large LSPs and local providers, which creates advantages for both by allowing local companies to develop their logistics service. The removal of the customs barriers and EU regulations has also a positive effect on the logistics market. However, higher competition is created by the reduction of prices for the transport services (especially road sector) and the increase of fuel prices. Due to the fact that for high volumes the profitability is low, the local companies are often acting as subcontractors of major logistics providers.

Rail

The opening of CEE railway market for the EU is scheduled for 2007 when the so-called 3rd Railway Package becomes enforceable and third parties will have full access. In general CEE railway companies are in difficult financial situation, which is mainly connected with poor infrastructure and service quality. It is also difficult to compete with road transport because of the limited distances. Another bottleneck is the lack of cooperation between rail companies.

Table 6-1 Rail Market Status in CEEC

Country	Status of Liberalisation[200]	Number of licensed RUs	Network length of largest RIU in km
Poland	"delayed"	22	20 000
Czech Republic	"delayed"	8	9 500
Latvia	"delayed"	6	2 300
Slovakia	"delayed"	18	3 700
Hungary	"delayed"	2	7 700
Slovenia	"delayed"	1	1 200
Estonia	"pending departure"	4	1 000
Lithuania	"pending departure"	5	1 800

Source: Authors, based on Liberalisation Index 2004, UIC Statistics

Inland Waterways

Inland water transport still needs development in CEEC due to the lack of navigable rivers and poor services. There is enough capacity for container transport growth. The river companies are mainly state-owned. The main problem is narrow passes in some sections of the Danube, Elba, and some other rivers. Besides, the dependency on fluctuations makes long-term planning hard. The navigation conditions and technical specifications of the ships are different for different rivers, which decrease the efficiency of the fleet. As Romania and Bulgaria joined the EU, the Danube transportation is likely to expand.

There are differences between Western and Eastern Europe inland waterway markets due to the historical reasons. Generally, large shipping companies are common in CEE but this situation is changing with a trend towards smaller companies, especially on the Danube as a result of political changes and the opening of Main-Danube Channel. Small companies are already very common in Western Europe.

6.1.1.1. Baltic States

The transport and logistics industries have been declared as priority sectors by Baltic States governments that try to implement an open policy. Currently, there are no transit fees.

[200] IBM, Rail Liberalisation Index 2004

Road

Compared with most EU accession countries, the absolute size of the transport market is relatively small.[201] The companies are often interrelated by the ownership within the same mode because of countries' comparatively small markets. The majority of road transport companies are small sized (5-10 trucks) and private.

The border crossing simplification created time savings which materializes in overcapacity of the transport service supply and forces the service providers to lower their prices.[202] There is a traffic imbalance, especially in Lithuania, on the Russian direction as 80% of trucks from CIS return empty.

There exist good opportunities for Baltic carriers to move goods through the Baltic ports (Riga, Liepaja, Ventspils, Klaipeda, Tallinn) by using ferry lines to Germany and Scandinavia. The forwarding sector is rather developed and includes actively competing operators. Most of the forwarders are medium sized and owned by large western international companies, especially Scandinavians. (Maersk, DFDS).

There is a clear difference between the companies working to the east and to the west connected to the technical requirements. The high investments into the up-to-date equipment make the companies not competitive on the east direction because of the cost differentiation.

Rail market

The price for the railway service is 20% higher than that for road transportation mainly because of the pre-carriage activities. One of the main concerns is the interoperability with other European railways.[203]

The restructuring of the railway sector should be continued in Latvia and Lithuania while in Estonia the sector is already privatized. The operational efficiency is rather good comparing to the other European railway operators. The financial indicators of the freight operations are mainly high as they include transit traffic and the net profits of the main operators have grown significantly since 2003.

Combined transport

Estonian, Latvian and Lithuanian Railways are involved in combined transportation but they have limited combined transport shares and none of them belongs to UIRR. There is also state owned Russian railways player, October Railways.

The container transit on railways is expected to grow in the Baltic States. The demand exists for the scheduled block train services from both Russia and CIS countries and appropriate rail platforms for transporting containers. There are several such trains in Baltic States as the followings:

- "Viking" (2003) is the train that can offer the savings in transport costs comparing with the road transport for the same distance because of the bilateral agreement between Lithuanian,

[201] Ojala, L. Overview of the Transport Sector in the Baltic States
[202] Ojala, L., 2005, TTFBS
[203] Ojala, L., 2005, TTFBS

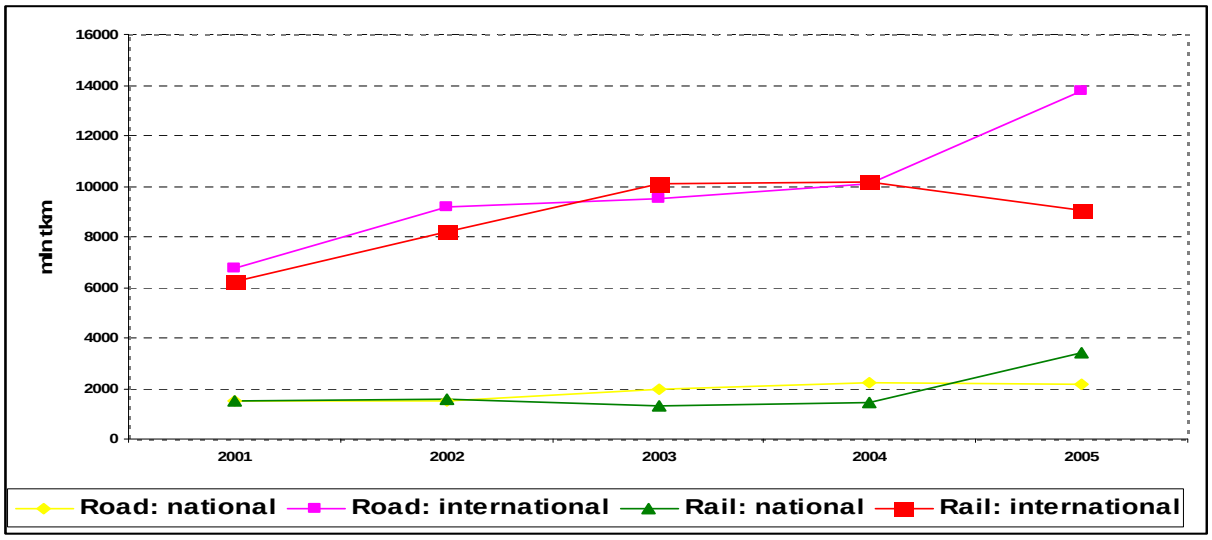
Belarus and Ukrainian authorities. The transportation of one cargo unit is approximately 400 US dollars from Klaipeda to Illichevsk whereas road carriers charge 1100-1200 US dollars for the same trip.[204] The simplified customs procedure (one declaration for whole train) could be also seen as an advantage. There are the plans to extend the route of the train till Turkey.

- "Baltic-Transit" is transporting cargo via the Baltic ports and Kaliningrad from Rezekne (LV) to Moscow (RUS) as a branch of Russian priority route Trans-Siberia. It is a joint Baltic States and Kaliningrad project initiated by Latvian Railways, which later was joined by Kazakhstan and Uzbekistan Railways. The train operator is Trans-Siberian Intermodal Service.
- Estonian railways had plans to open similar kind of service on the Muuga-Moscow Line. The main problem was finding suitable destination stations and terminals in Moscow with good customs performance.
- There is also the possibility of sending a container train from Klaipeda to Kazakhstan via Moscow for carrying the goods from Kaliningrad with the cooperation of Kazakh Railways. (World bank, 2004)

The weakest part of the intermodal transport system is the transfer between the modes. The rail links to the ports are rather good but the track ownership sometimes leads to the problems. The forwarders claimed that the quality of the service received at the ports is often poor while the rates are comparatively high.[205] One of reasons this is the inadequate technical interoperability between modes and loading units.

Lithuania

Figure 6-5 Goods Carried in Lithuania



Source: Authors, based on ECMT

Road haulage and forwarders

The truck fleet in Lithuania used for international traffic is almost three times the size of Estonian and over two times the size of Latvian fleets. The main road transport player is *Transekspedicija UAB (Vilnius)* that has its branches in Kaunas, Panevezys, Klaipeda, Hamburg and Riga. It has in its disposal over 100 trucks and trailers, non-standard trailers, such as Jumbo, and the specialized trailers, including trailers for clothes. Among the other companies could be

[204] Lithuanian Railways Annual Report, 2004
[205] Ojala, L., 2005, TTFBS

mentioned *Daisotra* (about 288 trucks) and *Hoja*, which has transport (90 trucks, 75 container chassis, 65 tilt trailers, 40 refrigerator trucks) and forwarding branches.

Railway and combined transport market

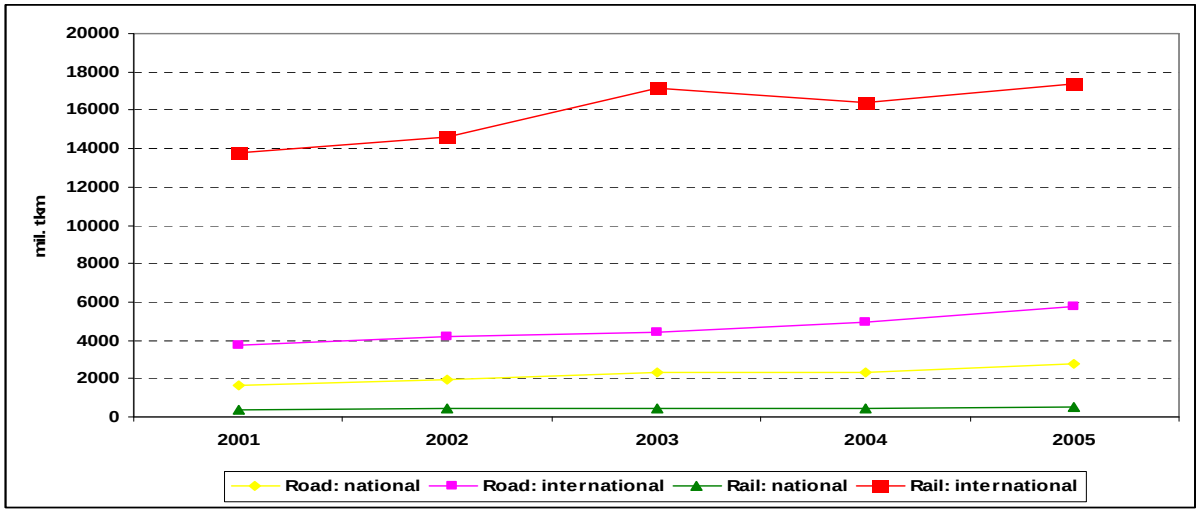
Currently, there is no competition on the rail market. Moreover, the government has consented to the changes in the bill regulating the railway transport which will guarantee the monopoly of the "state-owned railway haulers" in the railway transit from the "third world countries".[206] The main rail operator *Lithuanian Railways (LG),* which is a JS owned by the state, is the only railway hauler which meets this requirement. *"LG ekspedicija"* working within the freight department of LG provides the forwarding services between EU and CIS countries including the service of combined train "Viking".[207]

In spring 2004 the first operating license was granted to a private railway operator, *"Transachema"*. Klaipeda Seaport continued to maintain a leading position among the Baltic ports in handling of the containers. The shuttle train "Viking", launched in 2003 to promote combined transport, increased the number of containers transported in 2005 by 13.7 times.[208]

The development of Kaunas freight handling/reloading centre where the interface between wide gauge (1524mm), European standard gauge (1435mm) railways and road transport will be located could provide an opportunity to ship road transport cargo units for long distance with railways, and thus, develop combined transportation in Lithuania.

Latvia

Figure 6-6 Goods Carried in Latvia



Source: Authors, based on ECMT

Road haulage and forwarders

Among the market players Transekspedicija LV, which is the branch of Lithuanian Transekspedicija UAB and also Altreks working with Scandinavian countries could be mentioned.

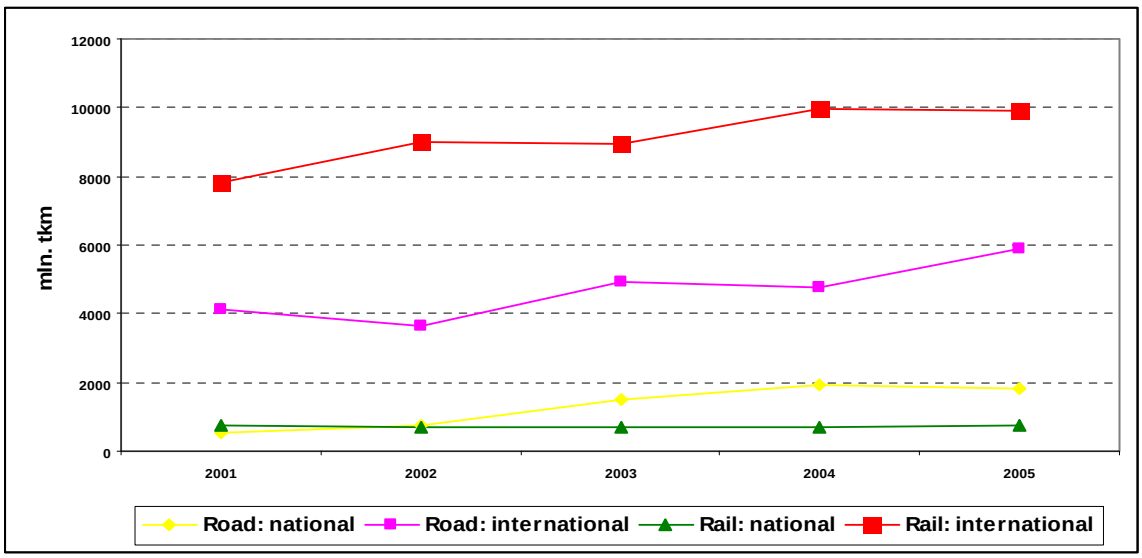
[206] Railway Market, CEE Review, Oct. 2006
[207] Lithuanian Railway Official Website
[208] UNECE, 2006, Review of the Transport Situation in UNECE Member Countries

Railway market

Latvian Railways (LDz) is the main railway operator in Latvia[209], owned by the state. Since February, 2003 freight transport has been performed also by private operators "*Baltijas ekspresis"* (Ventspils), *"Liepajas tranzita ekspresis"* (Ventspils) and *"Baltijas tranzita servis*" (Riga).[210]

Estonia

Figure 6-7 Goods Carried in Estonia



Source: Authors, based on ECMT

Road haulage and forwarders

According to Aripaev business magazine the top road transport companies in 2005 were[211]:

- *ADR Haanpaa* (1992, 75 employee, 12.2 mln. EUR) is one of the biggest players in the market specialized on liquid dangerous goods and planning to expand to Russia. The company is 100% owned by Finnish ADR Haanpaa OY;
- *Linford Ltd.* (1994, 7.4 mln. EUR) which is the second Estonian capital based road haulier owning 80 regular and 15 isothermal trucks. It is a partner of DFDS Transport;
- *Fameron* (Paikuse) which belongs to Stora Enso;
- *Est-Trans Kaubaveod* specialized in frozen goods.

According to the Aripaev Logistika the most successful national forwarder with respect to the financial figures together with Schenker is *IK Speditor Group*[212], which is a private-owned Estonian company (turnover – 5 mln. EUR) and an associated member of Scandinavian transport network Nordic Chain. All services are outsourced.

According to business daily Aripaev, two large logistics companies were going to enter the Estonian market: *Belgium's Scanfor* and the *Russian* logistics giant *Eurosib*. Scanfor at the

[209] Latvian Railways Official Website
[210] Public Utilities Commission (PUC), Latvia, Official Website
[211] Autotranspordi firmade TOP 2004, Aripaev Logistika, Sept 2005, No 5
[212] Ekspedeerimisfirmade TOP 2004, Aripaev Logistika, 2005, No 7

moment is focusing to Eastern Europe and Baltic transport market. Therefore, it decided to start activities in Estonia. In 2004 three large logistics companies already entered Estonian market, which are *LLC, Panalpina and GoPost*.

Having worked as partner of AS SP Transit, Scanfor has ambitious goals to become one of the five largest logistics companies in Estonia in five years and plans to establish its logistics centre in the north-eastern East-Viru, depending on the completion of Sillamae sea port. Eurosib (turnover - 256 mln. EUR, 2003) intends to offer logistics solutions to local companies.

Railway and combined transport market

The railway freight sector in Estonia is privatized from 2001 and there are three main companies in the market[213]. Two of them own infrastructure together with providing services (in Estonia operators pay track access charges unless they own rail network). The third one has started in 2004 as an operator for international transport. After privatizing the railway sector, Estonian government now tries to nationalize it. Moreover, the Russian capital is interested to take the sector over from the American investors. One of the profitable businesses in Estonia concerning the railway market is renting the rail wagons to Russia which expands together with oil export growth.

Eesti Raudtee (Estonian Railways Ltd., EVR) (2001) is 66% owned by Baltic Rail Services (BRS)[214] while the rest is controlled by the state. However, Baltic Rail Services had the plans to sell the majority of its stakes. It is the main freight operator connecting the country with Russia and the rest of Europe through Latvia. Business indicators in 2003[215]: Freight turnover is 92569 mln. tkm; average haul distance is 219 km; international business volume is 38,5 mln. tons. As to the goods commodity transported by Eesti Raudtee in 2005, the main shares are taken by oil products (65%), coal (10%), oil shale (6%), fertilizers (6%), timber (4%) and metal (3%).[216] The company is developing the container traffic, which in 2003 grew by 3.2% with the main traffic being transported to Russia and Central Asia.[217]

Edelaraudtee AS (Southern railway) (1997) owns the lines from Tallinn to Parnu and Viljandi for freight transport. It is not that important in the freight transportation in Estonia (only 0.31 mil. tons in 2005) It owns the advantage of the geographical layout of the railways in the country.

Another railway player, *Spacecom Ltd.* is a part of Russian company Severstaltrans that started the operations in 2003 with the turnover of 29 mln. USD in 2004.

It is important to mention that in 2005, in addition to AS Eesti Raudtee, AS Spacecom and Westgate Transport OU operated on the infrastructure of AS Eesti Raudtee.

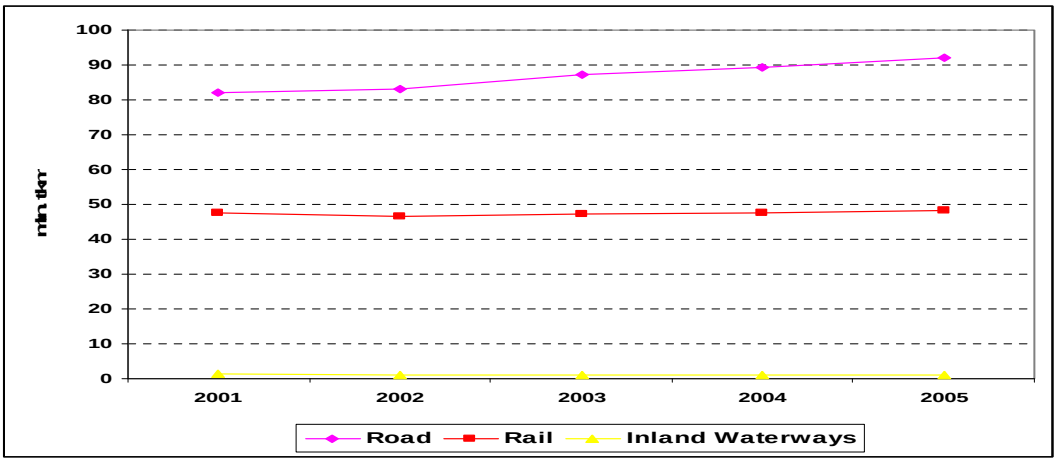
[213] Estonian Rail Administration Annual Report 2005
[214] Archer, S., ECMT, 2005, Estonian railways – always on the move
[215] After the change of the structure of shareholders, the company faces some misunderstandings in the investment and development policies between the state and private owners, that's why the annual reports for 2004 and 2005 have not been ratified yet, and official data for the Eesti Raudtee is presented only up to 2003.
[216] Estonian Railway Inspectorate Official Webpage
[217] Estonian Rail Administration Annual Report 2005

6.1.1.2. Central Europe

In Central Europe either small independent road haulers or large network operators and forwarders dominate the private sector. The majority of the inland waterways companies are state owned.

Poland

Figure 6-8 Goods Carried in Poland



Source: Authors, based on ECMT and ASSESS

Road haulage and forwarders

80% of the inland transport is carried by road in Poland. The market is very dinamic, fragmented and characterized by acquisitions and alliances. Spedol was bought by Schenker in 2004 and Raben by CJ International, Trans Universal in 2005. Currently, only 3% of the companies have more that 50 trucks and there are 58% with fewer that 10 trucks. However, a group of around 20-30 strongest companies dominate the market. [218] In spite of the low cost advantage, national companies have difficulties with providing sophisticated logistics solutions. They are mainly focused on transport services.

The market leaders in Polish market are *Raben, Spedpol (now Schenker), FM Logistics* and *Delta Trans.* The top 10 LSPs consist of 4 national and 6 international companies (mainly German and Dutch). The most common services are shipping and forwarding. The consolidation of the local players is also seen as a trend as it was before joining EU. However, sometimes there is a cultural barrier for this trend as the Poles prefer the individual characteristics of ownership, management and legal environment.

Pekaes Multispedytor (120 mln. EUR) is another Polish LSP which belongs to parent company, Pekaes SA. Pekaes Group is a group company in Europe that renders composite services in the fields of transport, forwarding, shipping, logistics in addition to the vehicle services and the automotive trade. It is well positioned as a transport and logistics hub that American and European service providers use to serve to Western and Eastern European markets. It has 1054 own trucks and trailers licensed for international traffic.[219]

[218] Analysis of Polish LSPs' market, Schenker Logistics Magazine, 2005

[219] Trepins, D. Logistics Finds its CEE, Logistics Management, Feb 2006

The main difficulties for operating in Polish road market are the decrease in transportation rates, the increase in fuel prices, strong position of zloty as a currency and very low rate of partners' trust in the supply chain. [220]

Railway market

Polish railway system is the third largest in Europe and there are a growing number of private freight operators. It is deregulated and one of the most liberalized freight markets in Europe: 92 licensed railway operators in 2005, of which 65 are freight operators (only in Germany more licenses have been granted for the rail operators). However, there are about 20 potential companies able to challenge the state-owned PKP Cargo. Currently, the market experiences the process of bigger companies taking over the smaller ones so that the real number of competitors is not clear. There is also no joint passenger/goods carrier.

Table 6-2 Stake of Private Haulers in Railway Cargo Transport

Country	2003	2004	2005
Poland	3,96%	8,01%	12,26%
Germany	7,38%	10,19%	15,04%
Czech Republic	11,17%	14,03%	12,50%

Source: Railway Market; DB AG, CD Report

However, in terms of the quality of the assets and services provided, the Polish standards are behind EU-15. Poland grants partial access to 20% of European licensed railway operators. The access is limited to the lines covered by TERFN (Trans-European Rail Freight Network) since EU membership. In 2007 these companies should receive an unlimited access to the entire infrastructure. [221]

There is a great potential to increase the rail freight traffic on the east-west transit corridor but currently Poland serves only 4% loads on this direction. The main barriers for the development are slow progress, very high track access charges and the lack of a long term market-driven strategies. The access fees for freight in Europe are the highest in Poland. Besides, there are also difficulties for private operators in negotiating with the national infrastructure manager coordinated by PKP.

The restructuring of the state enterprise, Polish State Railways is going on and since 1998 infrastructure and railway operations are split. [222] PKP is a holding company, organized in the similar way with German DB and consists of two freight operators namely PKP Cargo and PKP LHS. All PKP Group companies are 100% state-owned. Trade Trans Ltd. is a JS of PKP and Trade Trans (Austria). It also offers forwarding services.

PKP Cargo is the third largest among European railway freight operators (after Germany and Ukraine) and the biggest in CEE. It still holds the leading position in the domestic market: 85-90% in total ton-km moved and 50% in tons lifted. It owns a locomotive fleet (2004) of 1250 electric freight locomotives, 1600 diesel freight and shunting locomotives. The wagon fleet was around 82000 with 19% specialized cars. Coal still remains the major part of the loadings with 45% share.[223] From 2007 EC will be able to enforce antimonopoly low towards PKP.

[220] Analysis of Polish LSPs' market, Schenker Logistics Magazine, 2005
[221] Polish Railway market – Special edition of Railway Market, March 2006
[222] EC for Europe TEM and TER master plan, 2006
[223] Polish Railway market – Special edition of Railway Market, March 2006

Table 6-3 Goods Carried and Lifted by Polish Railway Operators[224]

	2004		2005		2005/2004	2005 – Market Share	
Operator	**1000 t**	**Mln tkm**	**1000 t**	**mln tkm**	**tkm**	**t**	**tkm**
PKP Cargo S.A.	156 200,0	45 350,0	142 722, 4	**41 968,3**	92,5%	52,5%	84,2%
CTL Rail	8 221,8	1 011,9	9 155,3	**1 845,6**	182,4%	3,4%	3,7%
PKP LHS	7 301,8	2 564,4	5 101,2	**1 726,3**	67,3%	1,9%	3,5%
PCC Rail Szczakowa	9 313,9	823,7	9 404,5	**1021,1**	124,0%	3,5%	2,0%
PTKiGK Zabrze	27 786,8	680,3	34 949,4	**861,0**	126,6%	12,9%	1,7%
PTKiGK Rybnik	52 717,0	664,2	51 500,9	**622,3**	93,7%	19,0%	1,2%
Lotos Kolej	715,7	190,7	1 461,5	**550,7**	288,8%	0,5%	1,1%
Pol-Miedz-Trans	5 829,3	297,1	6 220,8	**425,1**	143,1%	2,3%	0,9%
Rail Polska	636,5	108,2	971,7	**242,2**	223,9%	0,4%	0,5%
PKN Orlen S.A.	664,9	128,1	1 027,7	**220,5**	172,1%	0,4%	0,4%
KP "Kotlarnia"	3 846,6	110,7	3 772,8	**101,0**	91,2%	1,4%	0,2%
Transoda Sp.z.o.o.	902,1	46,8	1 044,1	**63,4**	135,4%	0,4%	0,1%
KP "Kuznica Warezynska"	2 110,4	58,9	1 423,1	**60,6**	102,8%	0,5%	0,1%
NZTK	1 355,5	39,5	2 205,6	**59,1**	149,7%	0,8%	0,1%
Others:	530,8	38,3	724,0	**77,1**	201,4%	0,3%	0,2%
Total	278 133,0	52 113,0	271 685,0	**49 844,0**		100%	100%
2005/2004	100%	100%	97,7%	**95,6%**			

Source: Polish Railway market – Special edition of Railway Market, March 2006

PKP LHS (Metallurgical Broad Gauge Railway Ltd.) operates 395 km of the wide gauge lines (1520 mm) linking Silesia industrial region (from Slowkow Logistics Center) with Ukrainian border. LHS has a system for changing the bogies and wheel sets from the standard (1435mm) to wide gauge and vice versa. It also has Polish-designed special track equipment for adjusting the variable gauge wheel sets called as SUW-2000 system. It operates 58 wide gauge, diesel-electric freight and shunting locomotives. Most of the freight is transported by the Russian or Ukrainian wagons. Also some new services appear as the transport of TIR trucks on flat cars.[225] The wide-gauge line can become a part of Euro-Asian transport corridor including Trans-Siberian Railway.

CTL Logistics Holding was established on the basis of forwarding companies located in Poland and Germany. It is the market leader among the private operators. It also provides rail forwarding services of bulk freight where chemicals account for half of all shipments. It has 145 locomotives and 4 400 wagons and manages 138 km of its own mainline track and 30 railway sidings (a total of 660 km). It has announced its acquisition plans for 2006. It aims to invest around 30,48 mil. USD to rail freight companies and railway sidings. It is also going to invest into road sector by launching international rail freight services and acquiring a number of transshipment and sea freight companies.

PTK Group is based on six former coal and mining railway lines in Silesia region. The biggest players of PTK Group are *PTKiGK Rynik* which has 84 locomotives and about 1300 wagons and *PTKiGK Zabrze* specialized in providing specific service to dependant companies with over 85 diesel and electric locomotives and 1300 wagons.

PCC Rail Szczakowa was also established on the basis of mining railways. It was purchased by the German PCC A.G. Group in 2004. It uses 30 electric and diesel mainline locomotives, 27

[224] Some of the operators are at a very early stage of their development and the growth rates do not precisely illustrate their market position.
[225] Annual report of PKP Group 2004

shunting locomotives and about 900 wagons. It also manages its own 150 km railway network. [226]

*Lotos Kolej***,** a part of the state-owned petrochemical concern Lotos Group (2000 fleet and 80 km of railway lines) and *Orlen Koltrans*, owned by another governmental petrochemical concern are smaller companies.

Rail Polska is owned by Rail Poland, a member of the Rail World group, headed by American private capital. In March 2003, it was bought by two companies namely ZEC TRANS in Wroclaw and PPUH Kolex in Wlosienica. It is mainly involved in coal transportation.

Combined transport market

Only 10% of the containers handled in the ports are transported by rail. The share of intermodal transport in Poland does not exceed 2%. The main barriers for intermodal transport development are high track access charges, bad rail infrastructure and lack of cooperation between the operators in Poland.

Currently, only a few private actors have sufficient assets to invest in special tanks or platforms of containers. The first private container train was launched at the end of 2005 by PCC Rail Szczakowa. The train, consisting of twenty five carriages and fifty 30-feet containers with polyethylene, runs on Plock Trzepowo - Grosslehna (Germany) line. The train was built by the cooperation of PCC Rail Szczakowa S.A., Mitteldeutsche Eisenbahn GmbH and PKN Orlen, Schmidt Spedition Grosslehna and Basell Orlen Polyolefins.[227]

The biggest container forwarder *Spedcont,* which leases 5 container terminals (Gdynia, Lodz, etc.) from PKP Cargo, carried 140 thousand TEU in 2006. This amount in 2005 was 55 thousand.

PCC Rail Containers (PCC Holding) operates regular container train by linking Baltic Conteiner Terminal and Slawkow Euroterminal with a direct wide gauge link to Ukraine.

PKP Cargo provides daily service of 16 intermodal trains. Ost-Wind train operates in the direction of Berlin-Malaszewicze-CIS. The other direct intermodal ferry train operates on Poznan Franowo-Swinoujscie-Malmo (33 hours). Poznan is the concentration point for wagons coming from Poland and Southern Europe. Spedcont is the PKP spin-off for inland transport. About 98% of intermodal transport was served by PKP Cargo SA in 2005 (200 thousand UTI). Container transport is growing but combined transport is decreasing. In 2001 it was 29.1 thousand swap-bodies and in 2004 only 6.1 thousand. The share of swap-body transportation is very small. PCC Rail Containers Sp. z o.o. [228] PKP also operates the intermodal transport by ferry trains between Malmo-Preroy (CZ)-Police and the terminals in Szczecin, Kostrzyn and Kunowice.

Polkombi is the Polish partner of UIRR. The main markets are Germany (21%), Italy (15%), and the Czech Republic with 62% of all carriages. One of the most important north-south corridors consists mainly of a shuttle train connection Poznan-Mlada-Boleslav (CSR) filled with cargo for the Skoda-Volkswagen production plant. In addition to this shuttle, the single wagon transports

[226] Polish Railway market – Special edition of Railway Market, March 2006
[227] Railway Market – CEE Review, Oct. 2006
[228] Logistyka: intermodalni w niszy, Europe Logistics Transport Online Magazine

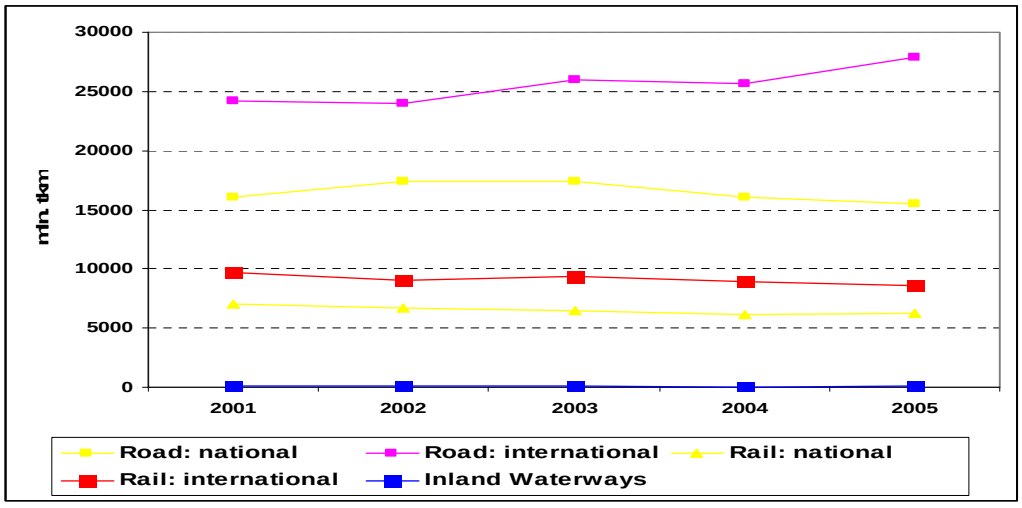
are also running. The company built terminal in Poznan-Kobylnica, which transships 24 000 TEU annually and also uses the terminal in Szczecin depending on the demand. Polcombi belongs to consortium of 4 intermodal transport operators (Intercontainer-Interfrigo, Kombiverkehr, Polkombi and Transfracht) carrying containers between Duisburg (D) and three terminals in Poland - Gadki (Poznan), Pruszkow (Warszawa) and Gliwice. Another joint project with Cemat is a full train from Gliwice to Northern Italy.

Polzug Intermodal (Poland/Germany, 1991) is the first privately owned block-train operator in Germany providing transport services from Hamburg and Bremerhaven to Poland, Baltic States, Russia and CIS. It is a joint venture of PKP, DB Cargo, and the "Hamburger Hafen- und Lagerhaus AG" (HHLA). Its main served terminals are Poznan, Gdansk, Gliwice, Katowice, Lodz, Warsaw (PL), Kiev (UA), and Vilnius (LT). It operates own terminals in Breslau, Gadki, Pruszkow and Slawkow. It has direct connection to the CIS's wide gauge systems via the terminal Slawkow at the south of Poland. Its founders are PKP, the Hamburg Port and Warehouse Corporation (HHLA), Egon Wenk Internationale Containerspeditionsgesellschaft. In 2003 there were 115 employees (30 in Germany), 4 owned and 3 jointly owned terminals, 72 000 TEU transport volume.[229] Polzug provides train connection through Silk Road Express via Ukraine to Georgia (the Port of Poti) and Central Asia. Polcont is involved in maritime business and represents ICF.

Czech Republic

The logistics market is quite developed and there is a strong presence of international operators.

Figure 6-9 Goods Carried in Czech Republic



Source: Authors, based on ECMT

Road haulage and forwarders

Two of the major players on the Czech road transportation market arethe followings:

ICOM transport a.s. (1992) was founded by the privatization of CSAD Jihlava (Czechoslovak Automobile Transportation). In 1996 the company merged with another post Czechoslovakian company called CSAD Pelhrimov. In 2000 ICOM acquired shares in four other transportation

[229] Polzug, Official Website

companies: CSAD Jindrichuv Hradec a.s., CSAD Benesov a.s., CSAD Slany a.s., and CSAD Usti nad Orlici a.s. Thus, the total amount of its vehicle fleet increased up to 1,500 vehicles.

Hopi s.r.o. was founded in 1992 as a regional trading company. Nowadays, the Hopi is operating within the entire country. Moreover, it provides transport service in the neighbouring countries such as Slovakia, Poland, etc. Transportation and logistic activities are provided by two divisions: MP 2001 and Hopi Logistic. The first one is specialized in the field of frozen and refrigerated goods such as meat, milk products, vegetables and fruits. The second, Hopi Logistics, deals with other materials and products except food, which are within the interest areas of the MP 2001 division. Currently, it owns over 100 high capacity trucks. Nevertheless, it is rather focused on the domestic transportation market. It has assets amounting to 35.5 million CZK.

Main forwarders are as follows:

Cechofracht a.s. was founded in January 1991 as a join stock company. Its shares are in the form of public negotiable book shares with registered capital of 102 mln. Czech's crowns.

Toptrans: It deals mainly with smaller packages and parcels. Approximately several hundred vans and lorries are hired by Toptrans every day.

Railway market

There are 5 competing rail operators in Czech Republic, the largest of which are Ceske Drahy, Viamond, OKD Transport and Unipetrol Transport. The activities of the private companies mainly include the operations of the rail sidings and the transport of dedicated trains. The majority of cargo is carried by Czech Railways (Ceske Drahy).

Checz Railways (Ceske Drahy, CD) is the largest national rail operator founded in 1993 which operates both the traffic and the infrastructure. Recently the new government of Czech Republic announced its intention to evaluate partial privatization of national operator.[230]

Table 6-4 Freight Volumes Carried by Ceske Drahy

Year	Total Volume	Intermodal transport					
	Tonnes (mln.)	Tonnes (mln.)	Tonnes (mln.)	TEU	Tonnes (mln.)	Intermodal transport in general	Unaccompanied Combined transport
2000	89,77	3,10	3,14	347 469	6,24	6,9%	3,5%
2001	88,01	2,46	3,35	369 376	5,81	6,6%	3,8%
2002	82,65	2,15	3,98	436 381	6,13	7,4%	4,8%
2003	85,35	2,78	4,48	472 037	7,26	8,5%	5,2%
2004	80,23	0,84	4,92	533 618	5,76	7,2%	6,1%
2005	75,64	0,00	5,43	603 391	5,43	7,2%	7,2%
1-6/2006	37,53	0,00	2,81	307 620	2,81	7,5%	7,5%

Source: Ceske drahy, a.s.

OKD Doprava, a.s. (Ostrava) is the largest private railway operator that provides rail and road connection to the industrial customers. An intermodal transport system employing ACTS

[230] CEE Railway Market, Jan. 2007

containers has been in operation since 1997. In 2005 it transported 204291 tons of international cargo in cooperation with LTE Logistik and Transport GmbH, LTE Slovakia and Floyd Kft.

Viamont, a.s. (Usti nad Labem, 1994) performs coal transportations from northern Bohemia to power plants.

Combined transport market

There is a price discount of 40% in Czech Republic for intermodal trains using railway infrastructure. The main companies are the followings:

Bohemiakombi (1992) was 100% owned by the child company of German Kombiverkehr Frankfurt/Main. In 1995 new ventures joined to it, which are Ceske Drahy, s.o., CESMAD Bohemia (the union of international automobile transporters), the union of forwarding and warehousing of Czech Republic and OKOMBI (Austrian combined transport company). The main goal of the company is to operate on the Czech and Sovakian transport markets as a neutral railway integrating road and rail.[231] It uses the terminal in Losovice, which was originally used for reloading the trucks to RoLa trains and provides services all over Europe. There is a direct shuttle train "Bohemia Express" going twice a week on direction Duisburg-Lovosice (from Duisburg to Rotterdam and then to France, Spain, Portugal from Lovosice (50 km from Prague) to all rail-road terminals in Czech and Slovakia). From June 2006 Bohemiakombi established a new line of the "Bohemia Express" three times per week connecting Losovice and Hamburg Billwerder, which can be used for the transports to Scandinavia. In August 2006 the new line to Belgium (Antwerpen, Zeebrugge) was also launched with the financial support of the Czech Ministry of Transport. The German operator Kombiverkehr has launched a shuttle to Sweden, block trains to Cervignano (I) and Granollers (E), which provide a connection to/from Lovosice (CZ) together with Bohemiakombi.[232] The company does not own terminals and has representative in UIRR. Bohemiakombi is the only operator involved in continental transport lines while the others provide overseas transport.

OKD Doprava is the only company in Czech Republic operating the ACTS system (Abroll-Container-Transport-System) for ten years and owns rolling containers of ACTS. They are used mainly in road and rail transport. The company operates the ACTS container trains between Police Chemia (PL) and Prerov (CZ). However, there is doubt about the system's usage increase in the future.

Currently, *CSKD-Intrans* operates directly only the terminals in Praha and Prerov and the terminals in Slovakia (Zilina, Bratislava and Kosice) through Slovak subsidiary *SKD-Intrans*. It operates container trains 4 times a week between Praha-Zizkov and Eurokombi Hamburg Waltershof terminals (15 hours). Intrans also provides the transport of containers on single wagons to the other ports like Rotterdam, Koper, Rijeka and Trieste.

METRANS is one of the most important container operators in the Czech Republic and Slovakia, which operates two container terminals in Czech Republic (Praha-Uhrineves, Zelechovice and Drevnici close to Zlin) as well as one in Slovakia (Dunajska Streda) through its subsidiary *Metrans Danubia.* It operates 18 shuttle trains weekly from terminal Praha-Uhrineves to Hamburg (10-12 hours), 8 to Bremerhaven and back from Hamburg to Praha 22 trains.

[231] Bohemiakombi Official Website

[232] Members of the UIRR, situation June 2006

METRANS operates 3 trains per week on the Slovakian direction through Praha-Uhrineves and 2 trains per week from Hamburg to its own terminal Dunajska Streda. There is also one daily train between the terminals at Zlin and Praha-Uhrineves.[233]

There are three river ports suitable for containers transportation: Praha-Holesovice, Melnik and Usti nad Labem. As the lead time by boat is very long, there is insignificant interest from the customer side. There is also a terminal for road-rail transhipment at the Bratislava river port Palenisko, operated by EUROKONT (Slovak subsidiary of P&O Nedlloyd Holdings Lmt).

The river terminal Melnik is used by *European Rail Shuttle (ERS)* as a container road-rail terminal with an annual transhipment capacity of 150 000 TEU. It operates shuttle trains from Melnik to Rotterdam (7 trains per week, 24-27 hours), Bremerhaven (4 trains, 13 hours), Hamburg (4 trains, 11 hours), Bratislava-Palenisko (3 trains, 8 hours) and Budapest (3 trains, 14 hours).[234] ERS also runs shuttle train between Koper and Sladkovicovo in Slovakia. From July 2006 it started from Melnik to the terminal in Koprovnice.

Intercontainer Austria GesmbH bought the Czech container operator CSKD-IN-TRANS and Slovakian SKD-INTRANS in 2003. It operates one shuttle train once a week via Austria between the Port of Rotterdam and Slovakian terminal at Sládkovičovo. The train is used, especially for the containers of the Hyundai Merchandise Marine Company (Samsung, Galanta). Lately, other containers can also be seen on this train. [235]

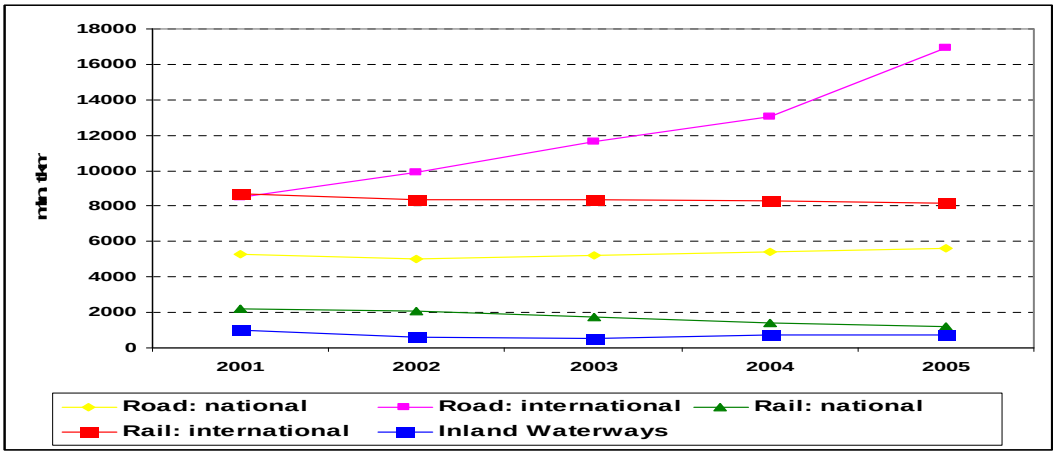
Inland waterways

As it is landlocked and there is a lack of navigable rivers, inland water transport is not very developed. The only significant shipping company, Ceskoslovenska plavba labska, a.s. (CSPL; Czechoslovak Elbe Shipping Company), bankrupted in 2001.

The shipping and ports will be taken over by the Brno-based Argo International Spedition (AIS), which is a part of AFG Holding. It is active in the international railway forwarding and has subsidiaries in Germany, Hungary, Slovakia, Ukraine and Belarus.

Slovakia

Figure 6-10 Goods Carried in Slovakia



Source: Authors, based on ECMT

[233] Rail Market – CEE Review, Oct. 2006
[234] Rail Market – CEE Review, Sept. 2006
[235] Rail Market – CEE Review, Sept. 2006

Railway and combined transport market

Cargo Slovak Rail Freight Company (Zeleznicna Spolocnost Cargo Slovakia, ZSCS) is the biggest railway freight operator in Slovakia, which owns terminals in Dobra (close to Cierna and Tisou on the Slovak-Ukrainian border). The container traffic increased gradually from 140 TEU in 2004 to 1724 TEU in 2005.

There are also private terminals, e.g. Nove Zamky, Sturovo and developing terminal at Sladkovicovo. The regular container trains between these terminals are mainly operated by Czech CD and Slovak ZSCS. There is a price discount of 40% for the intermodal trains using the railway infrastructure.

The combined transport providers operating in Slovakia are CS Eurotrans, SKP Intrans a.s. (Slovak Combined Transport, Zilina), Slovak Shipping and Ports JSC, ZSSK Cargo (Slovak Railways), Metrans Danubia JSC, Lozincz Ltd.[236]

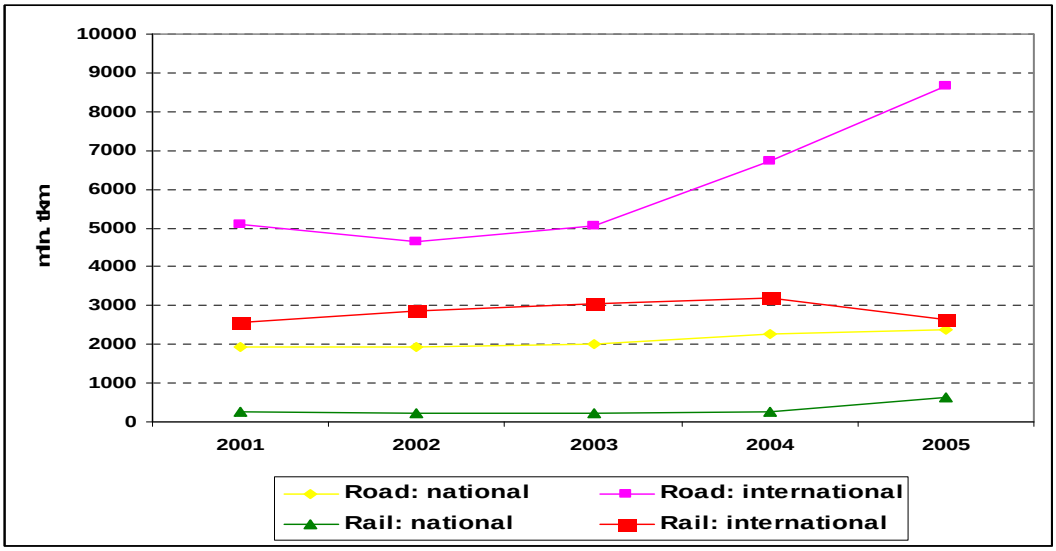
There is also terminal operated by Trans-Sped-Consult s.r.o. at Losovice. It is operated by CD since June 2006. It is also used for intermodal transport by Bohemiakombi. Additionally, a transport and forwarding company TALOSA s.r.o. Koprivnice operates two small terminals in the Moravian towns Koprivnice and Uhersky Brod.[237] Moreover, ZSR intends to build new terminals at Bratislava, Zilina, Zvolen and Kosice with EU fund supports.

Inland waterway market

Among the Inland Waterways operators could be mentiond *Slovenska plavba Dunajska (Slovak Danube Shipping)* and *Statna plavebna sprava*.

Slovenia

Figure 6-11 Goods Carried in Slovenia



Source: Authors, based on ECMT

[236] More details about intermodal shuttle trains in Slovakia could be found in part about Czech Republic
[237] Railway Market – CEE Review, Oct. 2006

Railway and combined transport market

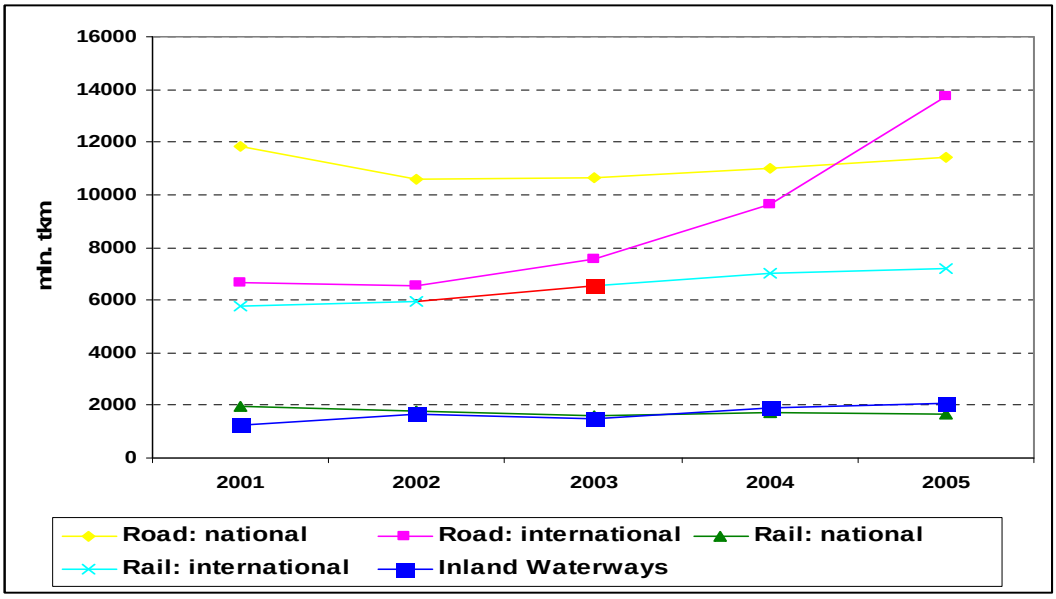
Slovenian Railways/Slovenske zeleznice (SZ) (1991) is the main state railway company in Slovenia, which carriers 90% of the services in international transport.

There are three main companies in the field of combined transport in Slovenia[238]: *Adria-Kombi Ltd*. (1992) is a national combined transport company, founded by Slovenske Zeleznice (26 %), Intertrans d.d. (26 %), Okombi GmbH&Co.KG (25 %), Chamber of Commerce and Industry of Slovenia (11 %), GIZ Intertransport (11 %). The main terminals are Ljubljana, Port of Koper, Maribor Tezno, Celje and Novo Mesto.[239] According to UIRR (2005) the proportion of Adria-Kombi for international traffic in combined transport techniques consists of 14047 swap bodies and containers (34%) and 27084 rolling stock (66%). *Alpe Adria* has 8747 swap bodies and containers (39%) and 13423 rolling stock (61%) used for international traffic.[240]

Moreover, foreign operators are expected on Slovenian rail market in 2007, which increases competition for Slovenian Railways. Several foreign operators already applied for safety certificates for operation in Slovenian territory. From the other hand, Slovenian Railways has plans to acquire 20 locomotives to expend to international markets.[241]

Hungary

Figure 6-12 Goods Carried in Hungary



Source: Authors, based on ECMT

Road haulage and forwarders

According to KSH, the Hungarian statistical office, in 2005 road freight transport activity continued to strengthen. A wide range of the domestic and international service providers are moving to Hungary, including Kuehne+Nagel, one of the first European companies to set up

[238] Intermodal Transport in the Republic of Slovenia Present state, opportunities and challenges, 2004
[239] Adriakombi, Official Website
[240] UIRR, 2006
[241] CEE Railway Market, Jan. 2007

own Hungarian subsidiary in 1992. Foreign-owned road transport companies, mostly from CEE, are increasing their market shares on the Hungarian market. (60% market share in export).

Hungarocamion is an international road freight transport company with 17 offices in Europe and Meadle East, fleet of 1100 units for general and specialized cargo.

The centre of Volan Enterprises includes 25 enterprises for inland and international road freight and passenger transports, forwarding. It has a fleet of 17,000 trucks with special tankers for fuel, refrigerators and trailers.

Railway and combined transport market

Due to the historical reasons the railway market has duopolistic character. There are two major state-owned railway companies namely MAV and GySEV. Three out of eight railway operators with the operator licenses belonging MAV Group registered in 2006. Therefore, in spite of the positive developments, the rail market is far from fair competition and dominated by MV Cargo, which had long-term contracts with the biggest customers before the liberalization.

Hungarian State Railways Ltd. (Magyar Allamvasutak, MAV) is the dominant in the market. The protectionist behavior of MAV was the main obstacle in the development of the rail freight transport in Hungary. The Competition Council of Hungary fined it 2 mln. EUR in 2006 for the abuse of its market position and hindering other railway operators from entering the Hungarian market.[242]

Hungarokombi is a member of MAV Cargo Group that is involved in combined transport. It is owned by Hungarian State Railways (14.8%), Gyor-Sopron-Ebenfurt Railways (19.2%), Association of Hungarian Transporters and its members (18%), Association of Hungarian Road Transporters (22%) and OKOMBI GmbH (26%). The interests of Hungarokombican be listed as: BILK Kombiterminal Co. (16.6%), Kombisztar Ltd. (12%), Eurokapu Ltd. (5%), Kombiwest Ltd. (5%), Bulkombi Ltd. (4%) and Logisztar Ltd. (0.13%).[243] According to UIRR, from 2006 Hungarokombi is concentrating exclusively on the rolling motorway while unaccompanied CT is marketed by the new company *Hungaria Intermodal.*

Central-European railway (CER) Kft. MAV has 25% share in the market. There were cases when Floyd Zrt and MMV (both private operators) lost contracts due to the niggling of MAV, and later on CER won these contracts. [244]

GySEV (Gyor-Sopron-Ebenfurth Railway - Hungarian-Austrian regional railway company, 1993) is a private operator which has established its role as private rail service provider in SEE with the mobility trough Sopron gateway.[245] Recently, besides the Gyor-Sopron-Ebenfurth line, GySEV operates over the electrified and renewed Sopron-Szombathely line.

The Hungarian government plans to spend 2 mln. EUR subsidy to transfer major parts of loads from trucks onto wagons. The trucks using the roads outside the motorways will be required to pay the fee.[246]

[242] Railway Market Review – Central Eastern Europe, Oct. 2006
[243] Hungarokombi, Official Website
[244] Railway Market Review – Central Eastern Europe, Oct. 2006
[245] GySEV Official Website
[246] CEE Railway Market, Jan. 2007

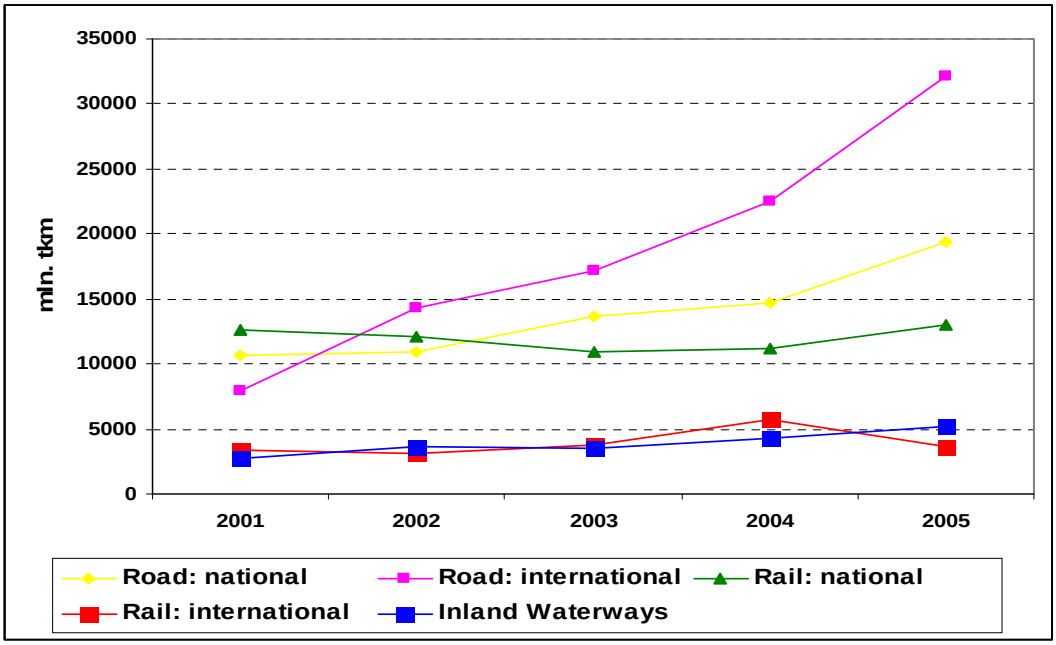
Inland waterways

Among the inland waterways actors in Hungary, Hungarian Shipping Co and MAFRACHT International Shipping could be mentioned. *Suzuki*, *Mitsubishi* and *Ford* use the Danube between Kelheim and Budapest. [247]

6.1.1.3. Balkan region (Romania, Bulgaria, Turkey)

Romania

Figure 6-13 Goods Carried in Romania



Source: Authors, based on ECMT

Road haulage and forwarders

As Romania faces a period of economic growth, the road freight traffic is expected to grow. According to the statistics, the Romanian international road freight transport fleet is one of the most modern in Europe. However, the natural disasters (floods) in Romania had major effects on its national economy by resulting in higher costs for the transport companies.[248] According to ARTRI[249] the top 5 leading transport providers in Romania are as follows:

[247] Inland Navigation Europe Official Website
[248] International Road Freight Transport Sector, Romanian Association for International Road Transports
[249] Interview with Sergiu Botez (ARTRI)

Table 6-5 Top 5 Road Transport Companies in Romania

Name of the Company	Turnover, mill. EUR	Number of employees	Number of trucks	Main services and other comments
Alin Trans IMPEX SRL (Brad)	40	1 000	398	▪ Private, transport of general cargo
Frigoexpres (Oradea)	16,9	412	199	▪ first private carrier company in Romania, specialized on perishable freight ▪ custom services ▪ refrigerating and dry customs warehouse 4 km from Bors Customs
Trans Car SRL SIBIU	17 (2004)	306	176	▪ part of ATLASSIB Holding SIBIU ▪ clothes transport on hangers transport of refrigerated freight
Dumagas Trade SRL (Podari)	16 (2004)	236	176	Dumagas Transport SRL as a subsidiary
Dunca Expeditii, (Timisoara) (1994)	15 (2004)	361	164	▪ Joint stock company ▪ Oversized transports ▪ Transport products of ballast-pit ▪ Transport containers

Source: Authors, based on ARTRI, "Major Companies in Romania 2006" and companies' official websites

Railway market and combined transport market

The rail freight remains as a strong market in Romania. The market for rail service has been open since 1998 with the first private operator in 2000. Currently, there are about 30 licensed private operators operating on Romanian Railways (CFR) infrastructure. However, their scale remains quite small. The charges for the foreign operators are two times of those for the domestic operators but this is expected to change from 2007.[250] The private operators are competing with each other and have 16% of freight market share.

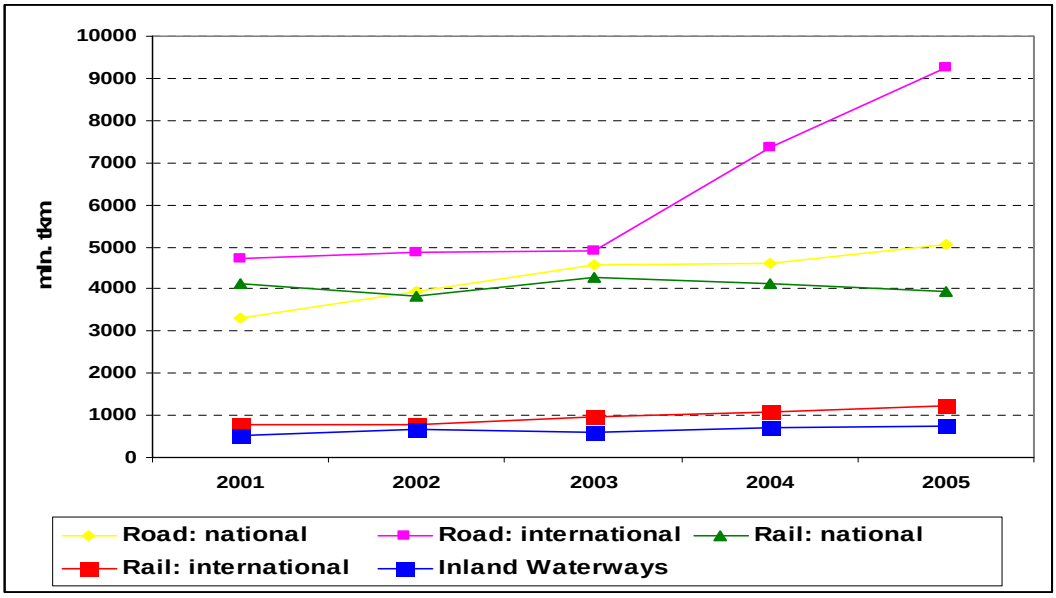
The main railway operator is *Romanian railways (CFR Marfa,* 1998*)* is a state rail freight company. It is also involved in container transportation between the main cities. Its tariffs are settled without the state's interference. There are also the trade company and the transport company, "CFR Transauto" for road operations, belonging to CFR Marfa.[251]

Another combined transport actor is *Rocombi,* which is considering the possibilities for the service expansion towards Hungary, Czech Republic and Western Europe. According to UIRR statistics (2005) it has 38 swap bodies and containers involved in international traffic and 11496 units in national traffic.

[250] Government of Romania, MTCT- SOPT, 2007-2013
[251] Erail Monograph: Romania, NEA Transport Research and Training, 2005

Bulgaria

Figure 6-14 Goods Carried in Bulgaria



Source: Authors, based on ECMT

Road haulage and forwarders

There are many logistics providers in Bulgaria. Alexander Logistics Ltd. and Unimasters Logistics Group Ltd. could be mentioned among the national ones.

Rail market

Currently, there are two licensed operators in Bulgaria: State owned company Bulgarian State Railways (BDZ EAD) as a national operator and Bulmarket (DM OOD) as a regional freight operator. BDZ EAD was established in 2002, following the efforts, made by Bulgaria, aimed at its accession into the EU.[252] Bulmarket got a permanent license in 2004 for the performance of freight transportation on the rail routes Ruse-North, Ruse-Marshalling Yard-Kaspichan. This license will be reviewed after 5 years. The other companies providing freight transportation are as Cargo-Partner Ltd., Despred J.S. Co, Eurosped J.S. Co, M&M, Proxima BG Ltd., Transexpress Ltd.

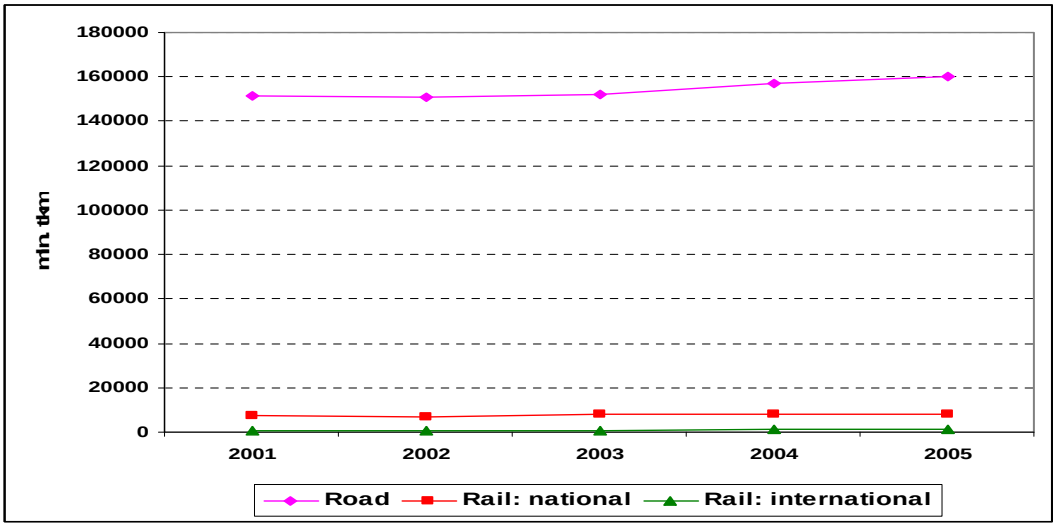
Inland waterways

The main actor is Bulgarian River Shipping Company.[253]

[252] Erail Monograph: Bulgaria, NEA Transport Research and Training, 2005
[253] Bulgarian River Shipping Official Website

Turkey

Figure 6-15 Goods Carried in Turkey



Source: Authors, based on ECMT

Considering the size and the population of the country, Turkish market is a huge market. In USA 10.5% of GDP goes to the logistics spendings (which corresponds to 1 trillion USD) and in developing countries it is 15-17% (Brazil – 200 bln. USD on logistics in the period 2000-2001). In the same perspective it could be said that Turkey has a value of 20 bln. USD as a logistics market. Transportation of agricultural products is included in this amount but it still has a potential of 7-8 bln. USD in terms of logistics to be supplied from abroad.[254] Logistics companies would like to go to Turkey as it is a vast market with the geographical advantages.

Road haulage and forwarders

The top 5 leading international transport providers of Turkey[255] are Omsan, Barsan, Turker Group, Gokbora and Ulusoy Group. The main firms involved in the automotive industry are Omsan, Reysas, Ilce, Agacligrup and Mertur.

Omsan (1978) is a subsidiary of Oyak Group which is one of the largest holdings in Turkey. It has a fleet of 600 unis and offices in France, Germany, Bulgaria, Russia, Romania, Azerbaijan and Italy. In 2005 its revenue was about 260 mln. USD. It provides vehicle logistics for the automotive industry and is a Turkish partner for Transfeca.[256]

Turker Group (1987) provides services for *the automotive industry*. It has a fleet of 500 units and representatives in Italy and Bulgaria.[257]

One of the important problems for Turkish carriers is finding partners in Europe to load the trucks back. Due to the highly competitive market and difficult regulations, it is almost impossible to create one stop transportation company in Turkey. The new road law determined in 2004 requires huge investments and separate licenses for each supply chain activity. Moreover, Turkish trucks have limitations in entering some countries and this situation causes delays.

[254] Turkey tipped to become a base for logistics, Turkishtime, Feb.-March, 2004
[255] Interview with Hakim Yildizdogan, RODER
[256] Omsan Official Website
[257] Turker Group Official Website

Railway and combined transport market

Turkish State Railways (Turkiye Cumhuriyeti Devlet Demiryollari, TCDD) is the largest money loser among the public sector enterprises. TCDD operates passenger and freight trains, the largest seven ports, locomotive, wagon and coach manufacturers and repair workshops. The ports actually cross subsidize the railways. The reform of TCDD is one of the main targets for the change.[258] The share of railway transport is about 4.5%[259].

The large multinational companies started to push the government for the dedicated block trains, especially in western part of Turkey where the automotive industry is based.

The logistics provider *Railog* provides the regular rail connections between Duisburg in Germany and Istanbul in Turkey once a week (The Turkey Container Shuttle, TCS). Each wagon carries two cube containers of 45-feet long the width of which conforms to standard European pallets. Shenker's partner in Turkey *Arkas* (Istanbul) is responsible for the dispatch operations in Turkey.

According to RODER 91815 semi-trailers were transferred (RoRo activities) in 2004. New rolling motorway line has been established between Trieste and Salzburg (two trains per day) under the cooperation of Italian and Austrian railways.

The major change in Turkey's transportation system in favor of high volume logistics operations has been the recovery of the rail ferries that allow trains to cross the Bosporus. The studies for a possible tunnel under the Bosporus are being considered.[260]
Transfeca is an operating block train between Cologne and Golcuk, Kocaeli. *Ford Motor Company* transports its components from the Northern Europe to the Ford Otosan plant in Kocaeli through intermodal corridor between Cologne and Kocaeli. The companies established a rail corridor (2 675 km) from Germany to Turkey, operated by JS "Omfesa Logistics". It allows Transfeca to transport Ford's components from UK, Belgium, Holland, Germany and France by road to the rail terminal at Cologne-Niehl. Then from Cologne the block train is formed and sent trough Austria, Hungary, Romania, Bulgaria to Istanbul. From Istanbul the train crosses Bosporus by ferry to the Asian side of Turkey. Also door-to-door transportation to Ford Plant in Kocaeli is provided by Omsan.

The commercial intermodal services are run between Western Europe and Turkey, four weekly by Intercontainer-Interfrigo and weekly by European Rail Shuttle. The latter service offers 5 days of transport time from Istanbul to Rotterdam.[261]

6.1.1.4. Southern Eastern Europe (Serbia, FYR Macedonia, Bosnia and Herzegovina, Croatia, Albania)

All the transport modes in the region were affected by the economic crisis and conflicts. This situation also resulted in the decrease of international trade in the region.

[258] ASSESS, Oct 2005
[259] IRU Official Website
[260] Inbound expansion for the Eastern Europe, Automotive Logistics, March-Apr. 2005
[261] Woxenius, J., 2006, Temporal Elements in the Spatial Extension of Production Networks

Road transport market

Road transport strongly dominates the market because of the difficulties faced by railway companies in the region. However, most of the traffic is presented by large Western European providers. A large share of the road transport in the region is undertaken by Turkish, Romanian and Bulgarian carriers. In spite of the theoretically low cost of transportation in SEE, the total cost accounts for about 60-80% of EU level. The imbalance in the trade with EU, which causes empty returns, delays and customs fees etc., is the reason of this situation.

Railway and combined transport market

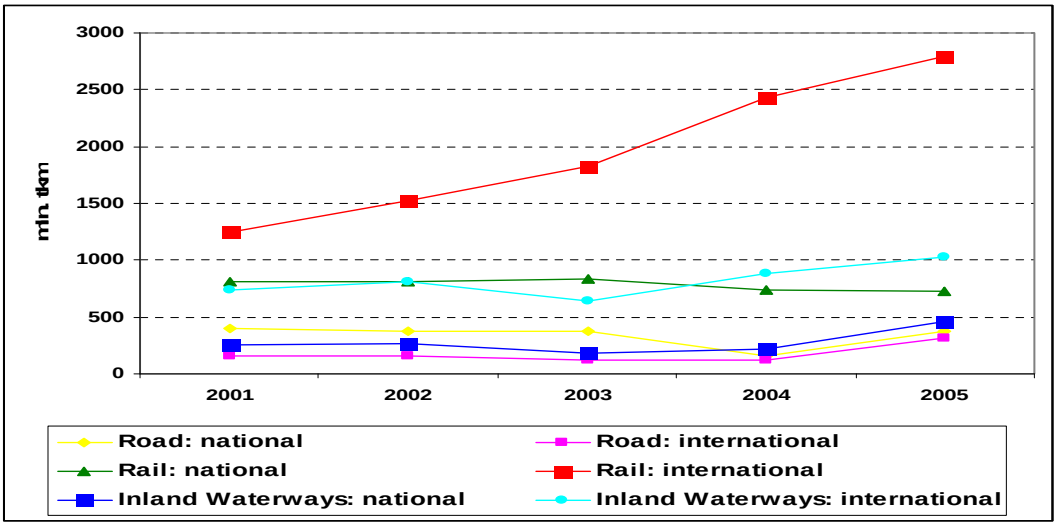
The railway traffic in SEE suffers from fragmentation, very short haulage distance, poor infrastructure and service quality. The region includes two moderately sized railways in Serbia and Croatia whereas the others are small. All the railways, except FYR Macedonia, are more focused on passenger service. Bosnia and Herzegovina and Albania railway systems are in very poor condition having small international traffic and being unable to offer services within their respective countries on time. The average haulage distance in Albania is less than 100 km, which makes impossible for the rails to be competitive.

According to REBIS, the study on the Balkans, the countries do not apply the techniques of combined transport. The container traffic is low and not organized. The distances are shorter than required, which do not allow the development of the mode on regular basis. The container traffic is mainly related to the import, which creates unbalanced flows and the problems of empty containers. There is also no clear policy in the region to promote intermodal transport. The transit time by rail to an Adriatic port is not competitive.

Serbia

As it could be seen from the picture bellow, the rail is the most appropriate transport mode. However, barge can be considered as a future solution, if the investments will be made into the infrastructure for Rhine-Danube connection.

Figure 6-16 Goods Carried in Serbia



Source: Authors, based on ECMT

Railway and combined transport market

The main operator in the region is *Serbian Railways (Zeleznice Srbije, ZS),* which is the state owned company created in 2004 from ZTP (former Serbian Railways). The new railway law indicates that public rail infrastructure is owned by the state and open to all the licensed rail transporters. The container traffic is operated by the *RTE Company*, which has 22% of total the income of the rail freight.[262]

Inland waterway transport market

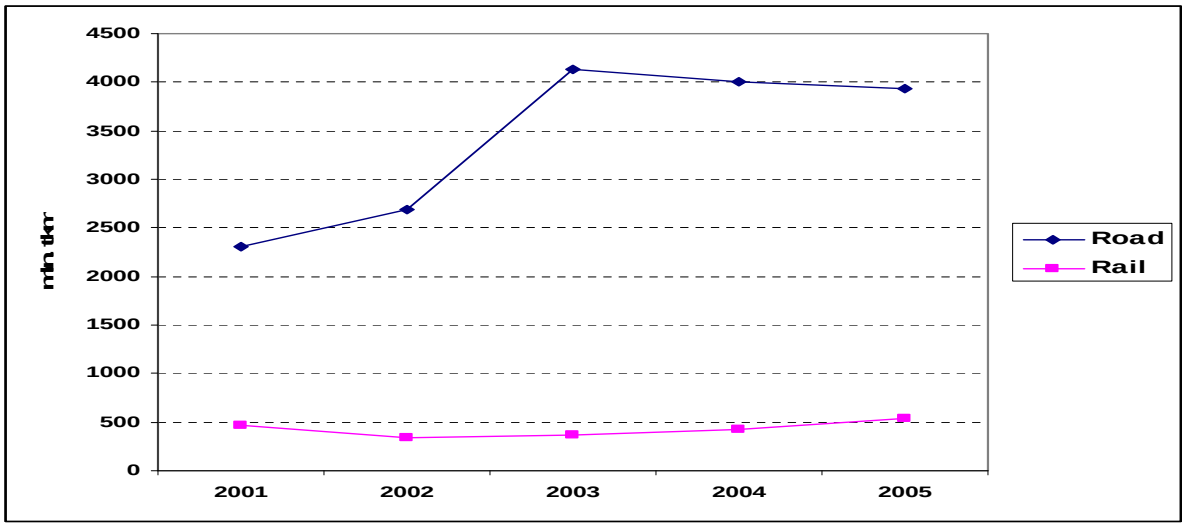
Inland waterways transport via the Danube is about 30% mainly bulk products on the section Novi Sad-Belgrade-Smederovo to Romania and Bulgaria.

Combined transport market

The only container company is ZIT, which is a subsidiary of the RTE Belgrade. It is established under the Serbian Railways and can not organize container transport in Serbia efficiently.

FYR Macedonia

Figure 6-17 Goods Carried in FYR Macedonia



Source: Authors, based on ECMT

Road transport market

The private sector is dominating the transport industry. *Fersped* is the biggest company in the freight industry in FYR Macedonia, which cooperates with the companies of other modes. There is a daily container unit train on the route to the Thessalonica Port towards the Fersped's container terminal in Skopje.[263]

[262] REBIS

[263] Associacion of FYR Macedonian Enterprises for International Road Transport – AMERIT, Official Website

Railway and combined transport market

The FYR Macedonian Railways (Makedonski Zeleznici, MZ, 1991*)* is a state owned company. Rail transportation handles 9% of the freight market. The traffic is dominated by iron plants customers in Skopje and Jegunovce. These customers' traffic moves on the main north-south corridor toward Thessalonica or Tabanovce. Almost all of the traffic is international (mainly with Serbia, Greece and Bulgaria) with 42% transit (2004). The freight volume was forecasted to increase by 41% during the period of 2004-2009 mainly due to the steel traffic. Therefore, FYR Macedonian Railways claims in its business plan forecast 2008 that the traffic will dominated by the containers and the metal products.

Combined transport requires better management with the involvement of *ICF*, which operates a weekly train between Skopje and its hub in Sopron.

Bosnia and Herzegovina

Railway transport market

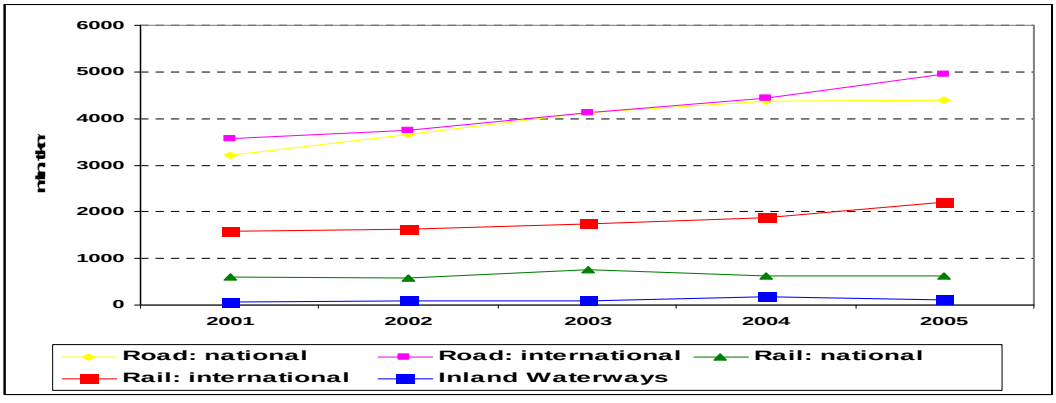
The railways in Bosnia and Herzegovina have a complex structure as a result of the difficulties through the history. The state company was divided into three regional state owned companies according to the ethnic divisions. In 2001 the new railway law merged the railways in the Croat and Bosnian parts but the railway in the Serbian part remains separate.

The state owned railways *(Zeljeznice Federacije Bosne i Hercegovine, ZFBiH)* is an important actor in Bosnia and Herzegovina. The traffic is characterized by heavy industrial product volumes for the short distances (average 46 km).

The Railways of the Republic of Srpska (*Zeljeznice Republike Srpske (ZRS)* has more internationally oriented traffic. The transit traffic is insignificant, mainly for cargo between Hungary and Ploce in Croatia. The company is free in pricing policies.

Croatia

Figure 6-18 Goods Carried in Croatia



Source: Authors, based on ECMT

Road transport market

There are about 5000 trucking companies in Croatia, of which around 3,800 have only one truck. The former major state-owned truck and bus company, Zagrebacki Transporti, has been broken

up into 20 enterprises which are now privatized (1999).[264] Among the biggest trucking companies it is possible to mention Renato P.P. (1989) that owns 42 trucks and warehouse facilities in Karlovac and Bencek. It is mainly focused on the transport of the frozen goods (about 10 trucks).

Railway and combined transport market

Croatian Railways (Hrvatske Zeljeznice, HZ, 1991) is a state-owned company, operating the 2,710 km of standard gauge (1435mm) lines and caring about 11% of the total freight transported to Croatia. The port town of Ploce is the only accessible through BiH. The railway lines of Istria are connected via Slovenian Railways.[265]

Croatia is the only country in SEE region, which has already initiated efficient combined transport development. There is one container company called AGIT in Croatia. Crokombi is the main combined transport operator.

Crokombi (1998) was established as a national combined transport operator and is a member of IURR. It has started block trains to Hungary and is setting up a rolling motorway between Zagreb (HR) and Padova (I).[266] According to the UIRR statistics, the proportion of CT techniques of Crokombi is 1796 swap bodies and containers for the international traffic.

Container Company *AGIT* is a subsidiary of the railway company and was established by the Croatian authorities to develop the combined transport activities in the country.

In 2004 in Croatia there were 4 companies registered for transshipment of cargo in river ports.

Albania

Railway and combined transport market

Albanian Raiways (Hekurudhat Shqiptare – HSH) is the main rail operator in Albania, which operates 3 trains per day on the route Tirana-the Port of Durres and most of the industrial cities. The largest traffic flow is the import of clinker from the Port of Durres to Fushe Kruje, which was expected to increase in 2006 with the upgrading of the cement factory in Fushe Kruje.[267] The tariff's level based on the distance, the type of the cargo and the load in the wagons are fixed by the government. The freight railway transport accounts for 1% of all the freight transport in Albania.

As to combined transport market, except the private operator in Durres port, there is minor interest from the government and railway companies. The lack of the assets for intermodal transport development is a big concern.

[264] Republic of Croatia policy directions for transport Infrastructure Sector Europe and Central Asia Region
[265] Railway Market – CEE Review, Sept. 2006
[266] UIRR, 2006, Members of the UIRR
[267] WB, 2005, Railway Reform in the Western Balkans

6.1.2. International Logistics Providers' Expansion to CEE

LSPs have started to move to the east together with their customers. Many pan-European logistics providers have welcomed the introduction of the euro as it will make easier to do business in Europe. It is also likely to see a faster convergence of VAT rates as customers cross the borders to take advantage of the lower prices.[268] Frost Sullivan forecasts an annual growth rate of 5% in CEE logistics sector. The automotive logistics will account for 21% of that market.[269]

Some of the foreign companies use the strategy of creating partnerships with the local firms or establishing wholly owned foreign enterprises. However, there is more to setting up a new operation in a new country than driving a fleet of own trucks across the border. The roads are different, the billing issues vary and the employee relationships bring their own complexities in each environment. Overcoming these cultural problems is not exactly as easy as falling off a log-book.[270] The language is a big issue (for example in Hungary) as not everyone speaks English. The advantage of JVs could be seen in the local market knowledge, contacts with the authorities, the legal knowledge. "Piggybacking" involves developing the services geographically on the back of the needs of a key client. This has become a frequently used mode of the expansion. When locating to an undeveloped, remote market, sophisticated logistics practices may not exist.[271]

The companies consider acquisitions of smaller local logistics companies as a quick way to grow in the CEE region. If no acquisitions in the NMs have gone through yet, one of the reasons is that the local logistics players have often proved to have less substance than big players demand.[272] The major problem for the companies involved in road haulage is that the market is highly fragmented with few barriers to entry or exit. The economies of the scale are limited, which allows small, low overhead owner drivers to compete effectively with large fleeted companies. On an international basis, low cost haulers from CEE, which enjoy lower fuel and labor cost, are more competitive.[273] Due to the low volumes the economies of scale is still missing and the companies are looking for the solutions to create synergies.

The European railway sector has also recently become a factor in the logistics acquisition market and the trend will extend in the future. This is partly a result of the liberalization of the markets which should see the increase of the competition on domestic and international levels.

6.1.2.1. ABX Logistics

Presence in CEE: Turkey
ABX Logistics entered CEE market through the acquisition with Gok-Bora (freight forwarding) in 2000 and created joint venture. The company has also extended the activities to Russian and Ukrainian markets.

6.1.2.2. APL Logistics

Presence in CEE: Turkey

[268] Automotive logistics, Financial Times.
[269] Logistics providers follow automakers eastward, Automotive News Europe, Oct 3, 2005
[270] It's a cultural thing, Supply Chain Europe, Sep 2004
[271] Global Logistics Strategies 2006
[272] It's a cultural thing, Supply Chain Europe, Sep 2004
[273] Global Logistics Strategies 2006

A new organisation was established in 2005 in Turkey to handle their activities in the market by taking over from APL and APL Logistics. According to company, Turkey is an increasingly important market for both its liner and logistics operations. APL offers transportation services by linking the Turkish ports of Istanbul, Mersin, and Izmir with its global network. [274] The company also is represented in Russia.

6.1.2.3. DHL

Through its merger with Exel in 2005, the company became one of the biggest logistics providers in CEE.[275]

- 1998 – Servico (express, Poland): acquired initial 51% of the stakes;
- 1999 – Danubiasped (road haulage, Hungary, 50 empl.): increase the holding from 74,9% to 100%;
- 2001 – Cargoplan (freight forwarding, Austria, Eastern Europe, 500 empl., 80 mil. EUR turnover);
- 2001 - Scandinavian Garmet Service (SGS) (Logistics, Nordic/Baltics, 31 mln. EUR, 300 empl.)
- 2002 – Servisco (express, Poland): remaining 40% of shares;
- 2003 - Berben Ekspress Nakliyat (freight forwarder, Turkey, 33 mln. EUR): top 3 air freight;
- 2005 – PPL (express, Czech Republic): number one player in the domestic market. [276]

6.1.2.4. Cat Logistics

Presence in CEE: Poland

- 1994 - Cat Polska Sp. (Poland, Oltarzew, 44 mil. USD, 100 empl): 100% owned.

Cat Logistics has a JV with GM Caterpillar Logistics GmbH. One of the ways in which CLS has been able to expand its services is by piggy-backing on the expansion of its parent company, which has allowed expanding into Russia (Moscow). The dealers from CIS still receive the parts from Belgium.[277]

6.1.2.5. Fiege

Presence in CEE: Czech Republic

According to the reports, the company is looking to increase its presence in CEE. The Goth Logistik was used as a vehicle to expand the company's presence in Eastern Europe.[278]

- 1999 - Fiege Sp.z.o.o. (15 mil. USD, 200 empl., Poland): 100% owned;
- 2002 – Media service (media logistics, Czech Republic).

6.1.2.6. Geodis

Presence in CEE: Czech Republic, Hungary, Poland, Romania, Turkey, Slovakia, Croatia.

[274] Global Logistics Strategies 2006
[275] Trepins, D., Logistics Finds its Center in Eastern Europe, Logistics Management, Feb. 2006
[276] Global Logistics Strategies 2006
[277] Global Logistics Strategies 2006
[278] Global Logistics Strategies 2006

- 1990 – Geodis Brno Ltd. (Czech Republic). The company has daughter companies in Slovakia (Geodis Slovakia in Banska Bystrica) and in Praha (Geodis Praha, Czech Republic).

The main strategy of the company to expand to CEE is the organic growth. Geodis also works in Russia, Ukraine and Belarus.

6.1.2.7. Kuehne+Nagel

Presence in CEE: Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Turkey

- 1990 - Kuehne+Nagel Sp.z.o.o. (Poland, 58 mln. USD, 400 empl.): acts as independent organization;
- 1992 – own subsidiary in Hungary;
- 1992 – headquarter in Latvia (70 empl.), which operates across all the Baltic States;
- 1992 – Kuhne+Nagel S.R.O. (Czech Republic, 29 mln. USD, 75 empl.): 100% owned;
- 2004 – Turkey: investments in 20,000 sq. m. of warehousing and handling space in Istanbul (6,5 mln. EUR).[279]

The company also operates in Russia and Belarus.

6.1.2.8. NYK Logistics

Presence in CEE: Czech Republic, Hungary, Poland, Romania

The company chose the organic growth through the acquisition of New Wave Logistics (Czech Republic) in 2002. As it provides the services for TPCA and other Toyota businesses, it has branch in Kolin (2004, 509 empl.). In 2004 it established a subsidiary in Russia.

6.1.2.9. TNT

Presence in CEE: Czech Republic, Poland, Hungary, Turkey

The company has already built up a significant presence in the region in the preparation for further enlargement. The hub in Poland is ideal to take advantage of the volumes. The research has suggested that Latvia, Bulgaria and Romania will see the highest levels of growth over the next 15 years.

- 1999 – acquisition of Romcargo (express, Romania);
- 2000 – strategic alliance with Koc Group (logistics, Turkey) to develop automotive goods market, working for Meadle East and Balkans;
- 2001 – Cargotech (warehousing distribution, Turkey), JV with Turkish Company Koc Group (650 empl.);
- 2002 - Dimar Group (data management): Czech Republic and Slovakia 60% of a full service direct marketing provider;
- 2003 - Dimar Group (mail): Czech Republic and Slovakia remaining 40% (subsidiary of TPG Post);
- 2004 - Koc Group (Logistics, Turkey): acquires 50%;
- 2005 - Door-to-Door (express, Slovenia);
- 2006 - ISH Nochi Express (express, Eastern Europe).

[279] Global Logistics Strategies 2006

6.1.2.10. Schenker

With the efficient national subsidiaries of its own in almost all of the accession countries and approximately 100 offices in Eastern Europe, Schenker is the market leader for logistics in this region. It has a strong focus on automotive industry. In Czech Republic it works for Ford, TRW, Lear and Autopal. Both Schenker and sister company BAX Global, which opens its Czech distribution center in Modletice, are expending their networks in the CEE region.[280] Schenker is already a market leader in many of CEE countries, for instance Estonia, through both acquisitive and organic expansion. In the region over the past two years it has expanded organically in Slovakia, Czech Republic, Poland, Hungary, and Latvia mainly by opening up terminals, which are then linked to its European road freight network. The main acquisitions were in Hungary (Masped-Schenker Krf.) and Poland (Spedpol) as well as with Turkish Arkas Group. In addition, Schenker is also present in Russia, Ukraine and Belarus.[281] The activities of the Company towards CEE market are summarized in the Appendix 5.

The other important part of the extension is railway service – Railion, which is working with Eastern European railroad partners to establish cooperative ventures. A key product in cross-border wagonload traffic, for instance, is the "Russia Express", which is run jointly by Railion Deutschland AG and the Eastern European railroad corporations in Poland (PKP), Belarus (BC) and Russia (RZD). This direct service links the German business centers with the most important economic regions in Russia. However, Rotterdam and Woippy in France are also connected to the network. Poland, for instance, is the country with the highest transportation volumes for Stinnes Freight Logistics. The Czech Republic and Hungary already play a very important role in cross-border rail transportation. The most important recipients of these shipments are IKEA and the German mail-order house Quelle. From Munich to Ljubljana (Ljubljana Line) it takes ten instead of the approx. 20 hours required in the past. This makes it possible to reach the ports of Koper and Rijeka, as well as Pula, Split, Zagreb, Sarajevo and Osijek faster and more reliably. Between Germany and the Eastern European intermodal train "Ostwind" (east wind) links the Berlin hub with Poland and Russia. Stinnes Intermodal provides block trains and rolling country road trains between Germany and the Czech Republic, Slovakia, Hungary (Budapest, Sopron). Railion signed cooperation agreement with PKP Cargo (main Polish railway operator) in July 2006. Moreover, DB plans further expansion towards Asia and CEE through Schenker.

6.1.2.11. Schneider Logistics

Presence in CEE: Czech Republic

2005 – Shared service centre for European logistics in Olomous (280 km from Prague, CZ).

6.1.2.12. UPS

Presence in CEE: Poland, Hungary

The focus has shifted in the recent years towards CEE. In 2005 UPS arranged its organic growth by the acquisition of Messenger Service Stolica S.A., one of the leading express deliveries in Poland (64 mln. USD).

6.1.2.13. DFDS

Presence in CEE: Lithuania, Latvia, Estonia, Poland, Czech Republic, Slovenia

[280] Trepins, D., Logistics Finds its Center in Eastern Europe, Logistics Management, Feb 2006
[281] Deutsche Bahn AG, The Eastern Perspective - DB Logistics and the EU's Eastern Enlargement

DFDS sends a lot of trucks to Eastern Europe: some of them are DFDS vehicles based in Poland and the others are run by Eastern European subcontractors. All foreign subcontractors are vetted and they have to meet British standards. The Eastern Europe division has been operating for 10 years. Polish-based HGV is bringing wooden furniture and automotive parts to the UK. This influx of foreign truck is driving rates down – operation benefits from the sheer number of the import and export movements, rather than generous payments. DFDS works strategically. Its individual national bases work independently but they also assist each other.[282]

DFDS – 1994 Tallinn (17,4 mln. EUR).

6.1.2.14. Ewals

Presence in CEE: Czech Republic, Poland, Lithuania

6.1.2.15. FM Logistics

Presence in CEE: Czech Republic, Poland, Slovakia, Romania (Russia, Ukraine)

6.1.2.16. Frans Maas

Presence in CEE: Poland, Czech Republic, Slovakia, Hungary, Romania, Slovenia, Latvia/Estonia, Lithuania, Bulgaria Russia

It combined business with DFDS Transport Group A/S. According to the company's annual report 2005, the financial settlement of the acquisition of the outstanding interest in Poland and smaller increases of Frans Maas' interests in Estonia, Latvia, Bulgaria and Italy involved 9.4 mln. EUR. The turnover in Southern Europe (26% of turnover) increased by more than 9% but the result remained negative. In the Central and East European region (21% of turnover) the double-digit growth figures were continued.

6.1.2.17. Gefco

Presence in CEE: Poland, Czech Republic, Slovakia, Hungary, Romania, Turkey

It is an active player in the market. The operations were also set up with Poland a couple of years ago. Now they are also set up with Turkey and Czech Republic. Last month Gefco, which is owned by PSA/Peugeot-Citroen, opened a new office in Kolin, Czech Republic. The office will be its automotive hub for the region.[283] It is in the process of putting in place structures in Slovakia and Romania. The operations in Hungary and Slovenia will follow. The link with its OEM sister companies and Toyota is important in this respect. The Kolin JV plant in Czech Republic between PSA and Toyota, as well as Peugeot Citroen plant in Slovakia Trnava will provide Gefco with a solid basis for developing more extensive networks in the Eastern Europe region.[284]

Also there are the plans of getting new subsidiaries in Hungary and Romania and opening new depots in Poland and Slovakia. In order to serve better to its automotive clients in the CEE region, the company favors rail over road transportation. Gefco plans to avoid congestion by utilizing block trains on a west-to-east rail corridor.[285] It operates in Russia as well.

[282] Maughan, T. Eastern promise. Commercial Motor; July 7, 2005
[283] Logistics providers follow automakers eastward, Automotive News Europe, October 3, 2005
[284] Life choices, Automotive Logistics, July-Aug, 2004
[285] Trepins, D., Logistics Finds its Center in Eastern Europe. Logistics Management, Feb. 2006

6.1.2.18. Wincanton Trans European

Presence in CEE: Poland, Czech Republic, Slovakia, Hungary

Wincanton expanded to Hungary in 2002 following Wincanton Plc's acquisition of P&O Trans European.

6.1.2.19. Maersk Logistics

The company has strong presence in CEE as well as in Russia and Ukraine.

6.1.2.20 Norbert Dentressangle

Presence in CEE: Czech Republic, Hungary, Poland, Romania.

6.2. FOCUSED REGIONS AND INDUSTRIES

In this part various business aspects of CEE countries closely related to the logistics are presented. These aspects comparatively give a general picture of the countries in terms of attractiveness for future logistics investments. There is information about the profiles of the countries, their main industrial cities, key and growing industry sectors.

6.2.1. General Situation

Central and Eastern Europe region consists of the following groups of countries:

- *New EU members (8):* Czech Republic, Slovakia, Slovenia, Poland, Hungary, Latvia, Lithuania, Estonia
- *Acceding countries that join EU in 2007:* Romania, Bulgaria
- *Candidate countries:* Turkey, Croatia, FYR Macedonia
- *Potential candidate countries:* Albania, Bosnia and Herzegovina, Serbia

Although there are certain differences in business environments in CEEC, the good economic performances and high growths of GDP and favorable productivity environments in the region have attracted large investments. CEE markets are benefiting from an increase in FDI confidence levels. Poland, Hungary, Czech Republic, Turkey and Romania lately get more FDI confidence than other CEEC. Poland, Turkey, Czech Republic and the Baltic States have the highest positive outlook. CEE is also viewed as an R&D location, offering both low costs and strong scientific and engineering capabilities.[286]

Table 6-6 CEE Countries, GDP

Country	2005, bln. USD	Country	2005, bln. USD
Turkey	363.3	Serbia	27.1
Poland	299.2	Bulgaria	26.6
Czech Rep	122.3	Lithuania	25.5
Hungary	109.2	Latvia	15.8
Romania	98.6	Estonia	13.1
Slovak Republic	46.4	Bosnia and Herzegovina	9.4
Croatia	37.4	Albania	8.4
Slovenia	34.0	FYR Macedonia	5.8

Source: Authors, based on World Development Indicators database, World Bank, 1 July 2006

6.2.1.1. Main Growing Industries

Manufacturing and consumer goods are the main industries of CEE. Automotive, high-tech/electronics, consumer goods, chemical, heavy industries and retail sectors are most likely to grow in the region. All these sectors will increase the demand in CEE for logistics activities such as transportation, contract logistics, and other added-value services.

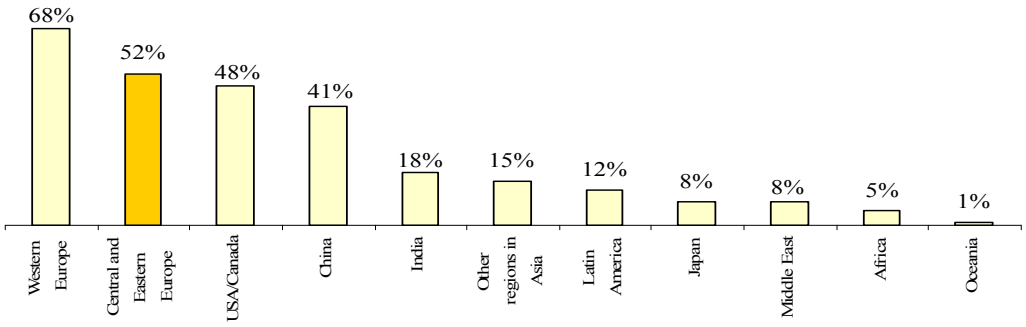
Central Europe has emerged as a very suitable place to invest in service oriented activities and many foreign companies have already founded IT, software, shared service and customer oriented centers.

[286] FDI Confidence Index 2005

6.2.1.2. Investment Competitiveness

According to 2006 European Attractiveness Survey[287], CEE region ranks second as a preferred destination after Western Europe for Europeans' investments.

Figure 6-19 2006 European Attractiveness Survey



Source: Authors, based on 2006 European Attractiveness Survey

Considering business environments, labour markets and financial aspects, many CEEC have good performance in the whole world.

Table 6-7 Global Services Location Index

World Rank	Country	Financial Structure	People and Skills Availability	Business Environment	Total Score
7	Czech Republic	2.57	1.12	1.90	5.58
15	Bulgaria	3.29	0.86	1.11	5.27
16	Slovakia	2.72	0.96	1.55	5.24
18	Poland	2.67	1.06	1.44	5.16
19	Hungary	2.61	0.88	1.63	5.13
24	Romania	3.07	0.92	1.05	5.03
40	Turkey	2.14	0.91	0.92	3.97

Source: Authors, based on Global Services Location Index, 2005

6.2.1.3. Economic Freedom

Economic freedom of a country is measured according to trade policy, fiscal burden of government, government intervention in the economy, monetary policy, capital flows and foreign investment, banking and finance, wages and prices, property rights, regulation, informal market activity.[288] According to the Heritage Foundation/Wall Street Journal, Baltic and Central European countries have better ranks than Balkan countries.

Table 6-8 Index of Economic Freedom

Country	World Rank (Score)	Country	World Rank (Score)
Estonia	7 (1,75)	Albania	52 (2,75)
Czech Republic	21 (2,10)	Croatia	55 (2,78)
Lithuania	23 (2,14)	FYR Macedonia	57 (2,80)
Slovakia	34 (2,35)	Bulgaria	64 (2,88)
Slovenia	38 (2,41)	Bosnia and Herz.	74 (3,01)
Latvia	39 (2,43)	Turkey	85 (3,11)
Hungary	40 (2,44)	Romania	92 (3,19)
Poland	41 (2,49)		

Source: Authors, based on The Heritage Foundation/Wall Street Journal, 2006

[287] 2006 European Attractiveness Survey
[288] The Heritage Foundation, Wall Street Journal

6.2.1.4. Ease of Doing Business

International Finance Cooperation, World Bank Group determines the ease of doing business index by ranking countries with respect to ten criteria: starting a business, dealing with licenses, starting a business, hiring and firing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, closing a business.[289] Results show that Baltic countries provide better conditions for doing business.

Table 6-9 Ease of Doing Business Ranking

Country	World Rank	Country	World Rank
Lithuania	15	Slovenia	63
Estonia	16	Romania	78
Latvia	26	FYR Macedonia	81
Slovakia	37	Bosnia and Herzegovina	87
Czech Republic	41	Serbia	92
Hungary	52	Turkey	93
Poland	54	Albania	117
Bulgaria	62	Croatia	118

Source: Authors, based on International Finance Corporation, World Bank Group, Sep 2006

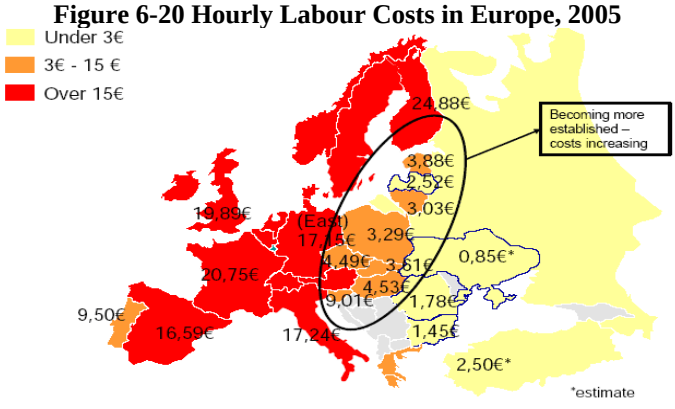
6.2.2. Regional Perspectives

6.2.2.1. Central Europe

According to the UN Conference on Trade and Development (UNCTAD), Poland, Hungary and Czech Republic are considered among the top five destinations for manufacturing activities.[290] Factors like stable political situation, proximity to Western Europe, transit position to Balkans and Asia make Central Europe attractive for expansion plans of developed countries. Following EU membership, Central European states are experiencing a rapid transition process. It brought them the advantages of customs free zone which allow free trade, monetary and freight flows. The region's countries Slovakia, Czech Republic, Hungary and Poland are considered as one single market as they have close characteristics and values. All of them are members of the OECD and other different organizations that affect investment decisions.

Central Europe offers not only low cost, but also skilled labour. In the last years it is becoming more mature and labour costs are increasing but they are still very low compared to Western Europe. Low costs will remain as a triggering factor for global companies, particularly European, to establish their facilities in the region.

Figure 6-20 Hourly Labour Costs in Europe, 2005



Source: Eurostat

[289] World Bank Finance Group, Doing Businesses in 2006
[290] UNCTAD, 2006, United Nations Conference on Trade and Development

Many Central European countries have reduced their tax rates to attract foreign investment. Lower tax rates compared to developed countries leads to expansion of investors.

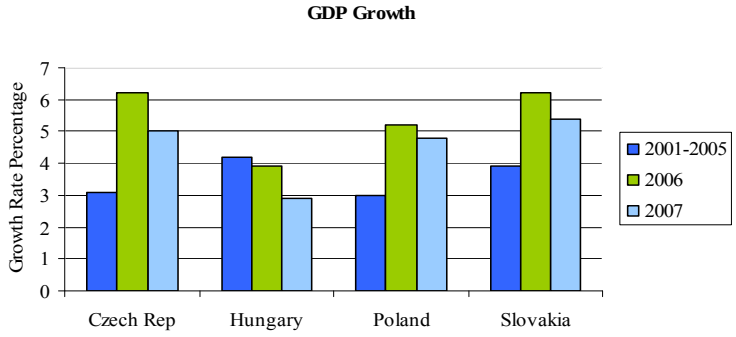
Table 6-10 Corporate Tax Rates

Country	Corporate income tax rates	Country	Corporate income tax rates
Slovenia	25	Poland	19
Czech Republic	24	Hungary	16
Slovakia	19		

Source: Authors, based on International Finance Corporation, World Bank Group, Sep 2006
Cato Institute Tax and Budget, Catching Up to Global Tax Reforms

Central European countries face very fast GDP growths and this trend is likely to continue in the coming years.

Figure 6-21 GDP Growth in Central European Countries



Source: Authors, based on Economist, Country Briefings 2006

Central European Countries

The characteristics of the countries are presented in Table 6-11.

Table 6-11 Central European Countries

Country	Area, km^2	Population, mln.	Capital	Principal Industry Cities
Poland	312,683	38.5 (2006)	Warsaw	Warsaw, Lodz, Krakow, Wroclaw, Poznan, Gdansk, Katowice
Czech Republic	78,866	10.3 (2004)	Prague	Prague, Brno, Ostrava, Plzen
Hungary	93,030	10.1 (2006)	Budapest	Budapest, Gyor, Szekesfehervar, Debrecen
Slovakia	49,037	5,4 (2005)	Bratislava	Bratislava, Kosice, Zilina
Slovenia	20,273	2,0 (2006)	Ljubljana	Ljubljana, Maribor, Kranj, Celje,Koper

Source: Authors, based on Ministry of Statistics, Ministry of Industry and Trade, Foreign Investment Agency

Poland

Poland is the largest country of Central Europe in terms of population and economic potential. As other countries, it also has the advantages of low labour costs, central geographical location and EU membership. However, its biggest market size differentiates it from the rest. Currently, the economy shows good signs for the future but there are still many challenges.

The government promotes investors by ensuring tax reductions, establishing economic zones, proving R&D centres. There are initiatives for small and medium sized enterprises related to employment and taxes. Agriculture, electronics, machinery, chemical, food, manufacturing are

developed industries. Automotive, construction, electronics, R&D, financial and call services are growing.[291]

Czech Republic

Czech Republic has one of the most developed economies in the region. Its economy is stable and shows optimistic signs for the future. There are different grants and incentives to make country attractive for investments. Currently, machinery, manufacturing, electronics, transport, heavy, automotive industries are developed. The country is investing to develop facilities for software and information system development. Besides, finance, telecommunication and energy sectors are facing improvements. Innovation activities, business support services, software development, health science, electronics, high tech engineering, automotive and plastic are key industries to invest.[292]

Hungary

Hungarian industries have positive future outlook. Its stable economy, highly-skilled workforce, supplier availability are important sides for foreign investments. There are strong banking and credit sectors. Automotive, R&D, shared services, logistics, construction are growing industries.[293]

By the end of 2005 there were 179 industrial parks. According to the plans of the Ministry of Economy and Transport, the development of industrial parks will be an important component of the new National Development Plan (2007-2013). Innovation and entrepreneurship will be strongly supported for small and medium size organization developments. Incubation, logistics and further innovative services in the industrial parks will be promoted in Hungary. The majority of the parks have an infrastructure suitable for hosting new enterprises.[294]

Slovakia

As other Central European members it is also a member of WTO and OECD. Lower labour costs, manufacturing tradition, favourable business conditions are attractive for investors. Automotive industry, especially car making, is developing rapidly. By 2008, three companies in the country will produce more cars per person than anywhere else in the world. In addition to automotive, other main industries are manufacturing, construction, metal and engineering industries. Main growing industries are automotive, construction, information systems, and engineering.[295]

Slovenia

It is the wealthiest country of former Yugoslavia with its strong political system and high standards. It has good infrastructure when compared to other CEEC. The economy shows very high GDP growth and better inflation performance than previous years. It is a member of NATO, OSCE, and SECI. Agriculture, manufacturing, trade, transport and business services are developed. Main growing industries are automotive, chemicals, pharmaceuticals, electrical and electronics, IT, logistics, machinery and metal.[296]

[291] Organisation for Economic Co-operation and Development, Poland
[292] Ministry of Industry and Trade, The Investment and Business Development Agency, 2006
[293] New Dynamics of CEE Oppurtunities and Challenges, 2004
[294] Industrial Parks in Hungary in Early 2006
[295] Sario, Slovak Investment and Trade Agency, 2006
[296] Tipo, Invest Slovenia, 2006

6.2.2.2. Balkan Region

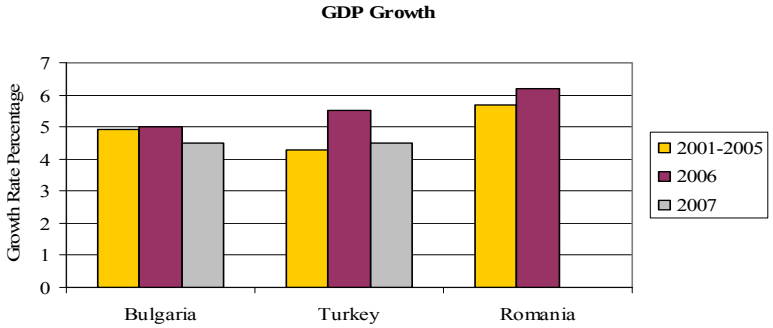
Many Balkan countries have cut their corporate income tax rates in recent years to attract foreign investment and promote growth. In the region, Romania and Bulgaria which join EU in 2007, and one of EU candidates, Turkey have been developing and offering good investment incentives. High GDP growths occur in these three counties and Romania is leading the whole region from GDP growth point of view. Turkey has the largest geographical area, population, GDP amount not only in Balkan region but in whole CEE. It has a big potential with size advantages and EU candidate status. Recently, Bulgaria also attracts some foreign investors. The rest of the countries are facing problems and are not convenient markets.

Table 6-12 Corporate Tax Rates

Country	Corporate income tax rates	Country	Corporate income tax rates
Albania	23	Romania	16
Croatia	20	Bulgaria	15
Turkey	20	Serbia	10

Source: Authors, based on International Finance Corporation, World Bank Group, Sep 2006
Cato Institute Tax and Budget, Catching Up to Global Tax Reforms

Figure 6-22 GDP Growth in Balkan Countries



Source: Authors, based on Economist, Country Briefings 2006,

Balkan Countries

The characteristics of the countries are presented in Table 6-13.

Table 6-13 Balkan Countries

Country	Area, km^2	Population, mln.	Capital	Principal Industry Cities
Romania	238,391	21,3 (2006)	Bucharest	Bucharest, Brasov, Iasi, Timisoara
Bulgaria	110,912	7,7 (2006)	Sofia	Sofia, Varna, Plovdiv, Bourgas, Rousse
Turkey	783,562	72,6 (2005)	Ankara	Istanbul, Ankara, Izmir, Izmit, Bursa, Adana, Mersin
Croatia	56,542	4,5 (2005)	Zagreb	Zagreb,Osijek, Split
Albania	28,748	3,6 (2006)	Tirana	Tirana, Durres
Bosnia and Herzegovina	51,197	4,5 (2006)	Sarajevo	Sarajevo, Mostar
Serbia	88,361	9,4 (2002)	Belgrade	Belgrade, Novi Sad
FYR Macedonia	25,333	2,0 (2005)	Skopje	Skopje, Kumanova

Source: Authors, based on Ministry of Statistics, Ministry of Industry and Trade, Foreign Investment Agency

Romania

According to World Bank Country Classification Groups[297], Romania is an upper-middle-income economy. It has one of the lowest fiscal burdens in Europe. Business environment is developed with simplified procedures and permissions. There are also reforms related to labor laws, trade and establishing offices.

Its economy is based on services, which forms highest portion of GDP, industry and agriculture. It traditionally has strong engineering and automotive industry, especially vehicle production. Other main industries are construction, textile, agriculture, metal, chemicals and petroleum. Tourism, finance, real estate, telecommunications are developing industries.[298]

Bulgaria

It has more stable political and economical situation compared to early nineties. Following EU membership in 2007, there will be more investments. It will offer the lowest labor, production and construction costs of EU which will be a triggering factor for investments.

Most of the labour force in Bulgaria is occupied in services, industry and agriculture. Energy, chemicals, machinery, electrical and electronics, transport and textile are among the main industries. Automotive parts, construction, telecommunications, finance are growing industries.[299]

Turkey

Turkey receives the highest amount of FDI in all CEE due to its big size and presence of liberalization policies. Private sector is strong and growing rapidly. It is a member of economic communities like OECD, WTO and NATO. Customs union with EU that signed in 1995 increases the trade and business with EU countries.

The country is one of world leader in textiles and clothing. Automotive, tourism, agriculture, electronics, chemicals, manufacturing, food, construction and mining industries are developed. Textiles and clothing, motor vehicles, consumer electronics, tourism are expected to grow in the future.[300]

Croatia

Croatia's economic situation is stable. Tourism industry is the main focus of both private and public sectors. There are many infrastructural and institutional improvements supported by EU and other funding organizations. (World Bank etc.). Future EU membership as a candidate country makes it attractive for investments.

In addition to tourism, chemicals, food, textile and electrics are developed industries. Main growing industries are tourism, construction, telecommunications, R&D, logistics and distribution.[301]

[297] World Bank Data and Statistics, Country Classification Groups, 2006
[298] Romania National Institute of Statistics
[299] Bulgaria Foreign Investment Agency
[300] Foreign Investment in Turkey, Prime Ministry for Foreign Trade
[301] Croatian Ministry of Finance, 2006

Albania

It is one of the poorest CEEC. Open market economy is not developed enough. It signed Stabilization and Association agreement with EU with the purpose accession in the long term. There are recent improvements related to taxes and customs duties.

Main industries in Albania are textile, food, cement, oil, chemicals, mining, timber, metal, and hydropower. Growing industries are tourism, construction, banking, textile, retail, oil, gas and insurance.[302]

Bosnia and Herzegovina

It is rapidly reconstructing its industry facilities that are destroyed during the war. Business environment is improving due to the tax reforms and bilateral agreements signed with many European countries. Manufacturing, banking, service, trade are the sectors that attract the highest amount of foreign direct investments. Developed industries of the country are agriculture, mining, forestry, hydropower, food, cement, textiles. Developing industries are tourism, textiles, construction, energy, metal and wood products.[303]

FYR Macedonia

There is a continuing industrial development. There are some agreements signed with IMF, World Bank and EU. Negotiations with EU are important to accelerate the reforms for better business environment. Agriculture is very important part of the economy. Wood products, tobacco, textiles, metal and food are the main industries that are also likely to grow in the future.[304]

Serbia

It has been experiencing political conflicts internally and with some of its neighbors. Damage of infrastructure due to the war influenced business environment. Agriculture still forms a big share of GDP and labor market. Mining, chemicals and food are other industries that are expected to grow in the future.[305]

6.2.2.3. Baltic Region

The Baltic Sea Region of CEE is seen as one of the most interesting areas in the world regarding the economic growth. Baltic countries' economies are growing quickly, partly due to the fact that many Scandinavian companies are relocating their routine operations to the region since it has good networks with Russia. Estonia, Lithuania and Latvia do not have high GDP due to their small populations and economies. However, they are very suitable places for doing business according to World Bank Group's survey.[306]

Table 6-14 Corporate Tax Rates

Country	Corporate income tax rates	Country	Corporate income tax rates
Estonia	24	Latvia	15
Lithuania	15		

Source: Authors, based on International Finance Corporation, World Bank Group, Sep 2006

[302] Albania Institute of Statistics
[303] Foreign Trade Chamber of Bosnia and Herzegovina
[304] FYR Macedonian Ministry of Finance
[305] SIEPA, Serbia Investment and Export Promotion Agency
[306] World Bank Group Survey, Living Standards, 2006

The characteristics of the countries are presented in Table 6-15.

Table 6-15 Baltic States

Country	Area	Population	Capital	Principal Industry Cities
Estonia	45,226 km2	1.34 million (2006)	Tallinn	Tallinn, Tartu
Latvia	64,589 km2	2.3 million (2006)	Riga	Riga, Ventspils, Liepaja
Lithuania	65,300 km2	3.7 million (2001)	Vilnius	Vilnius, Kaunas, Klaipeda

Source: Authors, based on Ministry of Statistics, Ministry of Industry and Trade, Foreign Investment Agency

Estonia

Estonia is a very suitable country for investments with its good economic indicators. Relocation of industrial facilities, particularly by Scandinavian organizations, is crucial for the developments in the country. Technological developments and IT have appeared as the strongest sectors. Engineering, wood products, textile, machinery, electronics are the main industries. IT, service, logistics, biotechnology and machinery are the industries that will grow.[307]

Latvia

Latvia has one of the highest GDP growth and the lowest tax burden among all EU members. Level of privatization is relatively higher than other CEEC and it is almost completed. However, FDIs are very low compared to Western European countries. As other Baltic States it is also a member of WTO. Wood, food and financial services are developed. In addition to these industries, engineering, metal, chemicals, IT, electrics and electronics are expected to develop.[308]

Lithuania

It offers favourable business environment with its stable economy. It has flat tax rate as other Baltic States. Outsourcing and tourism are rapidly developing. Transit position between Russia and Europe will increase logistics and distribution facilities.

Main industries of Lithuania are manufacturing, wood, construction, finance, agriculture. Information systems, R&D, automotive and electronic components, biotechnology, services are the growing industries.[309]

[307] Statistical Office of Estonia
[308] Ministry of Economics of the Republic of Latvia
[309] The Economist Intelligence Unit, Lithuania

6.3. HUB STRUCTURE

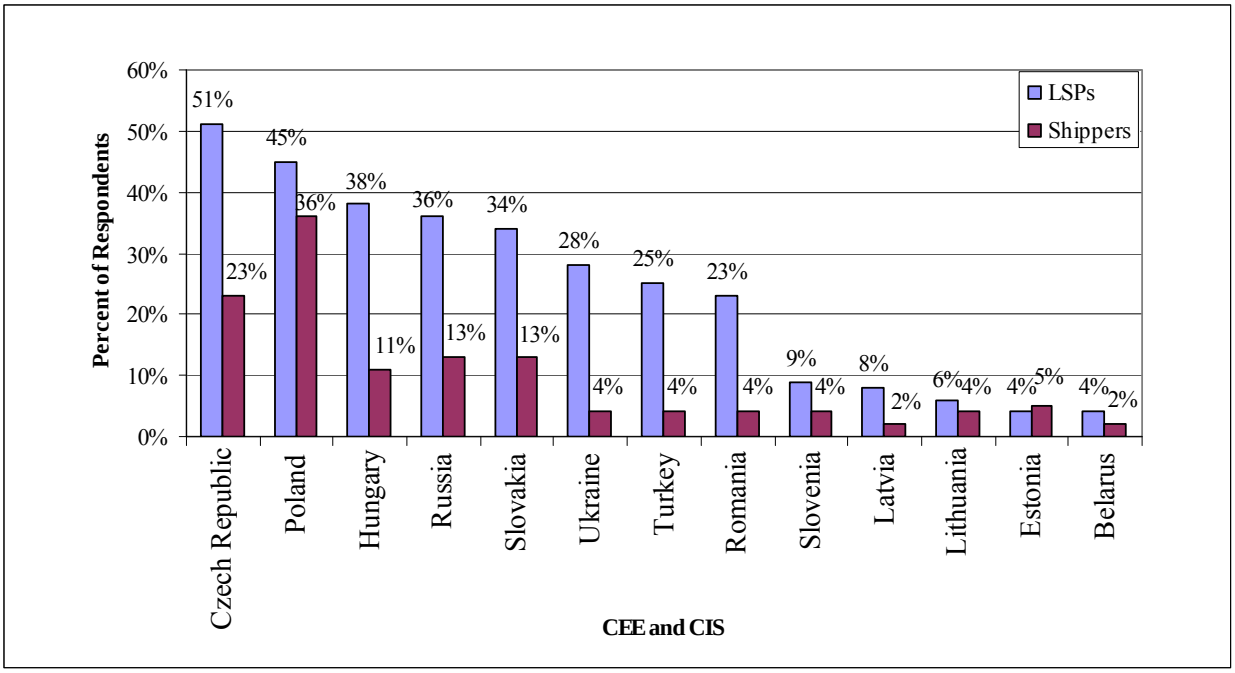
This part initially gives a comparison of the subregions and countries of CEE with respect to different logistics factors that affect the logistics centre location. Then subregions (Central Europe, Baltic and Balkan) and countries are elaborated individually with their main logistics centres and their hub potentials are compared.

After EU expansion in CEE, many transport actors have started to operate in order to meet increasing demand from different sectors. In addition to skilled and low cost workforce, geographical proximity to Western Europe, availability of land for warehousing and other logistics facilities are the main reasons that attract many industries to found new logistics hubs in CEEC. Many logistics and industrial parks have been developed.

In CEE most of the distribution and warehousing facilities are obsolete and reflect the characteristics of former regimes. In general, they have inadequate construction properties (insufficient column spacing, low ceilings etc.) and limited accessibility due to the poor road and rail connections with production areas. However, property developers have been building new buildings since early nineties to replace these old facilities. Generally, logistics centres are concentrated in industrial areas of the largest cities of CEE and this trend will continue in the future. Level of collaboration between local logistics service providers and logistics centre developers in CEEC will determine future national hub potentials.

Western European companies have shown interest to CEE to found distribution centres in order to increase efficiency of distribution to the end consumers as they can not access these markets and customers on time from the distribution facilities in their homelands.

Figure 6-23 Level of Interest in CEE and CIS Countries for Distribution Centers Location



Source: Authors, based on Warehousing space in Europe: Meeting tomorrow's demand, March 2006

6.3.1. Logistics Factors for Hub Location in CEE

There are many factors taken into account for logistics hub planning and development. Status of infrastructure, accessibility by all transport modes, location, construction and land costs,

availability of industrial premises, business conditions (taxes, assets, labor etc.) are the main of them. When these aspects are considered, CEEC show different characteristics. Regions closer to Western Europe, Baltic and Central Europe, have better infrastructures and business incentives. Central European countries are bigger markets and located strategically due to their proximity to huge Western European markets. Balkans offers lower labour and land costs. In terms of accessibility, Central Europe and Balkan are more advantageous as countries here are mainly connected by land. Baltic States have a huge transit between Western Europe and CIS for logistics service providers.

Many distribution centres are leased and constructed, particularly in Central Europe, to provide better services and meet the increasing demand of logistics service providers and manufacturers. Baltic States and Central European countries have better conditions in terms of sufficiency of logistics centre. Prices for industrial facilities are higher in Central Europe than Baltic and Balkan countries. Baltic States offer the best prices for the quality provided as Balkan countries' facilities are in worse conditions. However, warehousing services in Central Europe are probable to cheapen as more real estate companies are entering to the market with proper solutions. Price are expected to reduce due to the ongoing infrastructure projects but the region will remain as the most expensive of all CEE from logistics centers and warehouses point of view.

Table 6-16 Logistics Factors for Hub Location in CEE

Country	Property Price	Labor Market Force	International Accessibility	Inner Land Jams and bottlenecks	Freight Flow	Premises and Land Supply
Poland	1	3	7	8	9	7
Czech Rep.	4	5	2	10	6	11
Russia	9	1	14	1	8	6
France	6	11	6	11	2	4
Hungary	5	4	8	2	14	8
Belgium	3	10	1	12	7	12
Austria	8	15	5	5	13	1
Ireland	14	9	10	3	10	2
*Baltic States**	2	2	13	4	15	13
Italy	10	8	9	9	5	9
Portugal	7	6	12	13	11	3
Holland	12	12	3	14	4	10
Spain	15	7	11	7	3	15
Germany	13	13	4	15	1	14
Sweden	11	14	15	6	9	5

* Estonia, Latvia, Lithuania, * 1 means the best and 15 means the worst conditions

Source: Authors, based on Market of industrial premises of the Baltic region in Europe's context, Colliers International, 2006

6.3.2. Emerging Logistics Hub of CEE

There is a high demand for logistics facilities as manufacturing industry grows, particularly in Central Europe. CEE regions, Balkans, Baltic States and Central Europe, comparatively have different advantages. However, due to the domestic market sizes Central Europe has become the main logistics focus area of CEE. Area covered by Poland, Czech Republic, Hungary and Slovakia has emerged as a central location for distribution all around CEE.

Figure 6-24 Emerging Logistics Hub in CEE

Source: Lang LaSalle, J. (2005) CEE Logistics Market

This area is still at very low level as a logistics hub when compared to the biggest hubs of Europe like Rotterdam, Hamburg etc. However, in addition to the capital cities of the area, Bratislava, Prague, Budapest, Warsaw, other big cities like Brno, Gyor, Katowice are good options for companies planning to establish single regional distribution centres.

6.3.3. Regional Perspectives

6.3.3.1. Central Europe

Central Europe is the most important logistics hub of CEE. Countries have different characteristics and offer various opportunities for Western European companies. Poland is bigger market than Hungary, Czech Republic, Slovakia and Slovenia as it has the largest population. There are regional cities with population over a million whereas most of the cities of other countries have population less even half million. However, Poland has the worst infrastructure of the region. Slovenia and Czech Republic have comparatively better infrastructures. Hungary and Slovakia are at the levels between these two countries and Poland. Very good rail networks are in place in all Central European countries. When the geographical locations are considered, countries have different advantages over each other. Hungary and Slovakia have better positions to serve both to Eastern and Western Europe. Warehouse prices are close to each other and can change considerably over next the years.[310] Considering all these, from logistics perspectives all Central European countries have big opportunities to become regional hubs. Currently, Czech Republic, Poland, and Hungary are the best to locate logistics centres, respectively.

Table 6-17 Warehouse Prices in Central Europe

Country	Prime Rent per m^2 per Year (main cities)	Prime Rent Change Direction	Demand for Warehousing Facilities	Demand Change Direction	Availability of Warehousing Facilities	Availability Change	Land Supply (main cities)	Land Supply Change Direction
CZ	63	Stable	Medium	Stable	Low	Growing	High	Stable
HU	72	Growing	Medium	Growing	Low	Stable	High	Stable
PL	60	Growing	Medium	Growing	High	Stable	High	Stable
SK	60	Stable	Medium	Growing	Low	Growing	Low	Stable

Source: Authors, based on Lang LaSalle, J. (2005) European Warehousing Report

[310] Lang LaSalle, J., 2005, European Warehousing Report

Czech Republic

After EU entry in 2004, Czech Republic has become very attractive for logistics centres not only in Eastern Europe but also in whole Europe. Increasing country's potential as a logistics centre is stated on national transport policy in July 2005. In 2004, 210,000 m^2 and in 2005, 143,000 m^2 of industrial areas were organized for warehouses and distribution centres. Logistics and transport sectors expand considerably. In total they make around 10% of national GDP.[311]

It has the accessibility advantages due to its central location in Europe and borders with Germany and Austria. Czech Republic traditionally has very strong railways connecting all its main cities. However, they are not able to provide door-to-door solutions. Government makes big investments to develop them further in addition to motorways and logistics hubs. Projects concerning rail infrastructure and high-speed trains will be important for links with other EU states.

Many logistics operators are moving to the country as a result of transport infrastructure development. However, business environment for LSPs still needs to be developed. Conditions for city logistics are in need of investment as well.

Currently, Prague, Brno, Plzen and Ostrava own the main logistics centres. Most of the centres are located along D1, D5 and D8 highways close to Prague. In addition to them, public and private logistics centers in Central, East and West Bohemia, North and South Moravia, Pardubice, Hradec Kralove will develop in the future. [312]

Table 6-18 Main Logistics Centres in Czech Republic

Logistics Centre	Storage Capacity	Location
ProLogis Park Prague (the biggest)	120,000 m^2	D1 highway, Prague
Logistic Park Rudna (second biggest)	106,000 m^2	D5 highway, Prague
Central Trade Park	~ 100000 m^2	D1 highway, Prague
NorthPoint D8 Distribution Park	140,000 m^2 (by 2007)	D8 highway, Prague

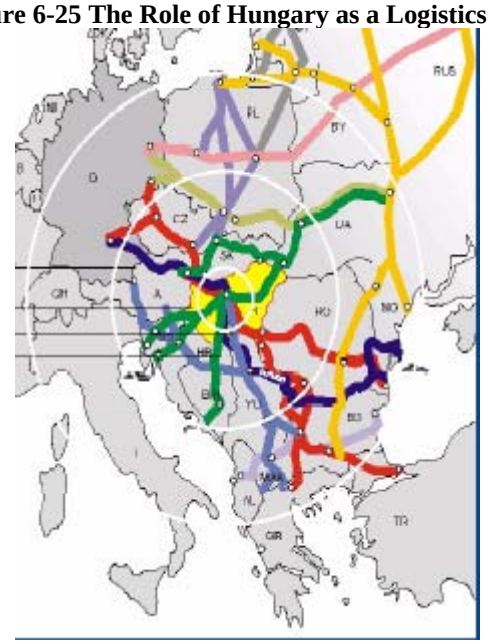
Source: Authors, based on Czech Business Weekly, June 2006

Hungary

Hungary is well positioned to become a logistics hub centre as it has good location between EU and non-EU countries. It can be a gate to serve Balkans, especially Romania and Serbia, and CIS. It has a strategic position to serve both to the East and West. In 500 km circle 9 countries are accessible as presented in the Figure 6-25.[313]

311 Czech Ministry of Transport, 2006, Transport Yearbook 2005
[312] CLA, Czech Logistics Association, Official Website
[313] Horvath, M., 2006, Changing Supply Chains and Logistics in the Enlarged Europe

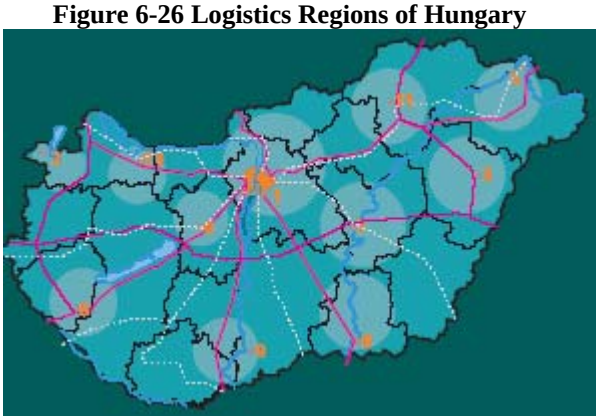
Figure 6-25 The Role of Hungary as a Logistics Hub



Source: Horvath, M. (2006) Changing Supply Chains and Logistics in the Enlarged Europe

Based on a logistics concept developed in the 1990s, the country has been divided into 11 logistics regions, each of which has an intermodal logistics center already established or under construction. Furthermore, logistics services are available at 165 local industrial sites across all 11 regions. Almost 3,000 domestic and international logistics companies are currently offering logistics services in Hungary. Four Trans-European Network rail corridors crossing the country, good inland shipping links by way of the Danube River, and more than 40 airports are important advantages.[314] The Danube River will increase distribution centre investments heavily.

Figure 6-26 Logistics Regions of Hungary



Source: Institute for Transport Sciences

Budapest, Zahony, Sopron are the most important logistics and distribution centers. There is big international freight traffic in these cities as they are located on one of the busiest transit routes of Europe. In western part of the country Gyor and Szekesfehervar have developed logistics centres. Szekesfehervar owns strong automotive industry and can be a good distribution centre for Eastern Europe. In Eastern part Debrecen and Szeged could be important hubs to serve Romania, Ukraine, Russia, Croatia and Serbia. However, these cities need further investment on infrastructure.

[314] Logistic Finds Its Center in Easter Europe, Logistic Management, Feb. 2006

ProLogis Harbor Park Budapest, which has 150,000 m^2 of capacity and links to airport, is an important centre. It has good highway links to neighbouring countries, Romania and Serbia as well. The Budapest Intermodal Logistics Center (BILK) is another big logistics centre with approximately 200,000m^2 of warehousing capacity.[315] Both of these logistics facilities are based in Budapest.

Table 6-19 National and Regional Logistics Centres

BIL K Budapest	ProLogis Harbor Park	Sopron	Szekesfehervar
Zahony	Csepel Freeport	Gyor-Gonyu	Nagykanizsa
Baja	Szeged	Szolnok	Miskolc
Debrecen	Nyiregyhaza	Kecskemet	Bekescsaba

Source: Authors, based on Transport Infrastructure Development in Hungary, Ministry of Economy and Transport, 2006

Poland

Poland is competing with other Central European countries to become the regional transport hub and demand for warehousing and logistics facilities increases rapidly. There are many logistics centers scattered in the whole country. It already accounts for 60% of all modern warehouse space in the eastern part of Central Europe. The major industrial hubs are currently concentrated in five main regions: Warsaw, Central Poland, Poznan, Wroclaw and Upper Silesia. Although Warsaw area is still the main market in the country, it may be overtaken by Central Poland and Silesia as both these markets are expanding rapidly due to transport infrastructure, low warehouse costs and proximity to big consumer markets.[316]

Poland's two largest ports, Gdansk and Szczecin-Swinoujscie, and other main ports, Szczecin-Swinoujscie and Gdynia, offer numerous services. Port of Gdansk which is also one of the largest ports in Eastern Europe will have a storage capacity for total of 10000 finished vehicles with its ability to handle two block trains.[317] It will have the capacity of 500,000 TEU by May 2007 and its final capacity is planned for 1 million TEU.[318] The biggest cities Gdansk, Warsaw and Poznan are suitable both for national logistics centres and regional distribution hubs for whole CEE. Poland can be interesting as a warehouse and distribution base for European companies planning to expand towards Baltic States and Russia.

There are many problems hindering Poland's potential as a logistics hub. The biggest of them is poor road infrastructure. Polish State Railways (PKP) is not involved in logistics infrastructure developments. There are construction delays on investments concerning highways, motorways, and railway connections. Intermodality and transport corridor establishments are still in the early stage as well. However, mature Polish logistics market is expected to attract considerable investments, particularly from automotive manufacturers, in the future.

Slovenia

Slovenia is very much developing as a logistics centre with its good infrastructure and business environment. Many LSPs and LLPs have already located. Seaports are important part of logistics services as they are close to the distribution centres and connected in a good way. Capital city Ljubljana is the most important business and logistic centre that serves as a national distribution

[315]Ministry of Economy and Transport, 2006, Transport Infrastructure Development in Hungary
[316] The Economist, Economist Intellegence Unit, Business Europe, Oct. 2005
[317] Automotive Logistics Magazine News, Sept. 2006
[318] CEE Railway Market Review, Sept.-Oct. 2006

centre. The main container terminals are Celje cargo, Koper Luka, Ljubljana KT, Maribor Tezno, Novo mesto.[319]

Slovakia

Slovakia is developing as an automotive hub in Central Europe. There are flexible labour market and favourable business environment. Capital city Bratislava is the national distribution centre. It is about 65 km from Vienna and can the primary warehouse hub for Central Europe. Rhine-Main-Danube inland waterway is important for the country as many logistics centres are being developed alongside it. Slovakia will gain importance as a logistics hub with its good quality of transport infrastructure.

6.3.3.2. Baltic Region

Baltic States are located strategically between EU and CIS countries. They are intersected by two European corridors - in the Northern-Southern direction (Tallinn-Riga-Kaunas-Warsaw) and Eastern-Western direction (Kiev-Minsk-Vilnius-Klaipeda).[320] Transport infrastructure is better than Central European and Balkan countries. Sea ports are key logistics locations of Estonia, Lithuania and Latvia. Main logistics centres are located at around big cities like Vilnius, Kaunas, Klaipeda, Riga, Tallinn, Parnu and Tartu. They are modern and provide good connections to terminals. However, these countries are small markets and can not attract high foreign investments. Multilingual workforce is an important advantage for the countries.

Almost half of Russian export to non-Baltic EU member states are conducted through these countries. Rail Baltica and Via Baltica projects will provide more opportunities to the Baltic States as Europe, Russia and Scandinavia will be connected better through it. Although there is cooperation in logistics and distribution, there is a big competition among them in order to be named as the regional transport hub.

Lithuania

Generally, transport infrastructure is developed and integrated with all transport modes. There are road construction works to improve the connections of national highways with TEN-T. Rail is an important mode of cargo transportation with other Baltic States, Russia and Kaliningrad and undergoing major modernisation. High speed trains can not be introduced because of the lack of electrified tracks. Connections with standard-gauges (1435 mm) will be extended till Warsaw which will increase Lithuania's transport links with Europe.

In Lithuania the logistics centers and activities are concentrated close to two largest cities Vilnius and Kaunas. There are good industrial infrastructure and main roads going through these cities. Region covered by them is emerging as a logistics hub for European countries. Kaunas has a good position for transit cargoes on main international and local transport corridors (Via Baltica and IXB corridor).[321] Kaunas International Airport is an intercontinental cargo transportation hub. Vilnius is a good location for national distribution centre. Klaipeda is an important ice-free, multi-purpose seaport in Lithuania. Both Kaunas and Klaipeda are free economic zones for investment which make them attractive for development of distribution facilities.

[319] Slovenian Railways Freight Transport Management Official Website
[320] Colliers International, Market of Industrial Premises of the Baltic Region in Europe's Context, 2006
[321] Vilnius and Kaunas, The Power of Two, 2006

Table 6-20 Lithuanian Logistics Centres

Klaipeda Logistics Centre	Kaunas Logistics Centre
Vilnius Logistics Centre	Panevezys Logistics Centre

Source: Authors

Latvia

Latvia lies at the geographic centre of the Baltic States. It is the most important air hub among the three Baltic States, both for cargo and passenger transportation. Riga is the main industrial centre. It is also developing as one of the main logistics centres in whole Baltic region with its ice-free port. Port cities Ventspils and Liepaja have potential to become future logistics hubs.

There are 13 industrial zones in 7 cities. Planning of 17 new industrial parks with total area of 245,2 ha has been done. Latvian Free Trade Zones are vital parts of distribution and transport activities. They are mainly located close to the port areas in Riga, Ventspils and Liepaja whereas the one named as SEZ in Rezekne is located into mainland.[322] Latvia is very suitable for regional distribution base that can serve all the countries located around Baltic Sea.

Figure 6-27 Network of Logistics and Industrial Parks

Source: Bastic, Baltic Association of Science/Technology Parks and Innovation Centres

Estonia

Estonia with its key geographical position is an important transit country for Europe. It is suitable for many European companies to establish transport links and distribution centres. Logistics and transport is an important part of the economy. Transit services concerning the rapidly growing trade through the Baltic Sea are very profitable for the country. The Port of Muuga Free Zone and Port of Sillamae Free Zone are established to contribute to the competitiveness as a transit country. Approximately 7.5% of its workforce is employed in transportation and road management. Transport industry forms about 15% of the GDP. 70% of all goods are carried by rail both domestically and internationally.[323]

Country offers good quality of transport and value-added logistics services with its well designed distribution centers. Tallinn is the main national logistics hub of Estonia. It is suitable for a regional distribution centre for Baltic States and Russia as well. Three major cargo ports, the Port of Tallinn, the Port of Kunda and the Port of Parnu are ice free ports with good accessibility.

[322] Baltic Association of Science/Technology Parks and Innovation Centres
[323] Estonian Investment Agency, 2006, Transport and Logistics

6.3.3.3. Balkan Region

Romania, Bulgaria are approved to join EU in January 2007. There will be additional investments for logistics facilities and distribution centres in these countries. Turkey is a big market but its EU accession is not clear and this situation affects logistics investments negatively. Three countries comparatively show better performance than the rest of the Balkan countries from distribution and logistics facilities point of view. Croatia has been developing its infrastructure as a part of its tourism investments.

The rest of the Balkan countries, grouped under SEE namely Serbia, Bosnia and Herzegovina, FYR Macedonia, and Albania, currently have distribution and storage facilities which are obsolete with low capacities. They require huge investments for years to become important transport hub. Present transport flows on key transport corridors are at low levels and international transport is done for imports of goods which create imbalances. Transport services constitute major obstacles to business growth.[324] Serbia has better logistics hubs than other countries. Albania and FYR Macedonia require more investments than others on terminals. There are terminal and transport links between the big cities and capitals. Belgrade, Skopje, Kumanovo, Novi Sad, Tirana, Sarajevo, Pristina are larger cities where transport and logistics facilities are better. Most of storage facilities are used for agricultural products, heavy industrial equipment and raw materials.

Romania

EU membership in 2007 will provide many advantages and it can be the distribution centre for south of Russia, Ukraine and other Balkan countries. Real estate market is developing and many high-quality distribution centres are built. Bucharest, Timisoara, Alba Iulia, Cluj-Napoca, Constanta, Ploiesti, Sibiu are the main cities with industrial parks and logistics centres.[325] Bucharest is the most important logistics centre and has a capacity for a national distribution centre.

Seaports at Black Sea are crucial for freight transport, especially Constanta. However, seaports are not located close to distribution centres. Highway connections to sea and air ports are not good enough either. There is a lack of inland terminals. Flexible labour market and available areas for logistics facilities around big cities are advantages.

Bulgaria

Bulgaria has a potential of being regional distribution centre of Black Sea and Mediterranean Regions. EU membership in 2007 will increase its hub potential for transit and trade as it already has the same specification and standards with EU. Ministry of Economy and Energy will invest a total of 100 mln. EUR in the establishment of industrial zones for the 2007-2013 period. Bulgaria is also probable to receive high investment from EU for distribution hubs it has future expansion potential.

There are not many large and multifunctional storage and terminal facilities. Most of them are located around ports, airports and railways stations. They are generally public as they belong to national transport state companies. Private operators are rapidly building new modern facilities with high capacity freight depots, container terminals. Main railway container terminals are located at Sofia, Plovdiv, Philipovo, Dimitrovgrad, Stara Zagora, Chestovo and Pleven. Bulgaria has two major ports on the Black Sea, Burgas and Varna which are in good condition but they

[324] WB, 2006, Infrastructure Development, Europe and Central Asia Region
[325] Romania Real Estate - Investment Property and Economic Statistics for Romania, 2006

have small capacity for international transport. Proximity of these ports to logistics centres is very good.

Sofia, Plovdiv and Varna are the main logistics centres. Sofia is an important location for a national distribution centre with the advantage of airport. New warehouses and distribution centres are planned around it in next three years that will occupy approximately 850 000 m^2. Eastern part of Sofia covered by Sofia International Airport, Iskar train station and Kazichene is the fastest-developing industrial zone. Southeast Europe's largest industrial park is expected to grow in Sofia that will link it to Serbia.[326]

Turkey

Turkey is located as a bridge between Eastern Europe, Caucasus, Middle East and North Africa. In the context of connections between Pan-European Transport Corridors and Central Asia, it is one of the most important countries in Balkans and Mediterranean regions for east-west and north-south connections. Transport has been the key target sector in Turkish government's globalization policies. [327] It is a big consumer market with a population over 70 million and fast growing economy. Future EU membership will very much increase country's attractiveness as a logistics centre. In this perspective, infrastructural upgrades are crucial. Generally, national highway network is developed but rail transport is in need of modernization.

Currently, the connections between Turkey and European distribution centres and regional distribution centres of CEE are not good. However, it has bargain real estate prices for warehouse facilities which are lower than EU countries. It owns one of the largest international road freight transport fleet of Europe with 30.000 tractor trucks. Being member of EU Customs Union since 1996 enables better logistics activities.[328] It is surrounded with seas from three sides. Ports at Istanbul, Mersin, Izmir, and Samsun are important import and export locations.

Western region of the country is more industrialized than eastern part. Main cities Istanbul, Ankara, Izmir, Bursa, Adana, Izmit own many well developed warehouses and logistics centres. Istanbul is the biggest and most important logistics centre. It has a good location for a national distribution centre with its port.

[326] Industrial and Warehouse Briefs, Bulgaria Propertrywise, 2006
[327] UN, Inland Transport Comitee, 2006, Transport in the Mediterranean Region
[328] Salah, I., 8th IRU Trans Euro Road Transport Conference

7. NEIGHBOURING COUNTRIES

EU expansion in May 2004 has significantly changed both the border crossing procedures and the customs practices for the trade flows in Europe. The impact of the EU membership is particularly noticeable at the border crossing points within the new EU members. The first part of this chapter discusses the relations of CEE with its neighboring countries, particularly CIS members (Russia, Ukraine, Belarus and Moldova). The second part mentions the trans-regional connections and transport corridors passing through the region in addition to the ones connected with Asia.

7.1. NETWORK INTERFACE

This part mainly discusses the trade and transit flow relations at the eastern border of CEE with the neighbouring countries, Russia, Ukraine, Belarus and Moldova. The problems faced in the international transit transport are elaborated with a focus on Russia.

7.1.1. General Situation

Although, transit flows have improved due to the internal EU borders at the western side of CEE, border crossings at the eastern side with CIS countries, Russia, Belarus, Ukraine and Moldova, is still problematic.

7.1.1.1. Road Transport

As the freight shipments between EU and CIS countries have not changed since EU expansion on May 2004, freight flows with heavy goods vehicles is still a big challenge. There are long queues of trucks and vehicles at specific border crossings such as between Poland and Belarus at Koroszczyn/Brest or between Latvia and Russia at Terehova/Buratchki.[329] Complex controls and weighing of vehicles, lack of coordination of the customs procedures are the common problems at CIS borders.

Low capacity access roads between Ukraine and Poland borders, mandatory convoys at Russia and Belarus borders, compulsory payment charges at Belarus and Ukraine borders, the lack of control officers at the borders between Poland and the CIS countries, obsolete and poor quality facilities between Poland and CIS countries are country/border specific problems.[330] Besides the internal problems at the borders within CIS countries worsened the situation.

7.1.1.2. Rail Transport

North East Europe Region

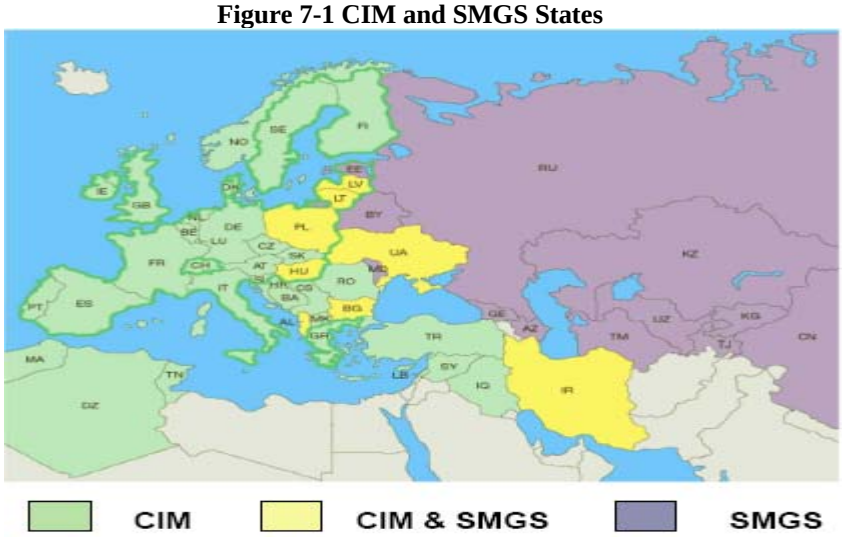
Increase in transit flows between North East European countries, Estonia, Latvia, Lithuania, Poland, and CIS can be expected due to the region's suitable position, a well-developed network of railways, highly qualified specialists and potential growth in Russia. Baltic railways have the same rail gauge of 1524 mm and common technical standards with neighboring CIS. This means that in all these countries the railways are fully interoperable. There are some constraints on the sections of infrastructure which connect the rail systems of Baltic States with EU neighbors.

[329] Lacny, J., 8th IRU TransEuro Road Transport Conference
[330] ECMT, Removal of obstacles at border crossings

Generally, the reloading of freight at the terminals of the borders is needed. Development of nodal points and railway corridors in Russia, Belarus and Ukraine with EU frontiers will be critical in the future.

Interoperability of two legal systems (CIM and SMGS) is one of the greatest concerns in rail transport between CEE and CIS. Almost all of the Western European countries work under COTIF (Convention concerning International Carriage by Rail) convention and use CIM Bill of Lading while CIS countries work in SMGS (International Goods Transport by Rail) system. Except Estonia, all the CEEC are members of COTIF. EU and other country organizations should develop the common CIM/SMGS consignment procedures that will be recognized as a customs document.[331]

Figure 7-1 CIM and SMGS States



Source: Joint ECMT/UNECE Working Party/Group on Intermodal Transport and Logistics

South East Europe Region

Technical standards of railway systems in SEE are same with the ones in most of the EU members. TEN-STAC (Scenarios, Traffic Forecasts, and Analyses of Corridors on the Trans-European Transport Network) and The Community of European Railway and Infrastructure Companies (CER) expect rail freight growth of 15-30 % in the region until 2020. Even higher growth rail freight is foreseen at the corridors between Turkey and EU.[332]

Urgent and big investments are needed to modernize the railway systems and border crossing procedures in South East Europe including the ones in the Pan-European corridors, which connect the region with EU.

7.1.2. Eastern Border of CEE

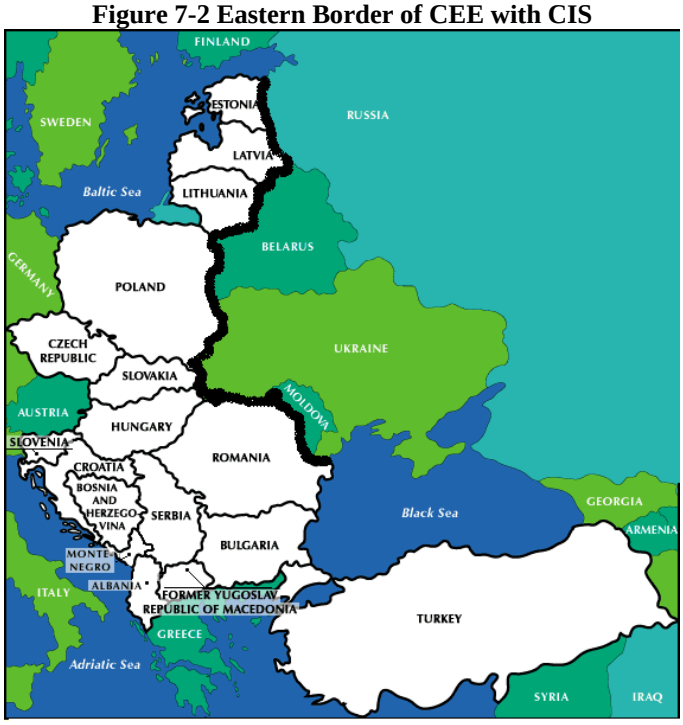
CIS countries (Russia, Belarus, Ukraine and Moldova) geographically have key role for the trade flows between Europe and Asia. They have a good strategic location for CEEC, particularly Lithuania, Latvia, Estonia and Poland.

The efficiency and performance of transport varies with respect to the transport modes in each CIS member and this situation complicates the transit flows. The bilateral agreements on transit

[331] Intergovernmental Organization for International Carrigae by Rail
[332] CER, EC Public Consultation on TEN-T in wider Europe

traffic are practically not efficient. In addition to the border problems between CIS and CEEC, internal bottlenecks within CIS worsen the transit traffic.

Figure 7-2 Eastern Border of CEE with CIS



Source: Authors, based on Regional Environment Centre

The introduction of globally recognized standards supported by ISO and EU and controlled by Interstate Council on Standards, Metrology, and Certification will play crucial role for freight flows with CIS. Currently, only 20% of the trade procedures are convenient with international standards whereas the rest is regulated with GOST standards.[333]

Investments on infrastructure will be essential in CIS as logistics costs are high and profit margin is comparatively lower for LSPs. The region has about 85% of its roads paved. Majority of the trains run on diesel and there are operational delays in winter period. Rolling stock and wagons are obsolete. There are cases with thefts of cargos at freight transit traffics. Improving infrastructure by eliminating all bottlenecks will provide a fast integration of the region with neighbouring EU.

7.1.2.1. Countries

Belarus

The main trade, transport and border crossing problems with Belarus have political background and require negotiations. Belarus with its two border posts of Medininkai and Salcininkai provide the shortest link to Russia for Lithuanian transit flows. However, road carriers avoid passing through Belarus as illegal payments are asked up to 500 USD per transit. Shipments under TIR-transit are sometimes stopped and even seized without any reason. Convoys are needed to ship cargoes through Belarus in order to avoid additional unexpected costs and big delays.[334]

[333] Freinkman, L. Et al., WB Policy Research Working Paper No. 38

[334] WB, From Disintegration to Reintegration: Eastern Europe and the Former Soviet Union in Internatinal Trade

At Poland/Belarus border where a track gauge difference occurs a new automatic gauge changing system, SUW 2000, has been applied to overcome the gauge problem. The system saves time as there is no need for transfer transshipment or bogie replacement for freight transport.

Ukraine

Track gauges are also different at Polish and Ukraine sides. The automatic gauge change system, SUW 2000 is used at the border of the countries but there is a need of additional rolling stock with gauge-change bogies. There are different technical and legal harmonizations (different axle load, permissible maximum truck weights etc.), consignment notes and customs procedures between the countries. The same problems occur with the other neighbouring country, Hungary. Cargo reloading, gauge and carriage arrangements are also needed at Ukraine/Hungary border. Currently, there is no gauge changing system at this border.

Customs administration and procedure is the main problem in logistics and trade operations. Freight trains wait 4 hours at the border points in Mostiska and 19 hours in Medyka (customs clearance takes 70 min) while coming from Ukrainian side. Trucks wait 3-4 hours at the border Korczowa-Krakovets in both directions when leaving and 5 hours when entering either Poland or Ukraine.[335] There are cases with illegal payments, especially done by domestic carriers, to avoid customs clearance rules.

Moldova

Moldova will become more important after Romania joins EU as it becomes neighbor to EU. Following the expected Schengen implementation in all new EU members, Moldova's border will still continue to be a barrier for integration with CIS.

Russia

Russia is experiencing economic growth and increased trade both with CEEC and the rest of the world. There will be larger transport volumes going to Russia through Baltic countries. However, there are many key logistics problems and trade barriers on Russian borders. These can be listed as follows:

- inappropriate customs clearance, and taxation issues;
- low use of electronic systems;
- corruption and malpractice;
- inadequate technical norms, standards and certifications;
- administrative procedures;
- goods inspections;
- border crossings.

Table 7-1 Predicted Rail Freight Transport Growth for 2020 with Russia

Direction	Rate of Increase	Change of amount
Estonia-Russia	75%	From 40 to 70 million tons
Latvia-Russia	60%	From 40 to 65 million tons
Lithuania-Russia	80–150%	From 38 to at least 60 million tons
Poland-Russia	80–150%	From 8 to at least 15 million tons)
Slovakia/Hungary-Russia	80–150%	From about 24 to at least 40 million tons

Source: Authors, based on EC Public Consultation on TEN-T in Wider Europe, March 2005

[335] Pan-Eurostar, 2005, Pan-European Transport Corridors and Areas Status Report

New customs codes came into force in Russia on January, 2004 based on Kyoto International Convention on Customs Simplification and Harmonization. However, still Russian customs clearance procedure is generally considered to be complicated that causes time losses in trade operations. The costs of a customs clearance in Russia vary from USD 200 to USD 3,000. In this perspective, Russia's accession to WTO will be beneficial both for Russia and WTO members.[336]

EU has been making investments to modernize CEE's borders with Russia for better trade relations as Russia is an important trade partner of it. It has allocated funds to Russia through the PHARE program in accordance with the requirements of the Schengen acquis. There are initiatives for successful implementation of Stabilisation and Association Agreement with Russia. Both Russia and EU are aware of the fact there will be many benefits to both sides by improving transport infrastructure links. The Ministry of Transport of the Russian Federation and the Directorate General for Energy and Transport of the EC agreed to promote a Russia-EU Transport dialogue in 2005.[337] CEEC will be critical intermediaries between EU and Russia for mutual trade and economic relations.

Russia is still not a member of WTO due to the some political conflicts. As Russia joins WTO, export and import flows with CEEC will increase. There will be more focus on Baltic States and overall efficient infrastructure in CEE for good accessibility to Russian market.

Russia and Baltic States

Latvia, Lithuania and Estonia have border facilities which are generally not loaded very much but controls at Russian side are not working efficient enough. Trucks even under TIR carnet are exposed to long waiting hours (over 10 hours) because of Russia. This situation is very obvious between Latvia and Russia at the borders of Terehova and Grebneva where trucks wait between 6 to 12 hours. There are unofficial customs procedures at the same border like paying fixed amount of 20,000 USD for a truck load of goods irrespective of the value of cargo. Because of that, shippers try to load transport units as much us possible until they exceed 50,000 USD limit set by TIR Carnet. [338] Obsolete technical equipment and facilities at railway border stations at Russian side is the biggest reason of bottlenecks in railway cargo traffic. This is acute at Estonia/Russia border.

Baltic States can hardly influence or change transport policies of Russia; although they are important trade partners. One example of this situation is the problem occurred at the marshalling yards of these countries due to the long Russian trains. Russia prefers trains as long as possible in long distance shipments. None of the Baltic States could manipulate Russia to change the situation. Russia's changing the requirements on the sanitary and veterinary controls from time to time is another example of this.

One of the main problematic transit traffic issues in Baltic Region is related to Kaliningrad. It concerns not only Baltic countries but also Russia and Poland. Generally, road and rail transit transports between Kaliningrad and Russia is executed in two directions, Lithuania-Belarus and Lithuania-Latvia, which means that the Lithuanian link has key importance on both. In addition to sea transport, rail will continue to be important means for transporting transit cargo between Russia and Kaliningrad. There are initiatives to introduce high speed trains for better logistics services.

[336] Russian Federation Ministry of Economic Development and Trade
[337] Mission of the Russian Federation to the European Comminities, No:191/05, 2005
[338] Ojala, L., 2005, TTFBS

7.1.3. Western Border of CEE

Generally, EU enlargement on May 2004 resulted in better trade and transport relations with NMs. EU has become a bigger single market with new 10 countries. The borders with Central European countries became internal which definitely reduced heavy customs controls. EU aims to increase interoperability within Europe including all CEE so that it is trying to reduce operational barriers in rail and road freight transport. Big increase of goods flow is foreseen from Western Europe to SEE through CEE.

The border between Poland-Germany in the west part of CEE faces the highest trade and transport traffic as the sizes and freight transport volumes of these countries are comparatively bigger. Following the EU accession, rail and road shippers are free to choose any border crossing post on the border. However, both PKP and DB use Frankfurt/Oder - Kunowice and Horka-Wegliniec as dedicated borders between Poland and Germany.[339] As many other European countries, there are bilateral agreement to upgrade the cross-border railway lines between Poland and Germany. One of them was signed on 30 April 2003 by the transport ministers. There are also construction works related to the electrification of the double rail tracks on Corridor II and III. These rail tracks will not be available until around 2008 due to financial difficulties.[340]

[339] European Intermodal Association, Intermodal Transport Newsletter 49
[340] Pan-Eurostar, 2005, Pan-European Transport Corridors and Areas Status Report

7.2. TRANS REGIONAL CONNECTIONS

In the recent years, there has been a rapid increase of the freight movements between Europe and its trading partners, Asian countries and CIS members, especially Russia. In addition to the flows in the north-south direction, east-west flows have increased considerably within Europe. In these perspectives, this part discusses current and future major trans-regional connections and corridors concerning the CEE region.

The railway trans-regional connections are very reasonable due to the increasing distances in the transport chains. There are about 25 neighbouring countries and regions involved in these networks, such as Georgia, Middle East, Moldova, Russia, Ukraine, Belarus, etc. There are a growing number of shuttle train projects running to the northern direction through Baltic ports and to the southern direction to the Mediterranean and Black Sea regions. There are also some from the West (Poland, Germany) to the East (Russia, CIS). There is also a great interest to the transport links across the European-Asian land links to China, Siberia and Kazakhstan.

7.2.1. Major Transnational Axes Going Through CEEC

The report of the High Level Group (2005) coordinated by Loyola de Palacio[341] covers the major Trans-European transport axes of EU extension towards the neighbouring regions. EC was going to issue a ‘‘communication’’ in autumn 2006 which aims to provide better integration of the national networks with the neighbours and among the neighbouring countries. Except Sea Motorways and South Western axis, the High Level Group identifies the following three major transnational axes which will extend and complement the major axes of Trans-European transport network by interconnecting them with the networks of the neighbouring countries:

Northern axis: To connect the northern EU with Norway to the North and with Belarus and Russia and beyond to the East. A connection to the Barents region linking Norway through Sweden and Finland with Russia is also foreseen.

Central axis: To link the centre of the EU to Ukraine and the Black Sea and through an inland waterway connection to the Caspian Sea. The connections towards Central Asia and the Caucasus are also foreseen. Besides, a direct connection to the TransSiberian railway and a link from the Don/Volga inland waterway to the Baltic Sea is considered.

South Eastern axis: To link the EU through the Balkans and Turkey to the Caucasus and the Caspian Sea to Egypt and the Red Sea. The access links to the Balkan countries and the connections towards Russia, Iran and Iraq and the Persian Gulf are also foreseen.

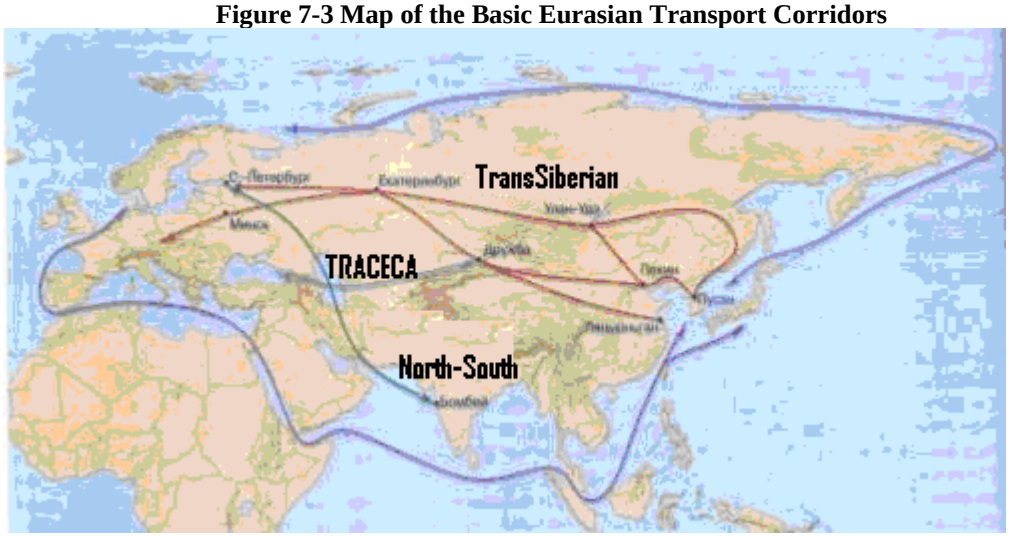
The mid-term review of the axes is proposed to be carried out in 2008 based on information provided by the countries concerned the traffic growth, implementation progress of the proposed measures and bottlenecks, including environmental difficulties that may emerge. The projects are divided in two groups according to their time of implementation: by 2010 and beyond 2020.

[341]Palacio, L., High Level Group, 2005, Networks for Peace and Development

7.2.2. International Networks Linking Europe and Asia through Eastern Europe

The first steps to establish the shorter continental links via Eurasia emerged during the 60s as the conditions at the Suez Canal were hard. There will be some corridors with different implementation stages of road and rail that are going to compete with long sea routes via Suez and other corridors. There were 4 Euro-Asian corridors determined on the conference named as Second International Euro-Asian Conference in 2000. The "Common ECE/ESCAP Strategic Vision for Euro-Asian Transport Links" also proposed four major Euro-Asian transport corridors: TransSiberian, TRACECA, Southern and North-South.[342]

Figure 7-3 Map of the Basic Eurasian Transport Corridors



Source: Authors, based on Alexandr Romanenko, The Europe - Asia transport corridors - competitors of the Suez?

7.2.2.1. TransSiberian Railways

There is a capacity shortage at the shipping and container routes between Western Europe and the Far East. This situation is faced mainly by the export companies in the Far East, especially Japan and Korea. These companies are looking for the alternative transport solutions with Western European import companies that they are collaborating with. In this perspective, TransSiberian Railway land route across Russia has been revived as an initial option. There have been already some successful attempts of transferring the containers to Berlin via TransSiberian Railway.[343] In addition, IKEA and BMW have tested the networks on this corridor.

Almost 90 % of all the rail freight between EU and North East Europe region (Estonia, Latvia, Lithuania and Poland) is going from the East to the West. There are four East-West routes for this movement: The TransSiberian via Perm passing North of Moscow to St-Petersburg, the TransSiberian via Moscow, Riga-Samara passing South of Moscow and Lvov/Kiev to Kazakhstan/China. Poland is connected to Kazakhstan/China through Lvov/Kiev by Pan-European Corridor-III. Besides, Pan-European Corridor-II forms the shortest connection between Moscow and Warsaw/Berlin and crosses the route Riga-Samara. Pan-European Corridor-IX crosses and interconnects the four East-West routes.[344]

[342] Declaration, Second International Euro-Asian Conference on Transport, 2000
[343] Romanenko, A.
[344] CER, 2005, EC Public Consultation on TEN-T in Wider Europe

TransSiberian rail goes from Europe (Corridors II, III, IX) through Russia to Japan with branches from Russia to Kazakhstan-China and Korean and Mongolia-China. The main advantage of TransSiberian is time savings. The shipment of the transportation to Asia takes approximately 26 days (19 200 km) when via TransSiberia it could be 18 days (12 400 km). This advantage is very important in high volume container traffic from Asia to Europe. This situation makes it possible for the Russian Northwest Federal District to double or triple the international flows on links between Europe - Asia and Europe-Asia-America. [345]

TransSiberian corridor is one of the international railway corridors that connect Korea with Europe. There are political aspects concerning the project and both China and Russia are also very much interested with this corridor in order to get some benefits in the future.

7.2.2.2. TRACECA

There is big freight traffic with containers through China in the whole world. China and Kazakhstan are promoting the transcontinental railway corridor with a length of 10500 km from the Chinese port of Lyanyungan on the Yellow Sea to the Port of Rotterdam. This corridor will be important for the container traffic of China on the route through Russia, Belarus, Poland and Germany. It will be profitable for Russia as well but not as much as TransSiberia.[346]

The main route of TRADECA goes from Eastern Europe (Corridors IV, VII, VIII, IX) across the Black Sea to the Caucasus and across Caspian Sea to Central Asia. The routes passing through Turkey were also decided to be included. Consequently, the Port of Mersin, which is the largest port in Turkey and a part of AGTC, was chosen as the entry/exit access point to the rail TRACECA route and the rail Southern route. Availability of RoRo services (across Lake Van and the Bosporus) on the rail routes was also a good side of Turkey on this decision.[347]

Recently, TRACECA programme includes 13 countries: five countries from Europe, three Caucasian states and five countries from Central Asia. It will be important for trade facilitation and the integration of the economies of the member states into the world markets. Members have already joined international conventions and agreements. There are also ongoing construction works on the corridor.[348]

7.2.2.3. North-South

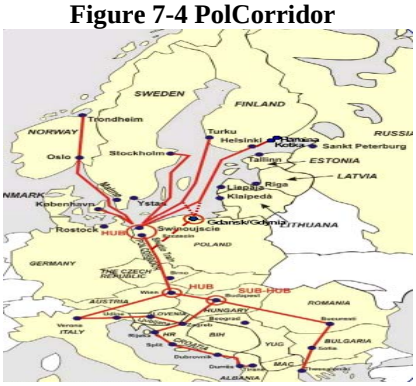
This corridor goes from North Europe (Corridor IX) to Russia with its three branches: Caucasus-Persian Gulf; Central Asia-Persian Gulf and across the Caspian Sea-Iran-Persian Gulf. Both of these braches and TRACECA corridors involve ferry crossings at the Black Sea and Caspian Sea. There are also multimodal solutions (road and rail) on North-South corridor. For example, Odessa Port and Moldova are linked by road or rail. In the same way, the Danube River can be reached from Black Sea (through Romania) or by the road and rail connections through the ports in Bulgaria and Romania.[349]

[345] Report on General Infrastructure Bottlenecks in the Baltic Tangent
[346] Romanenko, A.
[347] UN, 2nd Expert Group Meeting on Developing Euro-Asian Transport Linkages
[348] TRANCECA Official Website
[349]Transit – International Journal, No 4, 2002

PolCorridor

Polcorridor consists of three parts. The first one is a sea-land connection from Sweden, Finland and Norway to intermodal hubs of Poland. The second parts are the connections done with a scheduled block train named as the Blue Shuttle linking Szczecin/Swinoujscie and Gdansk in Poland with Vienna, Bratislava and Budapest. The last parts are the land connections to the destinations in South Europe and SEE.

Figure 7-4 PolCorridor



Source: PolCorridor Assessment of Demand for the Blue Shuttle Train's Services in North and South European Markets, 2005

PolCorridor which is a EUREKA project could be an alternative for international north-south logistics solutions if some conditions are fulfilled. One of these conditions is related to the northbound flows. They should be directed to Blue Shuttle Train instead of to the trailers on the roads by the south-end of PolCorridor countries. Another option can be the usage of Blue Shuttle Train by Austrian and Italian exporters. Blue Shuttle Train could offer quick and cost-efficient freight movements through the borders so that Nordic flows should be combined to obtain economies of scale and frequency.[350]

7.2.2.4. Southern

Southern transport corridor goes from SEE (Pan European Corridor IV) through Turkey to Iran with the branches Central Asia-China and South Asia-South-East Asia/Southern China.

[350] Leviakangas, P. at al., 2005, Pol-Corridor Assessment of Demand for the Blue Shuttle Train's Services in North and South European Markets

8. ANALYSIS

The international market's selection is a complex procedure that is based on a careful analysis of all the factors. The time specific objectives and the resources of the company should be kept in mind. The transport infrastructure plays a critical role when making such kind of decisions. However, when it comes to the evaluation of a region from automotive logistics perspective, not only transport infrastructure availability and legal conditions for efficient logistics operations, but also the demand factor (automotive industry presence) should be taken into account.

First, the infrastructure and logistics market of CEE countries covered by the thesis work are analysed to assess the overall infrastructure and logistics market status in the countries. Second, the automotive industry volumes are considered as a measurement for the automotive logistics demand in the region. Finally, these two sets of classifications are combined to develop a two-dimensional country-cluster matrix: infrastructure and logistics market index versus automotive industry production volumes.

8.1. Transport Infrastructure and Logistics Market Index

The country-cluster analysis is divided into two steps. In the fist stage, the analysis of selected factors related to the infrastructure is presented. The result classifies countries ranging from the most attractive to the least attractive from infrastructure point of view. This analysis is based on quantitative and qualitative data. Next, the analysis, related to the automotive industry is provided based on annual production volumes.

To classify the countries according to infrastructure condition and logistics market development the *transport infrastructure and logistics market index* is initially estimated. The total scoring is based on three different sections according to thesis main parts (Transport policy, Transport Infrastructure and Logistics Market) as follows:

Figure 8-1 Transport Infrastructure and Logistics Market Index

	EE	LV	LT	PL	CZ	SK	SI	HU	CR	RO	BG	TR	MK	SR	BA	AL
TRANSPORT POLICY (25%)																
Safety&Security	4	4	4	2	4	4	5	3	3	3	3	2	2	1	1	1
EU perspective	5	5	5	5	5	5	5	5	3	4	4	3	3	2	2	2
Implementation of transport policy	4	4	4	3	5	4	5	5	3	3	3	3	2	2	2	1
Investments into infrastructure	4	4	4	3	4	4	5	4	4	4	3	3	3	2	2	2
Standards	4	4	4	4	5	5	5	5	4	3	3	4	3	3	3	2
Total	**4,20**	**4,20**	**4,20**	**3,40**	**4,60**	**4,40**	**5,00**	**4,40**	**3,40**	**3,40**	**3,20**	**3,00**	**2,60**	**2,00**	**2,00**	**1,60**
INFRASTRUCTURE (50%)																
Road status	4	4	4	3	4	4	5	4	4	3	2	4	2	2	1	1
Rail status	5	4	4	4	5	4	5	4	3	3	3	2	2	2	1	1
Intermodal transport	4	4	4	4	5	4	4	4	3	3	2	3	1	1	1	1
Bottlenecks	5	4	4	3	5	4	5	3	4	2	2	3	2	1	1	1
Total	**4,50**	**4,00**	**4,00**	**3,50**	**4,75**	**4,00**	**4,75**	**3,75**	**3,50**	**2,75**	**2,25**	**3,00**	**1,75**	**1,50**	**1,00**	**1,00**
TRANSPORT MARKET (25%)																
Attractiveness for Global 3PL	3	4	3	5	5	5	4	5	2	3	2	5	1	2	1	1
Hub potential	3	4	3	5	5	4	4	5	2	4	3	4	1	2	1	1
Focus regions	4	3	3	5	5	5	4	5	3	3	3	4	2	2	2	1
Total	**3,33**	**3,67**	**3,00**	**5,00**	**5,00**	**4,67**	**4,00**	**5,00**	**2,33**	**3,33**	**2,67**	**4,33**	**1,33**	**2,00**	**1,33**	**1,00**
WEIGHTED AVERAGES	**4,13**	**3,97**	**3,80**	**3,85**	**4,78**	**4,27**	**4,63**	**4,23**	**3,18**	**3,06**	**2,59**	**3,33**	**1,86**	**1,75**	**1,33**	**1,15**

Source: Authors

The principle of the Transport Infrastructure and Logistics Market Index's estimation is summarized as follows:

1. Tree sections (Transport Policy, Infrastructure and Logistics Market) with their subtitles are graded as ratings on a 5-point scale, where very low means 1 point, small/low - 2 points, medium - 3 points, medium/high - 4 points and high implies 5 points. The grading is done considering only 16 covered countries in order to compare them with each other, but not with any external country;

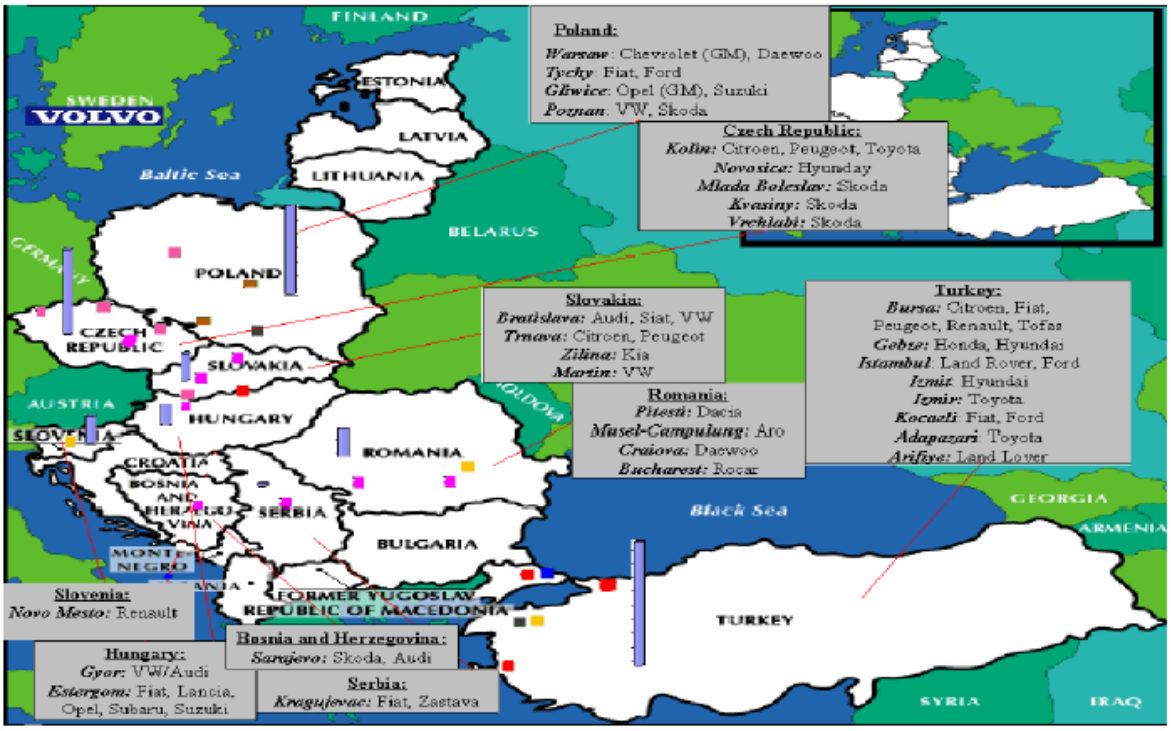
2. These tree indicators are assigned with different weights, as follows: Transport policy (25%), Infrastructure (50%) and Logistics Market (25%), which is derived with reference to their importance for automotive logistics industry. The scenario with equal importance of parameters is presented in Appendix 17. As the infrastructure is considered the main obstacle by the automotive logistics experts the highest weight is put on it;

3. The individual country grades are aggregated considering the sections weights (individual scores on three sections were multiplied by the weights and added together).

8.2. Automotive Industry Presence in the Region

The automotive is industry is growing rapidly and attracting global OEMs as a result of the high amount of investments. Most of the CEE countries are EU members and the remaining countries are considered as potential EU candidates. In addition to EU membership, the region also offers skillful and inexpensive labour, low tax rates and favourable business environment. Besides, proximity to Western European markets and good economic indicators are advantages for the region. The governments in CEEC are offering different types of investment incentives to make their countries even more attractive.

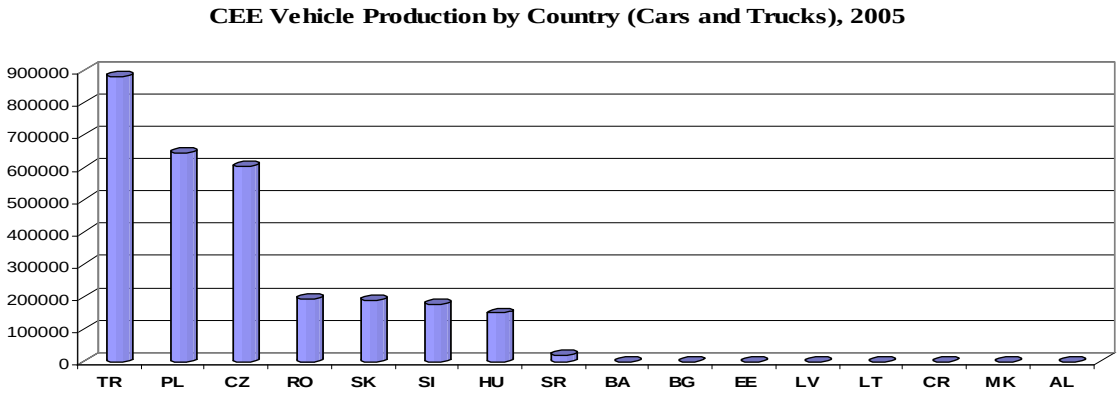
Figure 8-2 Automotive Industry Presence in CEE Region



Source: Authors

The automotive industry plays a very important role in manufacturing industry of the Czech Republic, Slovakia, Hungary, an intermediate role in Slovenia, Poland, Romania, Turkey and comparatively a smaller role in Estonia, Latvia and Lithuania. In the coming years, there will high investments in the region, especially in Slovakia, Czech Republic and Romania. These countries can be expected as important automotive hubs. Figure 8-3 shows the automotive volumes in CEE countries, which are the indicator for *automotive industry presence* in the region.

Figure 8-3 Automotive Volumes in CEE Region



Source: Authors, based on Automotive News Europe

Moreover, the automotive industry of CEE countries is growing very fast. According to forecast[351] by 2010 CEEC car production will reach over 3 million units per year and 20% of new car supply will belong to CEE. Currently, VW, Renault, Fiat, Daewoo and GM are the OEMs that are dominating the automotive industry in CEEC.

Figure 8-4 European Light Vehicle Assembly, 2005-2010

Global Size Rank	Country (EU/EE Top 20)	Unit Difference	% Change	CTG % Share of Global Assembly
3	Germany	394278	7,60%	4,30%
6	France	92843	2,70%	1,00%
7	Spain	133668	5,00%	1,50%
10	United Kingdom	- 279669	-15,70%	-3,10%
13	Russia	426226	35,50%	4,70%
15	Italy	350269	35,00%	3,80%
16	Belgium	76210	8,50%	0,80%
18	***Turkey***	***303771***	***36,70%***	***3,30%***
19	***Poland***	***72912***	***11,80%***	***0,80%***
20	***Czech Republic***	***468599***	***81,20%***	***5,10%***
27	Sweden	74580	25,80%	0,80%
28	Austria	-37683	- 16,40%	- 0,40%
30	Ukraine	43766	20,60%	0,50%
31	***Romania***	***44078***	***22,60%***	***0,50%***
32	***Slovenia***	***-45792***	***-25,70%***	***-0,50%***
34	***Slovakia***	***689058***	***428,80%***	***7,60%***
35	***Hungary***	***99518***	***67,30%***	***1,10%***
37	Netherlands	-115121	-100,00%	-1,30%

Source: PwC Automotive Institute, Global Light Vehicle Outlook, 2006

[351] Global Insight, Sept. 2006.East European Automotive Industry Forecast Report

As it could be seen from the Figure 8-4 the main automotive volumes growth for light vehicle assembly between 2005 and 2010 in CEE region is forecasted for Slovakia (more than 400%), then go Czech Republic (about 81%) and Hungary (67%). All the CEE countries involved in automotive production show positive growth except Slovenia.

8.3. Country-Cluster Method

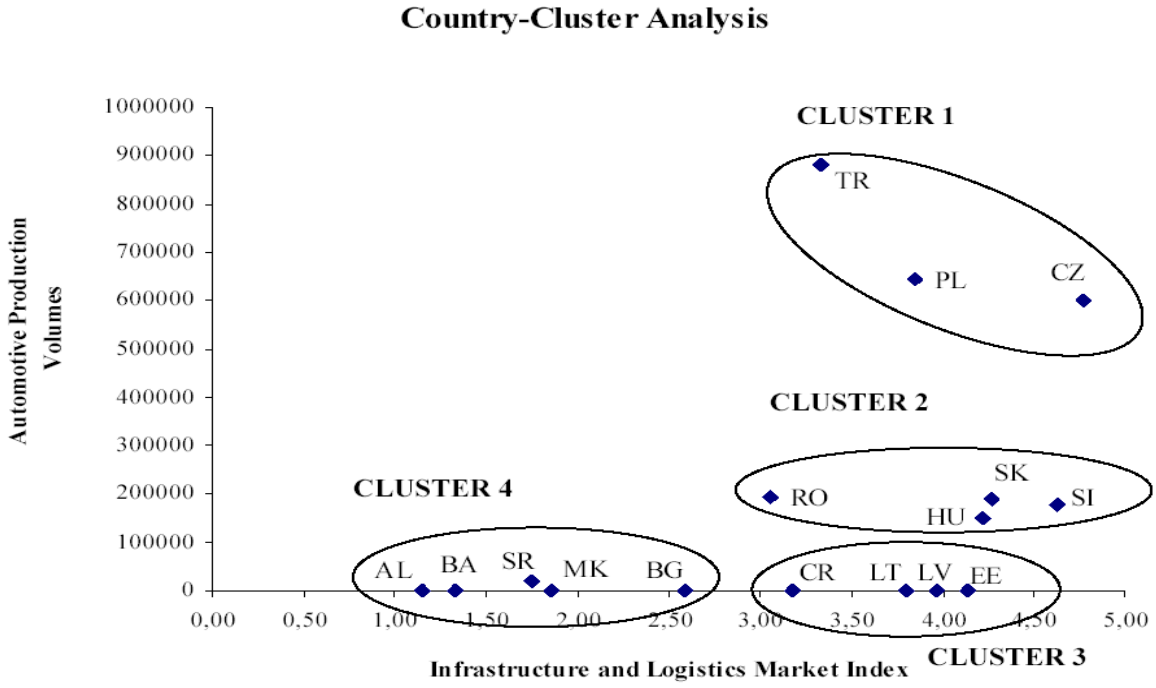
The automotive industry volumes reflect the overall size of the automotive market and its potential while the infrastructure and logistics market index reflects the ease of transport operations in the region. In this perspective, the two stages of classification are finally combined to develop a *country-cluster matrix* in which four main clusters are identified based on an aggregative analysis.

After all the data concerning the transport policy, infrastructure and transport market as well as automotive industry presence in CEE region is collected including particular country profiles, the decision about the most potential markets is taken for further analysis. To check whether these countries offer business opportunities for automotive industry the country-cluster scheme is developed classifying 16 countries of CEE in respect of their overall attractiveness for automotive logistics industry.

The aggregate result of cluster analysis reveals four country clusters:

- *Cluster 1:* Czech Republic, Poland, Turkey;
- *Cluster 2:* Slovakia, Hungary, Slovenia, Romania;
- *Cluster 3:* Estonia, Latvia, Lithuania, Croatia;
- *Cluster 4:* Bulgaria, Serbia, Albania, Bosnia and Herzegovina, FYR Macedonia.

Figure 8-5 Country-Cluster Analysis



Source: Authors

As the grading system used for infrastructure measurement is developed by the authors, the reliability study is conducted based only on official data - Global Competitiveness Index (Appendix 6). The classification scheme also compares well with other published information on these countries (World Bank, etc.).

8.4. Clusters Analysis

Each group of country could be classified as in the Table 8-1 bellow:

Table 8-1 Clusters Analysis

Clusters	Characteristics	Countries	Future Opportunities
Cluster 1	**Most promising group of countries:** Highest automotive production volumes, but infrastructure varies among the countries	• *Czech Republic* • *Poland* • *Turkey*	Huge investments into infrastructure in Poland Turkey as a gateway to Middle East
Cluster 2	**Balanced development on both dimensions:** Automotive industry and infrastructure are developed well	• *Slovakia* • *Hungary* • *Slovenia* • *Romania*	Romania is an EU member, 2007
Cluster 3	**Trade-off between dimensions:** Developed infrastructure, but insignificant automotive industry volumes	▪ *Lithuania* ▪ *Latvia* ▪ *Estonia* ▪ *Croatia*	-Baltic States – a gateway to Russia (strategic location between EU and CIS); -Intermodal development (Rail Baltica, Tran Siberian Railway); -Croatia will join EU by 2010
Cluster 4	**Least promising countries:** (at least in the nearest future) Poor infrastructure and lack of automotive production	▪ *Serbia* ▪ *Bulgaria* ▪ *Macedonia* ▪ *Albania* ▪ *Bosnia & Herzegovina*	-Transit location between EU and Middle East; -Future EU support; -Bulgaria is an EU member, 2007; -Macedonia is a candidate country.

Source: Authors

8.4.1. Cluster 1: Czech Republic, Poland, Turkey

Cluster 1 (Czech Republic, Poland, Turkey) reflects the most promising group of countries with the highest automotive production volumes. However, the status of infrastructure development varies within the countries. The most attractive from automotive point of view is the Eastern Czech Republic, Southern Poland and Northern Slovakia triangle.

8.4.1.1. Czech Republic

Czech Republic remains an attractive location for both automotive and logistics companies as a logistics centre on the Pyhrn corridor (Berlin-Zagreb axis). It is geographically close to the main OEMs operating in Germany and France. The automotive sector is represented by Skoda as well as Toyota/PSA, which ship 70-80% of all the production to Western Europe via rail from Kolin. LSPs are mainly located around Prague and closest areas. However, there are also strong interest for other regions as Brno, Plzen and Ostrava.

The road network is one of the best in the region but still needs to be improved to meet the changing demand of suppliers and markets. Highways, at least around Prague are very close to

Western European level. Czech Republic has a rail network density which is much higher than the whole European average.

Motorway projects with Poland and Germany should improve international distribution channels. However, there are some concerns among LSPs that the country could loose its competitiveness as a logistics hub with further EU enlargement.

8.4.1.2. Poland

Poland has a lower quality of roads than Czech Republic, but it has the highest potential for automotive industry growth and represents the largest CEE market after Turkey. Poland, especially Warsaw, Central Poland, Poznan, Wroclaw and Upper Silesia regions, is very well positioned as an important logistics hub for Eastern and Western Europe. Main OEMs and suppliers prefer south of Poland.

Poland is a gate to the East for Western Europe. Insufficient infrastructure (lack of highways, absence of multimodal terminals, capacity bottlenecks on Polish-German border, complicated trans-border transport, etc.) is expected to receive extensive investments in 10 years, especially on road development. New highways, which circle main cities, are needed. However, the main developments are concentrated mainly in the western area while the eastern part remains less developed. Direct connection to automotive clusters in Central Europe (Slovakia, Poland and Czech Republic) also remains uncertain. By 2009 most of Polish largest cities will have expressconnection with Western Europe. Warsaw plans to get 67 bln. EUR in EU structural funds for 2007-2013: 40% of which, 28 bln. EUR, will be directed for building of 500 km of motorways and over 1600 km of express roads.

8.4.1.3. Turkey

Strategic location of Turkey provides opportunity to distribute the goods in three days to Russia, the Middle East, Balkans and Eastern Europe. The present transport network (ports, highways, etc.) is suitable for combined transport development. Rail ferries allow trains to cross the Bosphorus. Transfesa has already implemented a rail-based intermodal traffic corridor distributing Ford parts between Northern Europe and Turkey. A tunnel construction project under the Bosphorus is expected to be finished by 2009, which could be interesting option for future distribution.

After the completion of high speed railway network of 30,000 km by 2015, Turkey will be connected to the two corridors going to Asia. However, there is a threat of losing some transit flows if TRACECA corridor's connection (from Romania to Central Asia over the Black Sea) and North-South corridor are realized.

The attractiveness of Turkey as an export hub for automotive industry is obvious. Renault Trucks (part of Volvo Group) announced its intention to build new production facility in Turkey in 2008. The fact that the majority of automotive manufacturers are based in the western part of Turkey (Marmara Region), which is more suitable for block train corridors, explains the higher infrastructure development in the western region.

However, some auto manufacturers and LPS's prefer Central Europe (Czech Republic) when looking for a location to serve the European market partly because of the tax issues and "high risk country" image. Turkey is 10 to 15 years away from becoming a full member of EU, but its

automotive industry is already well-integrated into Europe.[352] Although Turkey has joined Customs Union of the EU long ago (1996), there are bureaucratic difficulties connected to the customs procedures. Import and export trade is not balanced which causes difficulties in optimizing the transport flow.

Road infrastructure continues to improve, but there are still traffic congestion problems in Istanbul and the secondary roads are less developed. The fact that highway transport develops very fast results in high number of accidents, environmental pollution and congestion. Bureaucracy in investments models is sometimes problematic as coordination between the institutions might be weak. The structural funds and long term transport policies also seem not to be applied in the nearest time because of the delay of EU membership.

8.4.2. Cluster 2: Slovakia, Hungary, Slovenia, Romania

Cluster 2 (Slovakia, Hungary, Slovenia and Romania) represents the countries with the balanced development on both dimensions.

8.4.2.1. Slovakia

Slovakia is one of the leading car-making countries of CEE after Poland and Czech Republic, and it has potential for growth. The automotive production is still driven by VW, but the market is liberalizing after PSA and Kia establishment in the region.

Slovakia is expected to reach the largest car producer volumes per capita in CEE. The reasons of the success are wage rates, which are lower that those in Czech Republic and Poland, and the governmental interest in winning large-scale automotive investments.

Slovakia has strategic opportunities for expansion to Russian and Ukrainian market. This includes West-East and North-South cross links, density of existing transport infrastructure, relatively strong rail system with good links to Germany and Austria, access to Corridor VII (Danube-Mohan-Rhine) and successful railway corridors modernisation.

There are; however, several weaknesses in Slovakia: TEN-T is not constructed completely. There are the lack of IT development and financial resources, inefficient conditions for intermodal terminals (except Dobra) and insufficient infrastructure development of the areas outside the Western Slovakia.

Infrastructure investments are considered the main priority by the government and it is expected that extent of motorways should increase.

8.4.2.2. Hungary

Currently, there are 15 automotive production centres of which the outermost is only 500 km away the capital city, Budapest. One of the reasons why OEMs (Kia, VW, Toyota, PSA, Skoda, and Hyundai) make decision in favor of Hungary is that the country is characterized by favorable regime for automotive industry with suitable government initiatives and tariff-free environment. Many automotive producers after considering alternative locations (Poland, Czech Republic) finally choose Hungary to get the governmental subsidies. LSPs, such as Gefco, follow their

[352] Automotive News Europe, April 3, 2006

customers establishing the subsidiaries. Its central location in CEE makes it also a good location to benefit from the new emerging markets located further to the east and south of Europe.

Hungary has good road network and is well developed as a logistics hub (the country is divided into 11 logistics regions with intermodal centers in each). There are 4 TEN highways crossing the country that is more than in any other neighbor. The Danube offers big future potentials for inland shipping. Hungary is often considered as a country which can be reached from Germany via the Danube. It also has advantage as a connection point with Middle East and Balkans. Gyor is considered as an important logistics center, where the automotive cluster PANAC (Pannon Automotive Cluster) is based.

However, there is a long-term risk that the road system could be congested since the transport bottlenecks could occur caused by the unstable and slow rail reforms. The limited track capacity hinders future rail developments.

8.4.2.3. Slovenia

Slovenia has one of the most developed transport infrastructure in CEE, which is comparable with EU-15 level. Moreover, the country adopts Euro in 2007, which will simplify the business operations in the region.

Ljubljana is located on crossroads of V and X Corridors going from West to East and from North to South. Port of Koper on the Adriatic Sea is closer than western ports for Asian manufacturers based in CEE. Port and road infrastructure is still not good enough, but it is cheaper. There is also the shortest rail transport route from East to West that avoids the problem of crossing the Alps. Slovenian Transport Logistics Cluster (TLC) and Automotive Cluster Slovenia (ACS) are aimed to optimize the usage of attractive geographical location.

8.4.2.4. Romania

Romania becomes EU in 2007 and is emerging as a possible future location of automotive industry. Component manufacturing and vehicle assembly are developing rapidly in the country. The historical events have effects on Romanian's automotive industry such as the presence of Renault plant for years.

It has rather good potential for new road and rail links to the neighboring countries and Black Sea Ports. Port of Constanta which is the largest on the Black Sea is located on TEN-T and has enough potential for expansion. Extensive railway network is connected to the inland navigation waterways including the Danube, which provides potential for intermodal transport development. Many companies are expected to locate over the next five years in capital city, Bucharest.

The main weakness of Romanian transport system is that the infrastructure design and quality is not suitable for EU level. Undeveloped road network creates high number of accidents. There are few motorways in the country with no links to EU. Poor rail infrastructure is resulting in speed restrictions. Many investors considering Romania and Bulgaria as a research phase because of the political and economical risks.

8.4.3. Cluster 3: Estonia, Latvia, Lithuania, Croatia

Cluster 3 (Estonia, Latvia, Lithuania and Croatia) is quite interesting since it represents the trade-off between the two dimensions. In spite of rather developed logistics infrastructure, there is an insignificant automotive industry presence in the region.

8.4.3.1. Baltic States (Lithuania, Latvia, Estonia)

The Baltic States have rather limited market with low volumes. They are strongly dependant on the transit flows to Belarus, Ukraine and Russia, which are influenced by political and economical relations with CIS countries. The Baltic State market has the lack of automotive producers. However, component manufacturers are planning bases in Estonia, Latvia and Lithuania.

Vehicle import flows from Russia sometimes move through the Baltic ports as Russian ports do not have the capability to handle all the cargo. Therefore, having a strategic location between EU and CIS, Baltic States are developing as an important gateway from Western Europe to Russia via TransSiberian Railway connection and in long-term perspective to Asia as well as gateway to Europe for inland transport from Russia and Asia. The multilingual workforce is one more advantage for that.

Existing port and road infrastructure provides enough capacity currently and has a potential for future development. The rail infrastructure is rather good, but investments in terminals are still necessary. However, the reliable and quick link to the Baltic States is missing and it will only be offered with the completion of Rail Baltica by 2016.

Lithuania

The main potential could be seen in semi-trailers (Ro-Ro ferries), especially with Western Europe and Scandianavia. In future the intermodal transport can be an alternative for medium and long distance haulage. However, terminals still need development.

There is a serious concern about the traffic growth after EU enlargement. The traffic on the Via Baltica highway has grown by 42% since May 2004. Lithuanian government is going to upgrade the national infrastructure under the large national plan 2007-2013, especially by building new network, logistics centers and border checkpoints. Kaunas is promoted as a logistics terminal based on the crossroad of two important highways with city airport and tax advantages.

One of important transport bottlenecks is the cargo disappearance and delays caused by the customs procedures on Belarus border. Therefore, LSPs in the region could be selected not only from their logistics capabilities point of view, but also clearance capabilities plays important role.

Latvia

The production of vehicle and trucks in Latvia is developing, but the volumes are still miserable. The strategic location of Riga offers good opportunities within the Baltic States. Therefore, many international companies open head offices there to serve the Baltic States and the quality of logistics service is improving. Latvian legislation is developed to provide favourable conditions for tax regime. The quality of transport infrastructure is also rather good.

If the Trans-Siberian Railway line improves in terms of quality and reliability, there will be opportunities for Riga and Ventspils to be alternative distribution hubs for Far East, Scandinavia and Western Europe in Baltic Region.

Estonia

Estonia is competing with Finland to be a gateway to Russia. Tallinn Port, which combines low cost and quite good quality of services, could be the platform for shipments to St. Petersburg. However, Finish ports seem to have better locations for high value products and logistics operations. Some logistics companies also consider Lithuania and Latvia as a better location for the Russian transit market.

Quality of transport is good and Estonia has better investment climate image comparing with other Baltic States. It is the only country that has privatized its railway sector. There are congestion problems caused by traffic growth.

8.4.3.2. Croatia

Croatia has been investing heavily on the infrastructure and has one of the modern infrastructures of CEE. The construction works, particularly for motorways, are rapidly going on. The Danube River, the Save, and Drava River are international waterways with potentials.

While having no car production, the country concentrates on the component manufacturing. However, there is small automotive parts production. Tourism is very important for the national economy and investments on highways are triggered very much by it in the last years. Being in the stage of EU accession and expectations to join EU by 2010 are also important driving factors for infrastructure modernization.

8.4.4. Cluster 4: Bulgaria, Serbia, Albania, Bosnia and Herzegovina, FYR Macedonia

Cluster 4 (Albania, Bosnia and Herzegovina, Bulgaria, Serbia and FYR Macedonia) consists of the least promising countries at least in the near future for automotive industry considering the infrastructure condition. Bulgaria, FYR Macedonia and Albania are peripheries for CEE automotive industry.

There are concerns about the reliability and quality of the infrastructure and service providers. Balkan region has transit location between Middle East and EU. Therefore, many infrastructure projects are carried out. However, the fact of being non EU members slows down the speed of development and investments. “South Eastern Axis” is aimed to link the EU through Balkans to Turkey and further. In addition, the Pyhrn corridor (Berlin-Zagreb) is promoted by Austria and connected to railway project (TEN 22) Athens-Sofia-Budapest-Vienna, which is expected to be developed.

8.4.4.1. Bulgaria

Taking into account the EU enlargement in 2007, future infrastructure development is expected in Bulgaria. Its hub potential for transit and trade within Europe will increase considerably as it already has the same specification and standards with EU. It will be important for Black Sea and Mediterranean Regions as well with the ports in Bourgas and Varna. (5 TEN crossing the country) In addition to EU support, Bulgarian government has made heavy investments on the

establishment of industrial zones for the period 2007-2013. Sofia is developing as a national distribution centre.

Generally, road infrastructure is in poor condition. The lack of financial sources and mountainous territory complicates the situation. The railway density and network are quite well but the terminals, wagons are obsolete. Currently, the automotive industry is not a big part of the Bulgarian economy.

8.4.4.2. Serbia

Serbia is the most attractive among the SEE countries from automotive and logistics point of views. Serbian government has focused on foreign investments and economic reform promotions but still corruption is a big problem. The grey economy size, which is 20-25% of GDP, continues to be a problem. However, the internal and external political conflicts are over. It has a good basis to establish itself as the manufacturing engine of whole Southern Europe. Volvo Trucks is one of the OEMs, which has invested recently. However, Serbia is far behind the NMs' levels.

Serbia has a key geographical position in the Balkans as it provides the quickest link from Western Europe to Turkey and Middle East. Even though some parts are not easily accessible by road, the main cities are connected quite well by the roads. Due to its central location in SEE, it has rail links with many countries: Hungary, Romania, Bosnia and Herzegovina, Montenegro, Austria, FYR Macedonia, Bulgaria and Croatia.

8.4.4.3. Albania, Bosnia and Herzegovina, FYR Macedonia

Considering the geographical locations, level of investments in infrastructure, traffic and goods flows, the rest of the cluster members, Albania, Bosnia and Herzegovina, FYR Macedonia, fall behind CEE standards from transport infrastructure point of view. The rail network is the lowest in these countries. Road transport infrastructure is in need of heavy investments. The present transport flows on key transport corridors are at low levels and international transport is done for the imports of goods which create imbalances. Distribution and storage facilities are obsolete with low capacities.

However, open economy is developing rapidly and there are some agreement with IMF, World Bank and EU that are critical for the future. FYR Macedonia is an EU candidate and continues the negotiations. Albania has signed Stabilization and Association agreement with EU with the purpose of accession in the long term. Bosnia and Herzegovina is reconstructing its industry facilities and signing bilateral agreements with European countries. Automotive industry has a marginal role in both of the countries.

8.5. Future Scenario

Analyzing the CEE infrastructure and transport growth it seems that the main centre for the European market still will be Western Europe and there will be no core relocation of service networks. Instead new additional facilities and networks will occur to support the growing demand in CEE.

The CEE markets are developing very fast. It may take only some years for CEE to reach the EU labor rates. Considering Spain and Portugal as an example, the transition process for new members could take about five years.

Therefore, in 10 years the business interest can switch from Central Europe to the countries of higher economical risk such as Romania, Turkey and Southern Europe and further to Ukraine and Russia. Many international logistics companies and contract manufacturers have already started or planned to start operations there. Further expansion depends on the EU enlargement and infrastructure developments in the region. Belarus also has good potential for automotive logistics industry expansion, but the political situation is not expected to change in the nearest future.

The further enlargement will increase the number of shipments between EU and Eastern Europe and the shift will expand the market to the Russian border. As EU is the main trade partner of Russia, development of new lines for combined transport corridors through Poland, Belarus and Baltic ports as well as with Moscow will be very important.

According to Global Insight Russian growth will remain steady while growth will rebound in Ukraine. Ukraine is the third largest demand market after Russia and Turkey. Global Insight expects Russian market to become as big as the French and UK markets by 2011. It will overtake them and become the second largest market (after Germany) by 2013. With 1,9 million light vehicles in 2011, Russia will be the fourth largest supplier of cars in Europe after Germany, France and Spain.[353]

With the growth of transportation and trade between EU and CIS, the Baltic, Russian, Belarusian and Ukrainian logistics and transport companies could become more competitive since they are more familiar with the Russian market, culture, language and offer cheaper services. However, another important future trend of increasing service requirements could be an obstacle for that as Eastern European market is still not able to provide sophisticated logistics and supply chain solutions.

[353]Global Insight, Sept. 2006.East European Automotive Industry Forecast Report

9. CONCLUSIONS & RECOMMENDATIONS

- The attractiveness of *CEE* as an *emerging market* and its importance as a Pan European logistics hub for global OEMs and LSPs continue to grow. This increases east-west automotive export flows and creates demand for efficient logistics infrastructure in the region;

- *Transport infrastructure* remains the biggest challenge in the region and can not be improved in short-term period. Despite the years of investments, it still remains at a level well bellow Western standards and it will take around at least 10-15 years to reach EU-15 level;

Central European countries (Poland, Czech Republic, Slovenia, Hungary and Slovakia) and Baltic States (Estonia, Latvia, Lithuania) which are geographically closer to Western Europe have much better infrastructure than Balkan countries. Romania and Turkey comparatively are better than the rest of the Balkan region from infrastructure point of view;

- Infrastructure development of CEE depends on *EU financial support* and interest in particular countries and corridors. Currently, the main funding goes to new EU Members ("first flow countries") and TENs development. However, EU has limited financial resources and the national governmental *investments* into infrastructure are critical for region's development;

- *Road transport* market is rather well developed with high level of fragmentation and competition. There is a trend for road transport companies to switch to part truck loads. Global LSPs will try to cooperate with Eastern European drivers due to their lower costs or they will acquire the local companies;

- *Railway systems* are generally state-owned with a lack of cooperation between the providers and financial assets. Low capacities, poor service levels and different standards (width of gauge, electrification, signaling systems, etc.) slow down the operational efficiency and cause delays. Central Europe (Czech Republic, Hungary, Poland, Slovakia, and Slovenia) has the strongest railway system;

The changes could be expected with European railway freight market opening in 2007. However, the railway freight market could be liberalized only by 2015. Private rail corridors could start in Eastern Europe as there is a demand from multinational companies for dedicated trains;

- Traditionally strong railway networks and EU initiatives in CEEC provide the potential for *intermodality*, especially with the Western European countries. However, the lack of political measures, dominant role of road transport and improper railway services hinder intermodal developments in the region;

- *Inland waterways* have enough capacity to be used for automotive logistics. There are already some practices to transport finished vehicles via inland waterways from Central European countries to Western Europe through the Danube. However, investments are needed into the infrastructure for service improvement;

- The governments of Central European countries consider *automotive industry* as a core activity giving to the infrastructure investments the top priority. Currently, east-west connection

of automotive flows is the main focus in the region. However, north-south connection should be taken into account for future operations since it will affect logistics flows;

- Considering the main industrial and logistics factors to locate logistics hubs and distribution centres, Central Europe is the most suitable region. Czech Republic, Poland, Hungary are the most preferred Central European countries. Baltic States and Balkan countries are respectively the second and third regions for establishment of logistics facilities;

- The CEE markets are developing very fast. It may take only some years for CEE to reach the EU labor rates. Therefore, in 10 years *future focus* could switch towards Balkans, Ukraine and Russia (second after China according to the potential). Many LSPs and contract manufacturers have already started or planned to start operations there. Further expansion depends on the EU enlargement and infrastructure developments in the region;

- With a growing interest to Russia the importance of CEE, especially Baltic States (Estonia, Latvia and Lithunia), as a transit region and a gate to Russia and in longer-term to Asia is obvious. In the long term many logistics facilities are expected to be built on the Pan European transport corridors connecting Central Europe with Russia. There should be further developments of TransSiberian railway connection as well as transport network integration with the eastern border;

Recommendations for LSPs towards CEE transport market

The main centre for European market will still remain Western Europe and no single relocation to CEEC is expected. Therefore, LSPs should consider regional models for multi-country targeting;

- Analysing the presence of large international players on the CEE market, there is still a limited number of them, but they are expected to grow in the region.

- There will be high demand for transportation and value added services in CEE, which is extremely important for automotive sector. Modern logistics concept is rather new in the region, since most of the local providers specialized mainly in transportation and warehousing. There are very few 3PL companies which provide integrated service and own qualified staff. Therefore, big global LSPs will be important players in the region, facilitating logistics in Eastern Europe and lobbying governments for infrastructure development;

- In spite of the EU expansion, the region is still not a single market. Differences of currencies, alphabets, languages, laws, working cultures, IT systems should be taken into account. Therefore, the development of s*trategic long-term partnership with local transport providers* is critical for success. This synergy provides benefit for both sides: assets and financial resources for national providers and cultural knowledge, networking and market knowledge for global LSPs. Logistics companies should also elaborate their problems in a multimodal dimension;

- There is also a good opportunity for LSPs to act as *Logistics integrator of major OEMs* in CEE region; coordinating the goods flows back to Western Europe as the manufacturers try to consolidate their volumes in CEE.

Recommendations for further research

During the thesis writing several new areas and problems appeared which could be of interest for further investigations. The research is conducted considering the automotive logistics industry. However, it could be extended for the overall logistics industry. The study is limited by 16 Central and Eastern European countries. However, another research could be done to investigate the CIS countries, especially Russia and Ukraine. In developing country clusters two dimensions are taken into account. (Infrastructure and logistics market index versus automotive industry production volumes) The further analysis can be more insightful by including other variables. For example, one of the variables could be the development of IT systems in CEE. Another possible expansion in this research could be the patterns of shifts in country clusters in respect of transport infrastructure and automotive industry future trends. It could also be interesting to consider each international strategy at more micro level.

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- www.instat.gov.al - Albania Institute of Statistics.
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11.Appendix 1: Transport Policy

Table 11-1 Status of Acquis Requirements, Chapter 9 "Transport policy"

	Chapter opened	Status closed (provisionally closed)	Transitional arrangements
BG	June 2001	December 2004 (June 2003)	Access of non-resident haulers to the national road transport market of other Member States to be phased in gradually; Financial standing criterion for transport operators carrying out domestic transport services (until 31 Dec 2010); Gradual increase of axle-load limits on national road network (until 31 Dec 2013).
CZ	Nov. 1999	Dec. 2002	Access of non-resident haulers to the national road transport market of other Member States to be phased in gradually.
EE	Nov. 1999	Dec. 2002 (Mar 2002)	Access of non-residents haulers to the national road transport market of other Member States to be phased in gradually.
HU	Nov. 1999	Dec. 2002 (March 2001)	Gradual increase of axle-load limits on national road network (until 31 Dec. 2008); Access of non-resident haulers to the national road transport market of other Member States to be phased in gradually; Access to Hungarian rail market to be phased in gradually (until 31 Dec. 2006).
LV	Nov. 2000	Dec. 2002 (Dec. 2001)	Retrofitting of certain vehicles used in domestic transport with tachographs (until 31 Dec. 2005); Financial standing criterion for transport operators carrying out domestic transport services (until 31 Dec. 2006); Access of non-resident haulers to the national road transport market of other Member States to be phased in gradually.
LT	Nov. 2000	Dec. 2002 (Dec. 2001)	Retrofitting of certain vehicles used in domestic transport with tachographs (until 31 Dec. 2005); Financial standing criterion for transport operators carrying out domestic transport services (until 31 Dec. 2006); Access of non-resident haulers to the national road transport market of other Member States to be phased in gradually.
PL	Nov. 1999	Dec. 2002 (June 2002)	Gradual increase of axle-load limits on national road network (until 31 Dec. 2010); Access of non-resident haulers to the national road transport market of other Member States to be phased in gradually; Access to Polish rail market to be phased in gradually (until 31 Dec. 2006).
RO	June 2001	Dec. 2004 (Dec. 2003)	Access of non-resident haulers to the national road transport market of other Member States to be phased in gradually; Gradual increase of vehicle taxes for certain vehicles used in domestic transport (until 31 Dec. 2010); Gradual increase of axle-load limits on national secondary road network (until 31 Dec. 2013).
SK	Nov. 2000	Dec. 2002 (Apr. 2002)	Access of non-residents haulers to the national road transport market of other Member States to be phased in gradually.
SI	Nov. 1999	Dec. 2002 (Dec. 2001)	n/a

Source: Authors, based on EC Official Webpage

Table 11-2 Documents Related to National Transport Policies in CEEC

Country	Title of the Documents
Czech Republic	▪ New Transport Policy. *2005, Ministry of transportation.* ▪ Time Schedule and the financial provision for the implementation of the Proposal for the development of the transport networks in CZ until 2010. *Jan. 2001, Ministry of Transportation.* ▪ National Transport Policy. *1998, Ministry of Transportation.*
Estonia	▪ Estonian National Transport Policy 2004-2020, (under development). ▪ PT development 2006-2013. *2005, MoEAC.* ▪ Transport Development Plan 2005-2013. *2005, MoEAC.* ▪ Reference Framework for the Cohesion Fund in the transport sector 2004-2006. *2004, MoFA.* ▪ Estonian National Development plan for the implementation of the EU Structural Funds – program document 2003-2006. *2003, MoF.* ▪ Estonian National Road Safety Program, 2003-2015. *2003, ERAA.* ▪ Transport Development Plan 1999-2006. *1999, Ministry of Transport and Communication.*
Hungary	▪ Development Plan of the motorways and motor road network until 2015 ▪ Hungarian Transport Policy 2003-2015. *2004, GKM.*

	▪ Hungarian National Development Plan (2004-06). *2003, NFH.* ▪ Transport Safety Programme. *2000, ORFK.*
Latvia	▪ National Programme for Road Traffic Safety 2000-2006 ▪ Programme for Regional Support of the State 2nd Class Roads. *2004, Ministry of Transport.* ▪ Programme of the Development of Latvian Rural Roads for the Years 2003 to 2004. *2002, Ministry of Transport.* ▪ National Programme for the Development of Transport from 1996 to 2010. *Accepted 1999, updated 2002, Ministry of Transport.*
Lithuania	▪ Lithuanian long-term (to year 2015) transport system development strategy. *2005, Ministry of Transport and Communications.* ▪ Lithuanian long-term economic development strategy to year 2015. *2003, Ministry of Economics.* ▪ Long-term development strategy of the State. *2002, Ministry of Economics.*
Poland	▪ National Transport Policy. 2005-2025. *2005, Ministry of Infrastructure.* ▪ National Road Safety Programme "GAMBIT 2005". *2005, Ministry of infrastructure.* ▪ National Development Plan 2007-2013. *2005, Council of Ministers.* ▪ National Transport Development Strategy 2007-2013. *2004, Ministry of infrastructure.* ▪ National Development Plan 2004-2006. *2004, Council of ministers and Resolution Polish Gov. Publishing Office.* ▪ Integrated Operating Programme – Transport for 2004-2006. *2004, Ministry of Economy and Labour Resolution Polish Gov. Publishing office.* ▪ Sectoral Operating Programme – Transport for 2004-2006. *2004, Ministry of Infrastructure.* ▪ The Transport Policy of the Slovak Republic. *2003, MDPT SR.* ▪ Transport Infrastructure Development Strategy for 1004-2006 and beyond. *2003, Ministry of Infrastructure.* ▪ National Transport Strategy 2004-2006. *2003, Ministry of Infrastructure.* ▪ The Concept of the Road-Network Development in the Slovak Republic. *2002, SSC.* ▪ National Road Safety Programme "GAMBIT 2000". *2001, National Council for Road Safety.* ▪ National Transport Policy 2001-2015. *2001, Mol.* ▪ Strategy of development of transport, post and telecommunication regarding integration of the Slovak republic into the EU. *2000, MDPT SR.* ▪ Negotiation position of the Slovak Republic to Chapter No 9 – Transport Policies. *2000, Ministry of Foreign Affairs.* ▪ Transport policy in Poland. Action programme to transform transport into a system in line with market economy requirements and the new conditions for economic co-operation in Europe. *1995, Ministry of Transport and Maritime.* ▪ Concept of the road transport development until 2000 with a view until 2010. ▪ National Programme of the Slovak Republic. *1995.* ▪ Concept of transport development. *1993.*
Slovenia	▪ National Motorway Action programme. *2004.* ▪ Resolution on transport policy of Republic of Slovenia. *2004, Government of Republic of Slovenia.* ▪ Spatial Development Strategy of Slovenia. *2004, Ministry of the environment and spatial planning.* ▪ Road Safety Action Programme. *2002.* ▪ The Strategy for the Economic Development of Slovenia 2001-2006. *2001, Institute of Macroeconomic analysis and development.*
Slovakia	▪ Updated Principles of the State Transport Policy, *Slovak Government, 2000* ▪ Economic Stabilization and Transformation of Slovak Railways (contains framework for infrastructure development until 2007), *Slovak Government*
Bulgaria	▪ National strategy of transport sector. *2000, Ministry of Transport and Communications.*
Romania	▪ Development strategy of the railway system 2002-2010. *2002, Ministry of Public Works, Transport and Housing.* ▪ Development Strategy of the national program for motorways. *2001, Romanian Parliament.* ▪ Rehabilitation strategy of the national roads. *Ministry of Public Works, Transport and Housing.* ▪ Development strategy for road transport.
Turkey	▪ National Transportation Master Plan Strategy.*2005, Ministry of Transportation.*

Source: Authors, based on ASSESS, 2005

12.Appendix 2: Standards

Table 12-1 Driving Times – Goods Vehicles

	Current rules	New rules from 11 April 2007
Daily driving	Nine hours extendable to 10 hours twice a week	*No change*
Weekly driving	A weekly limit is currently not specified in law, but in practice it is 56 hours	Weekly limit of 56 hours is specified in the new rules
Fortnightly driving	Maximum of 90 hours driving per fortnight	Maximum of 90 hours driving during any two consecutive weeks
Breaks from driving	Total of 45 minutes at or before the end of 4.5 hours continuous or cumulative driving. The 45-minute break may be split into breaks of at least 15 minutes each	Total of 45 minutes at or before the end of 4.5 hours continuous or cumulative driving. The 45-minute break may be split into **two breaks, the first being at least 15 minutes long and the second at least 30 minutes**
Daily rest	11 hours in the 24-hour period commencing at the end of the last daily or weekly rest. May be reduced to a minimum of nine hours no more than three times per fixed week. Daily rest may be taken in a vehicle as long as it is fitted with a bunk and is stationary. Reductions must be compensated before the end of the following week and attached to another rest period of at least eight hours long. Compensation shall be taken at the vehicle or driver's base at the driver's request	11 hours in the 24-hour period commencing at the end of the last daily or weekly rest. May be reduced to a minimum of nine hours no more than three times **between any two weekly rest periods**. *This removes the potential to take six consecutive reductions during a Friday Wednesday working week.* **Where a driver chooses, reduced daily rest periods may be taken in a vehicle as long as it has suitable sleeping facilities for each driver and is stationary. Reductions no longer require compensation**
Split daily rest	12 hours in total in the 24-hour period. Can be taken in two or three periods, each at least one hour long with the last part at least eight hours	Can be taken in **two periods, the first period being at least three hours and the last at least nine hours**
Weekly rest	Must be taken after no more than six successive periods of 24 hours following the last weekly rest period. At least 45 consecutive hours, which can be reduced to 36 hours at base or 24 hours away from drivers' and vehicle's base Reductions must be compensated en bloc before the end of the third week following the week of reduction and attached to another rest period of at least eight hours long. Compensation shall be taken at the vehicle or driver's base at the driver's request. A weekly rest that begins in one week and continues in the following week may be attached to each of these weeks	Must be taken after no more than six successive periods of 24 hours following the last weekly rest period. At least 45 hours can be reduced to 24 hours **at base or away from base. A full regular 45 hours rest required in any two weeks** Reductions must be compensated en bloc before the end of the third week following the week of reduction and attached to another rest period of at least **nine hours** long. **Where a driver chooses, reduced weekly rest periods may be taken in a vehicle as long as it has suitable sleeping facilities for each driver and is stationary.** *This gives drivers the right to choose whether or not to take a reduced weekly rest in a vehicle. However, employers may still decide when reductions are to be taken. And the right for drivers to choose where compensation is taken has been removed*. A weekly rest period that falls in two weeks may be counted in either week, **but not in both**
Double manning daily rest concession	During each period of 30 hours when a vehicle is manned by at least two drivers, each driver shall have a rest period of not less than eight consecutive hours	*The regulations state that within 30 hours of the end of a daily or weekly rest period, a driver engaged in multi-manning must take a daily rest period of at least **nine hours***. 'Multi-manning' is defined as where during each period of driving between any consecutive rest periods, there are at least two drivers in the vehicle – but **for the first hour the presence of another driver is optional** A **regular (at least 11 hour) daily rest** may be interrupted **not more than twice** by other activities not exceeding one hour in total. During that regular daily rest the driver must have access to a bunk or couchette. *There is no longer a requirement for part of the rest to be taken on land*
Ferry/train daily rest concession	Daily rest may be interrupted once provided part of the rest is taken on land, the interruption is no longer than one hour (including customs formalities), the driver has access to a bunk or couchette during both portions of rest, and the rest period is increased by two hours	A **regular (at least 11 hour) daily rest** may be interrupted **not more than twice** by other activities not exceeding one hour in total. During that regular daily rest the driver must have access to a bunk or couchette. *There is no longer a requirement for part of the rest to be taken on land*

Source: Authors, based on Freight Transport Association Regulation (EC) No 561/2006 FTA members' briefing note

13. Appendix 3: Investments and Transport Projects

Table 13-1 Marco Polo Funding, 2004-2005

Project Description	*Companies Benefiting*	*Funding, EUR*
2004		
EUREWA (European Intermodal Rail Network) - serving the East West Axis Germany-Hungary: Daily high quality shuttle trains.	Kombiverkehr mbh&Co KG (DE) MAV Kombiterminal Kft. (HU) Duisport Agency GmbH (DE) Stinnes AG (DE)	***3,071,000***
INSECTT (Intermodal Security for Combined Transport Terminals).	UIRR (BE) Cemat SpA (IT) Adria Kombi (SI) Hupac (IT) Kombiverkehr (DE) Novatrans (FR)	***430,000***
SINGER (Slovenian Intermodal Gateway to European Rail) – Setting up of a fast and reliable unaccompanied CT network	Adria Kombi (SI) Hungarokombi (HU) Cemat s.p.a. (IT) Kombiverkehr (DE) Slovenske Zeleznice (SI) UIRR (BE)	***662,700***
IT-POL-IT NET (Transport Network Project Italy-Poland-Italy) – **Rail service for the automotive market North-West Italy to South Poland**	**Villanova Tematrans Srl. (IT)** **Fiat Auto Poland (PL)** **Fiat Italy (I)** **Fiat-GM-Powertrain (IT)** **Fiat-GM-Powertrain (PL)**	***723,203***
2005		
DRS (Danube RoRo Shipping) - Inland waterway transport system on the Danube (between Vidin in Northeast Bulgaria and Passau in Southwest Germany: Shifting freight from road to inland waterways on a major transport axis between Southern Europe and Central/Western Europe.	LEHNKERING Reederei GmbH (DE) FANTY G International Transport & Sped Co. (BG)	***968,141***
NePolExpress (Netherlands-Poland Express) - Regular rail connection between Rotterdam and seven regions in Poland (Poznan, Gdansk, Warsawa, Lodz, Wroclaw, Gliwice, Katowice). The frequency of operation will rise from 2 to 5 weekly round trips.	POLZUG Intermodal GmbH (DE) ECT Delta Terminal B.V. (NL)	***882,363***
RAIL (Rail and Integrated Logistics Project) - Development of rail service to/from Golbey (FR) and to/from the North Spain (Tarragona, Barcelona), via the rail terminal in Le Boulou (FR). The rail flows to/from Golbey are connected by a rail hub in Offenburg (D). Two new destinations will be introduced from Germany: Thessaloniki in Greece and Czechowice in Poland.	S.A. Eurorail Int. N.V. (BE) ECT Delta Terminal B.V. (NL)	***1,796,066***
LOGISTIC - New logistics chain for transporting LPG from Northern Italy to all markets of CEE by creation of dedicated block trains combined with the single wagon system for the distribution utilising two hubs (Breclav and Zagreb).	Cargo Chemical S.r.I (IT) Montana Gas GmbH&Co KG (DE) Primagaz Central Europe GmbH (AT) Trenitalia S.p.a. (IT)	***487,374***
TCS - Direct shuttle train between Duisburg (D) and Istambul (TR)	Railog GmbH AR-GU A.S. (Demiryolu Tsima Ve Depoculuk railway transport and warehousing S.A.)	***1,149,617***

Source: Authors, based on European Reference Centre for Intermodal Freight Transport

Table 13-2 EBRD Investments in CEE Road, Rail and Waterways Infrastructure 1991-2005

Project description[354]	Year of signing, Class	Project value	EBRD finance (€000)
Albania			
Road rehabilitation project Emergency improvements to 30 km section of road Albania between Elbasan and Librazhd.	2002 State	24,886	**17,000** Loan
Fier-Tepelene road rehabilitation project Upgrading and construction of road from Fier to Tepelene.	2005 State	109,000	**35,000** Loan
Bosnia and Herzegovina			
Emergency transport reconstruction Upgrade of airports, air navigation systems, roads and bridges.	1996 State	101,733	**27,650** Loan
Railways recovery Improvements to section of Pan European Corridor V railway.	2001 State	65,000	**21,000** Loan
Regional road development Programme Construction of Sarajevo by-pass and road connecting to Pan-European Corridor X.	2004 State	236,000	**70,000** Loan
Regional railway project Financing of track infrastructure.	2005 State	163,800	**70,000** Loan
Bulgaria			
Transit roads Construction of 32 km section of the trans-European motorway.	1993 State	90,388	**36,344** Loan
Railway restructuring Modernization of railway and facilitation of institutional development programme.	1995 State	256,889	**37,618** Loan
Croatia			
Highway reconstruction Construction of highway between Ostrovica and Delnice.	1995 State	204,834	**36,196** Loan
Railways rehabilitation Restructuring and commercialization of Croatian railways and upgrade of locomotive fleet.	1998 State	185,038 ,	**29,586** Loan
Autocesta Rijeka-Zagreb (ARZ) Construction of two key sections of the M12 motorway.	2001 State	140,000	**60,000** Loan
Motorway rehabilitation Improvements to European Corridor X motorway from Zabok to Brodski Stupnik.	2002 State	125,100	**46,500** Loan
Corridor 10 motorway Upgrade of Trans-European Corridor 10 to a four lane motorway.	2003 State	109,000	**45,000** Loan
Port of Dubrovnik infrastructure modernisation Extension of berth area in the port of Gruz, Dubrovnik, to accommodate more and larger vessels.	2005 State	33,7	**26,500** Loan
Czech Republic			
Ceske Drahy - Czech railway corridor Modernization and upgrade of railway line connecting Prague to Vienna and Berlin.	1995 State	1,126,202	**15,735** Loan
Siemens – SKV Upgrade of rail car and train manufacturing plant.	2003 Private	10,599	**10,599** 5,933 Loan, 4,666 Equity

[354] The table is based on EBRD project data base. Information is only provided for road and rail transport, as well as inland waterways and intermidality.

Grandi Stazioni Ceska Republika Refurbishment and management of three railway stations.	2004 Private	31,300	**3,800** Equity
Hungary			
Budapest orbital motorway Construction of south-western portion of the orbital motorway.	1992 State	108,800	**21,000** Loan
M1-M15 motorway Construction of section of motorway from Gyor to the Austrian border and a section from the M1 to Bratislava.	1993 Private	250,157	**71,879** Loan 67,929 3,950 Equity
M5 motorway Construction, operation and maintenance of the M5 toll motorway.	1995 Private	310,366	**61,039** Loan
MAV Upgrade of freight and passenger rolling stock and investments in revenue collection systems.	1998 State	220,000	**40,000** Loan
Budapest intermodal logistics Centre Construction of railway line and marshalling yard to service logistics centre.	1999 State	18,139	**4,739** Loan
M1-M15 motorway Construction of section of motorway from Gyor to the Austrian border and a section from the M1 to Bratislava.	1999 State	204,546	**65,566** Loan
M5 motorway Completion of remaining 47 km of M5 motorway	2004 Private	900,000	**100,000** Loan
M5 motorway - refinancing Construction, operation and maintenance of the M5 toll motorway.	2004 Private	221,250	**67,500** Loan
M5 motorway Completion of remaining 47 km of M5 motorway	2004 Private	900,000	**100,000** Loan
M6 motorway Construction of M6 motorway under a public-private partnership scheme.	2005 Private	410,851	**32,000** Loan
Latvia			
Road rehabilitation Upgrade of Latvia's main road network.	1994 State	27,358	**8,423** Loan
Lithuania			
Transport project Improvements to rail, road and ports across Lithuania	1994 State	39,307	**15,976** Loan
Via Baltica and Lithuania road project Investment in various road projects, strengthening international road links and reducing delays.	1996 State	101,984	**19,611** Loan
Lithuania Railways Corridor IX Investment in railway infrastructure.	2001 State	94,105	**45,647** Loan
FYR Macedonia			
Regional roads project Upgrade of high priority roads and construction of Skopje bypass (phase 2).	2003 State	147,320	**40,000** Loan
Poland			
Motorway development Upgrade of major roads within Poland and introduction of tolls.	1993 State	82,594	**44,994** Loan
Railway modernization project Upgrade of the Warsaw-Kunowice railway line.	1996 State	486,082	**49,082** Loan
PKP restructuring and privatization Restructuring and improvement of productivity and competitiveness of rail transport services.	2000 State	230,000	**100,000** Loan
PKP restructuring and privatization	2002	130,000	**130,000**

Restructuring and improvement of productivity and competitiveness of rail transport services.	State		Loan
PKP Energetyka network management project Establishment of two control and metering centers and procurement of railway maintenance vehicles.	2004 State	18,200	**15,000** Loan
Romania			
Bucharest-Pitesti motorway Upgrade of 96 km of motorway.	1996 State	87,405	**44,886** Loan
NAR restructuring and road Restructuring of National Administration of Roads (NAR) and upgrade of 224 km of roads.	1996 State	505,393	**72,612** Loan
Railway rehabilitation Restructuring of Romanian Railways (SNCFR) and upgrade of infrastructure.	1996 State	423,346	**57,976** Loan
Road sector restructuring and Pitesti by-pass Further restructuring of road sector and construction of Pitesti by-pass, part of Pan European Corridor IV.	2001 State	114,120	**60,000** Loan
CFR city stations enhancement project Refurbishment of five city railway stations, improving passenger amenities and increasing commercial space.	2003 State	27,850	**24,000** Loan
CFR rail traction project Priority investment in CFR traction energy company	2005 State	26,700	**22,500** Loan
Constanta by-pass project Building and maintenance of Constanta by-pass.	2005 State	211,469	**144,219** Loan
Serbia			
ZTP Belgrade reconstruction Upgrade of main railway network, including the purchase of track maintenance machinery and refurbishment of electric locomotives.	2001 State	135,000	**57,000** Loan
Road recovery project Upgrade of priority road links throughout Serbia.	2002 State	191,000	**76,000** Loan
Belgrade to Novi Sad Motorway Upgrading of 65 km section of road from Belgrade to Novi Sad and construction of a bridge across the Danube.	2005 State	211,400	**72,000** Loan
Slovakia			
International road corridor Upgrade of national motorway, with a focus on road Slovak Rep. charge studies and maintenance techniques.	1993 State	41,600	**15,000** Loan
Slovenia			
DARS motorway Upgrade of motorway to remove major bottlenecks in the main east-west corridor.	1994 State	53,636	**26,924** Loan
DARS motorway Upgrade of motorway to remove major bottlenecks in the main east-west corridor	1994 State	47,145	**22,969** Loan
Slovenske Zeleznice Maintenance of rail services on international lines, improvement of productivity and technical support for restructuring.	1994 State	132,008	**43,680** Loan

Source: Authors, based on EBRD database

Table 13-3 EBRD Projects in 2006

Country		Total value	EBRD financing	Co-financing
Serbia	Belgrade Highway and Bypass Project *Urgent rehabilitation of the Gazela Bridge and approach roads, which is the main bridge in the City of Belgrade and forms an integral part of Trans European Corridor X, and construction of the remaining sections of the*	290.4	80	80 (EIB) 7,5 (City of Belgrad)

	Belgrade bypass, which is required to alleviate traffic congestion in the City.			112 (Serbian roads)
Croatia	Ploce Port Bulk Terminal Project *The construction of a new bulk cargo terminal at the Port of Ploce to eliminate existing operational bottleneck in handling of the bulk cargo and increase its capacity.* *The programme is co-financed by the World Bank who is also financing the construction of a new Container Terminal at the Port of Ploce under Trade and Transport Integration Project.*	89	10	58,8 (WB)
Croatia	Autocesta Rijeka-Zagreb (ARZ) Project Extension	290	50	
Croatia	Croatia: Rijeka Bypass	114	40	

Source: Authors, based on EBRD database

Table 13-4 Investments and Implementation Progress Plan in CEEC

	Projects	**Up to 2010**	**2010-2015**	**2015-2020**	**After 2020**	**Unknown**	**Network funding**		
							Secured	**Unsecured**	**Unknown**
BH	15	7%	53%	13%	27%	-	47%	53%	
Ma	8	25%	-	-	-	75%	25%	-	75%
SM	41	90%	10%				12%		88%
BG	18	33%	28%	22%	17%	-	33%	11%	-
CR	43	56%	30%	12%	2%	-	70%	-	30%
CZ	13	69%	8%	23%	-	-	100%		
HU	43	31%	18%	3%	2%	47%	58%	16%	49%
LT	32	47%	28%	3%	22%	-	78%	-	22%
PL	97	33%	-	-	-	67%	1%	3%	96%
RO	45	18%	16%	16%	51%	-	51%	49%	-
SK	24	4%	8%	42%	46%	-	100%	-	-
SL	14	36%	43%	7%	14%	-	50%	50%	-
TU	24	50%	29%	21%	-	-	100%		

Source: Authors, based on Economic Commission for Europe TEM and TER master plan, 2006.

Table 13-5 Road and Rail Infrastructure Investment-Time Plan for CEE Countries

Project ID	Project ID	Category	Start	End	Budget (ml EUR)	% Funding Secured/Source N – National, B – Bank, G – Grant, P - Private
BiH						
Road projects						
BH-M-6	Improvement of Lasva-Travnik Road (M5/E-761)	II	2011	2013	60	0
BH-M-2	Construction of Tuzia-Orasja Expressway	II	2014	2022	350	0
BH-M-1	Construction of Bosanki-Gradiska-Banja Luka Motorway (along E-661 route)	II	2015	2021	83,50	0
BH-M-3	Construction of Jablanica Detour (E-73 road)	II	2011	2015	9	0
BH-M-5	Construction of Mostar Bypass (E-73 road)	II	2015	2020	72	0
BH-M-8	Construction of Corridor V Motorway	II	After 2020	n.a.	35	0
BH-M-7	Improvement of Stolac-Neum Road (M17-3)	II	2014	2018	12	0
BH-M-4	Improvement of Foca-Hum Road	II	2020	2024	88	0
Rail projects						
BH-R-1	Bosanski Samac-Sarajevo: Track overhaul and reconstruction of 123 km of the line to meet TER standards	I	2004	2006	83	100 B
BH-R-3	Bosanski Samac-Capijina: Modernization of signaling system	I	2004	2010	63,25	100 B

BH-R-4	Bosanski Samac-Capijina: Modernization of telecommunication system	II	2011	2014	13,75	100 B
BH-R-5	Doboj-Dobrljin: Track overhaul and reconstruction of 78 km of the line to meet TER standards	II	2011	2013	60	100 B
BH-R-2	Bosanski Samac-Capijina: Track overhaul and reconstruction of 145 km of the line	II	2011	2013	72	100 B
BH-R-6	Dobrljin-B.Luka-Doboj-Tuzla-Zvornik: Modernization of signaling system	II	2011	2015	51	0
BH-R-7	Dobrljin-B.Luka-Doboj-Tuzla-Zvornik:	II	2011	2014	11,10	100 B
BH-R-6		II	2011	2014	51	100 B
Bulgaria						
Road projects						
BG-M-7	Kalotina-Sofia Motorway, Section: Hemus Connector	I	2004	2008	28,03	0
BG-M-6	Kalotina-Sofia Motorway, Section: Kalotina-Dragoman	II	2016	2019	25,47	0
BG-M-10	Hemus Motorway, Section 2	II	2004	2012	190,968	0
BG-M-5	Kalotina-Sofia Motorway, Section: Dragoman-Slivnitza-Sofia	II	2004	2008	122,30	0
BG-M-2	Maritza Motorway, Section 1	II	2011	2014	72,50	0
BG-M-3	Maritza Motorway, Section 2	II	2011	2014	89	0
BG-M-4	Maritza Motorway, Section 3	II	2011	2014	88,50	0
BG-M-1	Reconstruction of road E85	II	2011	2016	113,001	0
BG-M-9	Hemus Motorway, Section 1	II	2011	2018	177,619	0
BG-M-8	Kalotina-Sofia Motorway, Section: Sofia Ring Road-North Arc	II	2011	2015	136,38	0
Rail projects						
BG-R-2	Vidin-Calafat: Construction of Danube bridge Vidin-Calafat	II	2005	2009	180	9 N, 50 B, 41G
BG-R-5	Sofia-Plovdiv-Burgas/Varna: Modernization of Sofia-Plovdiv-Burgas/Varna railway line	II	2015	2026	937	25 N
BG-R-3	Dragoman-Kalotina: Electrification of Dragoman-Kalotina railway line	I	2004	2005	7	100 N
BG-R-8	Sofia-Dragoman: Modernization of Sofia-Dragoman railway line	I	2005	2010	55	27 N, 55 G
BG-R-1	Plovdiv-Svilengrad: Modernization and electrification of Plovdiv-Svilengrad railway line	II	2001	2006	340	11 N, 44 B, 45 G
BG-R-4	Vidin-Sofia-Kulata: Modernization of Vidin-Sofia-Kulata railway line	II	2011	2037	2400	25 N, 75 G
BG-R-7	Sofia-Zimnitsa: Modernization of Sofia-Karlovo-Zimnitsa railway line	II	2017	2026	900	
BG-R-6	Radomir-Gueshevo: Modernization and electrification of Radomir-Gueshevo railway line	II	2011	2016	150	20 N, 80 G
Croatia						
Road projects						
CR-M-17	A1-08 Mala Kapela	I	2004	2004	32,50	100 B
CR-M-16	A2-02 Zapresic-Zagreb	I	2004	2005	40	100 P
CR-M-8	A1-01 Sveti Rok Tunel	I	2004	2005	7,40	100 B
CR-M-5	A7-01 Rijeka-Krizisce	II	2004	2005	108	100 B
CR-M-9	A1-02 Pirovac-Sibenic	II	2004	2004	105	100 B
CR-M-10	A1-03 Sibenic-Vrpolje	II	2005	2005	95	100 B
CR-M-27	A9-02 Umag-Kanfanar	II	2007	2007	129	100 P
CR-M-15	A2-01 Macelj-Krapina	II	2004	2008	260	100 P
CR-M-1	A3-01 Zupanja-Lipovac	II	2005	2006	99,70	100 B
CR-M-26	A9-01 Vodnjan-Pula	II	2011	2013	33	100 P
CR-M-18	A1-09 Dugopolje-Klis	II	2011	2013	30	100 B
CR-M-19	A1-10 Klis-Split	II	2011	2013	45	100 B
CR-M-11	A1-04 Dugopolje-Zagvozd (Makarska)	II	2014	2015	185	100 B

CR-M-22	A5-03 Osijek-Sredanci	II	2011	2013	199,80	100 B
CR-M-3		II	2011	2013	100	100 B
CR-M-4		II	2011	2014	120	100 B
CR-M-13	A1-06 Ploce-Neum	II	2013	2016	210	100 B
CR-M-20	A5-01 Knezevo-Ceminac	II	2011	2012	46,80	100 B
CR-M-21	A5-02 Ceminac-Osijek	II	2011	2013	80	100 B
CR-M-24	A10-01 Metkovic-Ploce	II	2011	2013	32	100 B
CR-M-12	A1-05 Zagvozd (Makarska)-Ploce	II	2016	2017	280	100 B
CR-M-7		II	2013	2016	138	100 B
CR-M-6		II	2015	2017	270	100 B
CR-M-2		II	2011	2012	11,20	100 B
CR-M-23	A5-04 Sredanci-Svilaj	II	2011	2013	18,40	100 B
CR-M-25	A5-05 Ceminac-Batina	II	2018	2019	90	100 B
CR-M-14	A1-07 Neum-Dubrovnik	II	2018	2022	350	100 B
CR-M-16		II	2011	2013	75,60	n.a.
Rail projects						
CR-R-1	Reconstruction of Railway section of Corridor Vc	n.a.	2004	2005	61,40	100 B
CR-R-2	Electrification of north section (78,9) Beli Manastir-Strizivojna/Vrpolje	n.a.	2008	2009	20,60	n.a.
CR-R-3	Track overhaul of railway section of Corridor Vb	n.a.	2004	2006	28,10	100 N
CR-R-4	Construction of 2nd rail track on 36 km Dugo Selo-Krizevci section	n.a.	2004	2007	56,10	n.a.
CR-R-5	Modification of the electrical traction system on rail line Moavice-Rijeka-Sapjane (Skriljevo-Bakaar)	n.a.	2004	2007	56,20	n.a.
CR-R-6	Remote control system on rail line line Botovo-Zagreb-Rijeka (329 km) section	n.a.	2004	2006	3,20	n.a.
CR-R-7	Reconstruction of Zagreb Main Railway Station	n.a.	2005	2008	54,70	n.a.
CR-R-8	Ostarije-Knin-Split: Track reconstruction on Kosovo (Knin)-Split section	n.a.	2004	2004	29,90	100 B
CR-R-9	Reconstruction of stations on rail line Ostarije-Knin-Split	n.a.	2004	2005	6	n.a.
CR-R-10	Construction of 2nd rail track on 53 km Zagreb-Kalrovac section	n.a.	2005	2007	54,70	n.a.
CR-R-11	Rail track overhaul Ostarije-Ogulin (6.2 km), Skrad-Drivenik (32,2 km) and Skriljevo-Rijeka (11,4 km) sections. Total 54,8 km of single track line	n.a.	2004	2005	27,90	n.a.
CR-R-12	Construction of 2nd track on section Zagreb-V.Gorica	n.a.	2005	2006	20	n.a.
CR-R-13	Remote rail control traffic system Savski Marof-Zagreb Tovarnik (319 km)	n.a.	2004	2006	23,40	n.a.
CR-R-14	Rail track overhaul Savski Marof-Zagreb and Ivankovo-Tovarnik sections, total 92,8 km	n.a.	2004	2006	47,10	n.a.
CR-R-15	Project of optical telecommunication rail network (whole HZ network)	n.a.	2004	2005	30,70	n.a.
Czech Republic						
Road projects						
CZ-M-3	Motorway D11: Podebrady-Hradec Kralove	I	2004	2007	389	83 N, 17 B
CZ-M-2	Motorway D8: Lovosice-Rehlovice	I	2004	2007	189	100 N
CZ-M-1	Motorway D8: Trmice-German border	I	2004	2006	501	88 N,12 G
CZ-M-5	Motorway D47: Lipnik-Polish border	I	2004	2008	1164	77N, 23B
CZ-M-4	Motorway D1: Vyskov-Kromeriz	II	2004	2009	1030	100N
Rail projects						
CZ-R-2	Ceske Budejovice-Horni Dvoriste	I	2005	2007	39,5	43N, 25B, 32 G
CZ-R-6	Electrification of the railway line Letoohrad-Lichkov	I	2005	2008	102	100N
CZ-R-3	State border-Cheb-Plzen	I	2005	2010	413,1	33N, 35B,

						32G
CZ-R-4	Detrovice-Mosty u Jablunkova	I	2007	2013	428,7	33N, 35B, 32G
CZ-R-5	Elecrification of the railway line Kadan-Karlovy Vary	II	2004	2007	88	100N
CZ-R-8	Praha-Benesov	II	2011	2016	256	43N,25B,32G
CZ-R-7	Plzen-Praha	II	2011	2016	767,62	33N,35B,32G
CZ-R-1	Benesov-Ceske Budejovice	II	2013	2020	948	43N,25B,32G
FYR Macedonia						
Road projects						
Ma-H-1	Construction of Demir Kapija-Udovo-Smokvica section: Phase I (33 km)	I	2004	2007	58	100B
Ma-H-2	Construction of Tavanovce-Kumanovo section (7,3 km)	I	2004	2006	5,7	100B
Ma-H-3	Finalise construction of works along Corridor VIII	n.a.	n.a.	n.a.	850	n.a.
Rail projects						
Ma-R-1	Complete construction of railway towards Albania and Bulgaria	n.a.	n.a.	n.a.	487	n.a.
Ma-R-2	Electrification/Modernization of Skopje-Gostivar	n.a.	n.a.	n.a.	24,6	n.a.
Ma-R-3	Increase speed on certain section along Corridor X	n.a.	n.a.	n.a.	n.a.	n.a.
Ma-R-4	Multi-modal terminal at Struga	n.a.	n.a.	n.a.	n.a.	n.a.
Ma-R-5	Free economic zone in Durres	n.a.	n.a.	n.a.	n.a.	n.a.
Hungary						
Road projects						
HU-M-1	MO: M1 to M5	I	These projects will be implemented between 2004-2010 but it is unknown when they will be completed		The cost of these projects is unknown	n.a.
HU-M-2	MO: M5 to M2	I				n.a.
HU-M-3	M2: Bp.-Vac	I				n.a.
HU-M-5	M3: Polgar-Nyiregyh	I				n.a.
HU-M-7	M5: Kiskunf.-H/YU b.	I				n.a.
HU-M-8	M6: Bp.-Dunaujv.	I				n.a.
HU-M-11	M7: Zamardi-H/CR b.	I				n.a.
HU-M-12	M15: Mmovar-H/SK b.	I				n.a.
HU-M-17	M30: Miskolc-Emod	I				n.a.
HU-M-18	M35: Emod-Debrecen	I				n.a.
HU-M-19	M35: Debrecen bypass	I				n.a.
HU-M-4	M2: Vac-H/SK border	II-III	These projects will be implemented between 2010-2015 but it is unknown when they will be completed			n.a.
HU-M-6	M3: Nyiregyh-H/UA b.	II-III				n.a.
HU-M-9	M6: Dunaujv.-Boly	II-III				n.a.
HU-M-10	M6: Boly-H/CR b.	II-III				n.a.
HU-M-13	M43: Szeged-Mako	II-III				n.a.
HU-M-14	M43: Mako-H/R b.	II-III				n.a.
HU-M-15	Sopron-N.Kanizsa	II-III				n.a.
HU-M-16	M30: SK/H b.-Miskolc	II-III				n.a.
HU-M-20	47/42: Debrecen-H/R b.	II-III				n.a.
Rail projects						
HU-R-2a	Reconstruction of Budapest-Hegyeshalom main lines phase II	II	2004	2006	111,41	15N,35B,50G
HU-R-2b		II	2004	2008	39,79	40N,50B,10P
HU-R-2c		II	2006	2007	2,39	100P
HU-R-2d		II	2007	2009	31,83	100N
HU-R-2e		II	2012	2014	23,87	100N
HU-R-23a	Railway line Budapest-Cegled-Szolnok	II	2003	2006	174,27	100G
HU-R-23b		II	2007	2010	55,70	100G
HU-R-19	Rehabilitation of railway line Budapest-Ujszasz-Szolnok-Lokoshaza-Phase I	II	2001	2008	399,47	22B, 78G
HU-R-18	Rehabilitation of Cegled-Szeged railway line	II	2003	2007	56,50	100B
HU-R-9	Reconstruction of Budapest-Szekesfehervar railway line	II	2005	2008	232,76	79B,21G
HU-R-21	Reconstruction of railway line Szolnok-	II	2007	2012	517,25	100G

	Debrecen-Nyiregyhaza-Zahony					
HU-R-7	Reconstruction of Dombovar-Gyekenyes railway line	II	2007	2009	159,15	100G
HU-R-8a	Reconstruction of Budapest-Pusztaszabolcs-Dombovar railway line	II	2005	2007	16,31	100B
HU-R-8b		II	2008	2014	318,31	100G
HU-R-12	Reconstruction of Zalalovo-Ukk-Boba railway line	II	2004	2007	202,92	100G
HU-R-1	Track reconstruction on the line Gyor-Celldomolk	II	2005	2007	25,46	100B
HU-R-15	Electrification of Hegyeshalom-Szombathely railway line	II	2006	2007	15,92	100B
HU-R-10	Rehabilitation and electrification of railway line Budapest-Esztergom	II	2005	2012	32,23	40N,60B
HU-R-13	Reconstruction of Szekesfehervar-Szombathely railway line	II	2008	2012	169,50	100G
HU-R-5	Reconstruction of Budapest-Hatvan-Miskolc railway line	II	2012	2016	477,46	100G
HU-R-22	Reconstruction of railway line Miskolc-Nyiregyhaza	II	2011	2015	119,36	100G
HU-R-20	Reconstruction of railway line Puspokladany-Biharkeresztes	II	2016	2018	83,56	100G
HU-R-17	Rehabilitation of Budapest-Lajosmizse-Kecskemet railway line	II	2007	2010	33,82	100B
HU-R-14	Electrification of Szombathely-Nagykanizsa railway line	II	2011	2014	27,85	0
HU-R-4	Rehabilitation of Mezozombor-Satoraljaujhely railway line	II	2009	2010	23,87	100N
HU-R-3a	Rehabilitation of Hatvan-Somoskoujfalu railway line	II	2006	2009	47,75	100N
HU-R-3b		II	2011	2012	15,92	100N
HU-R-11	Rehabilitation and electrification of Szabadbatlyan-Tapolca railway line	II	2009	2011	19,89	20N,80G
HU-R-6a	Reconstruction of Budapest-Szob railway line	II	2005	2007	28,65	100B
HU-R-6b		II	2008	2010	19,89	100B
HU-R-6c		II	2012	2014	31,83	100B
HU-R-16a	Rehabilitation of Budapest-Kelebia railway line	II	2012	2015	222,81	100G
HU-R-16b		II	2018	2022	716,19	100G
Lithuania						
Road projects						
LT-M-1	Development of I Transport Corridor (Via Baltica) in the Years 2004-2005	II	2006	2008	20,6	15N,85G
LT-M-2	Development of Transport Corridor IXb in the Years 2004-2005	II	2004	2007	45,80	15N,85G
LT-M-3	Development of Roads (E85 Lyda-Vilnius, E272 Vilnius-Panevezys, E272 Panavezys-Sauliai and E272 Siauliai-Palanga) of Transeuropean Road Network in the years 2004-2006	II	2011	2013	30,60	15N,85G
LT-M-4	Widening of bridge on road A1 across Neris river in Kaunas city	IV	After 2020		The cost of these projects is unknown	n.a.
LT-M-5	Widening of road A1 (6 traffic lines)	IV				n.a.
LT-M-6	Widening of road A1 (6 traffic lines)	IV				n.a.
LT-M-7	Road A5 Kaunas-Marijampole-Suvalkiai (construction of second driving direction)	IV				n.a.
LT-M-8	Road A5 Kaunas-Marijampole-Suvalkiai (construction of second driving direction)	IV				n.a.
LTM-9	Road A8 Panevezys-Aristava-Sitkunai (construction of second driving direction)	IV				n.a.

LT-M-10	Road A8 Panevezys-Aristava-Sitkunai (construction of second driving direction)	IV				n.a.
Rail projects						
LT-R-16	Construction of new standard gauge section State border with Poland-Kaunas (Rail Baltica)	I	2004	2010	300	20N,80G
LT-R-17	Construction of new standard gauge section State border with Kaunas-state border with Latvia (Rail Baltica)	I	2004	2010	500	20N,80G
LT-R-1	Modernization of telecommunications on the Rail Corridor IXb	I	2003	2004	7	100G
LT-R-22	Hot boxes axles detectors modernization	I	2004	2007	12	37N,63G
LT-R-3	Modernization of signaling and power supply on Crete corridor section Siauliai-Klaipeda	I	2003	2005	28,5	64B,36G
LT-R-4	Modernization of power supply on Crete Corridor IXb section Kaisiadorys-Radviliskis	I	2003	2004	10,5	44B,56G
LT-R-14	Extension of tracks length up to 1050 m on the corridor IXd, IXb stations	I	2007	2015	24,3	15N,85G
LT-R-12	Modernization of radio system	I	2005	2007	52	15N,85G
LT-R-13	Development of Klaipeda railway node	I	2003	2015	9	16N,84G
LT-R-15	Development of Vilnius node	I	2004	2006	11	36N,64G
LT-R-2	Modernization of telecommunications equipments on the Rail Corridor IXd	I	2003	2005	3,1	100G
LTR-21	Reconstruction of Kena border station	I	1999	2006	41	100N
LT-R-5	Reconstruction of Kaunas tunnel	I	2006	2008	21	15N,85G
LT-R-6	Elimination of crossings (road overpasses building) on corridor IXd	I	2005	2010	50	19N,81G
LT-R-7	Elimination of crossings (road overpasses building) on corridor IXb	I	2009	2015	104	25N,75G
LT-R-9	Tracks modernization for speed up to 160 km/h on Kena-Kybartai line	I	2005	2010	89,7	15N,85G
LT-R-10	Tracks modernization for speed up to 160 km/h on Kiasiadorys-Siauliai line	I	2009	2015	108	25N,75G
LT-R-11	Modernization of signaling and Power supply on line Kena-Kybartai, Radviliskes-Siauliai	II	2011	2016	81	15N,85G
LT-R-18	Electrification of Kena-Kybartai line	II	2011	2014	95	25N,75G
LT-R-19	Electrification of Kaisiadorys-Radviliskes, Palemonas-Gaiziunai line	II	2011	2013	70	24N,76G
LT-R-20	Electrification of Radviliskis-Klaipeda line	II	2011	2015	77	25N,75G
LT-R-8	Infrastructures renovation of main tracks links	II	2011	2014	109	37N,63G
Poland						
Road projects						
PL-M-1	A18-I	I	2004	2006	122	75G
PL-M-13	A2-II	I	2004	2004	203	n.a.
PL-M-14	A2-III	I	2004	2005	83	n.a.
PL-M-15	A2-IV	I	2004	2005	88	n.a.
PL-M-16	A2-V	I	2004	2005	45	75G
PL-M-17	A2-VI	I	2004	2005	57	75G
PL-M-18	A2-VII	I	2004	2006	52	n.a.
PL-M-21	A4-I	I	2004	2005	332	n.a.
PL-M-22	A4-II	I	2004	2005	230	n.a.
PL-M-23	A4-III	I	2004	2005	84	n.a.
PL-M-24	A4-IV	I	2004	2004	120	n.a.
PL-M-25	A4-V	I	2004	2004	91	n.a.
PL-M-30	A6-1	I	2004	2006	24	n.a.
PL-H-2	S1-II	I	2004	2004	20,9	n.a.
PL-H-3	S1-III	I	2004	2006	33	n.a.
PL-H-4	S1-IV	I	2004	2006	45	n.a.
PL-H-5	SI-V	I	2004	2005	35	n.a.

PL-H-27	S5-V	I	2004	2005	14,4	n.a.
PL-H-37	S69-VIII	I	2004	2006	5	n.a.
PL-H-38	S69-IX	I	2004	2006	13	n.a.
PL-H-44	S8-II	I	2004	2006	63,8	n.a.
PL-M-11	A1-X	II	2005	2007	141	n.a.
PL-H-35	S69-VI	II	2004	2006	24	n.a.
PL-H-36	S69-VII	II	2004	2006	31	n.a.
PL-H-54	S8-XII	II	2005	2007	40,7	n.a.
PL-H-55	S8-XIII	II	2004	2006	82,2	n.a.
PL-M-4	A1-III	IV	These projects will be implemented after 2020		The cost of these projects is unknown	n.a.
PL-M-10	A1-IX	IV				n.a.
PL-H-1	S1-I	IV				n.a.
PL-H-6	SI-VI	IV				n.a.
PL-H-7	S3-I	IV				n.a.
PL-H-8	S3-II	IV				n.a.
PL-H-9	S3-III	IV				n.a.
PL-H-10	S3-IV	IV				n.a.
PL-H-11	S3-V	IV				n.a.
PL-H-12	S3-VI	IV				n.a.
PL-H-13	S3-VII	IV				n.a.
PL-H-14	S3-VIII	IV				n.a.
PL-H-15	S3-IX	IV				n.a.
PL-H-16	S3-X	IV				n.a.
PL-H-18	S3-XII	IV				n.a.
PL-H-19	S3-XIII	IV				n.a.
PL-H-20	S3-XIV	IV				n.a.
PL-H-21	S3-XV	IV				n.a.
PL-H-22	S3-XVI	IV				n.a.
PL-H-23	S5-I	IV				n.a.
PL-H-24	S5-II	IV				n.a.
PL-H-25	S5-III	IV				n.a.
PL-H-26	S5-IV	IV				n.a.
PL-H-28	S5-VI	IV				n.a.
PL-H-29	S5-VII	IV				n.a.
PL-H-30	S69-I	IV				n.a.
PL-H-31	S69-II	IV				n.a.
PL-H-32	S69-III	IV				n.a.
PL-H-33	S69-IV	IV				n.a.
PL-H-34	S69-V	IV				n.a.
PL-H-39	S69-X	IV				n.a.
PL-H-40	S6-I	IV				n.a.
PL-H-41	S6-II	IV				n.a.
PL-H-42	S6-III	IV				n.a.
PL-H-43	S8-I	IV				n.a.
PL-H-45	S8-III	IV				n.a.
PL-H-47	S8-V	IV				n.a.
PL-H-48	S8-VI	IV				n.a.
PL-H-50	S8-VIII	IV				n.a.
PL-H-51	S8-IX	IV				n.a.
PL-H-56	S8-XIV	IV				n.a.
PL-H-57	S8-XV	IV				n.a.
PL-H-58	S8-XVI	IV				n.a.
PL-H-59	S8-XVII	IV				n.a.
PL-H-60	S8-XVIII	IV				n.a.
PL-H-61	S8-XIX	IV				n.a.
PL-M-3	A1-II	IV				n.a.
PL-M-6	A1-V	IV				n.a.
PL-M-7	A1-VI	IV				n.a.

PL-M-8	A1-VII	IV				n.a.
PL-M-9	A1-VIII	IV				n.a.
PL-M-20	A2-IX	IV				n.a.
PL-M-28	A4-VIII	IV				n.a.
PL-M-29	A4-IX	IV				n.a.
PL-H-52	S8-X	IV				n.a.
PL-M-2	A1-I	IV				n.a.
PL-M-19	A2-VIII	IV				n.a.
PL-M-26	A4-VI	IV				n.a.
PL-M-27	A4-VII	IV				n.a.
PL-M-5	A1-IV	IV				n.a.
PL-M-12	A2-I	IV				n.a.
PL-H-49	S8-VII	IV				n.a.
PL-H-17	S3-XI	IV				n.a.
PL-H-46	S8-IV	IV				n.a.
PL-H-53	S8-XI	IV				n.a.
Rail projects						
PL-R-1	Rzepin-Kunowice (E20): Rail upgrading	n.a.	2000	2004	23,6	25N,75G
PL-R-2	Siedlice-Terspol: Modernization of rail section (Phase 1)	n.a.	2002	2004	185,2	75G
PL-R-3	Wegliniec-Legnica modernization of E30 rail section	n.a.	2001	2004	123,8	75G
PL-R-4	Poznan modernization rail node E20	n.a.	2001	2004	67,4	75G
PL-R-5	Improvement of railway infrastructure and liquidation of operational bottlenecks	n.a.	2001	2004	111	75G
PL-R-6	Modernization of E30 railway line section	n.a.	2002	2004	83,5	75G
Romania						
Road projects						
RO-M-22	Clij-Turda	I	2004	2007	321,65	35N,65B
RO-M-24	Turda-Ogra	I	2008	2017	675,251	35N,65B
RO-M-18	Oradea-Zalau	I	2004	2008	455,847	35N,65B
RO-M-13	Buharest-Giurgiu	I	2005	2010	258,5	100G
RO-M-11	Fetesti-Cernavoda	I	2006	2008	37	100B
RO-M-30	Ploiesti-Bucuresti	I	2004	2008	324	40N,60P
RO-M-4	Deva-Sebes	I	2010	2017	665	100G
RO-M-25	Ogra-Sighisoara	I	2008	2010	521,282	35N,65B
RO-M-21	Zalau-Cluj Napoca	I	2004	2012	677,38	35N,65B
RO-M-10	Lehliu-Fetesti	I	2004	2006	147,4	100B
RO-M-26	Sighisoara-Brasov	I	2006	2015	782,18	35N,65B
RO-M-1	Nadlac-Timisoara	I	2010	2015	347,4	100B
RO-M-5	Sebes-Sibiu	II	2010	2015	361,6	25G
RO-M-17	Timisoara-Stamora Moravita	II	2010	2017	401,5	0
RO-M-31	Albita-Crasna	II	2010	2015	275	0
RO-M-19	Halmeu-Satu Mare	II	2010	2015	214,5	100P
RO-M-42	Targu Frumos-Sabaoani	III	2011	2016	165	0
RO-M-41	Iasi-Targu Frumos	III	2010	2016	253	0
RO-M-28	Predeal-Comarnic	II	2011	2015	522	40N,60P
RO-M-2	Timisoara-Lugoj	II	2016	2021	124	100B
RO-M-27	Brasov-Predeal	II	2020	2021	322	40N,60P
RO-M-34	Marasesti-Ramnicu Sarat-Buzau	II	2019	2025	495	0
RO-M-8	Buharest North By-pass	II	2016	2022	310	0
RO-M-12	Cernavoda-Constanta	II	2018	2023	242	0
RO-M-3	Lugoj-Deva	II	2027	2031	638	100B
RO-M-7	Buharest South By-pass	II	2018	2023	234	0
RO-M-35	Buziu-Bucharest N/E	II	2018	2021	357,5	0
RO-M-14	Lugoj-Drobeta Turnu Severin	II	2023	2028	990	0

RO-M-36	Siret-Suceava	II	2015	2019	220	0
RO-M-33		II	2015	2019	137,5	0
RO-M-29	Comarnic-Ploiesti	II	2022	2024	293	40N,60P
RO-M-6	Sibiu-Pitesti	II	2030	2037	1369,6	8G
RO-M-32	Crasna-Tecuci	II	2031	2034	473	0
RO-M-15	Drobeta Turnu Severin-Craiova	II	2030	2035	561	0
RO-M-39	Bacau-Marasesti	II	2033	2038	484	0
RO-M-16	Craiova-Buharest	II	2016	2025	948	0
RO-M-37	Suceava-Sabaoani	II	2022	2027	588,5	0
RO-M-20	Satu Mare-Zalau	II	2025	2032	528	100P
RO-M-23	Turda-Sebes	II	2027	2033	440	0
RO-M-38	Sabaoani-Bacau	II	2027	2033	231	0
RO-M-40	Sculeni-Iasi	II	2027	2033	137,5	0
Rail projects						
RO-R-2	Rehabilitation of the railway line Bucharest-Videle-Giurgiu component of the Pan-European Corridor IX for the traffic of the trains with a maximum speed of 160 km/hour	II	2009	2012	535,2	20N,80B
RO-R-3	Rehabilitation of the railway line Buharest-Constanta, component of the Pan-European Corridor IV for the traffic of the trains with a maximum speed of 160 km/hour	I	2005	2008	656,9	26N,39B,35G
RO-R-4	Rehabilitation of the railway line Brasov-Sighisoara-Curtici component of the Pan-European Corridor IV for the traffic of the trains with a maximum speed of 160 km/h	II	2010	2013	1458	20N,80G
RO-R-1	Rehabilitation and modernization of the railway line Craiova-Calafat, component of the Pan-European Corridor IV (the southern branch)	II	2009	2012	422	70N,30P
Serbia & Montenegro						
Road projects (were evaluated based on RABIS)						
SM-H-1	Upgrading border crossing at Kotroman	n.a.	2005	2005	2	n.a.
SM-H-2	Upgrading border crossing at Presevo	n.a.	2004	2005	7	n.a.
SM-H-3	Upgrading border crossing at Gradino	n.a.	2005	2007	10	n.a.
SM-H-4	Upgrading border crossing at Debeli Brijek	n.a.	2006	2007	4	n.a.
SM-H-5	Upgrading border crossing at Bozaj	n.a.	2006	2007	4	n.a.
SM-H-6	Rehabilitation of Bujanovac-Presevo road	n.a.	2004	2004	14,3	100B
SM-H-7	Rehabilitation of Leskovac-Bujanovac	n.a.	2004	2004	5,8	100B
SM-H-8	Rehabilitation of Liberty bridge in Novy Sad	n.a.	2004	2004	20	n.a.
SM-H-9	Rehabilitation of Belgrade-Nis road	n.a.	2004	2004	27,9	100B
SM-H-10	Improvement Rzav Nova Varos road	n.a.	2004	2004	9,9	n.a.
SM-M-1	Completion of Motorway Novi Sad-Horgos	n.a.	2004	2005	92	n.a.
SM-M-2	Completion of Motorway Belgrade-Novi Sad	n.a.	2004	2004	20	100N
SM-M-11	Upgrading Nis-Pirot-Gradina road	n.a.	2004	2004	5	n.a.
SM-M-12	Completion of Belgrade bypass	n.a.	2005	2007	172,5	n.a.
SM-M-13	Rahabilitation of Pancevo-Romanian border road	n.a.	2004	2004	3,8	n.a.
SM-M-14	Removal of bottlenecks on roads in Ovcar Banja	n.a.	2005	2006	6	n.a.
SM-M-15	Sozina Tunnel, access roads	n.a.	2004	2005	14,5	n.a.
SM-M-16	Eastern mini bypass of Podgorica	n.a.	2004	2006	15	40N
SM-M-17	Rehabilitation of road Podgorica-Bjelo Polje: Improving capacity and safety	n.a.	2004	2006	56	n.a.
SM-M-18	Rehabilitation of road Podgorica-Bjelo Polje: Improving capacity, speed and safety	n.a.	2004	2004	10	n.a.
SM-M-19	Rehabilitation of Cacak-Pozega road	n.a.	2005	2006	14	n.a.
SM-M-20	Cacak bypass, Phase 1	n.a.	2005	2007	25	n.a.
SM-M-21	Bypass Niksic	n.a.	2007	2008	11	n.a.
SM-M-22	Rehabilitation of Petrovac-Budva road	n.a.	2004	2004	10	n.a.

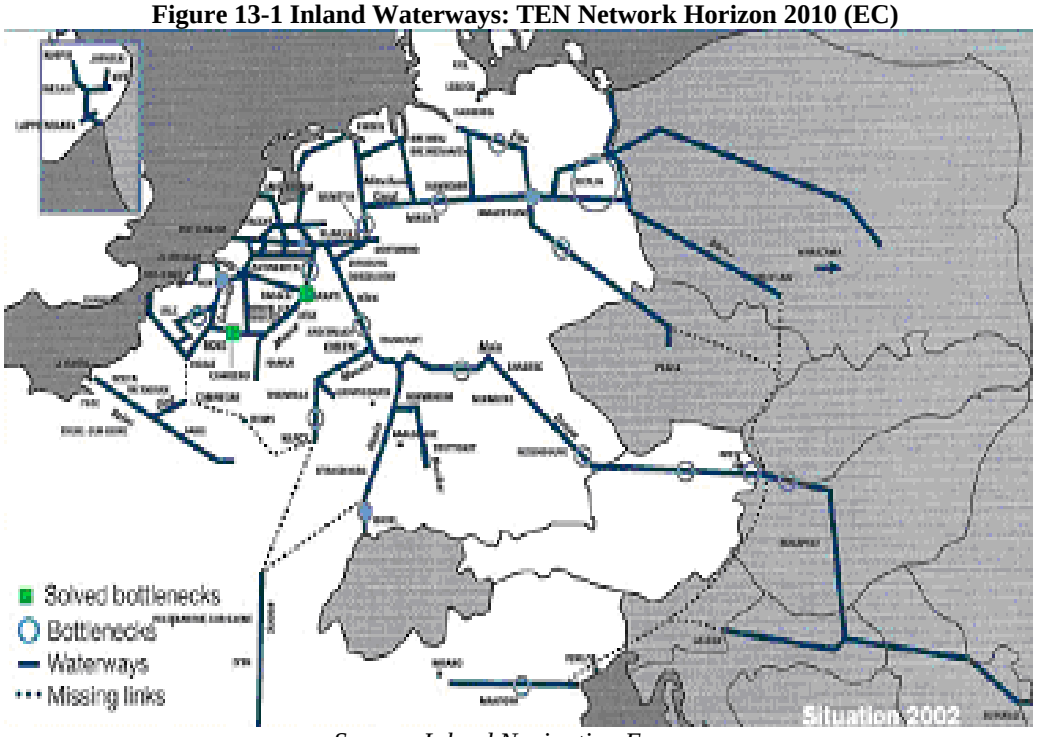
SM-H-23	Lescovac Bujanovac	n.a.	2011	2012	270	n.a.
SM-H-24	Verige bridge at Kotor	n.a.	2011	2012	57	n.a.
SM-H-25	Bypass Bijelo Polje	n.a.	2011	2012	15,1	n.a.
SM-H-26	Podgorica-Niksic Bosnian border	n.a.	2011	2012	32	n.a.
Rail projects						
SM-R-1	Priority rehabilitation works Belgrade-S.Pazova Tovarnik rail line	n.a.	2005	2007	71	n.a.
SM-R-2	Priority rehabilitation on Belgrade-Nis-Presevo rail line	n.a.	2004	2005	14	n.a.
SM-R-3	Widening of rail tunnels Ripanj and Ralja	n.a.	2005	2005	8	n.a.
SM-R-4	Priority rehabilitation works on S.Pazova Kelebia-section Petrovaradin Cortanovci rail line	n.a.	2004	2004	11,2	100B
SM-R-5	Priority rehabilitation of Stara pazova-kelebia rail line	n.a.	2004	2005	42	n.a.
SM-R-6	Priority rehabilitation on Nis-Pirot-Dimitrovgrad	n.a.	2004	2006	60	n.a.
SM-R-7	Upgrading of valjevo-Pozega rail line	n.a.	2005	2006	27	n.a.
SM-R-8	Rehabilitation of Vrbnica-Podgorica-Bar rail line	n.a.	2004	2005	7	n.a.
SM-R-9	Rehabilitation of Vrbnica-Podgorica-bar	n.a.	2004	2005	25	n.a.
SM-R-10	Repair of Danube and Ostruznica rail bridges at Belgrade	n.a.	2004	2005	11,9	n.a.
SM-R-11	Reconstruction of Zezelj rail bridge at Novi sad	n.a.	2004	2005	30	n.a.
SM-R-12	Completion of Belgrade railway junction	n.a.	2006	2009	133	n.a.
SM-R-13	Electrification of rail lines	n.a.	2004	2006	25	n.a.
Slovakia						
Road projects						
SK-H-2	Expressway R4 Kosice-Milhost	I	2004	2018	99,87	100N
SK-M-7	Motorway D1 Sverepec-Vrtizer	I	2004	2018	202,29	30N,28B,42G
SK-M-4	Motorway D3 Hricovske Podhradie-Zilina, Strazov	I	2004	2020	127,31	45N,55B
SK-M-9	Motorway D1 Dubna Skala-Turany	I	2004	2022	193,72	35N,65P
SK-M-3	Motorway D1 Pozdisovce-State border SR/UA	I	2004	2019	498	100N
SK-M-8	Motorway D1 Hricovske Podhradie-Dubna Skala	I	2004	2018	1001,94	35N,65P
SK-M-11	Motorway D1 Hubova-Ivachnova	I	2004	2023	355,27	35N,65P
SK-M-6	Motorway D3 Svrcinovec-Skalite	I	2004	2023	189,94	100N
SK-H-1	Expressway R3 Horna Stubna, bypass	II	2011	2019	14,67	100N
SK-M-13	Motorway D1 Jablonov-Beharovce	II	2011	2020	62,52	35N, 65P
SK-M-2	Motorway D1 Dargov-Pozdisovce	II	2011	2020	95,86	100N
SK-H-3	Expressway R4 Svicnik, relocation	II	2011	2019	21,49	100N
SK-M-12	Motorway D1 Janovce-Jablonov	II	2011	2022	266,60	35N,65P
SK-M-16	Motorway D1 Budimir-Bidovce	II	2011	2022	125,05	100B
SK-M-5	Motorway D3 Cadca, Bukov-Svrcinovec	II	2011	2022	85,31	100B
SK-M-1	Motorway D1 Bidovce-Dargov	II	2011	2024	141,93	100B
SK-M-14	Motorway D1 Fricovce-Svinia	II	2011	2024	146,86	100B
SK-M-10	Motorway D1 Turany-Hubova	II	2011	2024	507,96	35N,65P
SK-M-15	Motorway D1 Presov West-Presov South	II	2011	2024	242,77	100N
Rail projects						
SK-R-5	ZSR Zilina-Krasno nad Kysucou	II	2007	2009	155,95	15N,85G
SK-R-4	ZSR Nove Mesto nad Vahom-Puchov modernization	II	2007	2013	642,69	15N,85G
SK-R-3	ZSR Trnava-Nove Mesto and Vahom modernization	II	2004	2008	218,51	40N,60G
SK-R-1	ZSR Kuty-Bratislava modernization	II	2007	2011	397,51	15N,85G
SK-R-2	ZSR Bratislava-Trnava modernization	II	2004	2007	405,85	44N,56G
Slovenia						
Road projects						

SL-M-2	Bic-Obrezje	I	2002	2006	621	0
SL-M-6	Slivnica-Drazenci	I	2007	2012	267,15	0
SL-M-1	Maribor-Pince	I	2003	2013	1037,23	0
SL-M-3	Vrba-Peracica	II	2004	2008	119	0
SL-M-4	Sentvid-Koseze	II	2003	2006	106	0
SL-M-5	Koper-Dragonja	II	2005	2006	11,7	0
SL-M-7	Drazenci-Gruskovje	II	2014	2014	210	0
Rail projects						
SL-R-4	Introduction of the ERTMS/ETCS, GSM-R system with the implementation of remote control of fixed installations of the electric traction system on the Slovenian rail network	I	2008	2013	154	25N,25B,50G
SL-R-1	Modernization of railway line Pragersko-Ormoz-Project A	I	2005	2007	63,50	19N,32B,49G
SL-R-2	Electrification of railway line Pragersko-Hodos	I	2006	2009	62,50	25N,25B,50G
SL-R-5	Modernization of the existing railway line Koper-Divaca	I	2005	2009	123,30	26N,31B,44G
SL-R-3	Construction of 2nd track on railway line Maribor-Sentilj-border with the Republic of Austria	I	2010	2014	176	25N,25B,50G
SL-R-6	Upgrading the Ljubljana-Zidani most-Maribor railway line	I	2004	2006	35,30	64B,36G
SL-R-7	Construction of 2nd track on railway line Divaca-Koper	II	2006	2012	700	5N,25B,50G, 20P
Turkey						
Road projects						
TU-M-14	Tekirdag-Ipsala border Road, Section 4: Malkara junc.-Ipsala Border	I	2004	2006	30,12	100N
TU-M-13	Tekirdag-Ipsala border Road, Section 3: Tekirdag-Malkara Junction	I	2004	2006	31,60	100N
TU-M-3		I	2010	2014	222,77	0
TU-M-8	Bursa-Izmir Motorway, Section 4: (Balikesir-Edremit) Junc.-Kirkagac	I	2010	2014	184,40	0
TU-M-10	Bursa-Izmir Motorway, Section 5: Manisa-Izmir	I	2010	2014	164,91	0
TU-M-6	Bursa-Izmir Motorway, Section 2: (Bursa-Karacabey) jun.-Susurluk	I	2010	2014	193,85	0
TU-M-7	Bursa-Izmir Motorway, Section 3: Susurluk-(Balikesir-Edremit) Junc.	I	2010	2014	183,93	0
TU-M-12	Tekirdag-Ipsala border Road, Section 2: Tekirdag Bypass	I	2004	2006	20,74	100N
TU-M-15	Sanliurfa-Habur Border, Section 1: Sanliurfa-Viransehir	I	2004	2008	68,09	100N
TU-M-17	Sanliurfa-Habur Border, Section 3: Kiziltepe-Nusaybin Junc.	I	2004	2008	43,92	100N
TU-M-18	Sanliurfa-Habur Border, Section 4: Nusaybin Junc.-Oyali	I	2004	2008	35,70	100N
TU-M-19	Sanliurfa-Habur Border, Section 5: Oyali-Cizre	I	2004	2009	45,31	100N
TU-M-9	Bursa-Izmir Motorway, Section 5: Kirkagac-Manisa	I	2010	2014	132,54	0
TU-M-20	Sanliurfa-Habur Border, Section 6: Cizre-Sipoli	I	2004	2008	22,70	100N
TU-M-11	Tekirdag-Ipsala border Road, Section 1: Kinali Junc.-Tekirdag	II	2004	2007	106.90	100N
TU-M-16	Sanliurfa-Habur Border, Section 2: Viransehir-Kiziltepe	II	2004	2008	56,02	100N
TU-M-1	Ankara-Pozanti Motorway, Section 1: Ankara-Acikuyu	II	2015	2019	294,84	0
TU-M-2	Ankara-Pozanti Motorway, Section 2: Acikuyu-Ortakoy	II	2015	2019	267,81	0
TU-M-5	Bursa-Izmir Motorway, Section 1: Orhangazi-	II	2015	2019	281,87	0

	Bursa					
TU-M-4	Ankara-Pozanti Motorway, Section 4: Golcuk-Pozanti	II	2015	2019	735,46	0
Rail projects						
TU-R-4	Turkey (Kars)-Georgia (Tbilisi) New Railway Project	I	2006	2010	317,1	0
TU-R-1	Ankara-Istambul rehabilitation project (Existing Railway line)	II	2005	2006	1138	100B
TU-R-3	Project of bosphorus Rail Tube Tunnel and Gebze-Halkali Surface Metro system	II	2011	2017	1344	100B
TU-R-2	Ankara-Yozgat-Yildizeli New Railway Project	II	2011	2013	735,7	100B

Source: Authors, based on "Economic Commission for Europe TEM and TER master plan. Final Report, 2006."

Figure 13-1 Inland Waterways: TEN Network Horizon 2010 (EC)



Source: Inland Navigation Europe

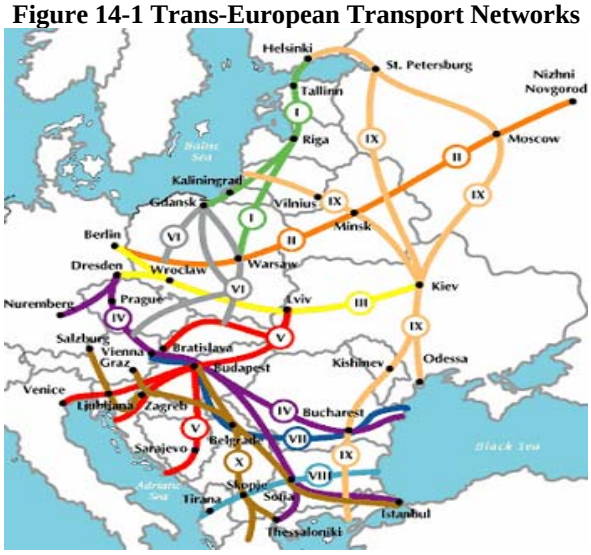
14.Appendix 4: Transport Networks

Table 14-1 Main Pan-European Corridors Crossing CEE

Corridor Name	Type, length	Route	Comments
Corridor I: Via Baltica Rail Baltica	Road/rail Road – 445 km Rail – 550 km	Helsinki (FIN) - **Tallinn (EST) - Riga (LV) - Kaunas, Klaipeda (LT)** – **Warsaw, Gdansk (PL)** – Kaliningrad (RUS)	
Corridor II:	Road/rail 1,830 km	Berlin (D) – **Poznan, Warsaw (PL)** – Brest, Minsk (BY) – Smolensk, Moscow, Nijni Novgorod (RUS)	Road and rail network is running in parralel for the most part
Corridor III:	Road/rail 1640 km	Berlin, Drezden (D) – **Wroclaw, Katowice, Cracow (PL)** – Lvov, Kiev (UA)	Road and rail network is running in parralel for the most part
Corridor III: Link EU-South-Eastern Europe	Road/rail/Danube ferry link/cmbined transport 3258 km	Berlin, Dresden, Nuremberg (D) – **Prague, Brno (CZ)** – Vienna (rail, A) – **Bratislava (SK) – Gyor Budapest (HU) – Arad Craiova, Buharest, Constanta (RO) – Sofia, Pflovdiv (BG)** – Thessaloniki (GR) – **Omenio, Istambul (TR)**	
Corridor V:	Road/rail 1600 km	Venice, Trieste (I) – **Kopar, Ljubljiana, Maribor (SLO)** – **Budapest (HU)** – Uzgorod, Lvov, Kiev (UA) – **Bratislava, Zilina, Kosice (SK)** – **Rijeka, Zagreb, Osijek, Ploce (CR)** – **Sarajevo (BiH)**	
Corridor VI:	Road/rail /combined transport 1800 km	**Gdansk, Torun, Poznan, Grudziadz, Warsaw, Zebrzydowice (PL)** – **Zilina (SK)** – **Ostrava, cor. IV (CZ)**	Link to Corridor V
Corridor VII: Waterway route on the Danube from Germany to the Black Sea	Waterway	(D) – (A) – **Bratislava (SK) – Gyor-Gonyu (HU) – (CR)** – **(SM) – Ruse Lom (BG)** – (MD) – (UA) – **Constantza (RO)**	Connects up with the North Sea via the Rhine and the Main
Corridor VIII:	Road/rail/combined 1300 km	**Durres Tirana (ALB) – Skopje Bitola (FYROM) – Sofia, Dimitrovgrad, Burgas, Varna (BG)**	Expansion of port of Durres, combined transport in Bitola
Corridor IX:	Road/rail/port expansion 6500 km	Helsinki (FIN) – Vyborg, St.Petesburg, Pskov, Moscow, Kaliningrad (RUS) – Kiev, Ljubasevka, Odessa (UA) – Chisinau (MD) – **Bucharest (RO) – Vilnius, Kaunas, Klaipeda (LT)** – Minsk (BY) – Alexandropolis (GR) – **Dimitrovgrad, Ormenio (BG)**	The Council in Essen (1994) declared the link Helsinki-St.Petersburg-Moscow as prioritary
Corridor X:	Road/rail 2360 km	Salzburg–Ljubljana-Zagreb-Beograd-Nis-Skopje-Thessaloniki Branch A: Graz-Maribor- Zagreb Branch B: Budapest-Novi Sad-Beograd Branch C: Nis-Sofia Branch D: Veles-Bitola-Florina)	

Source: Authors

Figure 14-1 Trans-European Transport Networks



Source: An Intermodal Freight Strategy for Baltic Gateway, 2006

Table 14-2 Rail Network Statistics of CEE

Country	Area (1000 km^2)	Length of railway lines (km)	Length of railway lines of which electrified km (%)	Railway lines density (length of lines/areas) m/km^2
Albania	28,8	447	-	15,5
Bosnia-Herzegovina	51,2	1042	774 (74,3%)	20,4
Bulgaria	110,9	4318	2847 (65,9%)	39,9
Croatia	56,5	2726	983 (36%)	48,2
Czech Republic	78,9	9602	2943 (30,6%)	121,7
Estonia	45,2	1200	133 (11,1%)	26,5
FYR Macedonia	25,3	699	233 (33,3%)	27,6
Hungary	93	7950	2848 (35,8%)	85,5
Latvia	64,6	2347	270 (11,5%)	36,3
Lithuania	65,2	1998	122 (6,1%)	30,6
Poland	312,7	23420	12132 (51,8%)	74,9
Romania	237,5	11385	3929 (34,5%)	47,9
Serbia	88,4	3800	1364 (35,9%)	43,0
Slovakia	48,8	3657	1556 (42,5%)	74,9
Slovenia	20,3	1229	504 (41%)	60,5
Turkey	780,6	8697	1752 (20,1%)	11,1

Source: Authors, based on UIC, Ministry of Transports, Eurostat

Table 14-3 Road Network Statistics (thousand km) of CEE

	Motorways	National roads	Secondary/regional roads	Other roads
AL	0,518	3,2	7,6	6,2
BG	0,416	3,0	4,0	29,4
BiH	0,012	3,7	4,1	14,0
CR	1,050	6,7	10,5	11,1
CZ	0,546	6,1	48,8	72,3
EE	0,096	3,9	12,4	39,5
HU	0,860	30,5	53,7	103,4
LT	0,417	20,9	19,6	38,4
LV	-	20,3	39,1	13,8
MK	0,208	0,9	3,6	8,4
PL	0,665	18,2	157,0	248,8
RO	0,266	9,1	35,9	108,1
SK	0,322	3,3	3,7	10,4
SI	0,483	17,6	28,5	n.a.
SR	0,560	6,3	12,5	31,0
TR	1,892	31,4	30,4	318,7

Source: Authors, based on EU Energy and Transport in Figures 2006, Ministry of Transports

Table 14-4 Inland Waterways Statistics of CEE

Country	Length of inland waterways (km)
Albania	43
Bosnia and Herzegovina	n.a.
Bulgaria	470
Croatia	785
Czech Republic	677
Estonia	320
Hungary	1440
Latvia	300
Lithuania	600
Makedonia	-
Poland	3812
Romania	1779
Serbia	587
Slovakia	172
Slovenia	n.a.
Turkey	1200

Source: Authors, based on Ministry of Transports, Eurostat

15.Appendix 5: Transport Actors

Table 15-1 Eastern European Rail Transport Market

	Name	Length of lines (km)	Freight tones carried (mln/year)	Freight Tonne-km (mil)	Turnover (mil. EUR)	Profit (mil. EUR)
AL	Albanian railways/Hekurudhat Shqiptare (HSH)	670	1	n/a	n/a	n/a
BG	Balgarski Darzavni Zeleznitsi/ Bulgarian State Railways (BDZ)	4300	20,3	5163	n/a	n/a
BiH	Zeljeznice Federacije Bosne i Hercegovine /Railways of the Federation of Bosnia-Herzogovina (ZFBH)	609	6,7	762	50,2	n/a
BiH	Zeljeznice Republike Srpska/ Railways of the Republic of Srpska (ZRS)	n/a	5,3	411	n/a	n/a
CR	Hrvatske Zeljeznice /Croatian Railway Company (HZ)	2726	15,8	3106	528,1	6,8
CZ	Ceské Dráhy/ Czech Railways (CD)[355]	9344	83,4	15973	1520,5	-19,8
EST	Aktsiasetts Eesti Raudtee/Estonian Railways (EVR)	1280	44,5	19156	115,2	4
HU	Magyar Allamvasutak Rt./Hungarian State Railways (MÁV)	7729	44	8537	896,5	-312,6
HU	Central-European Railway/Central-European Railway (CER)	-	0,4	26	0,941	0,016
HU/A	Gyor-Sopron-Ebenfurti Vasut/Gyor-Sopron-Ebenfurth Railway Company (GySEV/RoeEE)	220	6,3	657	117,8	0,1
LT	Lietuvos Gelezinkeliai/Lithuanian Railways (LG)	1771	49,3	12457	331,3	28,1
LV	Latvijas	2270	54,9	17921	243,4	n/a

[355] provisional

	Dzelzcells/Latvian Railways (LDZ)					
MA	Makedonski Zeleznici/Railways of the FYR Macedonia	699	3,1	530	33,9	-2,3
PL	Polskie Koleje Panstwowe/Polish State Railways (PKP)[356]	19507	155,1	45438	4347,5	152,9
PL	Rail Polska/Rail Poland (Rail Polska)	-	0,978	249	n/a	n/a
RO	Compania Nationala de Cai Ferate/Romanian National Railway Company (CFR)	10781	-	-	311,7	-40,1
RO	Societatea Nationala de Transport Feroviar de Marfa Romanian national freight train operating company CFR Marfa	-	55,3	12930	506,2	18,5
RO	Societatea Nationala de Transport Feroviar de Calatori/Romanian national train operating company for passenger transport (CFR Calatori)	-	-	-	362,2	-53,2
SK	Zeleznicna Spolocnost Slovensko/Slovak Railway Operator (ZSSK)	-	-	-	215,6	-13,7
SK	Zeleznicna Spolocnost Cargo Slovakia/Slovak Rail Freight Company (ZSSK Cargo)	-	47,8	9326	420,4	-18,1
SLO	Slovenske Zeleznice/Slovenian Railways (SZ)	1228	18,1	3579	286,2	-10,9
SR	Zeleznice Crne Gore/Railways of Montenegro (ZCG)	248	1,2	133	1,2	n/a
SR	Zeleznice Srbije/Serbian Railways (ZS)	3590	12,6	3482	237,7	-191,7

Source: Annual Report 2005/2006 CER (Community of European Railway and infrastructure Companies)

[356] Profit and turnover data for PKP covers the year 2004. All other data presented by PKP is for 2005.

Table 15-2 Eastern Europe Road Transport Market

	Number of road freight firms (year)	Total number of road vehicles for international transport	Number of trucks in average operating internationally in transport firm	Main competitors, presented in the market	Opportunities For partnership
LT	2490 (2003)	12707 (2001)			
LV	n/a	1100 (2003)	4,4 (2000)	LT, PL, RUS	Western and Eastern Europe for activities in Baltic region and transit to RUS and BY
EST	1600 (2003)		6,1 (2000)		
PL	8716 (2003)		3,7 (2000)		
CZ	4300 (2003)		7,5 (2000)		SK, A, D, F, I
SK	3263 (2003)	19030	3,3 (2003)		Empty runs are problem. Partners from Western and Eastern Europe are needed for load utilization.
SLO		40000	3,7 (2000)		Over Europe for both outbound and inbound
HU	27478 (2001)		6,5 (2000)		Western, Eastern to optimize return flow or third country movements on the East-West axis.
RO	5389 (2005)	31350 (2005)			

Source: Authors, based on Road Transport Fact File, IRU, "The World Bank. Trade and Transport Facilitation Audit of The Baltic States (TTFBS). Lauri Ojala, Tapio Naula and Torsten Hoffmann 2005"

Table 15-3 Schenker's Activities in the CEE Transport Market

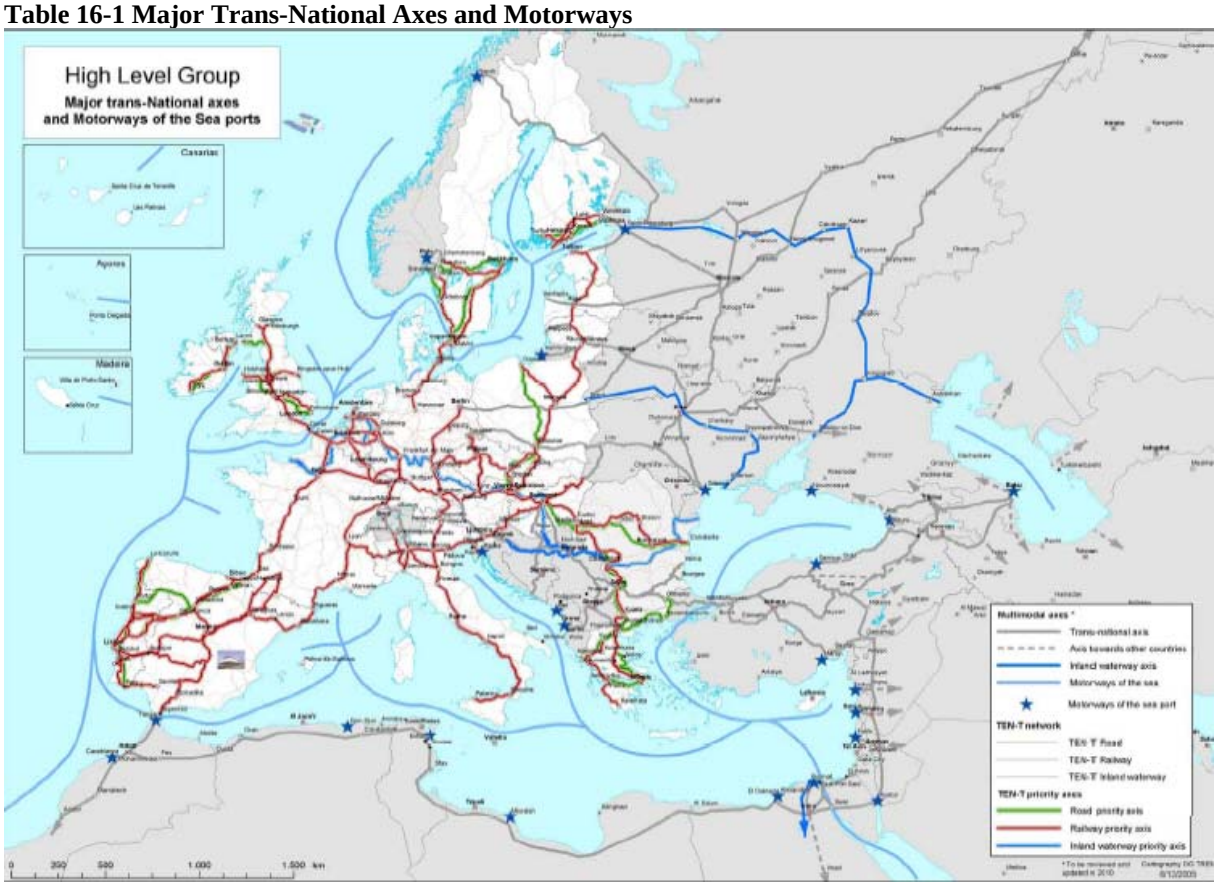
Country	Schenker's presence in the region
Bulgaria	▪ 1993 (130 empl.) ▪ 20,5 mil. EUR ▪ Shipping on Danube
Bosnia and Herzegovina	▪ 2001 (19 empl.)
Croatia	▪ 1996 (94 empl.)
Czech Republic	▪ 570 empl.
Estonia	▪ 190 empl.
Hungary	▪ 370 empl. ▪ Schenker Kft (land) acts as regional office for South-Eastern Europe ▪ 2000 - Masped-Schenker Kft. (air, sea) joint venture (50/50%) ▪ 2005 - moving to BILK logistics park
Latvia	▪ 80 empl.
Lithuania	▪ 1997 - Schenker UAB (65 empl.), former Scansped UAB, owned by BTL.
Macedonia	▪ 2002 - Schenker DOOEL (Skopje) ▪ cooperation with UNMIK Railways (Kosovo Railways)
Poland	▪ 1300 empl.

	▪ 1990 – Spedpol (international transport, Poland): acquired 69,4% for 18 mil. USD (by BTL); ▪ 2004 – Spedpol (logistics, Poland, 52 mil. EUR, 1000 empl.). Schenker through BTL subsidiary acquired further 29% of Company from government; now virtually owned. Being the largest Polish logistics market player Spedpol claims to grow 20% per year. It also feeds into Schenker's European Land Transport Network. At the end of 2004 it was integrated with Schenker's own operations in the country. Before acquisition with Spedpol Schenker was active in the Polish market through its subsidiary Schenker Sp.z.o.o. (for European land transport) and its majority holding in Spedpol Sp.z.o.o. with specialization on national logistics. Specialized Schenker subsidiaries have already been active in Poland for rail-based logistics, vehicle and ship charter sectors.
Romania	▪ 1992 (90 empl.)
Serbia	▪ 27 empl.
Slovakia	▪ 80 empl. ▪ Rail service to Germany
Slovakia	▪ 1992 - Schenker Slovakia Ltd. with branches in Košice, Trnava, Zilina ▪ 2005 – logistics terminal in Bratislava
Slovenia	▪ Subsidiary Intertrans (160 empl.) ▪ Since the beginning of 2006 under the name of Schenker d.d. Three years ago Intertrans was integrated.
Turkey	▪ 1995 - Schenker Arkas Transport and Trading A.S. (300 empl.) a Joint Venture between Schenker and Arkas Group.

Source: Authors, based on the official website and reports of Schenker

16. Appendix 6: Trans-Regional Connections

Table 16-1 Major Trans-National Axes and Motorways



Source: Networks for Peace and Development. Extension of the major trans-European transport axes to the neighbouring countries and regions. Report from the High Level Group chaired by Loyola de Palacio, November 2005

Figure 16-1 Major Intermodal Transport Lines between Europe and Asia

West-East	**Observatory: "Four-axis projects"** (Project by German (DB), Polish (PKP), Belarusian (BC) and Russian (RZhD) railways)
C-E-20[357] (E 20[358], PanEuropean Cor. V)	Berlin/Seddin – D/PL-Poznan-Warsawa-PL/BY-Minsk-BY/RUS-Smolensk-Moscow-Nizhny Novgorod
East-West	**Observatory proposed: Ukraine**
C-E-30 (E 30, PanEuropean Cor. III)	Dresden-D/PL-Wroclaw-Katowice-PL/UA-Kiev
North-South	**Observatory proposed: Ukraine**
C-E-10 – C-E-95 (E 10-E 95, PanEuropean Cor. IX)	Helsinki-FIN/RUS-St.Petersburg-Moscow-RUS/UA-Kiev-UA/MO-Chisinau-MO/RO-Bucuresti-RO/BG-Dimitrovgrad

Source: own elaboration based on the paper "Pilot transport corridors between Europe and Asia. Major intermodal transport lines Proposals ECE/TRANS/WP.24/2006/1"

[357] European Agreement on Important International Combined Transport Lines and Related Installations (AGTC)
[358] European Agreement on Main International Railway Lines (AGC)

17.Appendix 7: Cluster Analysis

Table 17-1 Global Competitiveness Index 2006-2007 (Infrastructure)

	EE	SI	CZ	LV	LT	SK	HU	CR	PL	TR	BG	RO	MK	SR	BA	AL
Score	4,66	4,51	4,5	4,33	4,14	4,08	4,05	3,98	3,64	3,46	3,41	3,05	2,83	2,72	2,5	1,92
Rank	30	32	33	39	44	47	48	51	57	63	65	77	82	90	96	121

Source: Global Competitiveness Report 2006-2007, Augusto Lopez-Claros, World Economic Forum, 2006

Figure 17-1 Transport Infrastructure and Logistics Market Index with equal weights

	EE	LV	LT	PL	CZ	SK	SI	HU	CR	RO	BG	TR	MK	SR	BA	AL
TRANSPORT POLICY (33,33 %)																
Safety&Security	4	4	4	2	4	4	5	3	3	3	3	2	2	1	1	1
EU perspective	5	5	5	5	5	5	5	5	3	4	4	3	3	2	2	2
Implementation of transport policy	4	4	4	3	5	4	5	5	3	3	3	3	2	2	2	1
Investments into infrastructure	4	4	4	3	4	4	5	4	4	4	3	3	3	2	2	2
Standards	4	4	4	4	5	5	5	5	4	3	3	4	3	3	3	2
Total	**4,20**	**4,20**	**4,20**	**3,40**	**4,60**	**4,40**	**5,00**	**4,40**	**3,40**	**3,40**	**3,20**	**3,00**	**2,60**	**2,00**	**2,00**	**1,60**
INFRASTRUCTURE (33,33 %)																
Road status	4	4	4	3	4	4	5	4	4	3	2	4	2	2	1	1
Rail status	5	4	4	4	5	4	5	4	3	3	3	2	2	2	1	1
Intermodal transport	4	4	4	4	5	4	4	4	3	3	2	3	1	1	1	1
Bottlenecks	5	4	4	3	5	4	5	3	4	2	2	3	2	1	1	1
Total	**4,50**	**4,00**	**4,00**	**3,50**	**4,75**	**4,00**	**4,75**	**3,75**	**3,50**	**2,75**	**2,25**	**3,00**	**1,75**	**1,50**	**1,00**	**1,00**
TRANSPORT MARKET (33,33 %)																
Attractiveness for Global 3PL	3	4	3	5	5	5	4	5	2	3	2	5	1	2	1	1
Hub potential	3	4	3	5	5	4	4	5	2	4	3	4	1	2	1	1
Focus regions	4	3	3	5	5	5	4	5	3	3	3	4	2	2	2	1
Total	**3,33**	**3,67**	**3,00**	**5,00**	**5,00**	**4,67**	**4,00**	**5,00**	**2,33**	**3,33**	**2,67**	**4,33**	**1,33**	**2,00**	**1,33**	**1,00**
WEIGHTED AVERAGES	**4,01**	**3,96**	**3,73**	**3,97**	**4,78**	**4,36**	**4,58**	**4,38**	**3,08**	**3,16**	**2,71**	**3,44**	**1,89**	**1,83**	**1,44**	**1,20**

Source: Authors