DIOMIS

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

HUNGARY

Developing Infrastructure & Operating Models for Intermodal Shift

January 2010

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Warning

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FOREWORD

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

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

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

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

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

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

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

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

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

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

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

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

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

Eric Peetermans
Chairman
UIC Combined Transport Group (CTG)

Oliver Sellnick
Director Freight
UIC

December 2009

1. SOCIO-ECONOMIC INFORMATION ON HUNGARY

In terms of administration the Republic of Hungary is divided into seven regions, which themselves consist of 19 counties (*megye*) and the capital city Budapest (see ***Figure 1-1***). In contrast to federal countries such as Austria or Germany where political power is shared between the central government and the federal states (*Länder*), Hungary features a comparatively strong central administration.

Figure 1-1: Hungary: administrative division by regions and counties

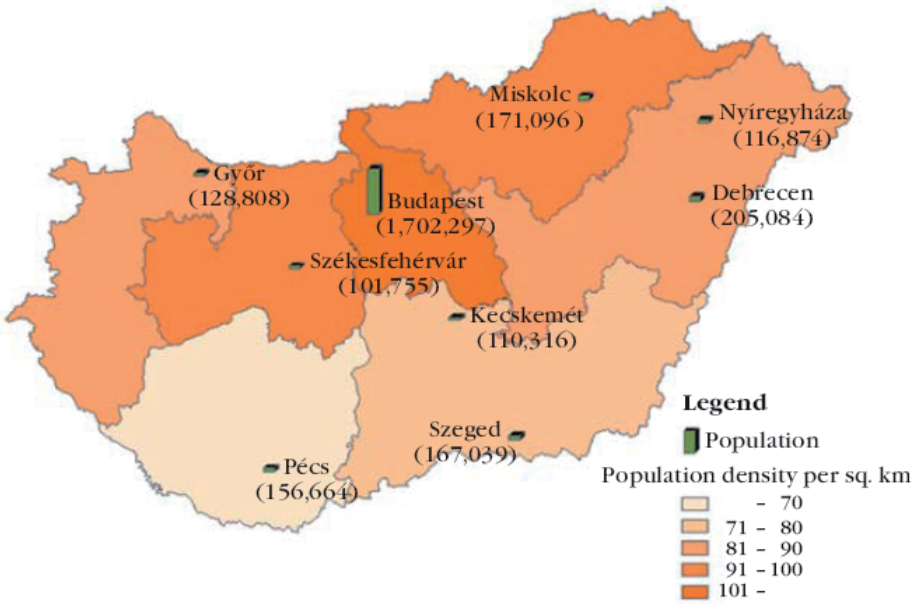
Source: Deutsch-Ungarische Industrie- und Handelskammer (DUHK) website

1.1 - Population

Similar to the administrative powers, the Hungarian population is concentrated in the Centre. 30 per cent of a total of 10,031,000 inhabitants (2008) live in the region of Central Hungary that comprises Budapest (1.7m inhabitants) and the adjacent county Pest. Budapest is naturally by far the biggest city. The next biggest settlement is Debrecen in eastern Hungary accounting for a population of about 205,000; all other towns such as Miskolc, Szeged, Pécs or Györ have less than 200,000 inhabitants (see ***Figure 1-2***).

Among the CEE states covered by this DIOMIS study Hungary is the fourth largest country both in terms of the population and size of territory. Hungary has an area of 93,030km². In 2008, this equated to an average population density of 108 inhabitants per km². The figure below also shows that population density is considerably lower in rural areas in the south and west. It goes without saying that such patterns impact on freight traffic volumes and on the market potential for intermodal services. These relations will be analysed in-depth in chapter 3.

Figure 1-2: Hungary: population density by region and biggest cities, 2008



Source: KSH (Hungarian Central Statistical Office): Hungary in figures 2008. www.ksh.hu

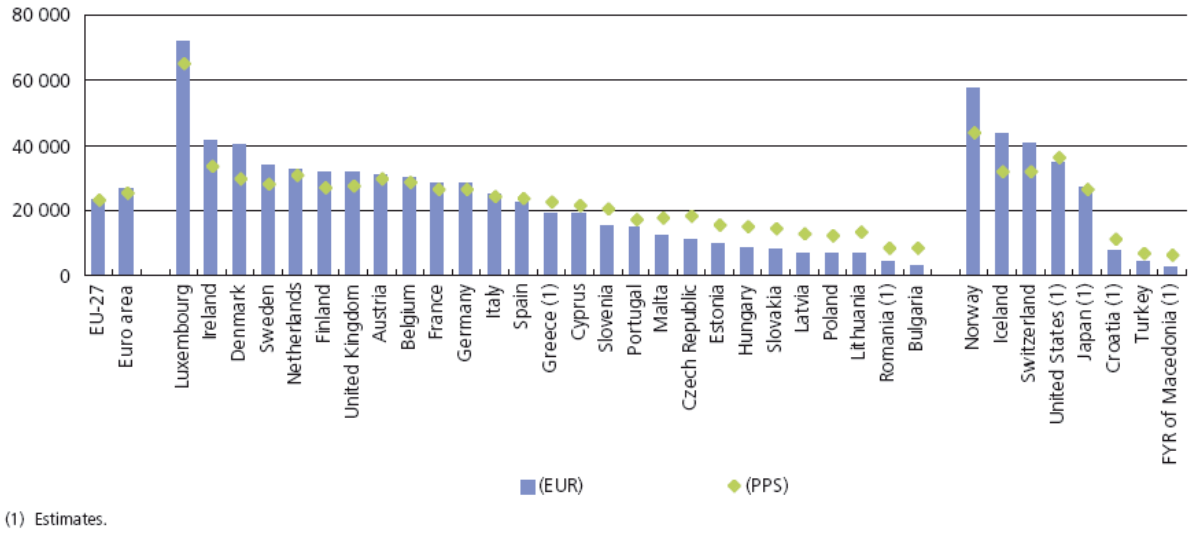
1.2 - Economy

Over the past 20 years Hungary has transformed from a centrally planned state to a well performing market economy. Until very recently, when the global economic crisis and domestic structural problems coincided and hit Hungary badly, it had been a leading economy in the region and among the new EU Member States. This is reflected in the following key economic indicators:

- In 2007, the Gross Domestic Product (GDP) in Hungary amounted to HUF 25,479bn (€ 101.1bn) at current prices. After the Baltic States and Slovenia, Hungary achieved the highest GDP growth among the 12 new EU Member States from 1996 to 2005. In the same period the country's mean annual GDP growth rates lay well above the European average. According to Eurostat Statistics Pocket Book 2009, the Hungarian economy grew by an average of 4.0 per cent in the period 1996-2000 and 4.4 per cent in the period 2001-2005, compared to EU averages of 2.9 and 1.8 per cent respectively.
- In Hungary, GDP per capita was € 10,053 in the year 2007 corresponding to about 40 per cent of the EU average of approximately € 25,000. With respect to the eight CEE countries involved this study, only Slovenia and the Czech Republic outperformed Hungary (see also Figure 1-3).
- The country's industrial base has been both reinforced and extended over the past two decades. It has created an economy strongly involved in European and global trade relations. In 2007 Hungary's external trade of goods and services amounted to HUF 42,000bn (€167bn) with a slight surplus of exports over imports. Thus it accounted for about 175 per cent of GDP, which is one of the highest ratios among CEE countries.
- Hungary has also become one of the most attractive places in Central and Eastern Europe for Foreign Direct Investment (FDI). In the 2000s, only Bulgaria achieved a higher level of FDI as a percentage of GDP than Hungary. According to Eurostat, values were particularly high in the years 2005 to 2007 (7.0%; 17.7%; 34.1%) especially when compared to EU averages of 1.2 to 2.9 per cent. In the same period Hungary also scored top values in the FDI Intensity Index, which - representing the relationship between average FDI inward and outward flows and GDP - measures the intensity of investment integration within the international economy.
- In the period between 2000 and 2007 foreign capital stock in Hungary has almost trebled to HUF 15,164bn (€ 59.9bn). The main investing countries are Germany, the Netherlands

and Austria (see ***Figure 1-4***). Even if the majority of capital went into service industries (marked green in ***Figure 1-5***) the importance of Hungary as a location for manufacturing is expressed in the high proportion of FDI invested into industrial production (marked pink in ***Figure 1-5***) at 36 per cent.

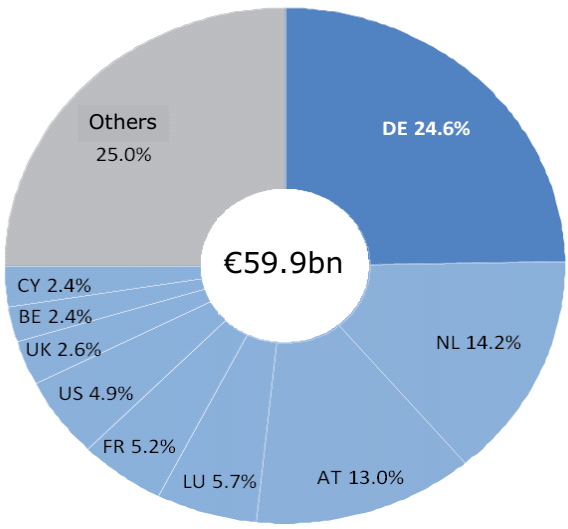
Figure 1-3: Gross Domestic Product per capita at current prices, 2006



(1) Estimates.

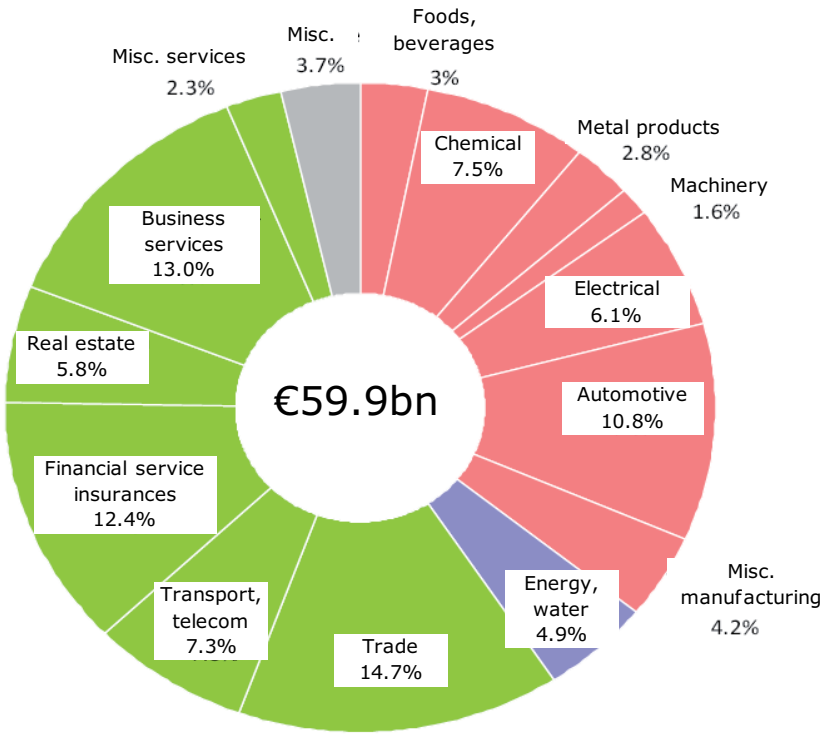
Source: Eurostat website

Figure 1-4: Foreign Direct Investment in Hungary by investing country, end 2007



Source: Hungarian Central Bank (MNB) according to DUHK website

Figure 1-5: Foreign Direct Investment in Hungary by industry, end 2007



Source: Hungarian Central Bank (MNB) according to DUHK website

1.3 - Freight traffic

In 2007 road vehicles carried 80 per cent of the total volume of 305 million tonnes of goods moved on national and international journeys in Hungary. This is not surprising since the majority of cargo was moved in domestic traffic over short, local or regional distances (see ***Figure 1-6***).

Although rail has lost more than one third of its domestic freight traffic since the year 2001, it has maintained its leading position in international traffic. Volumes even increased by 25 per cent to 2008. However, road traffic was able to more than quintuple its cross-border volumes in the same period. What, however, is remarkable, is that road was particularly successful on long distances, usually considered to be the stronghold of rail services. Though road moved about 30 per cent less goods than rail in 2007, its performance in tonne-kilometres was 2.5 times higher (see ***Figure 1-7***). This does not only reflect the

impact of a free choice of mode of transport in a market economy compared to the previous centrally planned state, a development effective since the 1990s, but more than that the changed pattern of freight in general. The volume of rail- and barge-oriented bulk cargo is more or less stagnant whereas the transportation of consumer goods and finished and semi-finished industrial products has grown strongly. The latter have comparatively demanding logistics profiles, which road is apparently much more capable of dealing with than rail.

As a consequence the modal split of total freight traffic in Hungary has increasingly turned towards road. In 2007 road transport had a 74 per cent share of total traffic and thus had gained nearly 9 percentage-points within six years mainly from rail freight (see ***Figure 1-8***).

Figure 1-6: Freight traffic in Hungary: transported goods (million tonnes) by mode and traffic type, 2001-2008

Year	Road			Rail			Inland waterway		
	Nat.	Int.	Total	Nat.	Int.	Total	Nat.	Int.	Total
2001	124.9	5.0	129.9	17.8	32.3	50.1	1.2	1.7	2.9
2002	211.3	5.7	217.0	16.6	33.8	50.4	1.5	1.5	3.0
2003	207.7	6.7	214.4	14.6	36.0	50.6	0.9	1.2	2.1
2004	204.7	8.7	213.4	15.2	36.5	51.7	0.0	7.3	7.3
2005	216.4	12.5	228.9	13.4	37.4	50.8	0.1	8.4	8.5
2006	233.2	17.6	250.8	12.1	42.6	54.7	0.1	7.2	7.3
2007	218.2	25.1	243.3	10.8	43.1	53.9	0.1	8.3	8.4
2008	231.9	26.5	258.4	11.2	40.3	51.5	0.1	8.8	8.9

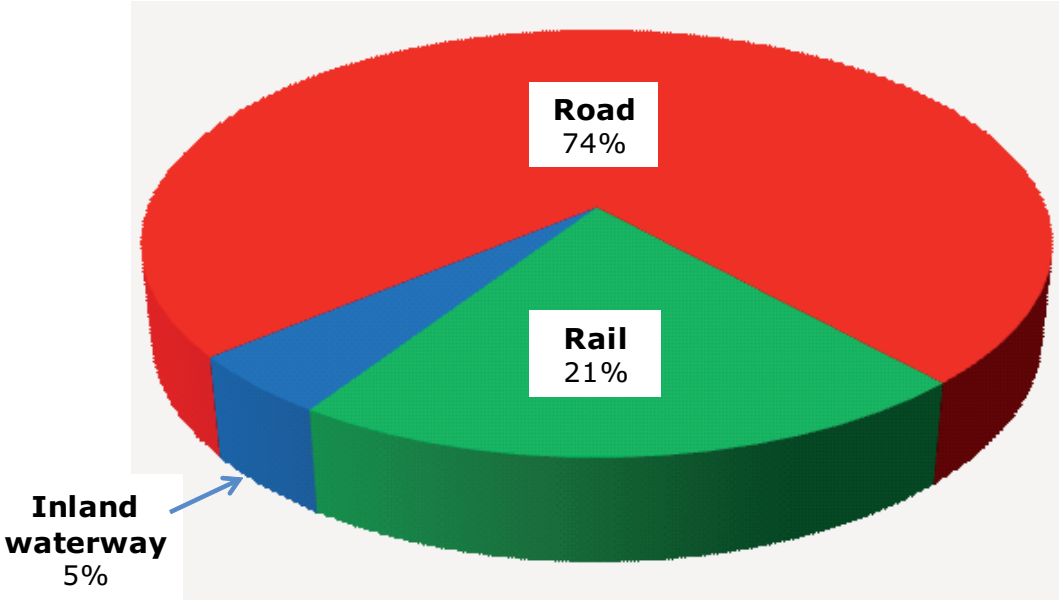
Source: KSH (Hungarian Central Statistical Office)

Figure 1-7: Freight traffic in Hungary: performance (billion tonne-kilometres) by mode and traffic type, 2001-2008

Year	Road			Rail			Inland waterway		
	Nat.	Int.	Total	Nat.	Int.	Total	Nat.	Int.	Total
2001	11.8	5.7	17.5	2.0	5.8	7.8	0.0	1.0	1.0
2002	10.6	6.5	17.1	1.8	6.0	7.8	0.0	1.1	1.1
2003	10.7	7.5	18.2	1.6	6.5	8.1	0.0	1.1	1.1
2004	11.0	9.6	20.6	1.7	7.0	8.7	0.0	1.9	1.9
2005	11.4	13.7	25.1	1.6	7.4	9.0	0.0	2.1	2.1
2006	12.4	18.1	30.5	1.5	8.7	10.2	0.0	1.9	1.9
2007	13.2	22.6	35.8	1.3	8.8	10.1	0.0	2.2	2.2
2008	13.0	22.7	35.7	1.4	8.5	9.9	0.0	2.2	2.2

Source: KSH (Hungarian Central Statistical Office)

Figure 1-8: Modal split of freight traffic in Hungary (related to performance), 2007



Source: KSH (Hungarian Central Statistical Office)

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

2.1 - Intermodal players

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

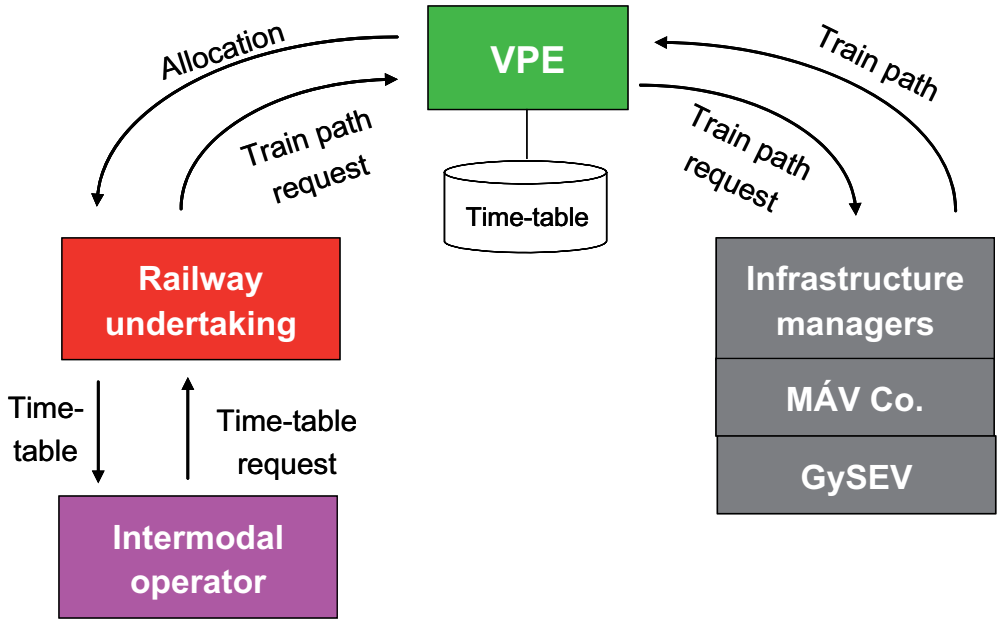
While in virtually every EU Member State the public nation-wide rail network - disregarding local or regional lines - is managed by a single company, in Hungary, we find the unusual situation of two relevant ***infrastructure managers***:

- The main rail infrastructure company is MÁV Co. providing for 7,727km or more than 97 per cent of the public network in Hungary. It is a legally independent company under the umbrella of the MÁV Group and fully owned by the Hungarian state.
- GySEV Zrt. (Raab-Ödenburg-Ebenfurter Eisenbahn AG) owns 287km of line, of which 211km are in Hungary and 76km in Austria. Though small in size the GySEV infrastructure is of great importance since it includes one of the two major rail links between Austria and Hungary. The line starts south of Vienna and runs via Sopron to Györ. GySEV is still an integrated railway company managing its infrastructure and operating freight and passenger services. The capital is currently shared by the Republic of Hungary (66.5%), the Federal Republic of Austria (28.6%), and the ÖBB-owned Speditions Holding AG (4.9%). Owing to competition law ÖBB, however, will be forced to sell its stake because of the acquisition of MÁV Cargo by Rail Cargo Austria, in 2009 (see below).

In order to ensure a non-discriminatory allocation of train paths, in 2004, the Hungarian state has established the independent authority *Vasúti Pályakapacitás-elosztó Kft*. (*VPE*), the Rail Capacity Allocation Office, by virtue of the 1993 Act XCV on Railways. Apart from this task the fully state-owned VPE is also responsible for developing and publishing the Network Statement of infrastructure managers and determining network access charges.

Concerning the train path allocation process, VPE acts as a kind of “broker” between railway undertakings and the two infrastructure managers in Hungary. Authorised railways apply to VPE for capacity, which passes on requests to the infrastructure company in question. The train paths elaborated by infrastructure managers are then allocated to the applicants by VPE. The authority also determines the time-tables in coordination with the infrastructure companies. The final contracting partners for the train path, however, are the railway undertaking and infrastructure manager(s) involved in the underlying service (see also ***Figure 2-1***).

Figure 2-1: Train path allocation process for intermodal services in Hungary



Source: KombiConsult based on Zsákai, T.: Development of the Hungarian Railway Network. Railway Market N° 4-2008.

In the year 2009, four ***railway undertakings*** have supplied rail traction services in intermodal transport:

- Floyd
- GySEV
- MÁV Cargo
- Wiener Lokalbahnen Cargo

MÁV Cargo Zrt. was and still is clearly the major player for domestic and international intermodal services in Hungary, accounting for a market share of about 70 per cent of the total TEU-related volume in this study's reference year 2007. The company was spun off the former state railway and established as a legally independent company for rail freight services within the MÁV Group as of 1 January 2006. In December 2008, the European Commission approved the acquisition of MÁV Cargo by Rail Cargo Austria AG, which plans to continue the business under the previous name.

GySEV Zrt. headquartered in Sopron – like MÁV Cargo – is also a long-standing provider of traction services to intermodal operators. Though the business has been focused on intermodal services using its own terminal and rail yard in Sopron, GySEV also operates block trains on MAV Co.'s infrastructure. As mentioned above, GySEV's rail freight activities are currently carried out as part of an integrated railway company. However, it is currently being investigated as to whether to incorporate them into an independent joint venture with other partners.

In 2007 Wiener Lokalbahnen AG, Vienna, spun off all its freight activities into the Wiener Lokalbahnen Cargo GmbH (WLC). For the time being WLC is only contracted for a single intermodal service in Hungary linking Budapest with Vienna and Duisburg, by the operator Hupac.

While the three railway undertakings described above had operated intermodal trains in 2007, FLOYD Zrt., Budapest, only entered this market in 2008. Licensed in the year 2004, the company claims to be first private rail operator in Hungary. FLOYD was founded by Hungarian business men. Now the majority shareholder (51%) is Eurogate, one of Europe's leading container sea port operators. This appears to be a coherent step since Eurogate's inland intermodal arm, Eurogate Intermodal, or its affiliated company boxXpress respectively, was the first intermodal operator to contract FLOYD. The railway operates its trains over the Hungarian section of the container hinterland services between Budapest and the German sea ports of Hamburg and Bremerhaven.

There are certainly not many countries in Europe with as many ***intermodal service suppliers*** as Hungary. In 2009, just like two years earlier, Hungarokombi and Ökombi were the only operators providing an accompanied, rolling highway service between Wels and Szeged. A total of 14 companies, however, have been operating unaccompanied intermodal services (see ***Figure 2-2***). Since 2007, Argo, Navismart and Pol Rail have acceded to the market while Railog

has suspended its operations in Hungary and InterFerryBoats (IFB) – as part of a reorganisation of B Cargo's intermodal activities - replaced TRW as continental intermodal service operator. A more intensive analysis of the supply of all operators is given in chapter 3.

Figure 2-2: Suppliers of unaccompanied intermodal services in Hungary, 2009

- Adria Kombi
- Alpe Adria
- Argo
- ERS
- Eurogate Intermodal
- Hungaria Intermodal
- Hupac
- ICA
- ICF
- IFB
- Kombiverkehr
- Metrans
- Navismart
- Pol Rail

Source: KombiConsult

2.2 - Legal framework

A key objective of Hungarian transport policy for many years has been to build an efficient and environmentally-friendly transport system and give priority to transport modes which contribute to achieving this goal. Therefore Hungarian governments have put a great emphasis on reinforcing the logistics industry and, in particular, supporting the expansion of intermodal transportation and enhancing the intermodal connectivity of modes in Hungary.

The Hungarian government also considers the country to provide a favourable geo-strategic position as four of the ten pan-European transport corridors affect the country. In fact, Hungary is located at the intersection of these corridors, which should enable the logistics industry to develop hub functions for regional and international freight flows. Corridors IV, V and X are more or less identical for rail and road, while Corridor VII is the River Danube for inland waterway traffic (see ***Figure 2-3*** and also chapter 2.6.1):

- Corridor IV: Dresden/Nuremberg - Prague - Brno - Vienna - Bratislava - Gyôr – Budapest – Arad (- Bucharest - Constanta) - Craiova – Sofia (- Plovdiv - Istanbul) - Thessaloniki
- Corridor V: Venice - Trieste - Koper - Ljubljana - Maribor - Budapest - Lvov

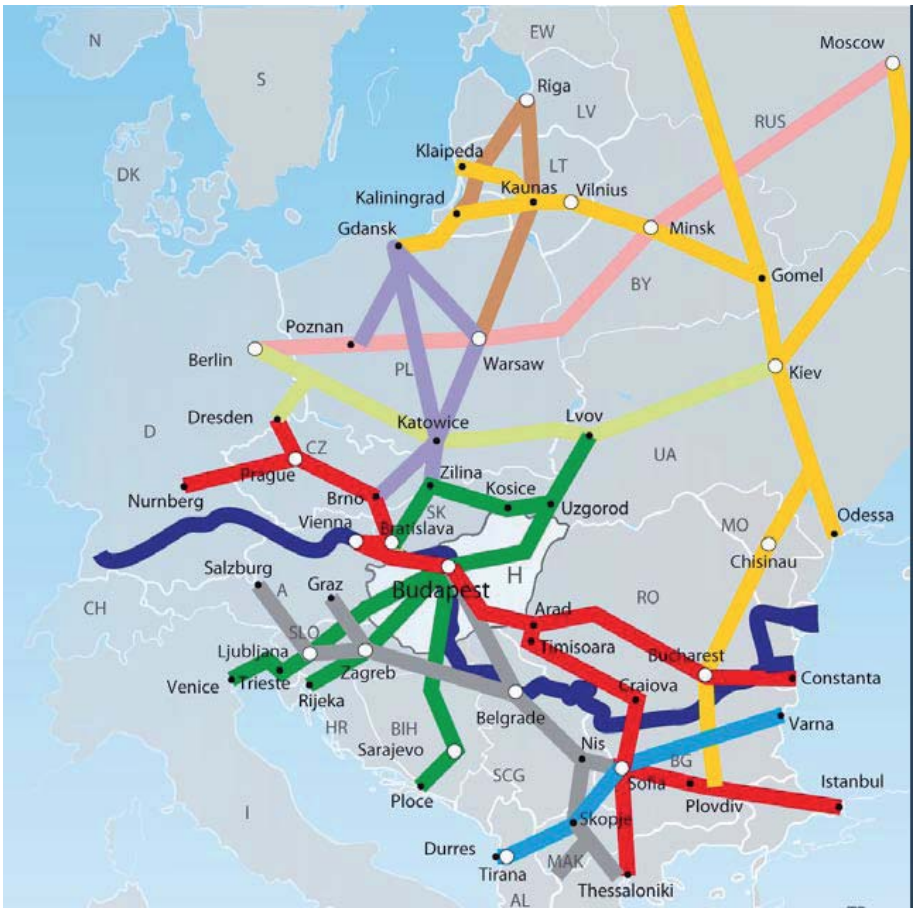
- Corridor VII: Ulm - Regensburg - Passau - Vienna - Bratislava - Komárno - Gyôr (Gönyû) – Budapest - Baja - Osijek - Novi Sad - Belgrade - Rusze - Lom - Galati
- Corridor X/b: Budapest – Belgrade (- Nis - Skopje - Thessaloniki)

Moreover, Hungary is affected by the south-eastern axis of the Wider Europe concept, which highlights the major transport routes between EU Member States and neighbouring countries.

The policy objectives and the actions envisaged are laid down particularly in the following documents:

- Unified Transport Development Strategy 2007-2020 – White Book
- Transport Infrastructure Development in Hungary (2006)
- Transport Operational Programme (2007)
- Intermodal Logistics Strategy (*Magyar intermodális logisztikai fejlesztési koncepció)* (2006)

Figure 2-3: Hungary within the pan-European transport corridor network



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

Concerning direct action to promote intermodal traffic the Hungarian state had implemented the following three instruments:

(1) There is a derogation from the general 40 tonnes limit for road vehicles, which are employed for pick-up or delivery of intermodal loading units at intermodal terminals, permitting an increased gross weight of up to 44 tonnes under the following provisions:

- Compliance with technical requirements such as max. axle weight.
- Road journeys up to 70km to/from intermodal terminal.
- Transport companies are required to gain authorisation from the Hungarian road administration, but no extra fee has to be paid.

(2) The Hungarian state provides grants for the construction or expansion of intermodal terminals. The financial sources are the European Regional Development Fund (85%) and the Hungarian central budget (15%). The scheme includes two programmes distinguished by the area where the terminal is planned to be built or expanded:

- The Central-Hungary Operational Programme (CHOP) governs investments in the Budapest and Pest regions. Funding is limited to €2.2m per project and a maximum of 30 per cent of total investment.
- The Economic Development Operational Programme (EDOP) relates to terminal investments in all other Hungarian regions. Funding is limited to €2.7m per project and a maximum of 50 per cent of the total investment.

(3) In 2007 the Hungarian Ministry for Economy and Transport launched a funding scheme designed to promote accompanied intermodal services (rolling highway). The programme included the following provisions:

- Management of programme by order of the Ministry: MAV Zrt. Infrastructure Unit.
- Eligible applicants: railway undertakings licensed for rail freight traffic in Hungary.
- The loading and/or unloading station of the accompanied service had to be located in Hungary.
- Operating costs could be subsidised up to max. €6 per train-km and €2,500 per train.
- The maximum subsidy could only be obtained if at least an average of 14 trucks were carried per train.

It was planned to maintain the funding scheme until 2011. Yet the Ministry was forced to discontinue it in 2009 owing to constraints on the central budget following the impacts of the global economic crisis.

2.3 - Overview of total intermodal market

For this DIOMIS study 2007 was selected as the reference year for intermodal traffic on the basis of which the assessment of the evolution of the industry to 2020 should be based. In order to establish the 2007 data base for the entire intermodal rail/road traffic in Hungary, we started with the statistics supplied by KSH, the Hungarian Central Statistical Office. Even though they are well prepared and detailed, they were not completely sufficient particularly in the following respects:

- The KSH statistical data does not reveal the market structure to the extent required. In particular, it does not distinguish between maritime (container hinterland) and continental shipments.
- We identified some discrepancies between container volumes measured in units and TEU. We, however, were able to eliminate them by calculating the TEU based on a detailed break-down of container volumes by type.
- It could not be completely clarified whether the net weight reported by KSH only relates to the weight of transported goods or also included the tare weight of intermodal units. Since KSH statistics are based on railways' information and railways generally consider the weight of the entire shipment they move for money – whether full or empty - as the net weight, we assume that the KSH records on the "net weight of transported goods" actually correspond to what we define as "gross weight".
- In spite of this it seems that the tare weight of empty loading units has not been calculated at all as, upon completion of the data base, we found that the total weight of intermodal traffic in Hungary published here exceeded the numbers reported by KSH.
- Finally, some rather simple checks such as the calculation of average weights per unit revealed that either wrong data had been registered or figures not allocated to the correct category of intermodal shipment.

In addition to the KSH data base we had access to the 2007 statistics of almost every railway undertaking and intermodal operator performing intermodal services in, with or

through Hungary. A thorough analysis and comparison proved that, even if two cooperating companies were concerned, the majority of data sets were not consistent neither on an aggregate level such as the volume of a country-country link nor in sub-categories. Particularly striking were those cases when an intermodal operator reported significantly different figures for a clearly defined intermodal service than its rail traction service provider.

Owing to these inconsistencies we approached the “statistical reality” iteratively. First of all, we determined the transport volumes of routes or market segments where we could rely on two independent and fairly congruent data sources. In a second step, we analysed the statistics on intermodal services, for which we provided in-depth market knowledge and/or reliable auxiliary information such as frequency of departure, maximum train length or weight. By carrying out plausibility analyses and cross-checks for example with KSH data we were able to pinpoint traffic volumes and assign them to market segments and traffic types with relative precision. As a result only a small percentage of less than 10 per cent of the total volume, which we have derived from the KSH data set (see above), could not be allocated to a specific category of intermodal traffic. To complete the data base, however, we performed estimates based on our own expert knowledge.

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

According to our analysis 667,900 TEU of intermodal units were moved on intermodal rail/road services in Hungary in the year 2007. The cargo shipped by intermodal trains totalled 6.35 million gross tonnes including both the weight of goods and the tare weight of intermodal loading units. Nearly 15 per cent of the total tonnage was contributed by the transportation of heavy road vehicles on accompanied services. Its volume amounted to about 76,800 TEU assuming a factor of 2.3 TEU per truck corresponding to 11.5 per cent of the total number of shipments.

In the same year, unaccompanied traffic in Hungary reached an all-time high of about 591,100 TEU. However, the weight of the shipments sharply declined compared to previous years, amounting to approximately 5.41 million gross tonnes. Though we do not

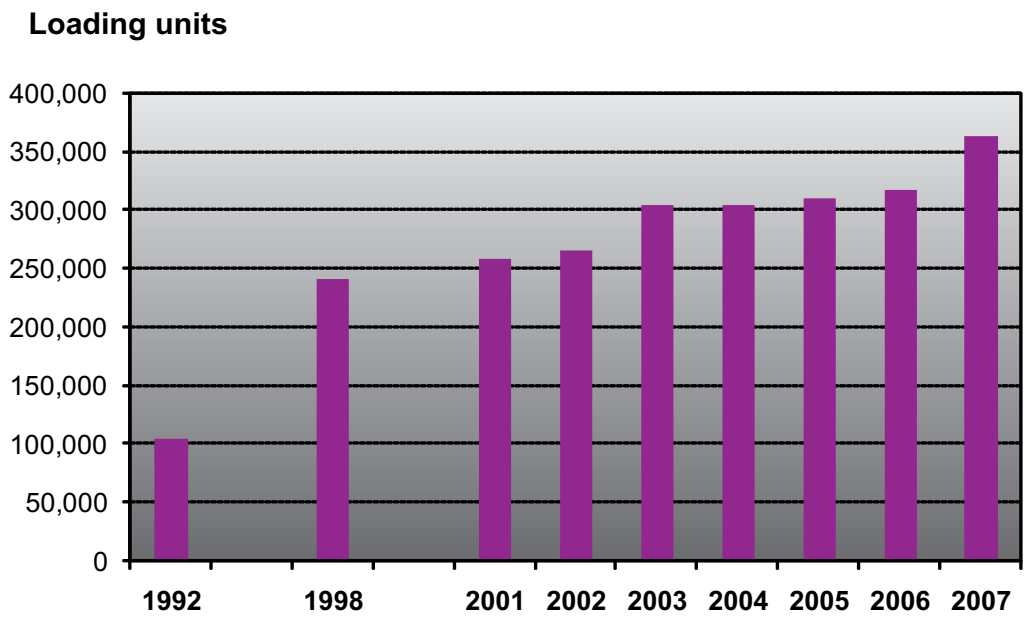
provide a long-term time series of unaccompanied traffic expressed in TEU and gross tonnes the characteristic development of this intermodal market can also clearly be taken from other measures (see ***Figures 2-5*** and ***2-6*** overleaf). It shows that the total number of unaccompanied loading units increased by approximately 250 per cent from 105,000 (1992) to 362,500 (2007). Over this 15 years period the volume of goods moved even quintupled. If tonnage had not fallen in 2007 the growth would have been even greater.

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

Intermodal market segment		TEU	%	Gross tonnes	%
Unaccompanied traffic		**591,100**	**88.5%**	**5,414,200**	**85.3%**
Domestic	Maritime	15,300	2.3%	50,100	0.8%
	Continental	-	0.0%	-	0.0%
	Subtotal	**15,300**	**2.3%**	**50,100**	**0.8%**
International	Maritime	280,400	42.0%	2,745,800	43.3%
	Continental	107,200	16.1%	1,075,300	16.9%
	Subtotal	**387,600**	**58.0%**	**3,821,100**	**60.2%**
Transit	Maritime	21,500	3.2%	247,500	3.9%
	Continental	166,700	25.0%	1,295,500	20.4%
	Subtotal	**188,200**	**28.2%**	**1,543,000**	**24.3%**
Accompanied traffic		**76,800**	**11.5%**	**932,200**	**14.7%**
Total intermodal traffic		**667,900**	**100.0%**	**6,346,400**	**100.0%**

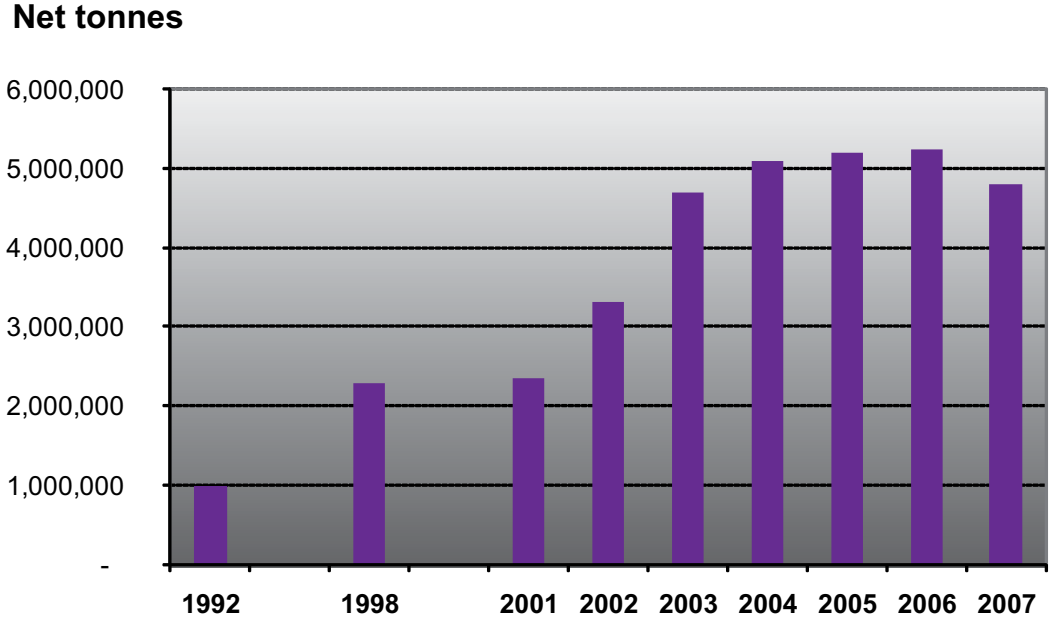
Source: KombiConsult analysis based on KSH, railways and operators statistics

Figure 2-5: Unaccompanied traffic in Hungary: units carried, 1992-2007



Source: Ministry for Economics and Transport: Magyar intermodális logisztikai fejlesztési koncepcion, 2006; KombiConsult analysis

Figure 2-6: Unaccompanied traffic in Hungary: goods moved, 1992-2007



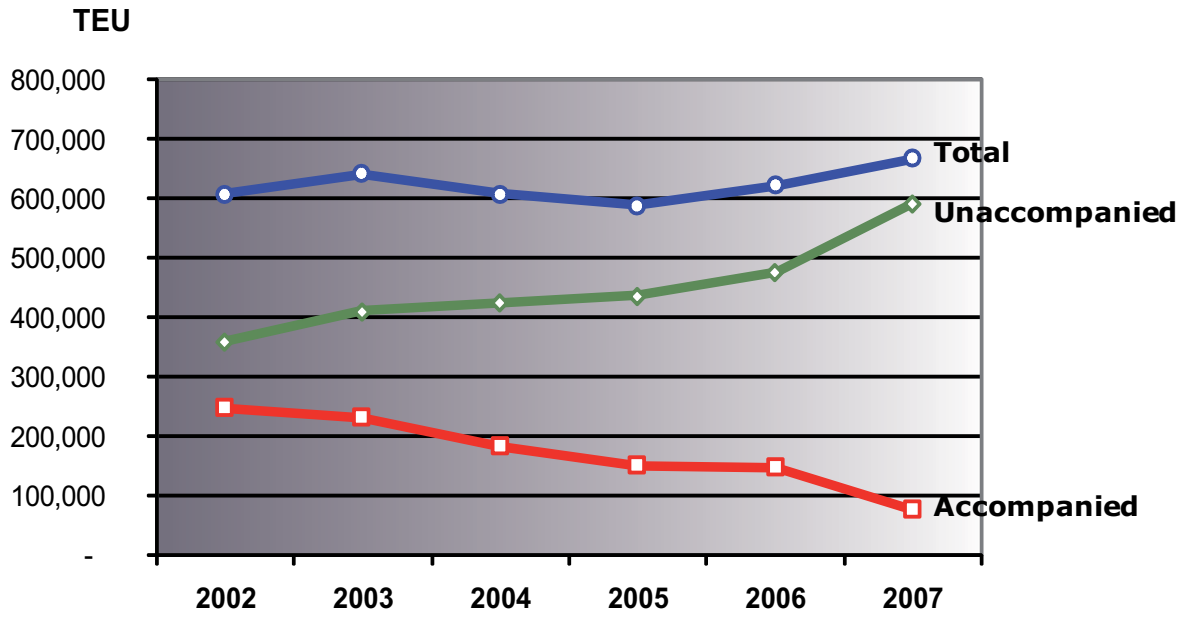
Source: Ministry for Economics and Transport: Magyar intermodális logisztikai fejlesztési koncepcion, 2006; KombiConsult analysis

After the fall of the Iron Curtain unaccompanied intermodal traffic in Hungary soared in the 1990s. Primarily boosted by the movement of marine containers on international hinterland services to and from German sea ports, volumes rose by an annual average of 15 per cent between 1992 and 1998. Then growth slowed to about 4.5 per cent annually to 2003. While in the first three years of Hungary's European Union membership the growth in intermodal traffic came to a halt, it regained momentum in 2007. Unaccompanied services considerably benefited from the boom in the European economy and global trade, and the number of unaccompanied shipments jumped by more than 14 per cent against the previous year (see ***Figure 2-5***).

As domestic volumes are very low, cross-border services represent the backbone of intermodal transportation in Hungary (see ***Figure 2-4***). The majority of intermodal units were evidently conveyed on bilateral international services. Notwithstanding, transit accounted for 32 per cent of total unaccompanied intermodal traffic in 2007 thus reaching a strikingly high level, especially when compared to other countries. Since customers of transit services through Hungary almost solely shipped goods originating from and destined for Europe, continental freight in total achieved a remarkably high market share of 46 per cent. In the bilateral traffic segment, in contrast, more than two out of three TEU were marine containers moved on hinterland services to or from Hungary.

In Hungary total intermodal traffic measured in TEU – just like the unaccompanied market segment - achieved its all-time high in 2007. However, the throughput had been more or less stagnant during previous years. This was due to the decline in accompanied traffic which could not been compensated for by a steadily rising number of unaccompanied shipments. The rolling highway services had their peak in the first years of the 21st century. By 2007, however, market share had fallen by about 25 percentage-points from 37 per cent in 2002 (see ***Figure 2-7***).

Figure 2-7: Intermodal rail/road traffic in Hungary by mode, 2002-2007



Source: KombiConsult analysis based on KSH, railways and operators statistics

2.4 - Unaccompanied intermodal traffic

2.4.1 - Domestic traffic

In 2007 15,300 TEU of intermodal units were carried on inland links in Hungary; total freight amounted to 50,100 gross tonnes. Two years earlier the volume had amounted to 23,500 TEU while it fell to 4,300 TEU in 2008.

These results genuinely reflect the current status of domestic intermodal traffic in this country. It is not a self-sustained product and the volumes are rather volatile and subject to the decisions of few major customers.

Virtually all units shipped on inland services are marine containers. One part of the volume relates to containers, which were re-forwarded at the Budapest Bilk terminal after or prior to an international movement (gateway transport) with a container port. The other market for domestic traffic is the supply of empty containers to a shipper. This service is typically required to be delivered to catch the subsequent international full container run as well. The demand for this container transport follows a company's production cycle and/or the

seasonal fluctuations in demand for the products concerned. As a result, peak demand periods can be followed by days or weeks without a single container shipment on the affected route.

At present MÁV Cargo is the only provider for domestic intermodal services. Owing to low and volatile demand, services are not conceived individually but integrated into the inland single-wagon system. The service level with regard to transit time and prices is basically not competitive with trucks, which in turn keeps demand low.

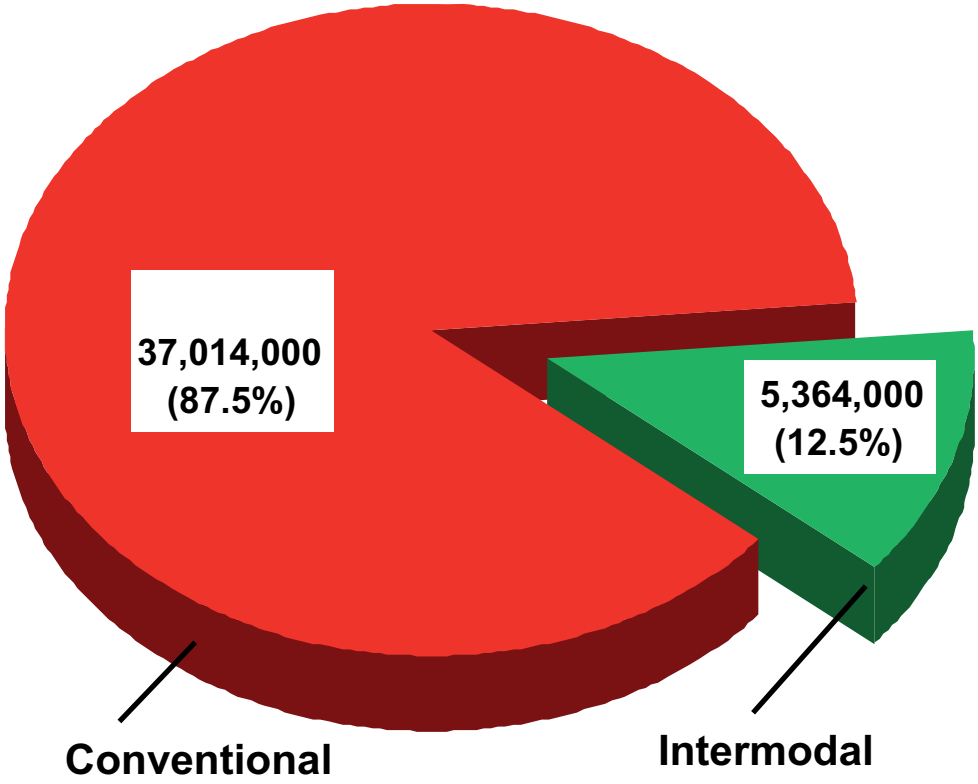
However, it should be acknowledged that geo-economic conditions are not beneficial for domestic intermodal traffic in Hungary either. Population and economic activities are concentrated in the Budapest area to a large extent. Since the capital is located in the centre of the country, which itself is also not particularly large, the distances to other major cities or important production sites are comparatively short at about 150 to 300km. It is next to impossible to establish a road-competitive intermodal service over these distances in almost all European countries, except if road traffic is restricted such as in Switzerland. This makes it even more challenging in a country like Hungary, where truck operators offer their services for significantly lower rates than in Western Europe.

2.4.2 - International traffic

Total unaccompanied cross-border traffic in Hungary including transit accounted for about 575,800 TEU and 5.36 million gross tonnes respectively in the reference year 2007. While this was an all-time high in terms of intermodal units, the weight of goods moved had significantly decreased compared to previous years, as the imbalance between inbound and outbound flows rose and more empty containers were moved.

In that year the intermodal industry held a market share of about 12.5 per cent of total international rail freight tonnage, which amounted to 37m gross tonnes (see ***Figure 2-8***). This is a remarkable percentage when compared to other countries, particularly when the fact that conventional rail traffic includes a large proportion of heavy bulk goods is taken into consideration.

Figure 2-8: Percentage of intermodal traffic of international rail freight related to gross tonnage, 2007



Source: KSH, KombiConsult analysis

Of the total international volume, 387,600 TEU (67.3%) were bilateral and 188,200 TEU (32.7%) transit services. Based on our market investigations we assume that tens of thousands of TEU recorded under bilateral traffic were actually units in transit through Hungary. Most likely, these were intermodal shipments, which - arriving in Hungary on a inbound bilateral international train – were interchanged to an outbound bilateral train in order to ensure that the shipments are forwarded to their final destination such as Greece. This is particularly common at Intercontainer's intermodal platform in Sopron. Against this background the share of "real" transit traffic is likely to be higher than published – plausibly between 38 and 40%. Since, however, it was not possible to precisely pinpoint the necessary level of adjustment we were obliged to use the data as given.

For many years ***bilateral international traffic*** has been operated almost entirely by dedicated intermodal trains. It is only on a few bilateral routes or links such as those with Poland that intermodal shipments are still carried in single-wagon traffic together with conventional wagonloads under the responsibility of the railway undertakings involved. The economic basis for the dedicated intermodal services, however, is a block train contract between an intermodal operator and a railway undertaking, which transfers the capacity risk from the railway to the operator.

According to our investigations the following 11 companies – some of them cooperating in commercial partnerships – supplied bilateral intermodal block train services to and from Hungary in 2007:

- Adria Kombi
- Alpe Adria
- ERS
- Eurogate Intermodal (boxXpress)
- Hungaria Intermodal
- Hupac
- Intercontainer Austria (ICA)
- Intercontainer-Interfrigo (ICF)
- Kombiverkehr
- Metrans
- Railog

Figure 2-9 provides a breakdown of the ***bilateral international traffic*** by transport corridor, which disregards our remarks above on the extent to which the intermodal statistics reflect the 'true' figures for international movement of shipments on a bilateral or transit journey. The data shows that for Hungary Germany is the most important partner, not only due to the external trade relationships but also in unaccompanied traffic. In 2007 about 157,000 TEU, corresponding to 40 per cent of Hungary's total bilateral volume, were carried to and from Germany. Of this figure trade marine containers accounted for nearly 95 per cent of total TEU. Overwhelmingly the containers were shipped between the German sea ports of Hamburg and Bremerhaven and intermodal terminals in Budapest. Some containers were also routed via the Czech Republic or Austria on Gateway services.

Figure 2-9: International unaccompanied traffic in Hungary by corridor, 2007

Corridor		TEU
Hungary -	Austria	20,620
Hungary -	Belgium	8,850
Hungary -	CIS	4,400
Hungary -	Croatia	3,800
Hungary -	Czech Republic	15,920
Hungary -	Germany	157,420
Hungary -	Italy	18,910
Hungary -	Netherlands	23,220
Hungary -	Poland	1,070
Hungary -	Romania	19,050
Hungary -	Slovenia	76,250
Hungary -	Turkey	37,490
Hungary -	other countries	600
Total		387,600

Source: KombiConsult analysis based on railways and operators statistics

While the German ports have maintained their market leadership for Hungarian export and import containers since the beginning of 1990s, the port of Koper has increased its attractiveness for the Hungarian economy at an extraordinary rate. In recent years the Koper-Budapest trade lane has been the most dynamic corridor. As a result, Slovenia ranked second in the 2007 breakdown of bilateral unaccompanied traffic. At 76,000 TEU the corridor accounted for about 20 per cent of total volume.

Trieste became the third most important port for Hungarian export and import containers in 2007. Intermodal trains transported more than 18,000 TEU to and from Budapest. All other container ports amongst them Rotterdam and Antwerp did not play a major role.

More than 72 per cent of total bilateral intermodal transport in 2007 can be attributed to container hinterland traffic. The principal trade lanes of continental intermodal traffic are between the Hungarian intermodal “hot spots” of Budapest and Sopron, at one end, and southwest and west Germany, Rotterdam, Antwerp and – in the context of gateway shipments - Romania and Turkey, at the other end of the service. The intermodal trains with Rotterdam and Antwerp also moved carry-on units, which travelled on short-sea services

to and from the UK and Ireland. The main commodities shipped on continental intermodal services were chemicals, primarily in bulk, but also packed, food, non-food and various industrial and consumer merchandise.

The intermodal operators serving Hungary by block train increasingly have to cope with notable imbalances in freight flows and the subsequent economic challenges. This especially relates to container hinterland traffic. While the demand of the Hungarian population for consumer goods apparently owing to “accumulated needs” grew strongly during recent years the export industry could not catch up to the same extent. This appears to be reflected in the 2007 statistics of international intermodal traffic. 85 per cent of all import shipments were loaded but only 59 per cent of export shipments. However, it should be pointed out that continental services also contribute to this effect. Bulk chemicals account for a considerable percentage of total continental volume. Based on the inherent economics of these shipments the majority of units are shipped full in one direction and empty on the return trip.

In addition, inbound trains to Hungary have a significantly higher average capacity load factor than outbound services. In 2007 trains to Hungary moved about 56 per cent (216,900 TEU) of the total bilateral volume, while export trains only account for 44 per cent (170,700 TEU). This means that a considerable percentage of outbound train capacities were not employed. Considering the critical balance between road freight rates and intermodal costs, such an imbalance of shipments together with the divergent loading status of import and export containers could jeopardise the viability of intermodal services.

In 2007 almost the entire volume of ***intermodal transit traffic*** through Hungary, as with bilateral traffic, was shipped on dedicated intermodal block trains. The economic responsibility for each service lay with one intermodal operator or a partnership of companies which contracted a lead railway undertaking to carry out the rail traction between origin and destination. According to our survey the following operators provided transit services in 2007:

- Adria Kombi
- Intercontainer Austria (ICA)
- Intercontainer-Interfrigo (ICF)
- Metrans
- T.R.W.

The majority of intermodal transit services are clearly geared towards the requirements of continental logistics even if intermodal operators may transport a small number of marine containers. As a result, approximately 90 per cent of the total volume of 188,000 TEU in 2007 could be attributed to continental shipments. The main commodities were chemicals, foodstuff, automotive, furniture and general cargo.

Transit flows through Hungary have developed rapidly over recent years. In the period between 2005 and 2007 volumes more than trebled. This demonstrates the growing integration of south-east Europe and Turkey into the "mature" Western European intermodal network. The following corridors through Hungary accounted for the largest numbers of shipments in 2007:

- Germany/Austria – Greece
- Germany/Austria – Romania
- Germany/Austria – Turkey
- Slovakia – Slovenia
- Belgium – Romania
- Italy - Romania

Among these corridors the intermodal services between the port of Koper and Slovakia accounted for the only significant container hinterland traffic transiting Hungary.

2.5 - Accompanied intermodal traffic

The heyday of accompanied traffic in Hungary was around the turn of the century. The volumes clearly topped the 100,000 truck threshold. Since 2001, however, the number of accompanied shipments annually has decreased and, to 2007, fell to 33,373 truckloads corresponding to about 76,800 TEU. The decline in this intermodal mode considerably accelerated in 2004 when Hungary and several other CEE countries became members of the European Union. In 2007 accompanied services in Hungary received the second blow when Bulgaria and Romania acceded to the EU (see ***Figure 2-10***).

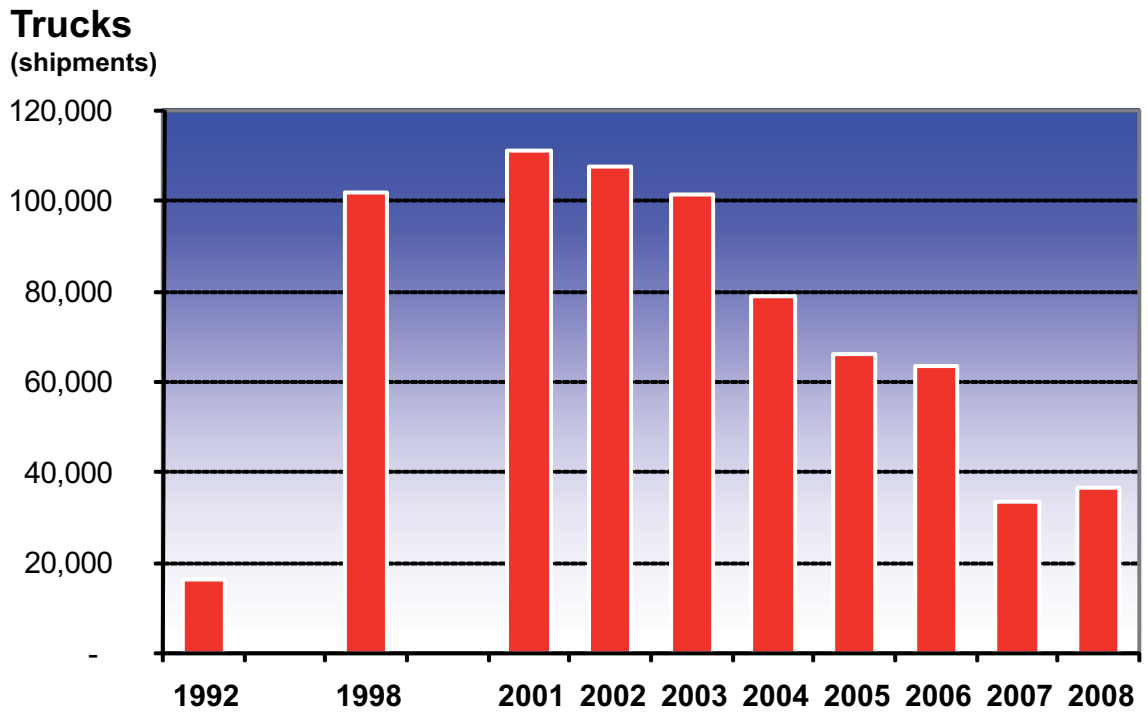
This impact has to be considered in the following context: the two stages of accession to the EU meant that international road traffic in south-east Europe, except for Turkey and former Yugoslav states, was almost completely deregulated. What hit accompanied traffic particularly severely was the elimination of quotas on licenses. Road operators, previously forced to use a license-free rolling highway service to be able to transport goods at all, could transport by road without any restrictions from now on. So the liberalisation of international road traffic eliminated one accompanied intermodal service after the other (see ***Figure 2-11***).

Two services, which had been operating since 2006, had to be discontinued owing to massive overcapacity. The only Hungarian accompanied service left links Szeged, in south-east Hungary, with Wels in Austria. It is being operated by Hungarokombi (HU) and Ökombi (AT), which both supply accompanied traffic. Even though this service also suffered from declining demand, a comparatively high frequency of departures could be maintained resulting in a satisfactory rate of capacity employment. The service even registered a slight recovery in 2008 when the number of trucks shipped rose by about 10 per cent against the previous year.

In spite of that the future for accompanied traffic in Hungary appears to be rather bleak. As the number of south-east European countries in the EU increases international road traffic will be increasingly deregulated and thus reduce the market potential for rolling highway services.

For this reason some parties are considering whether new lines could be established on corridors with the Ukraine or Russia. These could, however, be very risky ventures, and doubts should be raised as to whether those services could ever be economically viable without massive subsidies. Road freight rates are currently extremely low and expected to remain well below Western European levels for many years. On the other hand, rail costs for operating accompanied services are comparatively high. Moreover, the transit time for these long-distance rolling highway journeys are likely to be such – one day or more – that they are likely to exceed what truck drivers can be expected to tolerate.

Figure 2-10: Total accompanied intermodal traffic in Hungary, 1992-2008



Source: Ministry for Economics and Transport: Magyar intermodális logisztikai fejlesztési koncepcion, 2006; UIRR, KSH, KombiConsult analysis

Figure 2-11: Accompanied intermodal traffic in Hungary by services, 2002-2008

Year	Trucks (units) carried per accompanied service					Goods moved
	Szeged (Budapest) - Wels	Szeged (Budapest) - Ljubljana	Sopron - Wels	Arad/Oradea - Wels	Total	(gross tonnes)
2002	51,974	2,773	53,072	-	107,819	3,017,546
2005	51,008	3,788	-	11,549	66,345	1,862,421
2006	51,963	3,525	-	8,125	63,613	1,785,729
2007	33,373	-	-	-	33,373	932,218
2008	36,818	-	-	-	36,818	1,039,806

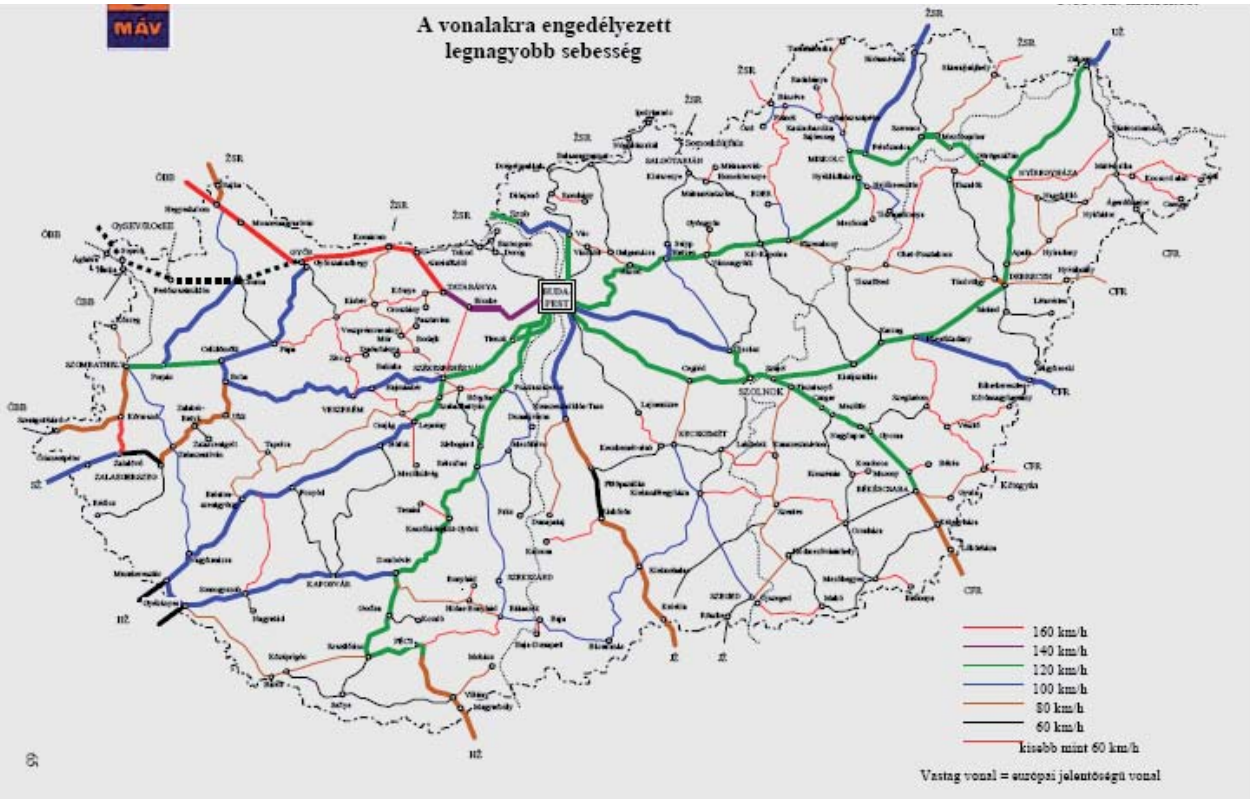
Source: UIRR, KSH, KombiConsult analysis

2.6 - Rail and intermodal terminal infrastructure

2.6.1 - Rail network

As mentioned in chapter 2.1, Hungary's current national rail infrastructure is composed of two networks owned and managed by independent companies. GySEV Zrt. is a joint Austro-Hungarian infrastructure manager providing 211km of lines in Hungary and 76km in Austria. The main rail infrastructure company is the fully state-owned MÁV Co.Zrt., which is responsible for 7,727km of lines (see also ***Figure 2-12***).

Figure 2-12: Railway network in Hungary

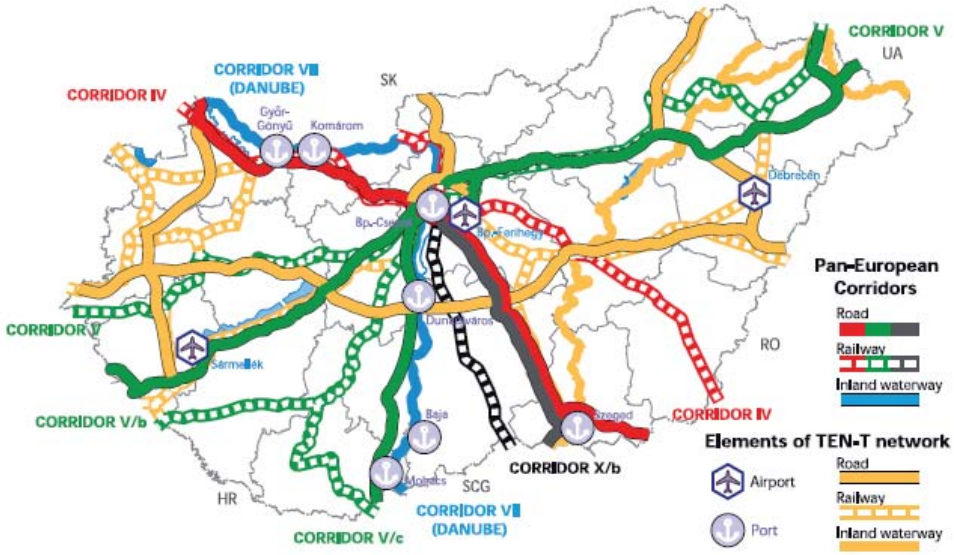


Source: MÁV Co. website

Hungary's rail infrastructure is in a key position with respect to the network of pan-European corridors. The country is involved in three important corridors, which meet or intersect in Budapest, as follows (see also ***Figure 2-13***):

- Corridor IV: Dresden/Nuremberg - Prague - Brno - Vienna - Bratislava - Gyôr – Budapest – Arad (- Bucharest - Constanta) - Craiova – Sofia (- Plovdiv - Istanbul) - Thessaloniki
- Corridor V: Venice - Trieste - Koper - Ljubljana - Maribor - Budapest - Lvov
- Corridor X/b: Budapest – Belgrade (- Nis - Skopje - Thessaloniki)

Figure 2-13: Pan-European corridors and TEN-T network in Hungary



Source: Ministry of Economy and Transport: Transport Infrastructure Development in Hungary.

With Budapest as the primary origin and destination of bilateral international intermodal services, clearly by far the largest portion of current volumes is carried on corridors IV, the link with Western Europe, and V, the connection to the port of Koper. Most of the transit intermodal services are operated on corridors IV and X. Corridor V, for the time being, is less often used for intermodal transit trains but its importance may increase in connection with port of Koper's efforts to expand its hinterland traffic.

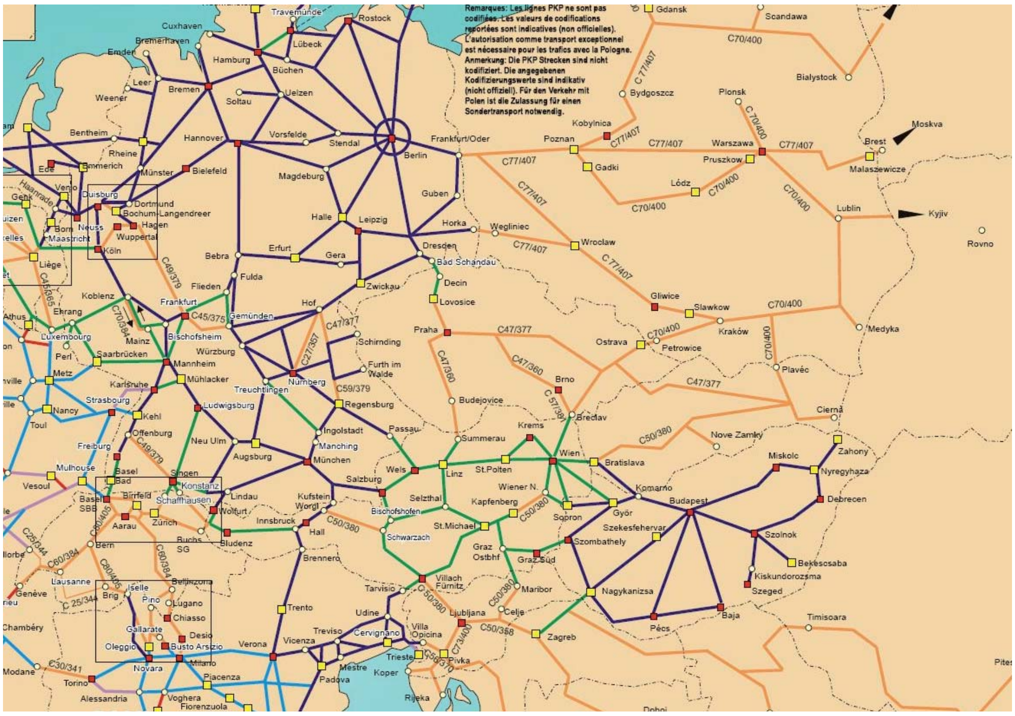
The Hungarian rail infrastructure of ***Corridor IV*** is entirely electrified and provides double-track lines for the largest part, except for the final single track section to the Romanian border station Curtici. Even though this constraint may not affect existing services it could become a bottleneck if transit services through Hungary and the bilateral traffic with south-east European countries grew in future. The network used for intermodal traffic between Budapest and the Slovenian and Croatian borders (***Corridors V and X***) generally features electrified single-track lines. In contrast, the section of Corridor IV between Budapest and Zahony, the border station with the Ukraine, is fully double-track and electrified.

According to the Hungarian Ministry for Transport, all main railway lines generally provide sufficient capacity to accommodate more trains. The highest capacity employment rates are 60 to 70 per cent, which is comparatively low compared to other nations. Results of recent research in the framework of the FP6 project CREAM, based on infrastructure managers' network statements, confirm the above statement. In 2007 the capacity employment rates on Corridor IV line sections were as follows:

- Hegyeshalom – Györ: 28%
- Györ – Budapest: 46%/38%
- Budapest – Szolnok: 34%/22%
- Szolnok – Curtici: 41%/53%

What is also very beneficial for developing efficient intermodal services is that the entire main rail network in Hungary offers a generous loading gauge of C 80/P 410. It permits the transport of any standard 4.0m high semi-trailer and high-cube swap bodies up to an external height of 3.25 m (see ***Figure 2-14***). If intermodal services with or through Hungary are confronted with restrictions they are caused by rail networks in neighbouring countries.

Figure 2-14: Loading gauge of Hungarian rail network



Source: Interunit

There are, on the other hand, two characteristics of the Hungarian rail infrastructure which currently hinder intermodal services. For the time being, there are only 228km of lines in MÁV's network which permit an axle load of 22.5 tonnes. The majority of tracks permit up to 20 tonnes. This limitation reduces the maximum possible train weight and impacts negatively on train economics, particularly of continental intermodal services, which tend to ship heavier commodities (chemicals, steel, paper etc,) than maritime containers.

What affects many intermodal services are speed restrictions on several sections of the network, which are due to a lack of maintenance or re-investment in the past, and the small percentage of lines fitted with modern traffic control systems. Passages with speed restrictions as well as manual signalling systems increase transit times more than necessary and are prone to cause delays (see also ***Figure 2-15***).

Figure 2-15: Key indicators of MÁV's railway network

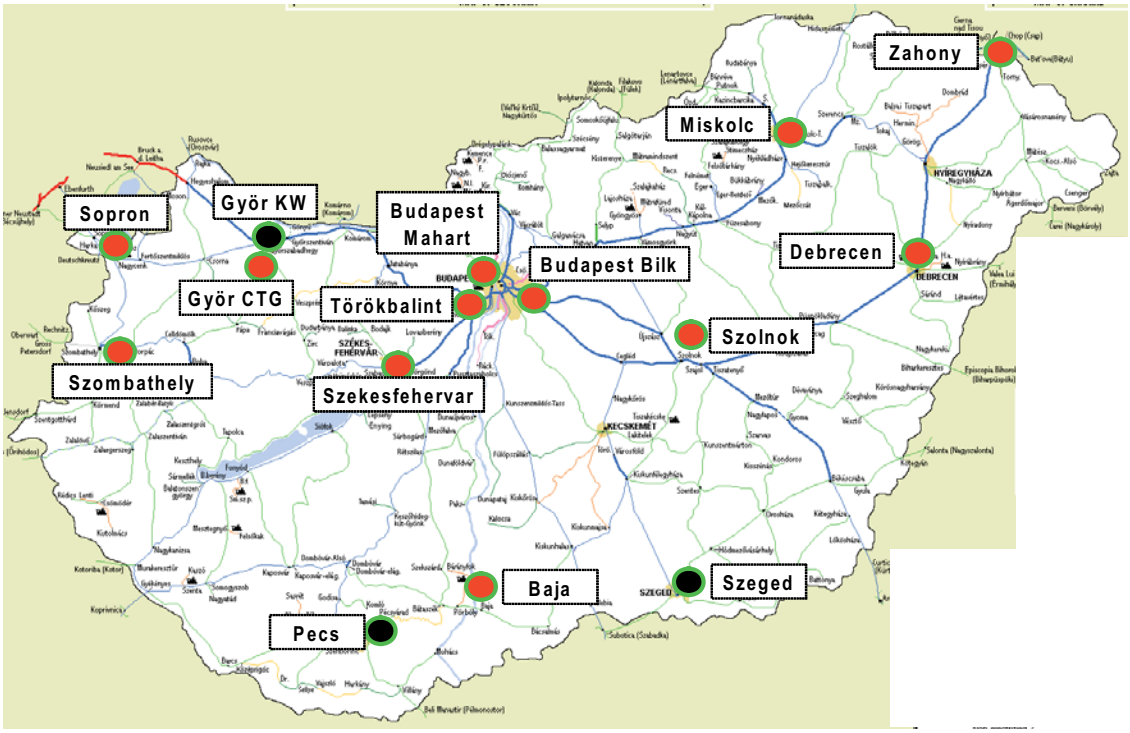
Indicator	Kilometres	% of network
Total length of line	7,727	100%
Double-track lines, length of line	1,292	17%
Electrified lines, length of line	2,627	35%
Electrified lines, length of track	3,894	44%
Lines with axle load 22.5 t	228	3%
Lines with axle load > 20.0 t	6,853	78%
Lines with speed limits	2,936	38%

Source: Zsákai, T.: Development of the Hungarian Railway Network. Railway Market N° 4-2008.

2.6.2 - Terminal infrastructure

There are at least 15 terminals in Hungary built to serve unaccompanied intermodal traffic. They are overwhelmingly operated by MÁV Kombiterminal, a MÁV Group company, or affiliated companies. According to our market investigation four sites were closed in 2009 owing to a lack of demand for services. For the same reason another two terminals - though open - are said to have no handling activities at present (see ***Figures 2-15*** and ***2-16***).

Figure 2-16: Terminals for unaccompanied intermodal traffic in Hungary



Source: KombiConsult analysis

The largest terminal in Hungary and also the most advanced in terms of infrastructure, handling and information technology as well as process organisation is Budapest-Bilk. It handled more than 145,000 TEU corresponding to approximately 91,000 loading units in 2008. The start-up facility, which provided four 700m long tracks and two gantry cranes, came into operation in November 2003. As the capacity became saturated after about four years of operations the terminal has been enlarged by another three tracks in 2008. Owing to the decline in traffic resulting from the economic crisis the second handing module is initially employing reachstackers.

The next biggest facilities in terms of rail/road transhipment volume are Budapest Mahart, located in the Freeport on the Danube, and Sopron. Sopron's terminal handling volume presented in ***Figure 2-16***, however, does not appropriately reflect the intermodal relevance of GySEV's facility as a considerable percentage of all transit shipments, which change between inbound and outbound trains, are shunted in GySEV's marshalling yard.

Budapest-Bilk is the only intermodal facility in Hungary to provide handling tracks which can accommodate the full length of international direct or shuttle train of 600 to 700 metres. With the exception of the Szeged terminal all other sites have shorter tracks of about 200 to 350m. The technical and infrastructure conditions of the majority of facilities also are not state-of-the-art. Since, however, the demand for handling services has been meagre – for the most part, owing to the concentration of traffic on the economic "centre of gravity" Budapest – a modernisation of these facilities does not currently appear to be a sound investment.

In addition to the terminals for unaccompanied traffic, MÁV Kombiterminal is operating a facility for a rolling highway in Kiskundorozsma close to Szeged.

Figure 2-17: Terminals for unaccompanied intermodal traffic in Hungary

Terminal	Handling tracks		Handling equipment		Annual handling capacity (LU)		Handling volume 2008 (2007)		Remark
	N°	Length (m)	Gantry	Mobile	Reported	Calculated	TEU	LU	
Baja Dunapart	2	680	3		40,800	25,500			
Budapest BILK	7	4,900	2	4	137,500	140,000	145,700	90,600	
Budapest Mahart	4	1,060	1	2		39,750	61,000	38,125	
Debrecen	3	730	1			27,375			no traffic
Gyor KOMBIWEST	2	550	2	4	22,000	20,625			closed
Gyor CTG	1	350				13,125			no traffic
Miskolc - Gömöri	3	750	1	-	45,000	28,125			
Pecs	3	716	1	1	42,960	26,850			closed
Sopron CCT	4	1,400	2	1	46,667	52,500	30,000	18,750	
Szeged	1	500	1	1	30,000	18,750			closed
Szekesfehervar	2	740	1	1	29,600	27,750	14,400	9,000	
Szolnok	3	840	-	2	50,400	21,000			2 tracks used
Szombathely	4	1,088	1	2	57,900	40,800			closed
Törökbalint	2	350	-	1	37,500	13,125			
Zahony						-			

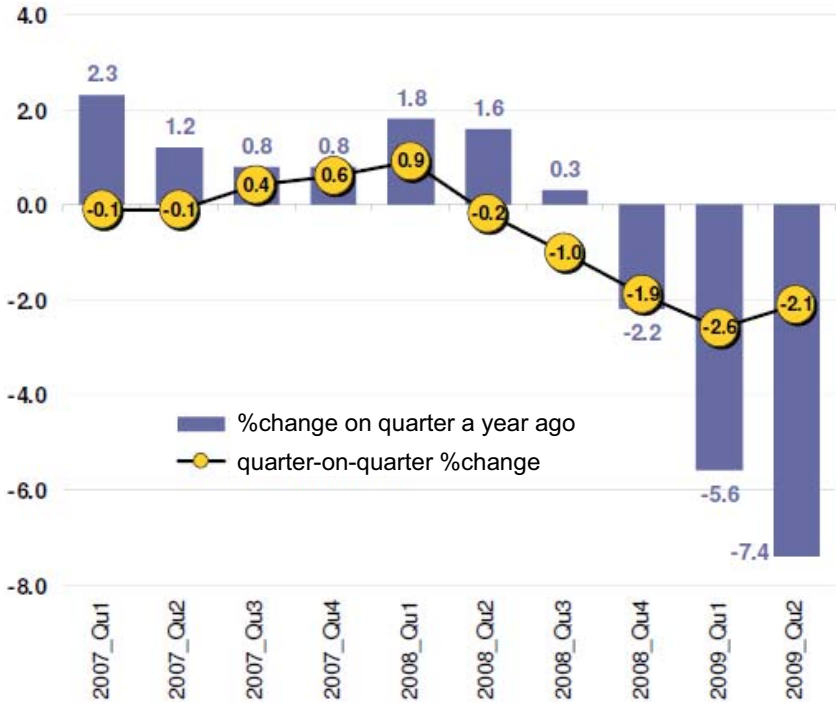
Source: MAV Kombiterminal; GySEV; Terminal websites; Ministry for Transport; KombiConsult analysis

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

3.1 - Recent developments to 2009

The Hungarian economy had already lost momentum prior to the global financial and economic collapse. The real gross domestic product, which had grown by an average of 4.4 per cent between 2001 and 2005 and 4.1 per cent in 2006, "only" rose by 1.1 per cent in 2007 and 0.6 per cent in 2008. This was primarily the result of an economic policy in place since 2006, which aims to consolidate the national budget, and declining private consumption. Yet the growth of Hungarian external trade, having previously shown outstanding double-digit rates, also came to a halt in 2008, and growth rates of exports and imports dropped to 5.6 per cent (see also ***Figure 3-1***).

Figure 3-1: Hungary's GDP quarter-on-quarter development, 2007-2009



Source: DUHK website

The impact of these economic developments on unaccompanied intermodal traffic was more than dramatic. In 2008 the volumes of every market segment except for transit services literally collapsed. Compared to the previous record year 2007 the intermodal industry in Hungary lost more than 13 per cent of throughput. It fell to about 513,250 TEU (see ***Figure 3-2***).

Figure 3-2: Unaccompanied intermodal traffic in Hungary by traffic type, 2007-2008

Traffic type		Traffic volume (TEU)		% change
		2007	2008	
Domestic		**15,300**	**4,300**	**-71.9%**
International	Export	170,700	149,150	-12.6%
	Import	216,900	181,300	-16.4%
	Subtotal	**387,600**	**330,450**	**-14.7%**
Transit		**188,200**	**178,500**	**-5.2%**
Total unaccompanied traffic		**591,100**	**513,250**	**-13.2%**

Source: KSH; KombiConsult analysis

According to the market survey we have carried out, the decline in traffic volumes generally continued in 2009. Depending on the intermodal service provider, in the first-half of 2009 the number of intermodal shipments decreased by between 10 and 30 per cent compared with the first six months in 2008. However, various sources such as operators, railways and terminals reported that they experienced at least a preliminary stop in the downturn trend at the end of the second quarter of 2009.

Virtually all intermodal companies responded to the decline in demand with a reduction in the frequency of departures. Some operators have tried to improve train capacity load factors by merging services or transforming previously direct trains into liner train or Y-type shuttle train operations. In a very small number of cases services have even been completely suspended. Grosso modo, capacities have been cut by about 20 per cent against 2008.

Figure 3-3: Unaccompanied international and transit services in Hungary, June 2009

	Unaccompanied service		Intermodal operator	Market segments	
				Maritime	Continental
International services	Budapest Bilk	- Hamburg/Bremerhaven	Eurogate Intermodal	X	
	Budapest Bilk	- München	Eurogate Intermodal	X	
	Budapest Bilk	- Sopron	ICF	X	
	Budapest Bilk	- Duisburg	Hupac	X	X
	Budapest Bilk	- Wien - Duisburg	Hupac	X	X
	Budapest Bilk	- Wien - Wels	Kombiverkehr	X	X
	Budapest Bilk	- Trieste	Alpe Adria	X	
	Budapest Bilk	- Koper	ICF	X	
	Budapest Bilk/ Székesfehérvár	- Ljubljana - Koper	Hungaria Intermodal/ Adria Kombi	X	
	Budapest Bilk	- Koper	Argo	X	
	Budapest Mahart	- Koper	ERS	X	
	Budapest Mahart	- Melnik	ERS	X	
	Törökbalint	- Koper	Navismart	X	
	Sopron	- Nürnberg - Mannheim	ICF	X	X
	Sopron	- Wels - Herne	ICF		X
	Sopron	- Wien - Köln	ICF		X
	Sopron	- Bukuresti/Istanbul	ICF		X
	Sopron	- Thessaloniki - Athinai	ICF		X
Transit services	Dunajska Streda	- Koper	Metrans	X	
	Zilina/Bratislava	- Koper	Adria Kombi	X	
	Lambach	- Thessaloniki	ICF/ICA (Gartner)		X
	Mannheim	- Sopron - Thessaloniki	ICF		X
	Köln	- Köseköy (Istanbul)	DB Schenker		X
	Genk	- Oradea	IFB/ICA		X
	Piacenza	- Oradea	Pol Rail		X
	Germany/Austria	- China	FELB/ICA	Transcontinental	

Source: KombiConsult analysis: allocation of services to market segments partly estimated.

In spite of these outstanding challenges in mid-2009 the scope of international and transit services affecting Hungary – which does not necessarily mean the total number of departures - has increased compared to 2007 (see ***Figure 3-3***). The Hungarian intermodal market has also expanded and seen new entrants into the market such as Argo, Navismart,

Pol Rail or Far East Land Bridge (FELB), which has implemented a container transport service between China and Germany/Austria currently served about twice a month.

Another two bilateral intermodal services, one from Nuremberg and one from Bologna, inaugurated in 2008 by newcomers failed rapidly owing to a lack of demand and efficiency. At least one of the operators, the Nuremberg-based East Train Logistik, is scheduled to restart the service between Nuremberg and Budapest Bilk once the economic crisis is over. The owner of the company is a forwarder specialised in south-east Europe, Ukraine and CIS states. He plans to use the intermodal service as the backbone for his shipments between Western Europe and these areas, and Budapest-Bilk as the hub for continuing either by rail or road.

3.2 - Projections of national transport policy

About two years ago the Hungarian Ministry of Economy and Transport investigated the potential development of intermodal rail/road traffic in the period between 2007 and 2013. The result was the following forecast:

- Total unaccompanied traffic: + 30.4%
- Unaccompanied traffic via Zahony: + 80.1%
- No more accompanied traffic

The separate assessment of intermodal traffic via Zahony has to be seen in the following context: Zahony is the border station to the Ukraine and it provides transhipment facilities including an intermodal terminal between the UIC and the Ukrainian wide gauge. Hungarian officials and rail freight stakeholders are convinced that the favourable geographic location and infrastructure conditions of Zahony are suitable for developing an efficient rail freight platform and various rail-oriented value-added services in the area. This goes along with the assessment of Hungarian intermodal stakeholders that the importance of the Pan-European Corridor V via Zahony for intermodal traffic will significantly grow. For this reason considerable regional development funds have been allocated to this area, and several projects including the enhancement of the border crossing facilities are planned or under way.

Even though the projection of intermodal traffic for the horizon 2013 was not particularly "ambitious" – in the six year period 2001 to 2007 the volume increased by 40 per cent – ministry officials and railway experts in Hungary consider this objective to be obsolete now. They believe that the intermodal market will not recover quickly from the current downturn following the economic crisis. If intermodal volume could be re-stabilised at 2007 levels by 2013 they would consider it "satisfactory".

3.3 - Analysis of impact factors

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

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

Moreover we have examined existing prognoses on road and rail traffic, political, infrastructure, intermodal and rail freight industry-internal factors and evaluated whether they may foster or boost, jeopardise or impede intermodal services in, with or through Hungary and – if so - to what extent. Based on these result the quantified forecast of intermodal traffic by 2020 has been carried out (see sections 3.4 to 3.6).

3.3.1 - Development of road and rail freight traffic

How can intermodal traffic increase volumes? It can grow by benefiting from the growth of the entire freight market or by capturing goods currently transported by road. Statistical data clearly show that, in Hungary, road traffic has been the most dynamic mode over the past decade and increased its market share. Consequently, there is vast theoretical market potential on international trade lanes. Whether service suppliers are capable of designing a product which matches customer requirements and is competitive with road is, however,

another matter altogether. Against this background it is useful to highlight the expected evolution of the relevant long-distance freight market since it helps to put the global growth potential of the demand for intermodal services in context.

According to the results of our inquiries with Hungarian authorities there are no official long-term prognoses on goods transport and its modal split for the horizon 2015 or 2020. We analysed other sources, but the results were not encouraging: early reference years, so that reality has already overtaken the forecasts; non-harmonised data; lack of transparency regarding the assumptions for forecasts.

The only source that appeared to be methodologically clear and suitable for establishing a frame of future freight traffic was *Progtrans'* "European Transport Report 2007/2008". It provides several freight-related performance indicators for 2015 and 2020 generated through a trend forecast. Recently observed developments in several socio-economic factors were more or less extrapolated and used as inputs into a quantitative transport model. The results for Hungary are presented in ***Figure 3-4***. It shows the growth rates for several freight market segments for 2005-2015 and 2005-2020. We used 2005 as a reference as this was the last year for which *Progtrans* provided actual figures.

Figure 3-4: Prognosis for Hungarian freight traffic related to performance (tkm)

Indicator		Growth rate	
		2005-2015	2005-2020
Total domestic traffic		+14.6%	+ 15.4%
International traffic	Export	+102.1%	+134.0%
	Import	+27.3%	+33.3%
	Transit	+106.5%	+139.1%
	Total	+84.9%	+109.5%
Total road freight traffic		+36.8%	+45.1%
Total rail freight traffic		+78.0%	+98.9%

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

Progtrans forecasts that the total international freight market will rise by nearly 110 per cent in the period 2005 to 2020. Above average growth rates are expected for the transit (+139%) and the outbound (+134%) movement of goods. What is puzzling, however, is that import traffic is expected to almost stagnate (+33%) over the entire period. This means that in future the Hungarian economy would primarily produce for Europe and the world but its demand for products from other countries, basic supplies and semi-finished goods will hardly increase. We assume that this result is a logical consequence of the applied methodology, the trend forecast, as in the period since 1995 export traffic performance grew rapidly while import declined. The reason for this, however, can be found more in a changed goods structure than in a tendency of the Hungarian economy to decrease its reliance on external supplies. Concerning the transport of marine containers we have even seen a trend in the opposite direction in recent years (see chapter 2). Shipping lines and intermodal operators faced an increasing imbalance between loaded import and empty export containers.

Another result of the *Progtrans* forecast is also hard to believe. Rail traffic shall grow twice as quickly as road and increase its modal share by about eight percentage-points by 2020. Since, unfortunately, the report does not provide separate data on international traffic we are not in a position to assess if *Progtrans* is expecting a similar development as for total freight traffic. As the latter includes the road's stronghold, domestic traffic, which is due to grow very slowly, the result for the total traffic is likely to be somewhat distorted.

Based on our own investigations we considered the forecasts on total domestic, international and transit freight traffic to be plausible if applied to road traffic though we do not agree with the assessment of import flows.

3.3.2 - Population

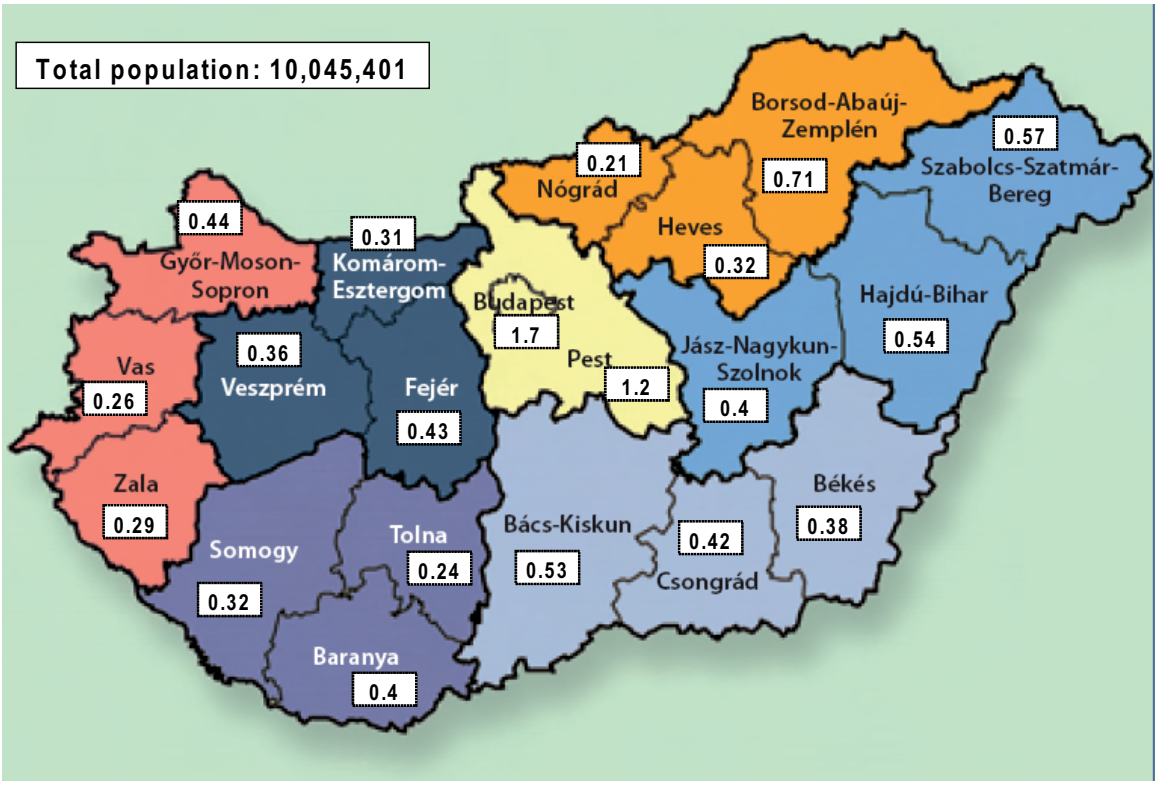
Size and regional distribution of population have a major influence on total freight traffic as well as on logistic patterns and modal choice, in particular with regard to the capability for consolidating volumes.

In 2008, Hungary had a population of 10,031,000. In its "European Transport Report 2007" the Swiss-based consultancy *Progtrans* forecasts that Hungary will lose about 300,000 inhabitants (-3%) by 2020. If, however, the current trend, which sees an average annual decrease of the Hungarian population of 14 persons per 10,000 inhabitants, were to continue the total population would only decline by 170,000 (-1.7%) to 9.86 million inhabitants.

Such a reduction would neither considerably influence freight in general nor intermodal transport specifically. What is much more important for potential demand for transport services is population distribution. Hungary's population is clearly very concentrated in the centre, in Budapest and its vicinity. About 30 per cent (3m) of all inhabitants live in this region. Almost all other counties in Hungary have a population of not more than 200,000 to 500,000 people (see ***Figure 3-5***). They can be characterised as rural areas with a very low population density of 70-80 persons per km^2 or even less. It is unsurprising that Central Hungary has the highest density at more than 200 persons per km^2 and only the adjoining counties in north-west Hungary have comparable high rates (see ***Figure 3-6***).

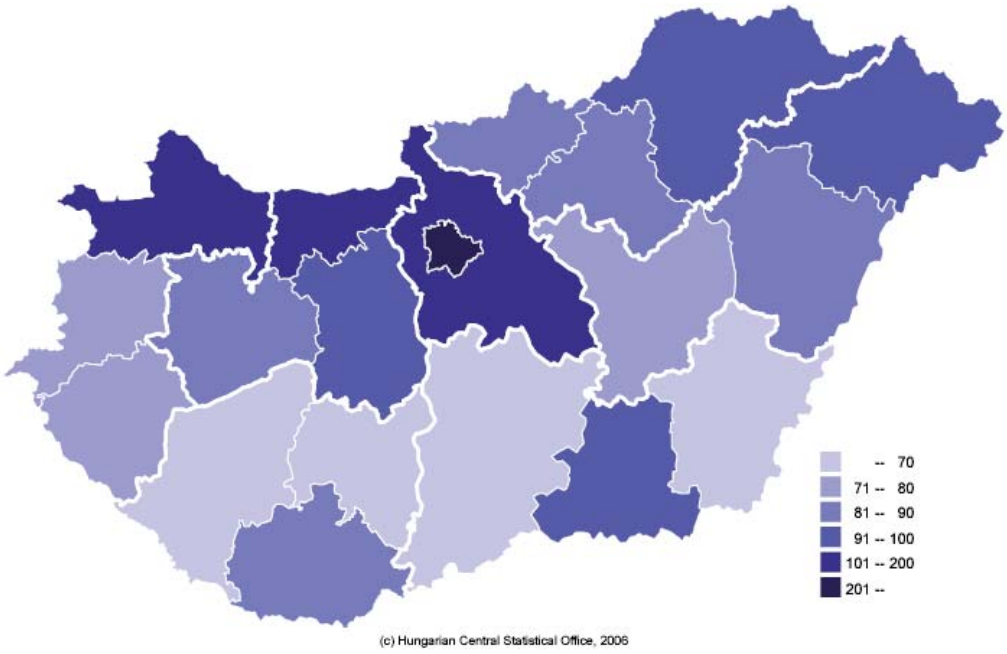
This data proves that Hungary has a strong centre in the region of its capital but generally features a rather low level or urbanisation. This is also reflected in the fact that the next biggest cities after Budapest just have a population of only 150,000 to 200,000.

Figure 3-5: Distribution of Hungarian population by county (millions), 1 Jan 2008



Source: KSH, KombiConsult graph

Figure 3-6: Population density (persons/km²) in Hungary, 1 Jan 2005



Source: KSH

3.3.3 - Fiscal and economic policy

In 2008 the combination of the global economic downturn and domestic structural deficits took Hungary to the brink of economic collapse. Joint action by the EU, the IMF and the World Bank has stabilised the financial position of the country. The new government is now following an extremely difficult policy path. On the one hand it is committed to continuing to consolidate finances and on the other to providing incentives to the domestic economy at a time of economic recession.

The previous government, which took over in 2006, faced extraordinarily high budget deficits, considerably exceeding the EU convergence criteria of 3.0 per cent of GDP. It implemented a strict policy of fiscal consolidation that included the elimination of subsidies e.g. for energy and public transport, the increase of taxes and the reduction of staff in public services. This policy was very successful as it achieved a reduction in budget deficit from 9.3% (2006) to 4.9% (2007) and 3.3% (2008). The fiscal consolidation process, however, generated drawbacks as well. It stifled private consumption and brought about a critical debt position. National debt as percentage of the GDP rose to more than 72 per cent in 2008 – thus well above the 60% EU convergence criteria - and it is due to increase even

further in 2009. Furthermore the exchange rate of the Forint, the Hungarian currency, which had previously been extremely strong, became rather volatile and declined sharply against the Euro in 2008.

As mentioned above, the new government is scheduled to stay on track with fiscal objectives. Given the current recession, economic policy exclusively aimed at consolidating the national finances would have pro-cyclical effects and have been likely to reinforce the economic downturn. Since the government could see no option to implement policies of economic expansion owing to budgetary constraints, but nevertheless needed to mitigate the impacts of the crisis and stimulate the domestic economy, it decided to restructure budgetary expenditure. Amongst the actions intended to generate short-term effects are increased availability of funds and small loans for small and medium-sized enterprises (SME), a simplification of approval procedures for projects aimed at economic development and construction works, and support of export activities of SMEs. Further restructuring of the tax system is planned by relieving income taxes and raising indirect taxes such as VAT.

Against this background the government expects that real GDP will decrease by 6.7% in 2009 and 0.9% in 2010. A return on the path of growth is forecasted for 2011 when Hungary is expected to achieve GDP growth of 3.6%. These expectations seem to be generally in line with the forecasts of the Commission and international organisations such as the OECD or the IMF.

The Hungarian government is required to ensure the successful implementation of this policy of economic recovery in order to be able to cope with the next challenge. Hungary plans to introduce the Euro. This will only be possible when the fiscal situation and the economy have stabilised.

The introduction of the Euro would signify another major step forward for Hungary's economy. It would contribute to stabilising the economic and fiscal system and thus improve the country's attractiveness for foreign investments. Additionally, it could stimulate Hungary's external trade, particularly with other EU Member States, since both export and import companies would no longer need to consider fluctuations in the exchange rate for calculation of prices.

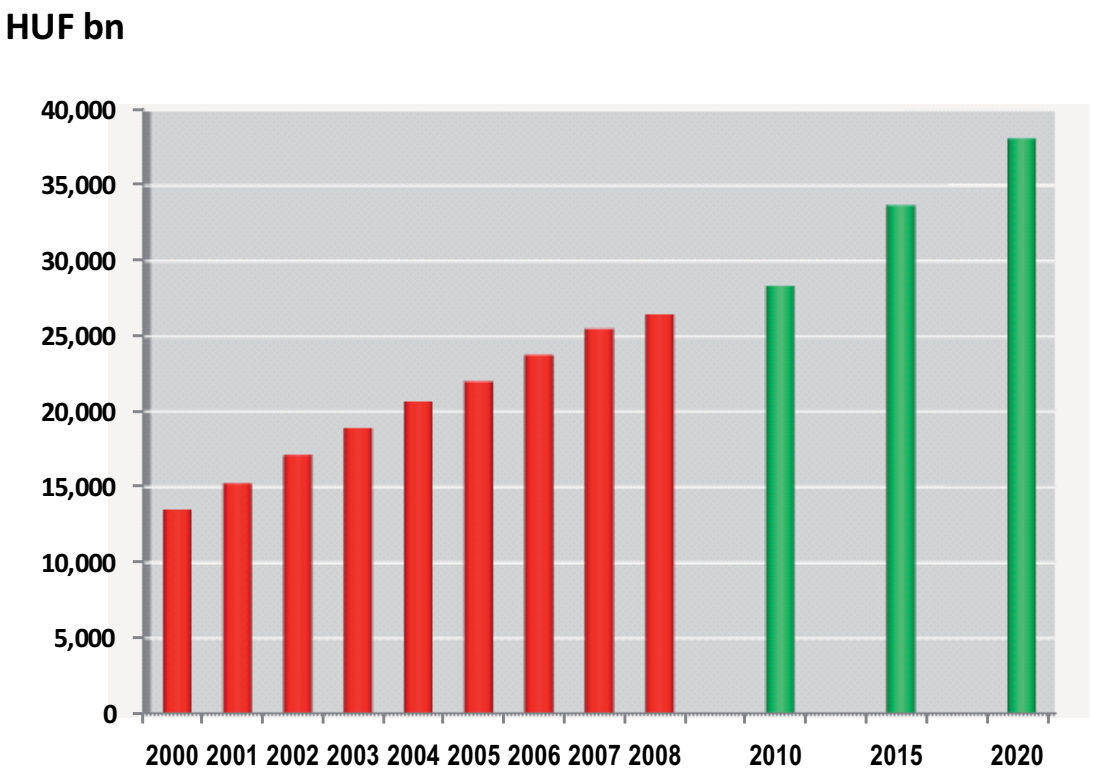
3.3.4 - Evolution of Gross Domestic Product

Hungary's real gross domestic product rose by 31 per cent between 2000 and 2008; at current prices it almost doubled in this period. Due to the current economic crisis it is expected to decline in 2009 and 2010 but rise again in 2011. As concerns long-term GDP forecasts we again established our own assessment on the basis of the *Progtrans* report. *Progtrans* expects Hungary's real GDP (at 2000 prices) to rise in the period 2005-2015 by 41.8 per cent and in the period 2005-2020 by 60.2 per cent. This corresponds to following average growth rates:

- 2005 – 2015: 3.5%
- 2015 – 2020: 2.5%

As – unlike *Progtrans* - we had access to the *KSH* data on the actual evolution of Hungarian GDP to 2008, we applied the above growth rates as of the year 2008 and calculated the development until the year 2020 (see ***Figure 3-7***).

Figure 3-7: Evolution and forecast of Hungarian GDP (at current prices)



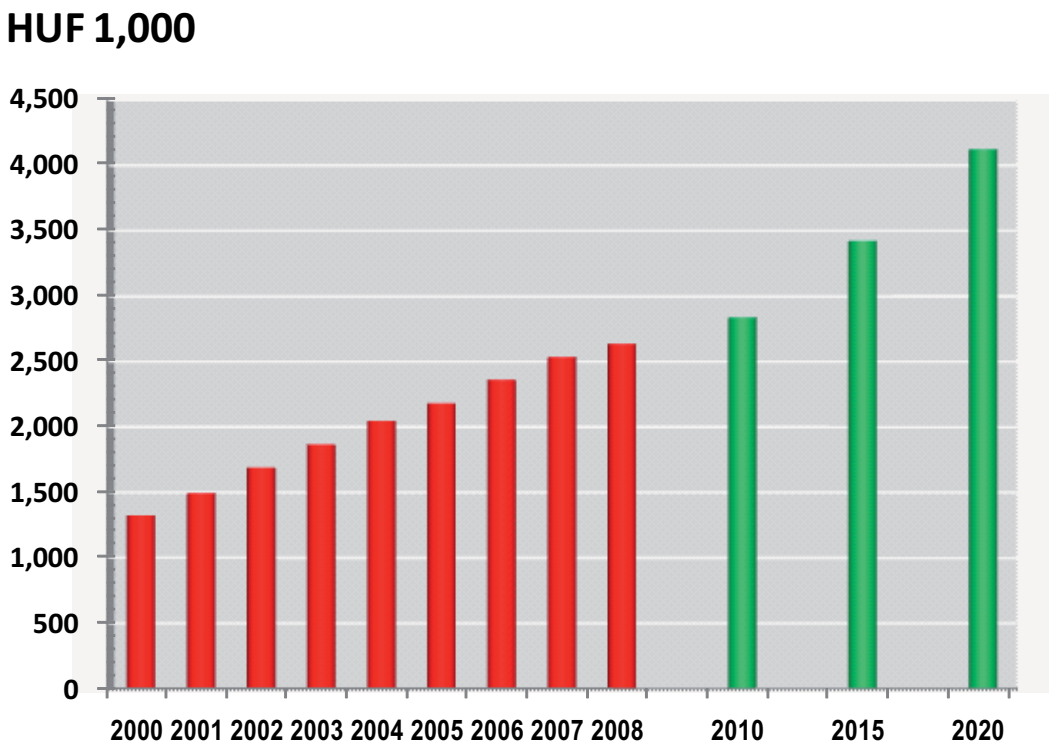
Source: KSH; Progtrans; KombiConsult calculations.

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

- 2005 – 2015: 3.5%
- 2015 – 2020: 3.1 – 3.3%

GDP per capita in Hungary amounted to HUF 2.5m (€ 10,059) in 2008. *Progtrans* expects it to grow in the period 2005-2015 by 3.8% and in the period 2015-2020 by 2.8%. By applying the same methodology as for the forecast of the GDP the potential development of the GDP per capita by 2020 can be derived (see ***Figure 3-8***).

Figure 3-8: Evolution and forecast of real GDP per capita in Hungary



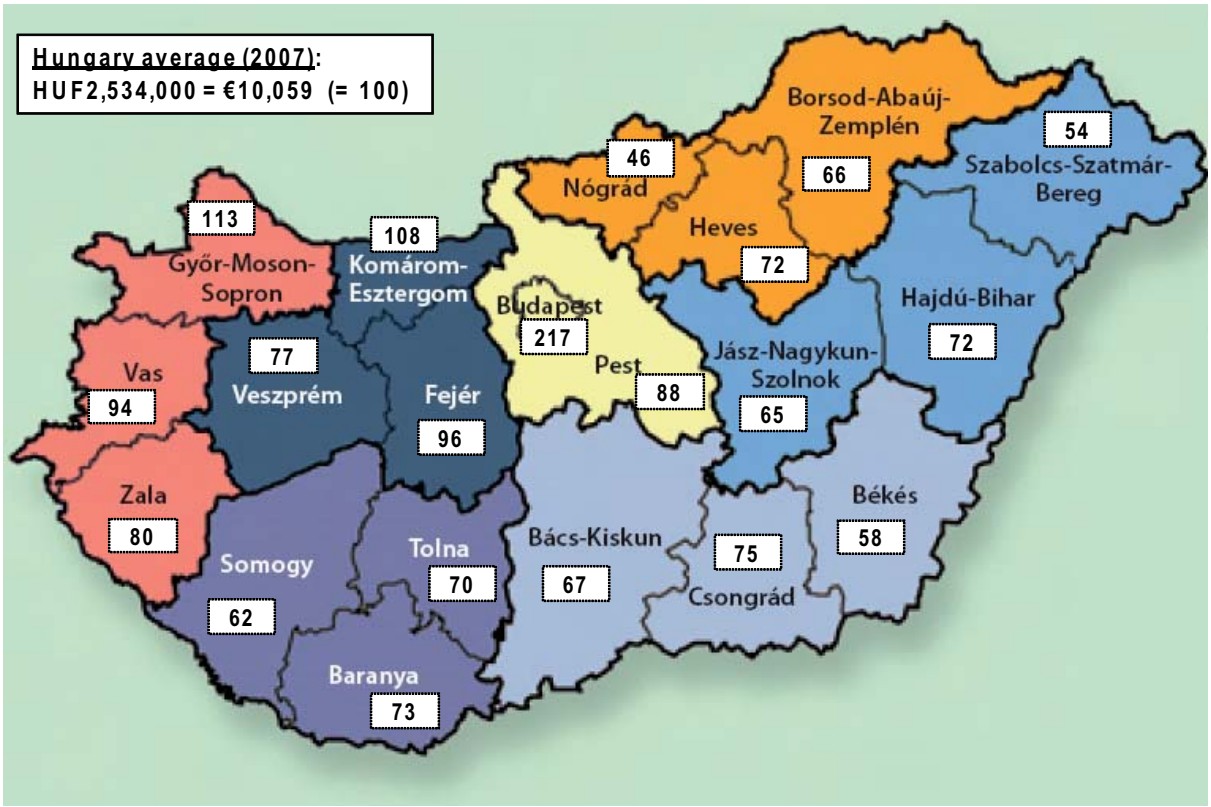
Source: KSH; Progtrans; KombiConsult calculations.

Based on our evaluation of the Hungarian economy and the evolution of population (see section 3.3.2) we determined the following average growth rates:

- 2005 – 2015: 3.9%
- 2015 – 2020: 3.3 – 3.7%

Regional distribution of population is much more important than general development of GDP in identifying potential markets for intermodal services. ***Figure 3-9*** shows that, apart from Budapest, there are only two counties, both west of the capital, where GDP per capita is above the national average. Moreover GDP per capita in Budapest is more than double Hungary's average. This data confirms the conclusion on the distribution of population. The Budapest area is the centre for Hungary's population and its economic centre for the production of added value as well.

Figure 3-9: Real GDP per capita (indexed) by Hungarian county, 2007



Source: KSH, KombiConsult graph

3.3.5 - Evolution of manufacturing industry and foreign investment

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

Hungary has a strong, efficient and also very export-oriented manufacturing industry. According to KSH statistics, the main industrial sectors, accounting for about 80 per cent of the total gross value added, are as follows:

- Mechanical engineering, electric machines, electronics, equipment
- Automotive
- Foodstuffs
- Metal products
- Chemicals, pharmaceuticals

Other industries such as the plastics and rubber, non-metal products, paper and wood also contribute considerably to the output of the manufacturing industry. The overwhelming majority of both the supplies and products of these industries can basically be regarded as potential markets for intermodal services – though this, of course, is dependent on the transport distance.

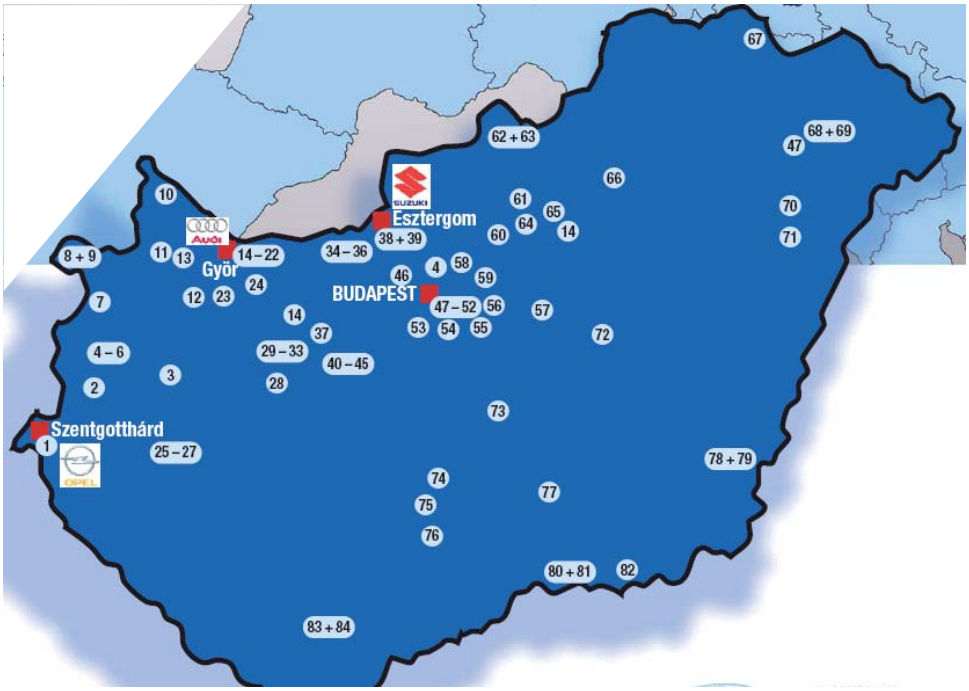
In recent years the manufacturing industry has grown considerably faster than total GDP. From 2003 to 2007, for example, gross value added of the sector rose by 35 per cent. The strength of this industry is based on, first of all, long-standing competences of Hungary's economy, which, secondly, heavily contributed to attracting substantial flows of Foreign Direct Investments (FDI). Hungary in fact has become one of the preferred locations in Central and Eastern Europe both for establishing new production sites and "off-shoring", i.e. transferring intermediate processing stages from Western European countries.

International companies had built up a capital stock of €60bn in Hungary by the end of 2007. About 40 per cent of investments were allocated to the manufacturing industry. Indeed German companies, which account for 25 per cent of all foreign direct investment and thus rank top ahead of the Netherlands (14%) and Austria (13%), invested more than 50 per cent of their capital in this sector.

Many renowned multi-national companies focusing on the industries mentioned above have invested in Hungary; amongst them are for example Alcoa, Audi, Flextronics, Philips, Robert Bosch and Samsung. Alongside the machinery and electronic industries the automotive sector also plays a key role. Meanwhile an automotive cluster has developed in Hungary. In addition to the production sites of three major automobile companies Audi, which carried out the largest ever investment in Hungary, Suzuki and Opel there are more than 80 direct automotive industry supplier plants (see ***Figure 3-10***).

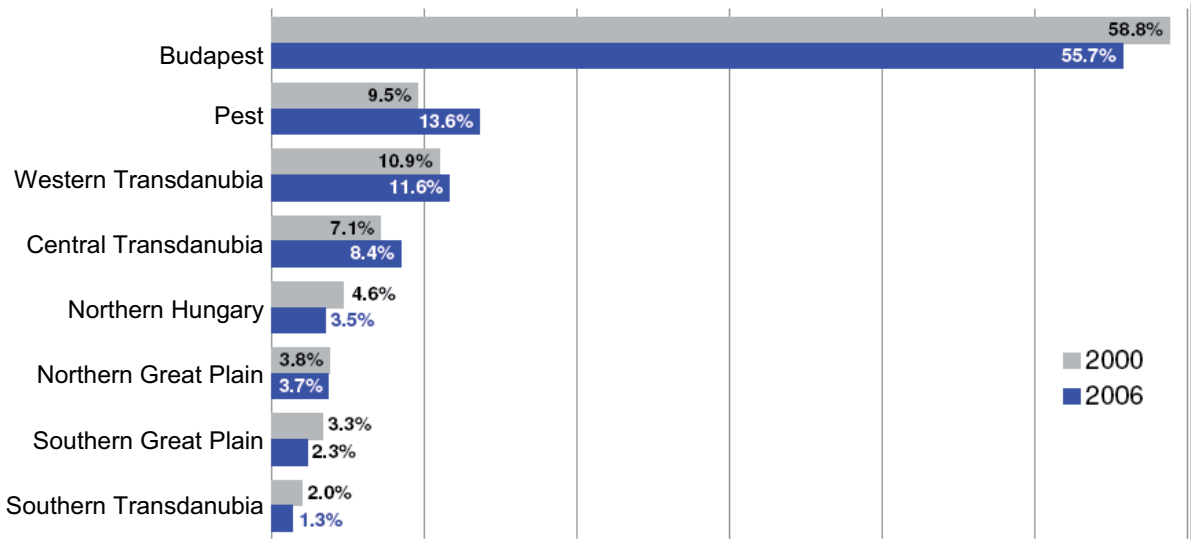
The map also shows that the production sites are overwhelmingly located in the neighbourhood of Budapest and in western Hungary. So it is the same picture as we observed for the distribution of population and the GDP per capita. And this also applies to the regional distribution of foreign investments. Budapest and the county Pest which surrounds it have absorbed about 70 per cent of total capital (see ***Figure 3-11***).

Figure 3-10: Importance of automotive cluster in Hungary: location of producers and direct suppliers



Source: retail, www.automotobil-cluster.at

Figure 3-11: Foreign Direct Investment in Hungary by county, 2000/2006



Source: DUHK website based on KSH data

According to industry officials, the main reasons for choosing Hungary are the skilled and well-trained work force, low labour costs (2008: 25% of German level), a high quality-cost ratio of production and the comparatively good standard of transport infrastructure. The proximity of Hungary to the large consumer markets in Western Europe and other plants of an integrated production network, which ensures a reliable supply chain of components or semi-finished goods, was also often crucial in the selection of Hungary.

What virtually no company mentions, but nevertheless influences investment decisions involving many millions of Euros, are subsidies via grants, tax discounts or in any other form. However, there is no clear picture as to whether the international rivalry for attracting foreign investment through granting subsidies was advantageous for Hungary or not.

Our investigation into Hungary's future as a location for industrial production resulted in the following main findings:

(1) Hungary will remain one of the most preferred CEE countries for foreign investment in the manufacturing industry. In addition to the country's comparative advantages mentioned above, Hungary will be able to score well with a more stable legal and economic framework once the economic crisis is over and the government has successfully made progress in consolidating the national budget. The introduction of the Euro will make Hungary even more attractive.

All these achievements will contribute to raising the efficiency of investments since, if investors regard an investment as having a lower economic risk of failure, it will reduce the risk premium on interest rates.

(2) The mechanical engineering, automotive, metal and plastic product, electronics, foodstuff and pharmaceutical product sectors will continue to be key for Hungary's industrial production. This is clearly demonstrated by last year's decision by the major passenger car manufacturer Mercedes Benz to build a completely new plant in Kecskemét, about 70km south of Budapest. It is said that the Hungarian town won the competition for this €800m investment against competitors in Poland, Romania and Serbia.

(3) We anticipate that, owing to a gradual increase in wage costs and improved social security, some labour-intensive industrial processes, which have been located in Hungary due to skilled workers and low wages, will be transferred to other "lower-wage" countries. This will apply for example to the production of electronics, metal and plastic products and automotive components (e.g. cabling).

(4) On the other hand, we believe Hungary to be in a favourable position to benefit substantially from a completely new economic trend. Over the next decade we expect certain production chains to be relocated from Far East Asia (China, Malaysia, Indonesia etc.) to Europe and especially to CEE countries. This will most likely apply to finishing processes, high-performance and high-value products as well as to very fashionable merchandise. We expect isolated moves of various companies in the medium-term but the trend is due to gain momentum especially in the period after 2015.

We discussed this hypothesis with experts from the financial and logistics sectors and analysed the decisions of various multinational companies, which have already taken steps in this direction. The consensus both on the likelihood of this trend and the reasons was surprisingly large. The production of premium goods or certain production processes may be transferred back to Europe due to the following reasons:

- Skilled workforce in Europe: high product quality.
- Levelling out of labour and social security costs between Asian and CEE countries.
- During the recent boom in global trade it was obvious that transcontinental supply chains have become increasingly unreliable. This impacted negatively on the predictability of subsequent processes and raised capital cost since higher stock levels were required.

Many factors such as congested ports both in Asia and Europe, delayed container vessels, coordination deficits between players and saturated hinterland infrastructure have contributed to this effect. In contrast, logistic service providers are capable of ensuring just-in-time movements over long distances across almost the whole of Europe.

- With respect to the above developments, European-based supply chains can increasingly ensure advantages in total working capital cost particularly concerning higher value products. Working capital costs include cost of labour, transport and logistics and stocks, i.e. the cost of capital, which is substantial for a 30 to 40 day journey between China and the consignee in Europe.
- The production of fashion merchandise within Europe notably ensures that if confidential information concerning product characteristics were disclosed, it would be unlikely to do any harm. This is due to the fact that the period from design to market, i.e. the point-of-sale in a boutique, is so short a copyist could hardly be faster. This is not the case for a producer in China, for example, if the rival were to airship the products.
- European-based production of fashion goods would also increase flexibility with respect to rapid changes in trends.

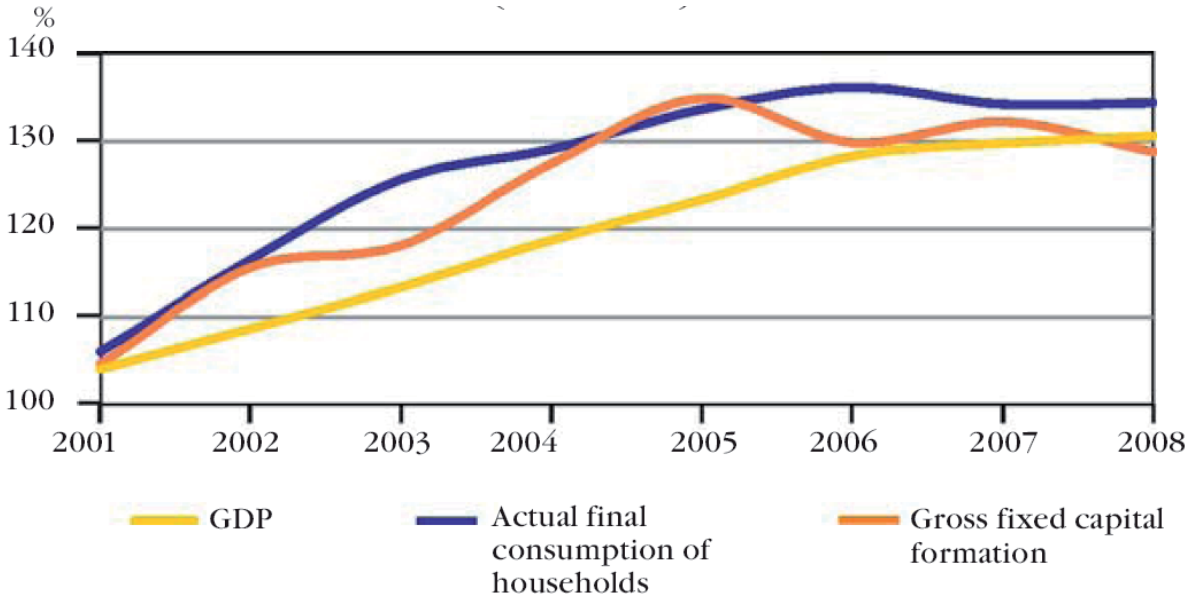
In the context of this trend, Hungary – as well as some other CEE countries such as Romania – could benefit with comparative advantages as concerns skilled labour, favourable geographic position, advanced logistics industry – compared to other CEE countries - and good infrastructure. As a result traditional Hungarian industries such as leather products or textiles, for which Hungary has provided key competences in the past, could be revitalised.

It should be pointed out that we do not view a partial relocation of industrial production to Europe as a backlash to globalisation, but rather globalisation in a slightly altered form. We should not deceive ourselves. The production chains which would be transferred to Europe would bear almost no resemblance to former industrial production processes. According to the findings of our survey they are likely to generate only a low level of employment as the production is expected to being comparatively specialised and capital-intensive.

3.3.6 - Evolution of private consumption

In recent years the propensity of Hungarian private households to consume has been very strong. The boom in the national economy obviously enabled a growing proportion of the population to satisfy "accumulated needs". Consequently private consumption rose considerably faster than consolidated Gross Domestic Product in the first years of the 21st century. It is only since the government changed direction and introduced a policy of financial restrictions in 2006 that private consumption has stagnated (see ***Figure 3-12***).

Figure 3-12: Evolution of Hungary's GDP and its main components (indexed), 2001-2008 (2000 = 100)



Source: KSH: Hungary in figures 2008.

The previous boom catapulted private consumption expenditure as a portion of real GDP to about 52 per cent to 2007 (see ***Figure 3-13***). At this level the international community of economic advisors obviously considers Hungarian consumers to have reached their limits. Our investigations suggest this at least. Most professionals expect private consumption to increase at considerably lower rates than GDP in future. *Progtrans* for example anticipates that this, the largest GDP component, will even lose about 5 percentage-points by 2020 against 2005.

Figure 3-13: Hungary: final use of real GDP (at 2005 prices), 2007

Component	HUF bn	Percentage
Private consumption expenditure	12,469	52%
Government consumption expenditure	5,373	22%
Gross capital formation	5,871	24%
External trade balance of goods and services	326	1%
Exports	*21,244*	-
Imports	*20,918*	-
Gross domestic product	24,039	100%

Source: KSH website; KombiConsult calculations (exchange rate approx. HUF 250 per €).

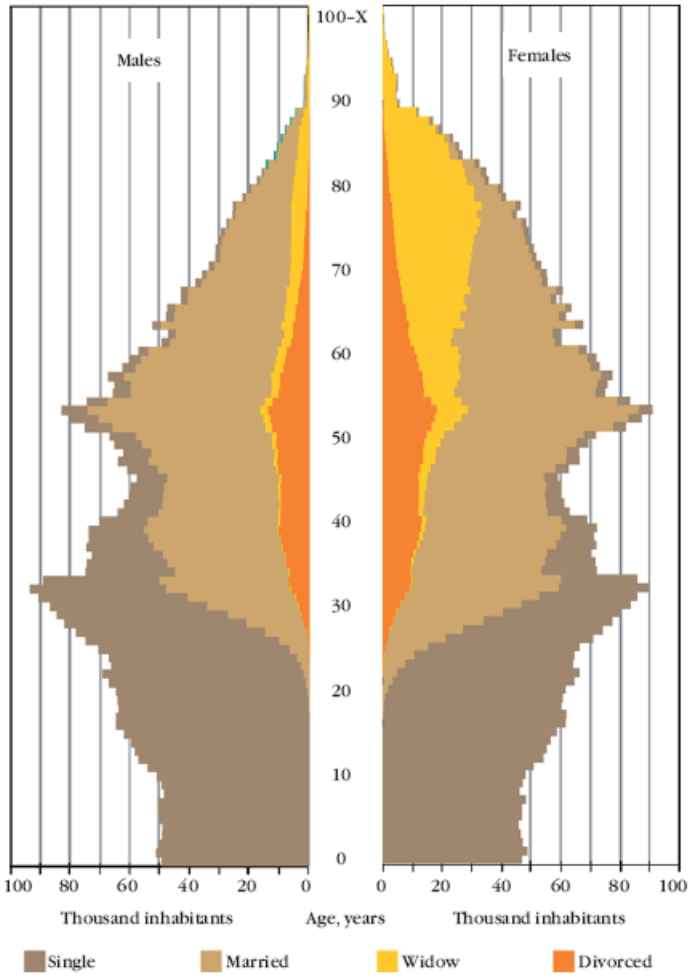
We do not share this wide-spread opinion. It is clear that, in the near future, private consumption will suffer from the impact of the current economic crisis as well as fiscal policy, which is likely to mean cutbacks for a large portion of the population and support for investment in the private sector. However, in the medium-term the prospects for consumer demand can improve greatly provided the national government is in an improved financial and political position, enabling them to pursue more generous policies in terms of taxation, public investment and social security measures.

Since we expect economic conditions to permit such a policy we came to the conclusion that private consumption will grow, on average, only slightly less than GDP in the period between 2012/2013 and 2020. This assessment is based on the following reflections:

(1) Unlike many Western European countries Hungary is not yet an “ageing society”. In the first decade of the 21st century the percentage of people aged 65 or over has only increased by about one percentage-point to 16.3 per cent of total population. On the other hand, people in the early 50s constitute the second largest population group. When they retire within the next 10 to 15 years, however, they will not have generous pensions and therefore not belong to the “wealthy senior citizens”, who have been discovered by the

consumer industry as a very attractive target group in the West in recent years. Thus, while it is very unlikely that private consumption in Hungary can be stimulated by pensioners, it appears very important that the largest population group is males and females aged 20 to 40 and that the group of young people aged 10 to 20 is also very large (see ***Figure 3-14***).

Figure 3-14: Hungarian population by sex, age and marital status, 1 Jan 2008



Source: KSH: Hungary in figures 2008.

As we anticipate that the Hungarian economy will prosper again once the economic crisis is overcome and that Hungary will also remain a preferred location for foreign investment, the population in both groups mentioned will have opportunities to gain relatively good jobs and higher incomes. People in these age groups are typically comparatively high-spending.

They compare their economic and social status with their peer groups in the West and will strive to catch up with them as far as their economic situation will allow it. Thus it can be expected that their consumer propensity is comparatively high. Taking the large proportion of the total population this group constitutes into account, this may result in a considerable stimulation of private consumption in Hungary in the years to come.

(2) Hungarian private households overall – like in virtually all CEE countries, though to a different extent - still have tremendous "accumulated needs". Owing to the current size of their available income, they cannot buy many items now for sale in local branches of multinational retailers. However, most of them would definitely like to do so if they had the necessary financial resources. KSH statistics on the level of prevalence of several consumer durables in Hungarian households shows that, apart from mobile phones, they are far from the Western European standard of living (see ***Figure 3-15***).

Figure 3-15: Consumer durable goods per 100 households in Hungary, 2007

Consumer durable goods	Households without children	Households with children	Lowest income decile	Highest income decile	**Total**
Dishwasher	4	11	3	14	**7**
CD-player	26	53	30	51	**35**
Digital camera	14	32	9	39	**20**
DVD	31	68	48	50	**43**
Personal computer	38	83	41	83	**53**
Mobile phone	127	245	163	168	**166**
Passenger car	46	76	36	79	**56**
Of which: own	44	72	35	71	**53**

Source: KSH: Hungary in figures 2008.

Though this overview does not include other important household items such as washing machines, flat screen TVs or kitchen appliances, and also overlooked the plethora of items available in DIY stores, it nevertheless demonstrates that significant market potential exists. In addition this data does not indicate the age of the durable goods for example of private cars, which might reveal the extent to which replacements are necessary.

Thus we may assume that with increased household purchasing power (increased disposable income) and improved social security, many households will try to improve their standard of living and acquire state-of-the-art items for their homes.

If both impact factors are taken into account, in the medium-term we expect private consumption to contribute substantially to GDP growth. This is also due to market stimulation by international wholesale and retail companies. Most of them, such as Tesco, Metro, Rossmann or the major DIY stores, have already established branches and distribution centres in Hungary. It is said that, owing to the low level of purchasing power of a great deal of Hungarian households, most of these companies currently regard their investment more as “strategic” rather than purely profit-oriented. But this is due to change as soon as disposable incomes rise.

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

But there is no reason why consumer goods should not also be shipped on intermodal services. Basically these goods do not present particularly demanding logistics. In most cases they are full-truckload or part-load shipments. They must not be moved quickly but rather cost-efficiently and must be delivered reliably on-time. The intermodal industry is required to design and ensure a service profile which matches these requirements.

3.3.7 - Evolution of external trade

In the period from 2003 to 2008 Hungary’s external trade grew at an outstanding rate. The total volume of goods and services increased by 81.5 per cent from €80.4bn to €145.8bn at current prices. This corresponds to annual average growth of 12.7 per cent. The Hungarian export economy grew even faster and raised revenues by 91.2 per cent to € 72.8bn while imports achieved a plus of 72.7 per cent to € 73.0bn. Owing to this boost in exports Hungary’s trade is virtually balanced.

For many years Germany has been Hungary's key trading partner by a large margin. In 2008, Germany accounted for 25.4 per cent of Hungarian imports and 26.6 per cent of its exports. The main origins and destinations in Germany are Bavaria, Baden-Württemberg, the Rhein-Ruhr area and Hesse. Romania, the next bigger import nation for Hungarian products, only accounted for a sixth of the value German companies procured in Hungary. Equally Germany shipped almost three times as many imports into Hungary as the next largest export country, Russia (see also ***Figure 3-16***).

Figure 3-16: Hungary's external trade: top 30 countries, 2008

Exports

Rank	Country	Value (€m)	2008/2007 (%)
1	Germany	19,384	- 1.0
2	Romania	3,882	26.9
3	Italy	3,864	0.6
4	Austria	3,578	14.7
5	Slovakia	3,464	19.8
6	France	3,410	4.4
7	United Kingdom	3,287	5.6
8	Czech Republic	2,940	13.2
9	Poland	2,877	-
10	Russia	2,635	21.7
11	Netherlands	2,090	3.9
12	Spain	2,011	- 6.7
13	United States	1,677	3.7
14	Ukraine	1,467	9.6
15	Belgium	1,238	15.5
16	Croatia	1,155	12.5
17	Serbia	1,039	20.3
18	Switzerland	925	19.8
19	Turkey	912	- 9.7
20	Slovenia	851	11.5
21	China	759	1.9
22	Bulgaria	753	27.4
23	Sweden	739	- 3.4
24	Denmark	521	4.4
25	Greece	448	- 20.8
26	Utd. Arabian Emirates	423	9.7
27	Bosnia Herzegovina	394	47.4
28	Portugal	386	- 19.6
29	Finland	369	12.7
30	Japan	336	14.7

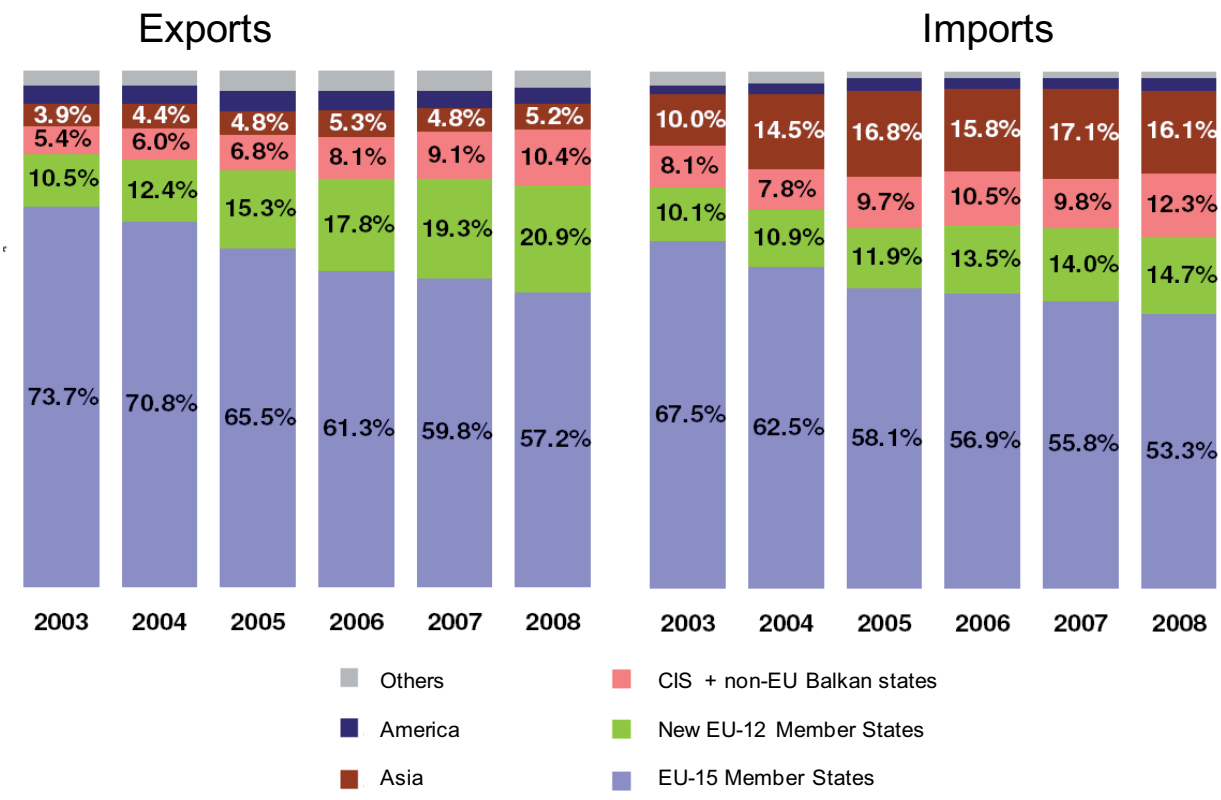
Imports

Rank	Country	Value (€m)	2008/2007 (%)
1	Germany	18,523	- 0.1
2	Russia	6,842	43.8
3	Austria	4,462	6.0
4	China	4,177	11.5
5	Netherlands	3,274	9.5
6	France	3,192	5.7
7	Italy	3,069	- 1.0
8	Poland	2,889	5.4
9	Czech Republic	2,776	12.9
10	Slovakia	2,591	23.3
11	Japan	1,903	- 1.9
12	Belgium	1,698	22.8
13	Romania	1,567	4.0
14	United Kingdom	1,402	- 18.9
15	United States	1,335	18.7
16	Taiwan	1,324	- 5.4
17	Korea	1,243	- 17.9
18	Spain	1,067	1.3
19	Ukraine	1,050	13.8
20	Hong Kong	893	- 28.2
21	Slovenia	656	5.0
22	Switzerland	652	17.8
23	Sweden	649	- 31.0
24	Finland	555	7.6
25	Singapore	543	10.2
26	Denmark	506	10.4
27	Turkey	401	2.9
28	India	372	70.7
29	Malaysia	318	- 1.5
30	Croatia	270	- 16.6

Source: DUHK website based on KSH data

Hungary's main trading partners are in the European Union. In 2008, EU Member States accounted for 78 per cent of Hungarian exports and 68 per cent of its imports. The share of imports is smaller than exports as Hungary has considerably expanded imports from Asia, in particular China, during the recent boom years. What is particularly remarkable is that the percentage share of total volumes of Hungarian exports both to the other 11 new EU Member States and to the CIS and Balkan states doubled between 2003 and 2008. The share of imports from these groups of states has grown by about 50 per cent over this period. As a result the old 15 EU Member States lost about 15 percentage-points in market share and now only account for about 55 per cent of Hungary's foreign trade (see ***Figure 3-17***).

Figure 3-17: Hungary's external trade by group of countries, 2003-2008



Source: DUHK website based on KSH data

According to *Progtrans* forecasts, Hungary's external trade will essentially maintain its dynamic over the coming years. Exports are expected to increase by a mean annual growth rate of 7.0 per cent between 2005 and 2015, growth will then slow down to 4.6 per cent to 2020. For Hungarian imports the corresponding rates are 6.9% and 4.8% respectively. So *Progtrans* anticipates that exports and imports will grow almost at the same pace. The report, however, does not indicate the assumptions on which this assessment is based, and why external trade is going to slow down around 2015.

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

Exports:

- 2007 – 2014: + 4.5%
- 2015 – 2020: + 7.5%

Imports:

- 2007 – 2014: + 3.0%
- 2015 – 2020: + 8.0%

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

(1) The main driver for Hungary's exports and imports will remain the EU Single Market. This applies to both the current and also to prospective new members such as Croatia, Serbia and Turkey. According to our evaluation of trends, the integration into intra-European trade will be reinforced in the final years of the next decade. We consider the following factors to be crucial for this development:

- A more stable legal and economic framework will facilitate and foster foreign investment in Hungary and contribute to raising exports and imports.

- The Hungarian population will seek to achieve Western standard of living and consequently demand for consumer goods produced to a certain extent in the EU will increase. We would like to emphasise, however, that in the medium term it is likely that Hungarians will increasingly meet their consumption needs with products imported from the Far East and non-European countries in other regions.
- All manufacturers as well as retailers are subject to increasing competition for market shares. In order to tap the full potential of productivity gains, international division of labour will continue to be extended and therefore reinforce the establishment of integrated Europe-wide and global production chains. In the competition for locating new production sites or distribution centres, Hungary can score well with several comparative advantages explained above.
- Given the international integration of production, increased production in Hungary will drive the volume of international long-distance freight transport and raise inbound and outbound transport of supplies, components, semi-finished and finished products with Western markets. There is no reason why the traditional strong relationships between Hungary, on one side, and Germany and Austria, on the other hand, should end.
- A trend, which can already be observed in Hungary that trade with CEE countries grows faster than with Western European countries, will be reinforced. Increasingly, the intra-CEE exchange of manufactured products will be integrated into European supply chains. We particularly expect trade lanes with Romania, Poland and the Ukraine to expand rapidly.
- The enhancement of infrastructure in CEE countries will improve the position of European production in global competition. In this respect Hungary is in a particularly favourable position on the intersection between major east-west and north-south corridors.
- Hungary can also benefit from a partial relocation of production chains particularly moving from Asia to Europe as explained above.

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

What is the result for maritime container traffic to and from Hungary taking into account the expected economic development as explained in previous sections?

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

- 2007 – 2014: + 3%
- 2015 – 2020: + 9%

3.3.8 - Intermodal competition

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

Hungarian road operators offer some of the lowest prices in Europe. Although their equipment (trucks and spare parts) is not generally cheaper than that of their Western European counterparts, they can offer considerably lower rates. This is practically solely due to lower labour costs. Considering that, in Western Europe, the dricer costs account for about 30 to 35 per cent of the total vehicle costs per day, vehicle costs with a Hungarian driver who receives about 20 per cent of the salary of his Western European colleague, are about 5 to 6 per cent lower. Given that the margins in road traffic are extremely narrow this is a tremendous difference even without taking other factors such as longer working times into account.

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

- Energy costs
- Staff cost
- Cost of access to infrastructure
- Allocation of social cost

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

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

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

- In Western European countries a shortage of truck drivers compared to demand has arisen. First of all, it results from the fact that the armed forces, which were a “natural” trainer for truck driving licences, have reduced the number of draftees. Secondly, ever more truck drivers do not want to spend their lives on motorways. They prefer jobs in regional or local traffic.
- The accession of the CEE countries to the EU “saved” Western European road-based logistics because many CEE residents were willing to work as low-cost truck drivers instead being unemployed at home. However, as the economy in CEE countries has prospered, ever more truck drivers have changed to more pleasant industrial jobs in their country. It would seem that this development has yet to affect Hungary. But if the economy completely recovers within the next five years we believe that many Hungarian drivers might also turn their back on trucks.
- The strongest and most sustainable impact on road cost can be expected from the new EC regulation on driver working and resting times and the obligatory application of the digital tachograph (“blackbox”). Both measures are expected to reduce the effective working time per driver and require road operators to employ more drivers for the same

scope of services. Forwarders estimate that personnel costs in road transport have increased by 10 to 25 per cent depending on the level of compliance with current rules. Considering that driver costs make up about 30 per cent of total road transport costs, the market price level is due to rise by between 3 and 8 per cent.

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

(4) Regarding infrastructure charging, road operators are still in a better position than rail freight services. Even if some countries have introduced road tolls for using motorways, the level, in general, is comparatively low. The Hungarian state has also planned to levy a toll for motorways but it has not yet been implemented. This means that, in Hungary, road operations can be carried out at very low costs which do not reflect the cost of wear and tear imposed by heavy vehicles on the road.

In contrast to this railway undertakings – and consequently intermodal operators and their customers – have to pay track access fees for the usage of virtually any European network. In Hungary the track access charges amount to about €3.0 to 3.5 per train-km. In cooperation with the national Rail Capacity Allocation Office (VPE) we have carried out various model calculations. The results show that concerns about "excessive" charging cannot be confirmed.

The Hungarian government, however, is preparing to restructure the calculation of track access fees envisaged to be implemented as of 2010. The new scheme is to generate increased cost coverage for infrastructure managers and thus may entail higher access charges for intermodal services. Since the planning has not been finalised we are not in a position to draw any conclusions.

(5) While intermodal service are currently penalised with regard to infrastructure access charging compared to road operations, they might considerably benefit from a regime ensuring that the social costs resulting from each mode of transport are allocated and paid

for. Any calculation shows that rail causes much less social costs per tonne-kilometre than road especially with regard to air emissions and non-covered costs of accidents.

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

3.3.9 - Sustainable logistics

Climate policy, in responding to the threats of a change in world climate, could become key leverage for shifting shipments from road to more environmental-friendly supply chains, of which intermodal traffic could particularly benefit.

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

Recently several major European wholesalers and retailers have started driving sustainable, "green" logistics. They have started to examine where, in their own logistical system, they could reduce the environmental impact of their supply chains for foodstuffs and non-food consumer goods. But in addition to this they are also requesting that their suppliers contribute to this objective. We learnt that the big producers of food and non-food consumer goods have particularly understood the message. It has immediately become obvious that the majority of them are generally looking for solutions as to how they could shift current road-based tonnage to intermodal services. They are analysing, which of their trade lanes match existing intermodal services, and if there are none they require intermodal operators to design an appropriate supply.

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

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

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

3.3.10 - Rail infrastructure and terminal development

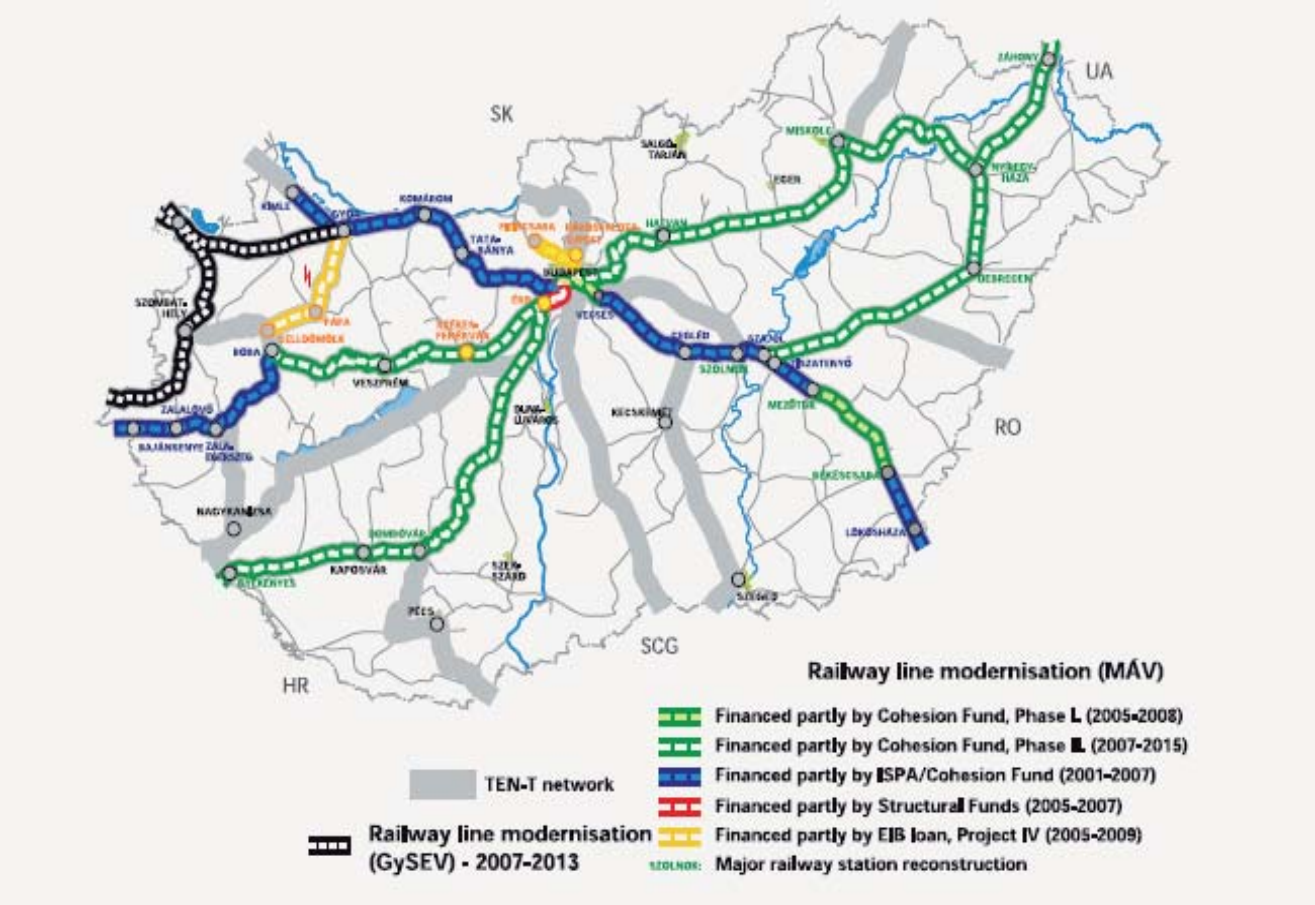
In the course of Hungary’s integration into the EU, the government has elaborated a comprehensive improvement programme for transport infrastructure. It comprises six priorities. Two of them aim directly at rail or intermodal transport:

- N° 2. Improving accessibility by international railway and waterway of the country and regional centres.

- N° 4. Linking up the modes of transport and improving intermodality and the transport infrastructure of economic centres.

Relating to rail, the programme foresees the upgrading of the Pan-European Corridors IV, V and V/b to be completed by 2013. These railway lines are of paramount importance for bilateral and transit intermodal services. The modernisation includes building double-track lines, the improvement of the maximum permitted axle weight to 22.5 tonnes and an increase in the max speed to 120 or 160km/h and shall bring about more train path capacity (see ***Figure 3-18***). Whether there will really be more capacity for intermodal services, however, depends on the mix of passenger and freight traffic on the line and, particularly with respect to transit services, whether neighbouring countries enhance their networks at the same time.

Figure 3-18: Modernisation of MÁV's and GySEV's rail network



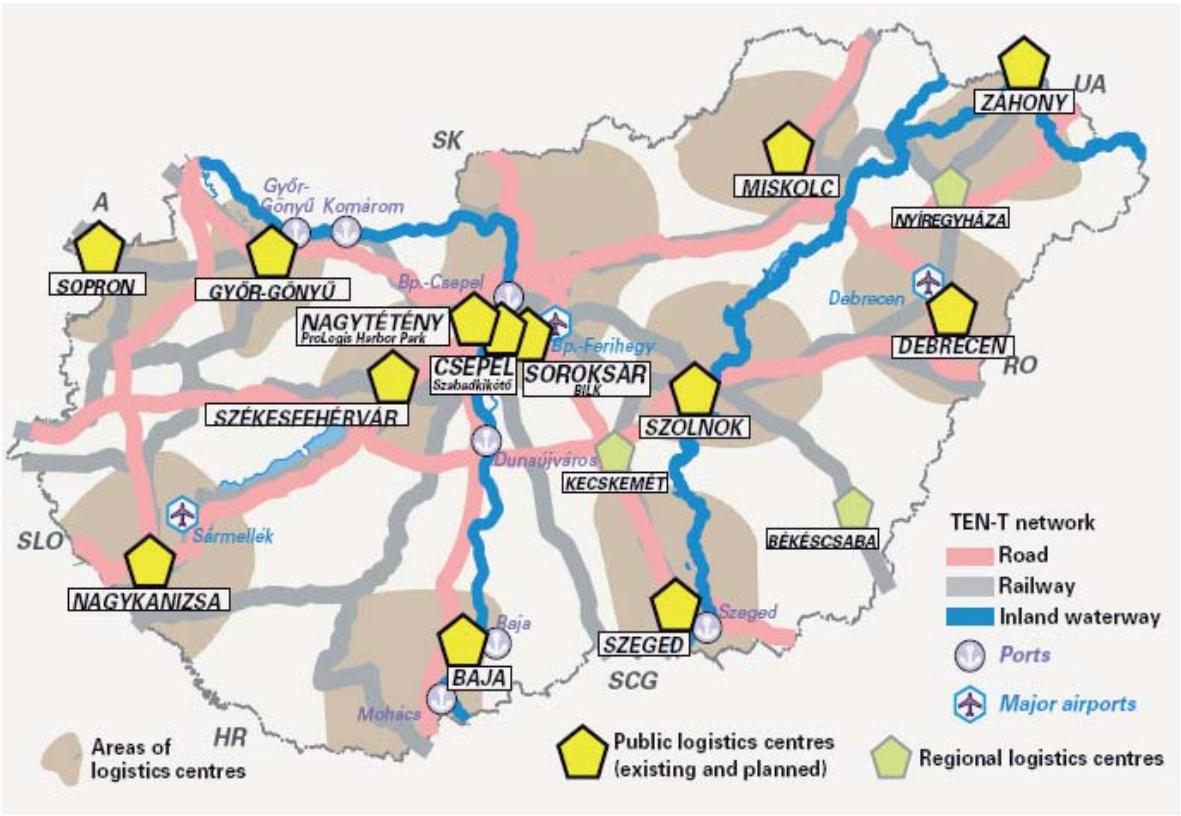
Source: Ministry of Economy and Transport: Transport Infrastructure Development in Hungary.

The Intermodal Logistics Strategy is integrated into this infrastructure improvement programme. It contains a sort of “master plan” for logistics centres and intermodal terminal locations. In fact the national logistics service centres are primarily planned at locations which already provide an intermodal terminal (see ***Figure 3-19***).

The Hungarian government considers its role to be providing conditions, which the market players would not identify on their own and has defined the following tasks:

- development of the external logistics infrastructure: improving the accessibility of intermodal logistics centres,
- development of the internal logistics infrastructure: establishment and modernisation of transshipment terminals and the range of equipment necessary for logistics services,
- development of an intermodal goods transport vehicle fleet: acquisition and modernisation of special transport equipment suitable for use in combined transport.

Figure 3-19: “Master plan” for intermodal logistics centres



Source: Ministry of Economy and Transport: Transport Infrastructure Development in Hungary.

3.3.11 - Evolution of intermodal industry

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

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

(1) Freight volumes are concentrated to a very large extent in the Budapest area. Traffic flows are increasingly balanced east-west. Such framework conditions facilitate the implementation of - multi-frequency - point-to-point intermodal block train services.

(2) However, it will be necessary to establish at least one or even two additional state-of-the-art terminals such as Bilk in the Budapest area in order to ensure a fast and cost-efficient service to customers west and north of Budapest.

(3) The current competition in the intermodal industry on an operator and railway level has generally enhanced competitiveness of international intermodal services to/from Hungary. It seems that intermodal stakeholders in different fields of business are keen to maintain the situation. This should contribute to improving service quality and productivity and developing new markets and trade lanes.

(4) In order to foster intermodal services on routes beyond Hungary, which do not initially provide full-trainload volumes, it is necessary to establish hub-based rail production systems (gateway services). For many years Intercontainer has been using GySEV's platform in Sopron for this purpose. As good as the service is, this location has one important drawback: it has virtually no local volume which could be combined with gateway shipments. For this reason we expect any other intermodal operator to establish their hub in the Budapest area to achieve economies of scale on train services. Such a hub would be suitable for serving the following trade lanes:

- Between west and south-east Europe: Turkey, Croatia, Serbia
- Between west Europe and central Asian states & north-west China: establishment of regular and efficient gateway services expected to be in operation by 2012-2014 (competition with other routings via Poland or Slovakia)

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

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

Given the geo-economic conditions, road-competitive “real” domestic services geared to move freight between a point of origin and a point of destination located in Hungary could not yet be established. We do not expect the competition situation to change within the next decade to such an extent that domestic intermodal rail services could generally become competitive on distances below 300 kilometres apart from the lack of a regular full-trainload market potential on such routes.

Therefore the demand for intermodal shipments on domestic lines – as is the case today - will primarily be confined to gateway shipments and remain extremely volatile and dependent on the decisions of individual companies. Those decisions cannot be forecasted in the framework of such a global assessment. We assume that one part of the volume will originate from containers re-forwarded following or prior to an international movement and the other part from the carriage of empty containers.

Regarding our prognosis that the international container hinterland traffic between the seaport and Hungarian inland terminals will more than double by 2020 (see section 3.5) we expect domestic intermodal traffic compared to international traffic, to grow at nearly the same rate and volumes to rise to 32.400 TEU. This corresponds to an increase of 112 per cent compared to 2007.

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

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

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

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

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

The input is mainly based on our expert knowledge of current services on the trade lanes in question – if there is a service – and the general economic conditions of intermodal trains, the forecasted patterns of external trade and logistics, and the infrastructure parameters on the freight corridor by 2020. Through this comprehensive exercise we were able to determine 2020 levels of intermodal shipments (in TEU) for each trade lane. These results were assigned to the corresponding country-to-country couple. The consolidated volume of all trade lanes between two countries delivered the total bilateral intermodal traffic volume. Concerning the results for Hungary, the bilateral intermodal traffic to/from Hungary and the transit traffic through Hungary are presented in ***Figures 3-20*** and ***3-21*** respectively.

It goes without saying that this approach could not reflect the possibility that, operationally, a part or even total shipments will be moved on gateway services. In such a case, these volumes would statistically be allocated to other bilateral links than the “original” trade lane of the goods concerned.

In fact this is a challenge we had to cope with regarding the 2007 data. Intermodal shipments were registered as bilateral traffic to and from Hungary though it was obvious that they were transit shipments and not locally sourced or terminated. They were just consolidated to ensure efficient block train services on both connections.

Since, for the 2020 prognosis, we tried to avoid these deficits, it seems as if traffic declined on a small number of bilateral routes with Hungary. However, we have actually only allocated transit shipments, which, in 2007, were operated on bilateral gateway services, to transit traffic.

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

3.5.1 - Evolution of bilateral international traffic to/from Hungary

The intermodal traffic volume on bilateral international services to and from Hungary is expected to grow by 136 per cent between 2007 and 2020. In this period the number of shipments will rise from 387,580 TEU to 913,270 TEU, resulting in an average annual growth rate of 6.8 per cent (see ***Figure 3-20***). The specific development of each country-country intermodal corridor is presented in ***Figure 3-21***.

Figure 3-20: Bilateral international unaccompanied intermodal traffic by traffic type, 2007/2020

Intermodal traffic type	2020	2007	2020/2007 increase	Ø annual growth
Maritime	589,000	280,400	110%	5.9%
Continental	324,270	107,200	202%	8.9%
Total international	913,270	387,600	136%	6.8%

Source: KombiConsult analysis

Figure 3-21: Bilateral international unaccompanied intermodal traffic by corridor, 2007/2020

Hungary from/to	2020			2007			% change on total
	Maritime	Continental	Total	Maritime	Continental	Total	
Austria	-	-	-	-	20,620	20,620	-100%
Belgium	30,000	29,250	59,250	-	8,850	8,850	569%
Bulgaria		16,200	16,200	-	-	-	n,a,
CIS States	-	63,000	63,000		4,390	4,390	1335%
Croatia	32,500	-	32,500	3,800	-	3,800	755%
Czech Republic	-	20,250	20,250	15,920	-	15,920	27%
Germany	247,500	73,800	321,300	149,220	8,200	157,420	104%
Italy	45,500	27,000	72,500	18,360	550	18,910	283%
Macedonia		5,400	5,400	-	-	-	n.a.
Netherlands	37,500	29,250	66,750	16,880	6,340	23,220	187%
Poland	-	16,200	16,200	-	1,070	1,070	1414%
Romania	42,000	21,600	63,600	-	19,050	19,050	234%
Slovenia	154,000	-	154,000	76,240	-	76,240	102%
Turkey	-	22,320	22,320	-	37,490	37,490	-40%
other countries	-	-	-		600	600	n.a.
Total	589,000	324,270	913,270	280,420	107,160	387,580	136%

Source: KombiConsult analysis

The two main intermodal market segments are subject to a distinctive path of development. Container hinterland traffic will clearly maintain its leading role in Hungary's bilateral intermodal traffic to 2020. According to our market investigation it will see a growth of about 110 per cent from 280,420 TEU in 2007, to 589,000 TEU in 2020. Even though the maritime sector will achieve a higher absolute increase in TEU shipped than continental traffic it is expected to lose eight percentage-points of its market share, dropping from 72 to 64 per cent. Growth is forecasted for the volume of freight shipped on bilateral continental services with Hungary at considerably higher rates and it is expected to treble from 107,160 TEU to 324,270 TEU between 2007 and 2020 (see ***Figure 3-20***).

The assessment of the evolution of the volume of ***intermodal container hinterland traffic*** to and from Hungary is based on the evaluation of Hungary's external trade as explained in section 3.3.7, and the analysis of the comparative competitiveness of hinterland corridors between European container ports and Hungary. Basically, decisions on the port of call, the hinterland routing of containers and the modal choice taken by shipping lines – in the case of carrier's haulage – and freight forwarders – if containers are carried under

merchant's haulage – are subject to a variety of criteria such as: the efficiency of ports; port handling charges; the frequency of vessel arrivals and departures and direct calls of sea-going vessels; the potential of consolidating container flows to/from various areas; the effectiveness, cost and service level of hinterland services; personal relationships and cultural values. The results of our in-depth investigation in this respect are as follows:

(1) German sea ports

Against the background of the above decision criteria the German container ports of Hamburg and Bremerhaven have been very successful in the past as concerns the transportation of marine container to and from Hungary. They were the first European ports to be connected with Hungary by cost-efficient and fast intermodal block train services. It was intermodal operators such as Kombiverkehr and Intercontainer that established services on this corridor in the early 1990s. In 2007 about 40 per cent of all import and export containers carried on intermodal services into and out of Hungary were shipped via the sea ports of Hamburg and Bremerhaven. In previous years the market shares had been even higher before the port of Koper caught up in competitiveness (see below).

We expect that the German container ports to be able to maintain the market leadership to 2020 though, since the growth of container movements via German ports will be less than the average, they will lose some percentage-points in share. The container volumes will rise to 247, 500 TEU, thus realising a plus of nearly 100,000 TEU against 2007 (see ***Figure 3-21***). This assessment is based on the following considerations:

- Several market studies such as those prepared for the German Ministry of Transport (Prognosis of sea freight transport 2025) or for the port authorities consider the German sea ports and Hamburg in particular will remain very competitive for container traffic with CEE countries.
- We essentially agree with this assessment as concerns Hungary. According to our analysis, many factors will contribute to this result, especially the efficiency of the ports, the scope and extent of vessel services to and from international ports as well as the frequency of sailings, and the long-lasting excellent bilateral relationships between the German ports and the Hungarian export and import companies and the logistics industry. We also assume that to a large extent the current bottlenecks in hinterland rail infrastructure close to the ports will be eliminated within the next five years and thus ensure further growth both in sea-borne container throughput and hinterland traffic.

- Additionally, we expect intermodal operators to considerably extend and upgrade their services on the corridor. This move will be fostered by increasing competition among intermodal service providers and the efforts of the German port handling companies Eurogate – which is a major shareholder of the operator boxXpress and the railway undertaking Floyd – and HHLA to "safeguard their hinterland".
- According to local sources about 30 per cent of the current volumes of intermodal marine container movements between the German ports and Hungary are not operated via direct services with Hungarian terminals. Instead, the operator Metrans routes them to and from its own terminal Dunajska Streda in Slovakia, located close to the border, and serves the loading and unloading locations especially in west and central Hungary via truck. Metrans is expected to provide a competitive edge in terms of transit time and cost in this catchment area. We assume that, in the medium-term, intermodal services with terminals in the Budapest transport area and Sopron will manage to eliminate their disadvantage, and Metrans will also supply direct services on the corridor to cope with increasing volumes.

As concerns the market shares of the German sea ports we expect Hamburg to retain its position as leading port for Hungarian export and import containers. By 2015 the port of Bremerhaven will probably lose ground to the benefit of the new deep-water port of Wilhelmshaven due to be inaugurated in 2011 or 2012.

(2) Koper

During the last decade the container port of Koper has developed rapidly and achieved an unexpected breakthrough in the Hungarian market. Within a few years several intermodal block train services have been established by various suppliers and boosted the volumes to more than 76,000 TEU in 2007. Unlike other ports there is a unanimously positive assessment of logistics experts and the transport administration on the future importance of Koper for Hungarian exports and import containers and rail hinterland traffic. The main reasons are as follows:

- Intermodal companies emphasise the efficient and customer-oriented container handling and the comparatively low handling charges in the port.
- Koper is planned to be the first port in the Adriatic Sea, which can accommodate larger vessels of up to a capacity of 6,500 TEU. This would provide an opportunity for the port

to be served directly by ocean carriers and integrated into their regular schedules especially to/from the Far East and not only be served by feeder vessels. This would considerably reduce total door-to-door transit time and improve the consistency of the supply chain. Unlike with most feeder services, shippers and importers could then rely more on regular intercontinental transit times for their container movements and thus catch up with the North Sea ports, which have a major competitive edge compared to Mediterranean ports here.

- The distances between Koper and Budapest or other Hungarian centres are shorter than on the corridors with the North Sea ports. This means the costs of hinterland transportation and also the total transport cost could be comparatively lower.
- Existing intermodal hinterland services to and from Hungary are efficient and stable. We guess that the intense competition considering the comparatively large number of intermodal operators serving the corridor has chiefly contributed to this result. What we gathered from our market survey is that, at least in the next few years, the degree of competition is more likely to increase than decline. Therefore we expect that market innovations will be fostered and the scope of daily intermodal services increase.
- The port authority of Koper has recognised how vital an efficient network of container hinterland services is to ensure the growth of sea-borne container throughput. Therefore it has recently begun to reinforce hinterland services on its own, in addition to the independent intermodal operators. As far as it can be judged today, this strategy includes the following components: establishment of a railway undertaking; stake in a newly-built intermodal terminal in Arad, Romania; inauguration of intermodal services. With these actions the port of Koper seems to be pursuing a similar strategy to, for example, Eurogate, Hamburg/Bremen, or ECT, Rotterdam, aiming at strengthening the core business through related hinterland activities.

Against this background and also taking the strategic plans of the port of Koper into account we estimate that container hinterland traffic between Hungary and Koper will more than double to 154,000 TEU by 2020. Hereby, the share of this corridor of the total bilateral maritime traffic with Hungary will increase from 20% (2007) to about 26% (2020).

Our forecast would have predicted an even higher increase if we had not considered the fact that capacity constraints in rail access to the port are expected to reduce the pace of growth. The capacity of the current single-track line is almost saturated. Though a new efficient rail

access to the port of Koper is being constructed including a double-track line and a tunnel, this is unlikely to be finished before 2015. Thus the positive impact on the evolution of the sea-borne throughput and the hinterland traffic of containers will be limited.

(3) Trieste

Our market research revealed that there is no other port, for which the opinions differ to such an extent as for the future importance for Hungary's external trade via Trieste. They span from Trieste becoming the major south European port for Hungary to the forecast of an absolute decline in volumes.

The negative assessments primarily relate to the comparatively poor service quality in port handling, which was reported by most intermodal stakeholders in recent years, the lack of market orientation, infrastructure bottlenecks in the port and the lack of non-discriminatory access for any intermodal and rail service provider. Those industry experts who are sceptical about Trieste's future do not trust in the port's ability to change things, while others highlight the recent efforts of the port to improve the situation. The latter, too, are in a position to refer to the boom in container traffic in recent years meaning that Trieste's sea-borne throughput has almost matched Koper's volumes.

Our own assessment of Trieste's role for Hungarian container exports and imports combines both strings of arguments:

- We recognise the port of Trieste's efforts to enhance its service quality and open up the infrastructure for competing companies. Yet we are concerned that – like in previous years – the actions might not be consistent and remain comparatively volatile.
- Particularly in the period to 2015 the port of Trieste may benefit from Koper's rail network constraints. On the other hand, Trieste itself has to struggle with infrastructure bottlenecks, which, in our view, will not be eliminated quickly enough and therefore limit the extent of growth.
- To date Trieste's container traffic has been overwhelmingly geared towards exports and imports from/into Italy. Unlike Koper, which has been successful in positioning itself as a major platform for south-east Europe, Trieste is only now about to strengthen international services. This will take some time.

- Trieste's key business is Ro/Ro services. But if the port intends to make Trieste more attractive for container shipping lines it has to enlarge facilities and the hinterland network. At this point both business areas are likely to come into conflict relating to the claim for land, if not before.

Based on these assumptions we forecast that container hinterland traffic between the port of Trieste and Hungary will rise by 222 per cent between 2007 and 2020, from 18,360 TEU to 45,500 TEU. But even if the percentage growth rate is much higher than that of Koper, the absolute increase in container shipments with Trieste will be significantly smaller.

(4) Constanta

During our market survey we have scarcely encountered an assessment as unanimous as that of the port of Constanta. All intermodal stakeholders expect Constanta to become one of the major ports – or even the main port – for Hungary and many other south-east European countries such as Bulgaria or Serbia and even for Austria and southern Germany. In fact, the port has undergone outstanding growth in the past decade and can boast some competitive advantages: deep-water quays; port of call for Far East schedules; large space for extension; global players as quay operators. Moreover, in a few years, the rail access to Constanta will be modernised including a double-track electrified line to Bucharest. This will create enormous transport capacity for hinterland traffic.

In spite of these excellent arguments our analysis came to a distinctively different conclusion. We expect that, in the medium-term, Constanta will not develop to the dominating platform for container flows in south-east Europe and particularly not for Hungary, but it will become one of several container ports in this area with regional importance. This assessment results from the following considerations:

- The Dardanelles are already a critical bottleneck for vessels calling at Black Sea ports. The constraints are very likely to increase when traffic grows and traffic is due to increase as demand in developing economies, i.e. Russia, Ukraine and other CIS states, for industrial and consumer goods increases. Then the journeys of container vessels to and from Constanta will become either less reliable or time-tables will have to be adjusted leading to extended sailing schedules.
- Regarding Hungary's export and import of containers the ports of Koper and Trieste - and Rijeka in the long term – provide for more favourable performance indicators than

Constanta. Given the above mentioned development, the total door-to-door transit time for Far East containers will be larger via Constanta. Moreover the total supply chain costs are due to be considerably lower owing to a shorter hinterland transport, which has a disproportionate impact on transport costs.

- The current success of Constanta as regards the growth of container throughput is based on two pillars: Constanta is the main port for Romania's external trade, and, what is even more important, it is currently the main transhipment port in the Black Sea particularly for Russia and other CIS states. According to our findings, Constanta will not be capable of maintaining the latter function. Russia and the Ukraine are about to enlarge their Black Sea container ports and improve hinterland connections to accommodate the anticipated growth of traffic. We are convinced that authorities and companies in these countries will make sure that their ports are served directly and certainly not via feeders from Constanta. If and when the port of Constanta loses this traffic, it is likely that it will be taken out of the loop schedule of other global container services. Then its role would be reduced to a port of regional importance.

In spite of this rather sombre scenario – compared to the expectations of the intermodal industry – we anticipate that at least one regular intermodal service six days a week will be implemented between Constanta and Budapest. This would lead to a volume of about 42,000 TEU in 2020.

(5) Rotterdam and Antwerp

In contrast the German sea ports Rotterdam and Antwerp, for the time being, have been considerably less successful in penetrating the Hungarian market. While, in 2007, at least 17,000 TEU were carried on direct services between Rotterdam and Hungary – and an unknown number of containers by Gateway services via Austrian and Czech terminals – the record for the port of Antwerp to and from Hungary was rather bleak. This performance widely corresponds with the situation of both ports virtually in the whole area "east of the Rhine". Traditionally it has been the stronghold of the German sea ports or – since recently – of Mediterranean ports.

In the context of the above considerations regarding the other ports we do not expect the situation of these two ports to improve substantially over the next decade. This means that container hinterland traffic between Rotterdam and Hungary will grow, and Rotterdam may

even increase its market share but it will not be a real breakthrough. Container shipments are forecasted to increase in the period 2007 to 2020 by 160 per cent to about 37,500 TEU. As concerns the port of Antwerp we identified the interest of a major shipping line to establish a direct service with Budapest. We anticipate that the service will be implemented in the medium-term, starting with a low frequency. When it is fully operative a daily service might be achieved. Based on this, we estimate that the volume on this corridor will reach about 30,000 TEU in 2020.

(6) Rijeka

The Croatian authorities are seeking to develop the port of Rijeka as an important container hub in the Mediterranean Sea. Once the enlargement works are finished, Rijeka will become the only “real” deep-water port in the area. This competitive benefit is a prerequisite to become a transhipment port but it will not be sufficient to attract major volumes of hinterland traffic with other countries. For example rail access to the port is rather poor and must be enhanced.

Based on current information, it is rather difficult to assess when Rijeka will be in a position to attract international container flows. However, we expect that, by 2020, one regular block train service between Budapest and Rijeka will be viable and have replaced the current single-wagon movements. Volumes are forecasted to rise from 3,800 TEU (2007) to about 32,500 TEU (2020).

As presented in ***Figure 3-20*** the ***intermodal continental traffic*** on bilateral international trade lanes to and from Hungary is forecasted to increase from 107,200 TEU to 324,300 TEU between 2007 and 2020. Owing to stronger growth than maritime traffic, the market share of continental intermodal traffic will rise to over 35 per cent by 2020, up from 27 per cent in 2007. This prognosis is based on the evaluation of Hungary’s external trade, the development of the terms of competition between intermodal and road freight traffic, the impact of environmental and climate policy issues on modal choice, and the evolution of the intermodal industry itself. The consolidated result for the entire sector is compiled from the evaluation of every single bilateral trade lane with Hungary (see ***Figure 3-21***). Below the main findings with an emphasis on those corridors, which are expected to grow particularly rapidly, are explained.

(1) Hungary - Germany

Germany is likely to remain Hungary's main trading partner. Exports and imports may almost double within the prognosis period and thus considerably increase the volume of continental freight particularly of high-value industrial and consumer goods. This is a typical road-oriented market and, at the same time, a potential market for intermodal services.

In spite of the fact that the majority of continental freight is carried over long distances of more than 800 kilometres, the intermodal industry was not able to capture more than a marginal proportion of the cargo shipped. This is primarily due to the fact that the costs of through-road transport have been considerably lower than those of intermodal transportation. Moreover, trucks are faster than continental intermodal trains particularly since there is a shortage of direct services. Though gateway services are an excellent means to serve less-than-trainload routes, they do lead to longer transit times. As a result the turnaround times for the equipment of intermodal customers are expected to exceed those using road, which in turn effectively raises costs per shipment.

According to our findings (see chapter 3.4) the cost-related terms of competition on the corridor are likely to change to the benefit of intermodal transport within the next five years. Even if today the volume of daily truckloads on many bilateral trade lanes already exceeds the "critical mass" for direct intermodal services – though this could not be exploited owing to a lack of competitiveness - the growth of external trade between both countries will substantially increase the point-to-point volumes especially on existing high-volume lanes. The main corresponding areas for Hungarian exports and imports in Germany are the Rhein-Ruhr area (Dortmund, Duisburg, Cologne), Rhein-Main area (Frankfurt, Mainz), Ludwigshafen/Mannheim, Stuttgart, Nuremberg and Munich.

Against this background we anticipate the implementation of efficient direct, shuttle or Y-shuttle services for continental intermodal traffic by 2020, particularly on the above trade lanes with the exception of southern Bavaria (Munich) and Frankfurt. Continental traffic between Hungary and Germany is forecasted to soar as of 2015 and will increase from approximately 8,200 TEU (2007) to 73,800 TEU (2020).

(2) Hungary – Belgium/Netherlands

The conditions for continental intermodal services between Hungary and Belgium and the Netherlands are comparable with those for German destinations in every respect. Both countries do and will play a major role in Hungary's external trade and the trade lanes provide large potential for long-distance freight traffic not exploited by intermodal service providers at all.

As for Germany, we expect intermodal operators to recognise the opportunities in a changed environment as concerns the terms of competition and establish efficient block train services. Unlike Germany, which has a rather poly-centric economic geography, these services will be likely to be concentrated on the primary economic centres of both countries, Rotterdam and Antwerp. At both locations service providers, additionally, might be able to bundle local cargo with short-sea shipments to and from the United Kingdom and – eventually – Ireland. In fact the UK will remain one of Hungary's main trading partners.

As a result, we estimate that continental intermodal traffic on the corridor Hungary-Belgium will more than treble in the period 2007 to 2020 from 8,900 to more than 29,000 TEU. On the corridor Hungary-Netherlands intermodal service providers are expected to achieve an increase of more than 460 per cent from 6,340 to 29,250 TEU of continental shipments in the same period.

(3) Hungary - CIS States

We have shown that the external trade of Hungary with Russia and other CIS States, especially Ukraine and the Central Asian States such as Kazakhstan, has increased rapidly in the five year period up to 2007. The exchange of goods, particularly of higher value commodities, will grow even stronger in the next decade if and when the CIS States improve their economic and legal situation. This will improve the conditions for intermodal services as point-to-point volumes enabling efficient direct operations increase. Yet road operators will remain much less expensive than rail for many years. We therefore expect that intermodal services may generally become competitive in terms of cost and quality level after 2015.

Further to that, Hungary is in a favourable geographic position as a logistic hub for consolidating shipments, which cannot be conveyed on direct trains to and from the CIS

States. From today's point of view, it is difficult to determine whether Budapest or Sopron will be the preferred location for gateway services with the CIS states or if both are equally suitable. Budapest has the advantage of being able to bundle local and onward shipments while Sopron has the edge of a long-term experience and know-how in this kind of traffic.

At any rate we expect traffic between Hungary and the CIS States composed of local and gateway shipments to account for outstanding growth from 4,400 TEU in the year 2007 to about 63,000 TEU in 2020. However, it should be observed that this volume relates to various destinations in CIS States, mainly Russia (Moscow) and Ukraine (Kiev). All services will be routed via Zahony on the Hungarian-Ukrainian border, requiring efficient and sufficient handling capacities to tranship intermodal units between UIC and wide gauge trains.

(4) Hungary – CEE Countries

The CEE countries whose economies were forcefully inter-related during the COMECON era, seem to be integrating themselves once again partly as a revitalisation of earlier relationships and partly under the umbrella of the favourable conditions of the European Single Market with regards to free trade and the elimination of trade barriers. This is reflected in Hungary's balance of external trade, which sees an increasing proportion of exports and imports of commodities with CEE countries.

Our analysis of the future development of Hungary's external trade brought about the finding that this trend will continue and even be reinforced:

- Following further foreign investment into manufacturing industries in CEE countries we expect an increase in trade of semi-finished and finished products between CEE countries complementing and sometimes replacing the existing supply chains between production plants in Western and Eastern European countries.
- The growth of private consumption ("accumulated needs" of population compared to Western European standard of living) resulting from increased household purchasing power (increased disposable income) and improved social security once the global and national economic crises are over, will also promote growth in intra-European freight traffic, increasingly with other CEE countries particularly Bulgaria, Romania and Poland.

In this context we expect the step-by-step enforcement of competitive intermodal block train services between Hungary, mainly from Budapest, and its key trading partners in the CEE area (see ***Figure 3-21***).

3.5.2 - Evolution of transit traffic through Hungary

Intermodal transit through Hungary is going to grow rapidly in the years to come. It is forecasted to more than quadruple from 188,200 TEU in 2007 to 880,660 TEU by 2020, corresponding to an average annual growth rate of 11.9 per cent (see ***Figure 3-22***). The main reason for this development is that we expect the bilateral intermodal traffic between Western European countries, especially Austria and Germany, on one end, and Romania, Bulgaria and Turkey, on the other end, to grow substantially (see ***Figure 3-23***). There are more details in the other country reports on bilateral intermodal trade lanes which they are involved in.

At first sight the total, absolute and relative increase in the transit traffic may appear to be exaggerated. But the following aspects should be taken into account:

- Transit traffic starts at a very low level.
- Within two years from 2005 to 2007, intermodal transit through Hungary almost quadrupled.
- The transit traffic serving primarily continental trades was much less hit by the current economic crises than the international maritime traffic.
- We expect a considerable increase in external trade between the old and new EU Member States as well as with Turkey.
- Each of the corridors, which we assume intermodal traffic will grow strongly, has very long rail-oriented transport distances and is expected to provide potential for more than a daily full-trainload of point-point freight.

As is the case today, continental cargo will dominate transit traffic in 2020. The volume of this market segment will grow by 291 per cent from 166,700 TEU (2007) to 651,060 TEU (2020). This corresponds to a mean annual increase of 11.1 per cent. The growth rate of container hinterland services through Hungary is expected to amount to 16.5 per cent. But this is also a consequence of a statistical effect. The market segment only accounted for 21,500 TEU in 2007, and it is estimated to rise to 157,600 TEU by 2020 (see ***Figure 3-22***).

Figure 3-22: Unaccompanied intermodal traffic in transit through Hungary by traffic type, 2007/2020

Intermodal traffic type	2020	2007	2020/2007 increase	Ø annual growth
Maritime	157,600	21,500	633%	16.5%
Continental	651,060	166,700	291%	11.1%
Total international	808,660	188,200	330%	11.9%

Source: KombiConsult analysis

Figure 3-23: Unaccompanied intermodal traffic in transit through Hungary by corridor, 2007/2020

Transit corridor		2020	2007	% change
Austria -	Bulgaria	27,000	-	n.a.
Austria -	CIS	33,750	1,090	2996%
Austria -	Croatia	21,600	70	30757%
Austria -	Greece	31,500	38,730	-19%
Austria -	Romania	105,200	16,630	533%
Austria -	Serbia	27,000	-	n.a.
Austria -	Turkey	50,400	12,450	305%
Belgium -	Bulgaria	20,160	-	n.a.
Belgium -	Greece	23,400	14,680	59%
Belgium -	Romania	31,500	9,400	235%
Czech Republic	Romania	5,400	2,700	100%
France -	Romania	29,250	-	n.a.
Germany -	Bulgaria	48,600	-	n.a.
Germany -	Greece	23,400	2,960	691%
Germany -	Romania	121,050	-	n.a.
Germany -	Turkey	75,600	24,980	203%
Italy -	Romania	21,600	9,750	122%
Netherlands -	Romania	29,250	-	n.a.
Poland	Bulgaria	10,800	-	n.a.
Poland	Romania	16,200	-	n.a.
Slovakia -	Slovenia	56,000	21,490	161%
Other corridors		-	33,270	n.a.
Total transit through Hungary		808,660	188,200	330%

Source: KombiConsult analysis

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

We expect unaccompanied intermodal traffic in Hungary to increase from 591,100 TEU in 2007 to 1,754,330 TEU in 2020 (see ***Figure 3-23***). This is almost a trebling of the total volume in this period and corresponds to an annual average growth rate of 8.7 per cent. Since intermodal transit through Hungary is supposed to be the most dynamic market segment over these years it will improve its proportion of total intermodal traffic from 32 to 44 per cent.

Figure 3-24: Total unaccompanied intermodal traffic in Hungary by traffic type, 2007/2020

Intermodal market segment		2020	2007	% change
Unaccompanied traffic		**1,754,330**	**591,100**	**197%**
Domestic	Maritime	32,400	15,300	**112%**
	Continental	-	-	**n.a.**
	Subtotal	**32,400**	**15,300**	**112%**
International	Maritime	589,000	280,400	**110%**
	Continental	324,270	107,200	**202%**
	Subtotal	**913,270**	**387,600**	**136%**
Transit	Maritime	157,600	21,500	**633%**
	Continental	651,060	166,700	**291%**
	Subtotal	**808,660**	**188,200**	**330%**

Source: KombiConsult analysis

4. IMPACT OF EVOLUTION OF INTERMODAL TRAFFIC ON INFRASTRUCTURE

4.1 - Impact on rail network capacity

The ***Figure 4-1*** shows the approximate assignment of the 2020 transport programme of block train services to/from and through Hungary determined by our assessment of the evolution of unaccompanied intermodal traffic, on the Hungarian rail network. Since we expect the majority of intermodal shipments to be carried on international trains between Hungary and Germany and the Benelux states in Western Europe, the rail lines in Austria (Passau-Vienna) and the Czech and Slovak Republics (Dresden-Prague-Bratislava) will have to bear the highest load of bilateral intermodal trains. The corridor through Austria will additionally carry the large increase in transit trains through Hungary.

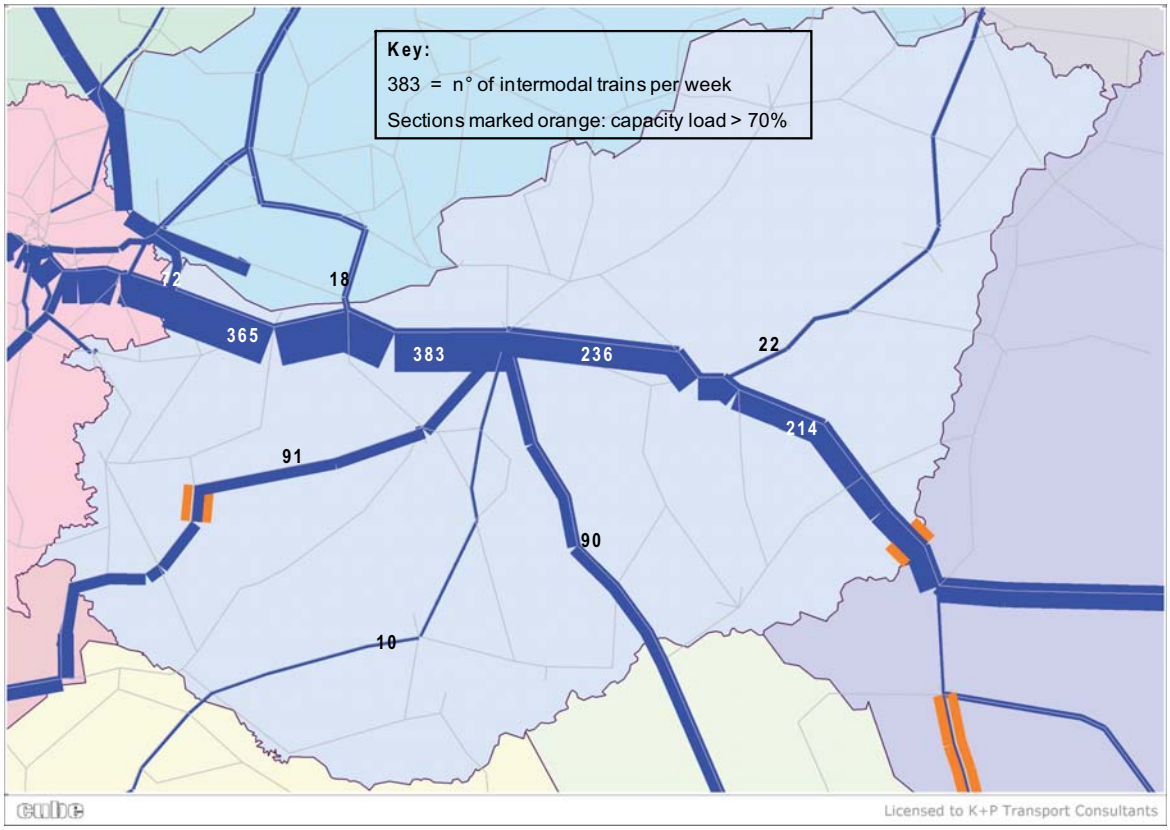
In spite of this substantial growth in intermodal trains to 2020 we do not essentially anticipate major capacity constraints on the Hungarian network even taking other freight and passenger trains into account. Thus the situation will not change significantly compared to the existing situation (see section 2.6.1). According to the Hungarian Ministry for Transport, all main railway lines currently provide sufficient capacity to accommodate more trains. The maximum the capacity employment rate amounts to 60 to 70 per cent. In 2007, the capacity employment rates on Corridor IV line sections were as follows:

- Hegyeshalom – Györ: 28%
- Györ – Budapest: 46% / 38%
- Budapest – Szolnok: 34% / 22%
- Szolnok – Curtici: 41% / 53%

With regard to the ambitious rail network enlargement plans (see section 3.3.10) there should be sufficient capacity on the trunk lines in Hungary also used by the overwhelming majority of intermodal services. This statement is basically confirmed by the ERIM 2020

study, which sees very few sections of the Hungarian rail network employed by an average of 70 per cent or more by 2020. These sections are marked orange in ***Figure 4-1***. It should, however, be qualified that although this means there will be sufficient capacities in general, this does not necessarily mean there will be capacity in the time-window required by intermodal service suppliers and their customers.

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



Source: K+P mapping; KombiConsult analysis

4.2 - Impact on terminal capacity

By the year 2020 intermodal terminals in Hungary will require transhipment capacity for an annual volume of 945,670 TEU in unaccompanied traffic. This is the consolidated volume of the expected intermodal shipments on domestic and bilateral international services and corresponds to 54 per cent of total intermodal traffic in Hungary in 2020, amounting to 1,754,330 TEU. Only these two market segments affect terminals located in Hungary since

we assume that transit shipments will be carried between terminals in other countries and basically not handled at Hungarian sites in the framework of gateway or hub systems.

In order to determine the handling capacity required to process the transport volume of 945,670 TEU it is necessary to translate the TEU into loading units (LU). Loading units are the objects which terminals physically lift and therefore the appropriate calculation parameter.

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

Current continental intermodal services are strongly focused on the chemical industry and therefore move a large amount of 20' (1 TEU) and 30' (1.5 TEU) tank and bulk containers. For this reason, the TEU-loading unit ratio is comparatively low, lower than on maritime services. We, however, expect that over the next decade intermodal operators will be successful in capturing general cargo freight markets, as explained in chapter 3. Then we will see a significant change in the pattern of loading units employed. To carry general cargo such as foodstuffs, dry cargo domestic containers, semi-trailers and swap bodies are required. An equivalent of a full truckload of such a continental intermodal shipment corresponds to on average of 2.3 TEU. We determined a 1.8 TEU-LU-ratio as the weighted average of dry cargo and bulk units (see ***Figure 4-2***).

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

Market segment	Volume 2020 (TEU)	TEU/LU ratio	Volume 2020 (LU)
Domestic	32,400	1.60	20,250
International Maritime	589,000	1.60	368,125
International Continental	324,270	1.80	180,150
Total	**945,670**		**568,525**

Source: KombiConsult analysis

The exercise shows that by 2020 Hungarian intermodal terminals will require handling capacity for 610,525 loading units to be able to process the expected transport volume of 945,670 TEU, of which a capacity of 42,000 units is required for transhipment purposes between UIC and wide gauge tracks in Zahony at the border to the Ukraine.

According to the findings of our investigations into the Hungarian logistics market, we estimate that intermodal traffic will continue to be concentrated in the Budapest transport area. Transhipment sites should provide consolidated annual handling capacity of about 495,000 loading units. This is 87 per cent of the total required capacity. Depending on the flow factor – a flow factor of 1 means that a handling track is used for one daily train only (inbound/outbound service) - the existing terminals in the area provide an annual capacity of 236,000 or 473,000 loading units. Here we assume that the terminal at Bilk will have completed the current expansion measures. If the terminals were capable of ensuring a flow factor of 2, the gap between existing and required capacity would be very small. If not, for example if there were a lack of parking tracks or interim storage space, an additional transhipment capacity of up to 260,000 loading units would be required to be built in the Budapest area (see ***Figure 4-3***).

The only two other locations, which, from today's perspective, we expect to a play a role in intermodal traffic in Hungary, are Kicskemét and Sopron. Sopron has ample experience in intermodal traffic. We therefore assume that some services will call at Sopron even if the location will not have a great deal of local volume and the terminal is in the catchment area of other sites. Based on our calculations the existing terminal has sufficient capacity to accommodate rising handling volume.

We expect that, in conjunction with the establishment of their new plant, Mercedes-Benz will require the construction of a logistics centre and an intermodal terminal in the vicinity of the plant. Presumably the new production site will be integrated into the Mercedes-internal production network and also receive large volumes from suppliers. In the context of sustainable logistics and in an effort to secure capacities for a reliable supply chain, Mercedes is likely to aim to carry a significant percentage of total volumes by rail in particular on intermodal services - also because for the latter a Mercedes truck could be employed for pick-up and delivery services.

Figure 4-3: Handling capacity need of intermodal terminals in Hungary by 2020

Terminal	Handling tracks	Annual handling capacity 2007		Capacity need 2020	Capacity enlargement need 2020
		Flow factor: 1	Flow factor: 2		
	(m)	(LU)	(LU)	(LU)	(LU)
Budapest transport area		236,625	473,250	495,125	21,875 -258,500
Budapest BILK	4,900	183,750	367,500		
Budapest Mahart	1,060	39,750	79,500		
Törökbalint	350	13,125	26,250		
Kicskemét		-	-	34,150	34,150
Sopron CCT	1,400	52,500	105,000	39,250	-
Zahony		-	-	42,000	-
Total		289,125	578,250	610,525	n.a.

Source: KombiConsult analysis

5. RECOMMENDATIONS FOR INTERMODAL STRATEGY

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

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

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

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

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

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

(4) Seize the opportunities created by climate policy

(5) Seamless international intermodal services:

- Interoperability,
- Synchronisation of processes between railways and operators,
- Data interchange; tracking of shipments.

(6) States shall ensure level playing field between road and rail concerning infrastructure access charging.

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