Levegő Munkacsoport

Shifting freight from truck to rail, based on Hungary's experience

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Executive Summary

The aim of this study is to investigate the possibilities of shifting freight transport from road to rail in Hungary. (It is also very important to improve the efficiency and reduce the environmental impact within the road freight sector. However, this is out of the scope of the present study.)

For a unit of freight performance, road transportation requires ten times more energy and six times more land area than rail transportation, while it causes several hundred times as many accidents with personal injuries. Therefore, shifting freight from road to rail would have very beneficial effects for the environment and also for the health of the population.

Road and railway subsectors account for some 85 per cent of the overall freight transportation performance in Hungary. This means that the competition between road and railway transportation is a predominant feature of the freight transportation sector. Recent decades saw a rather quick expansion of the market share of road haulage. The main reasons for this trend were that, on the one hand, the state carried out major improvements in Hungary's road infrastructure, while it let the country's railway infrastructure become degraded; and on the other hand it granted very substantial (mostly indirect) subsidies to road haulage, and at the same time it drained away considerable funds from railway freight transportation.

This policy lead to a deterioration of railways' rolling stock and track. The network of Hungarian Railways, with a typical permitted axle load of 210 kN, is the weakest link of the chain within Central Europe, as opposed to the neighboring countries and Western Europe, where an axle load of 225 kN can be used on the main transportation routes.

Moreover, after the change of the political system in 1989-1990, heavy industries and much of the traditional trade collapsed in Central and Eastern Europe as well as in the (former) Soviet Union, which substantially reduced the need for bulk cargo.

Road transport users do not pay a very large part of the costs of their activity even today. For example, in Hungary each year heavy trucks cause costs amounting to several billion Euros which are not paid by the operators of these vehicles, but by the whole society. All these costs should be internalised into the prices in accordance with the polluter pays principle and with the principles of market economy. These principles are laid down in the Treaty of the European Union. This means among others, that the construction of new roads should be also financed in this way instead of putting more burden on the EU taxpayers. In spite of these principles, the structure of the EU aid for transport enhances processes in Hungary which are unsustainable socially, economically as well as environmentally. Environmental NGOs have already warned the European Commission, the European Parliament and the Hungarian government about these problems, however without real results. It is known that the European Commission has tried on many occasions to refuse those demands of national governments which consider only the short term interests of certain business circles and which are unsustainably on the long term. However, finally the Commission ceded too much to the pressure of national governments, even though these demands violate the basic principles and even the legislation of the European Union concerning market economy, environment and sustainability.

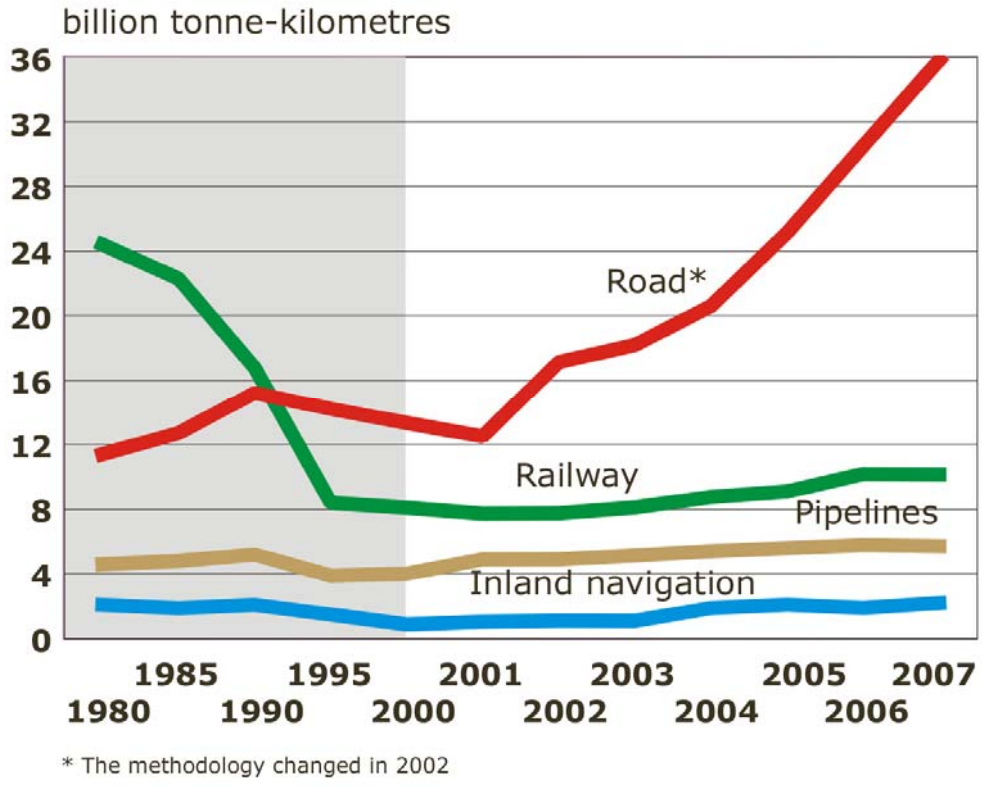
The present study analyses in detail the possibility of transferring various types of goods from road to rail. It comes to the conclusion that, in the short term, without substantial changes (including changes in pricing) and investments, only about 2 to 3 percent of the freight (measured in tonnes) transported by road can be shifted to rail. However, with appropriate measures, this proportion can be raised to 12 percent. As most of the goods shifted from road to rail would come from long-distance transport, the shift measured in tonne-kilometers could be much greater and might even reach 25 to 30 percent. This would substantially reduce the environmental pollution caused by transport. The necessary measures to achieve this aim include first of all a proper pricing system where road freight transport pays its full costs, and the railways are compensated for the losses due to the market distortion caused by the inappropriate pricing and investment policies by the government during the past decades.

1. Analysis of the Current Situation

1.1. Freight transportation performances and directions

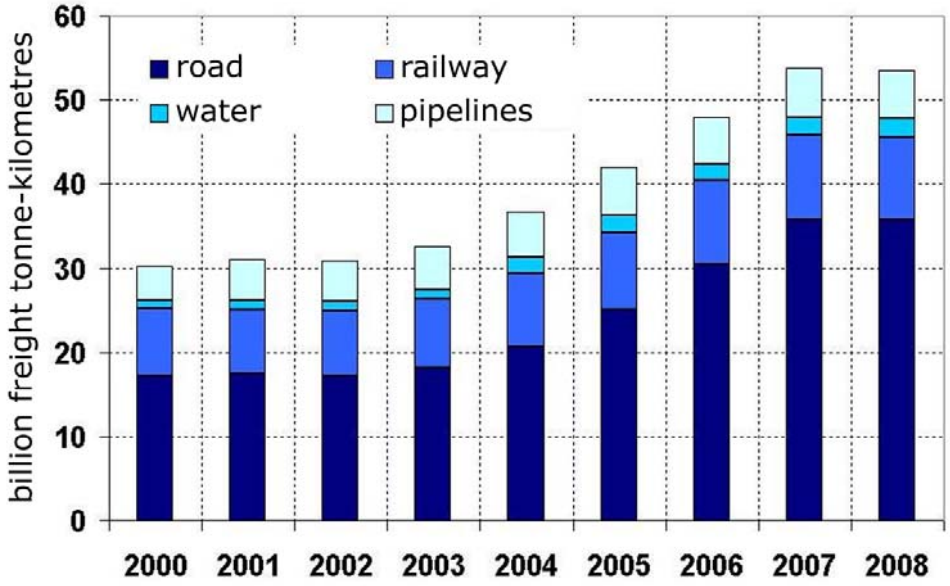
Hungary's relatively small geographical area is crossed by four pan-European railway corridors and by two ERTMS (European Rail Traffic Management System) corridors, which allow connections between Western Europe and the Balkan, as well as between South-West Europe and the CIS.
The Hungarian transport network is Budapest-centred and radially arranged. Transversal connections are either missing or are of poor standard both in the railway network and the road network. Density of the core network is adequate, but for the most part the technical standard of its construction and its current condition do not meet traffic needs, and are significantly below the average of the EU-15 (the old Member States).
Following a severe decline after the change of regime in 1989-1990, freight transportation performances grew by nearly 80 per cent from the turn of the millennium until 2007, reaching 53.8 billion tonne-kilometres. This performance slightly decreased in 2008 due to the general economic recession. Almost 67 per cent of the freight volume was transported by road, 18 per cent by rail, 11 per cent through pipelines and 4 per cent by water (Figures 1 and 2). In recent years, road haulage achieved the highest growth rate. (These volumes do not necessarily represent economic performances that are realized within Hungary.)

Figure 1: Changes of freight transportation performance by transport modes in Hungary (1980-2007)



Source: KTI (Institute For Transport Sciences Non-Profit Ltd.), Central Statistical Office of Hungary, 2008

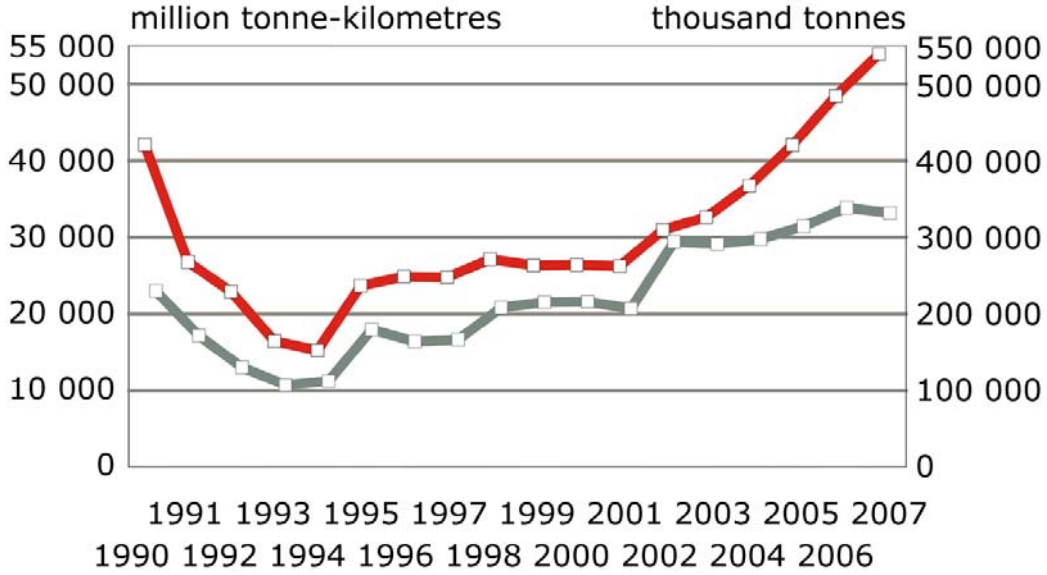
Figure 2: Freight transportation performance in Hungary by transport modes (2000-2008)



Source: Central Statistical Office of Hungary

Overall, the quantity of performed freight tonne-kilometres increased at a much quicker rate than the volume (tonnes) of transported goods. This means that the goods quantity carried only grew to a relatively small extent, but these goods were transported over an increasingly long distance (Figure 3).

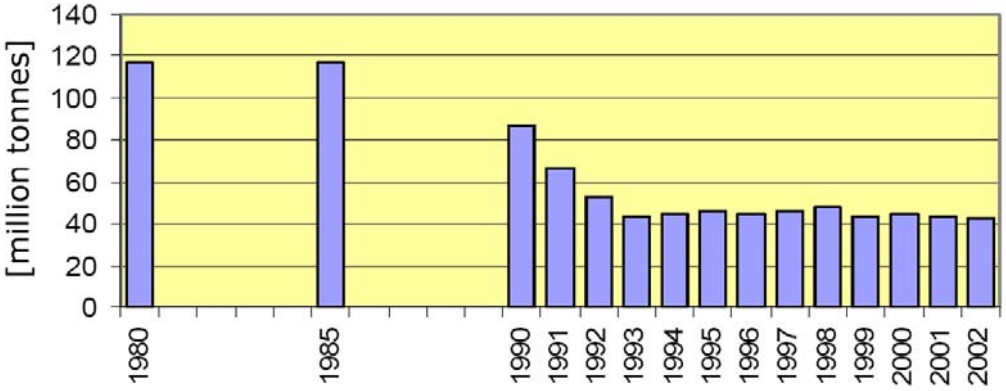
Figure 3: Development of Hungarian freight transportation performance as measured in tonne kilometres and tonnes (1990-2007)



Source: KTI (Institute For Transport Sciences Non-Profit Ltd.), Central Statistical Office of Hungary, 2008

Railway freight transportation achieved its peak performance at the end of the 1970s; thereafter, its level started to fall at an ever accelerating rate. Moreover – following the change of regime – with the emergence of market economy, various unfavourable impacts hit railway transportation simultaneously as a shock, and the annual volume of transported goods dropped to about one-third part of its earlier level (Figure 4).

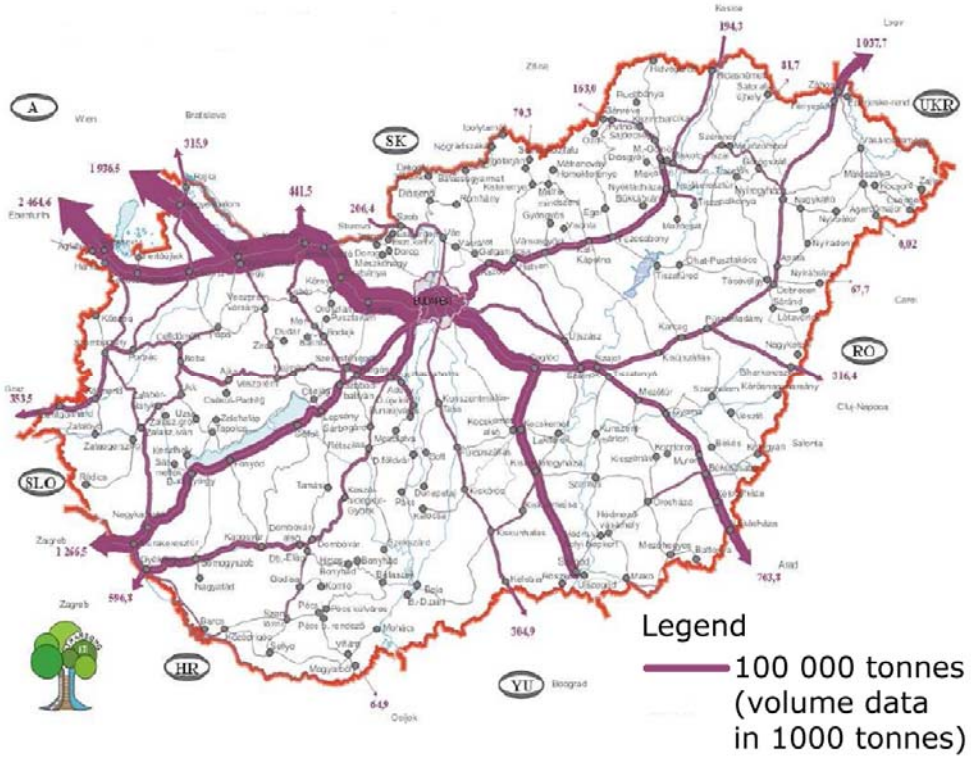
Figure 4: Total freight transportation performance of Hungarian State Railways Co. (MÁV) between 1980 and 2002



Source: KTI (Institute For Transport Sciences Non-Profit Ltd.) Transorg

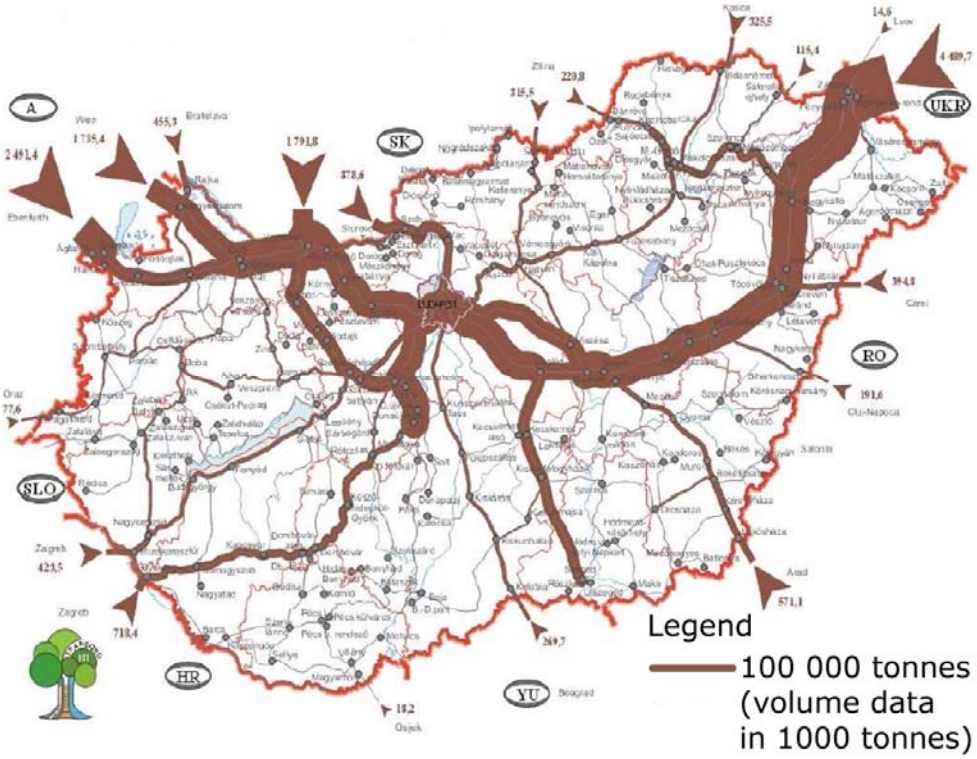
As regards the direction of railway-transported goods flows, export traffic is mainly related to Hungary's central and north-western parts (Figure 5), while within import traffic the north-western and south-eastern directions are predominant (Figure 6). Transit traffic's primary transport direction is northwest–southeast (Figure 7). The volume of transit traffic – with the exception of imports by rail – significantly exceeds the volume of export and import traffic.

Figure 5: Railway-transported export goods flows in 2001



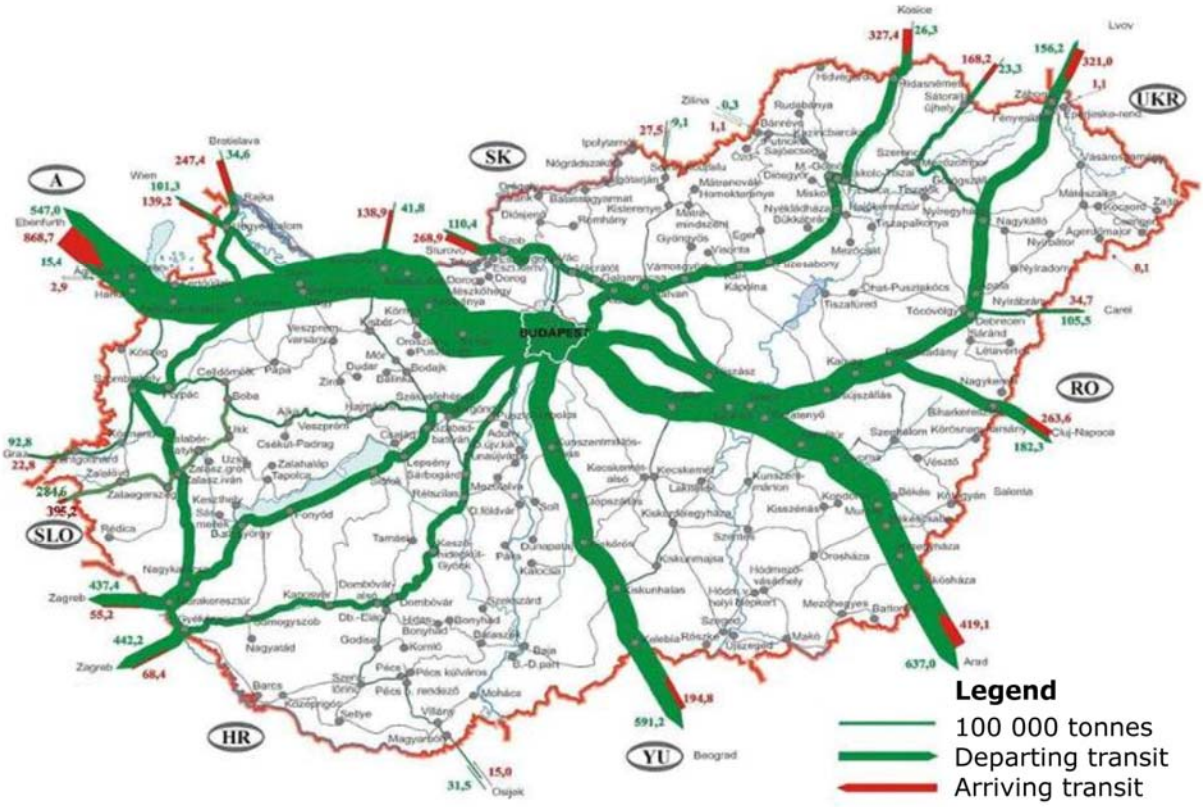
Source: KTI (Institute For Transport Sciences Non-Profit Ltd.) Transorg

Figure 6: Railway-transported import goods flows in 2001



Source: KTI (Institute For Transport Sciences Non-Profit Ltd.) Transorg

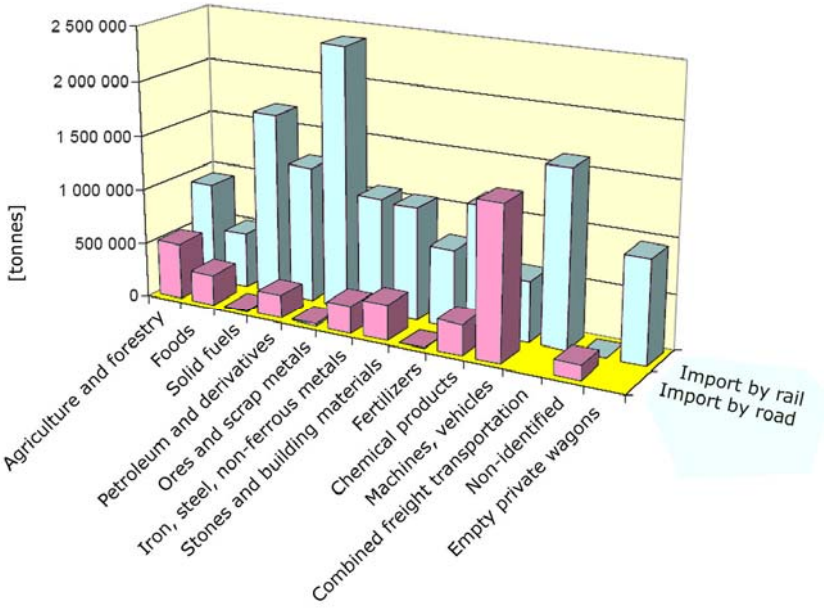
Figure 7: Railway-transported transit goods flows in 2001



Import railway traffic (Figures 8 and 9) mostly involves low value-density goods (e.g. raw materials), while the export goods traffic (Figures 10 and 11) is dominated by products of medium to high value-density.
As regards various groups of materials, significant changes have not occurred either in road haulage or in railway transportation during the last 15 years. Consequently, the latest available data (from the year 2001) also reflect the current proportions of different groups of materials.

When comparing annual performances, it appears that the volume of export by road surpassed by some 24 % the volume of export by rail. However, the railway volume comprises the following two particular elements, too:
(1) combined freight transportation, which is a common product of the two subsectors (transportation of goods by road to and/or from the railway, and forwarding of the goods partly by the railway); this includes also the rolling highway (RoLa)[1];
(2) private wagons[2], which are not actual goods, but the forwarding thereof brings to the railways revenues equivalent to freight transportation.
Without these performances, road export would exceed rail export by 75 %.

Figure 8: Road and railway import freight traffic by groups of materials in 2001 (tonnes)



1 **Rolling highway** (in German: *Rollende Landstrasse*; its abbreviation, RoLa is used internationally) is the transport of heavy trucks by rail. The goods are closed in the trucks. The truck drivers travel on the same train in a separate wagon with seats and beds.
2 **Private Freight Wagons** (called **P-Wagons** for short) are railway wagons developed, built and managed by private operators. In a close working relationship with shippers and railways, the owners of P-wagons have provided a response to the need for tailor made distribution services throughout the 20th century. They finance and maintain by their own means a very large wagon fleet and free the railways of substantial investment and maintenance costs. Major innovations are brought about by private wagon development in European countries. Without these customized wagons the large scale bulk transport of chemical products, petroleum products or foodstuffs is inconceivable. With innovative wagon types, complete new markets have been found for the railway transport. (Source: http://www.uiprail.org/private_wagons.php)

Figure 9: Distribution of railway import freight traffic by commodity groups in 2001

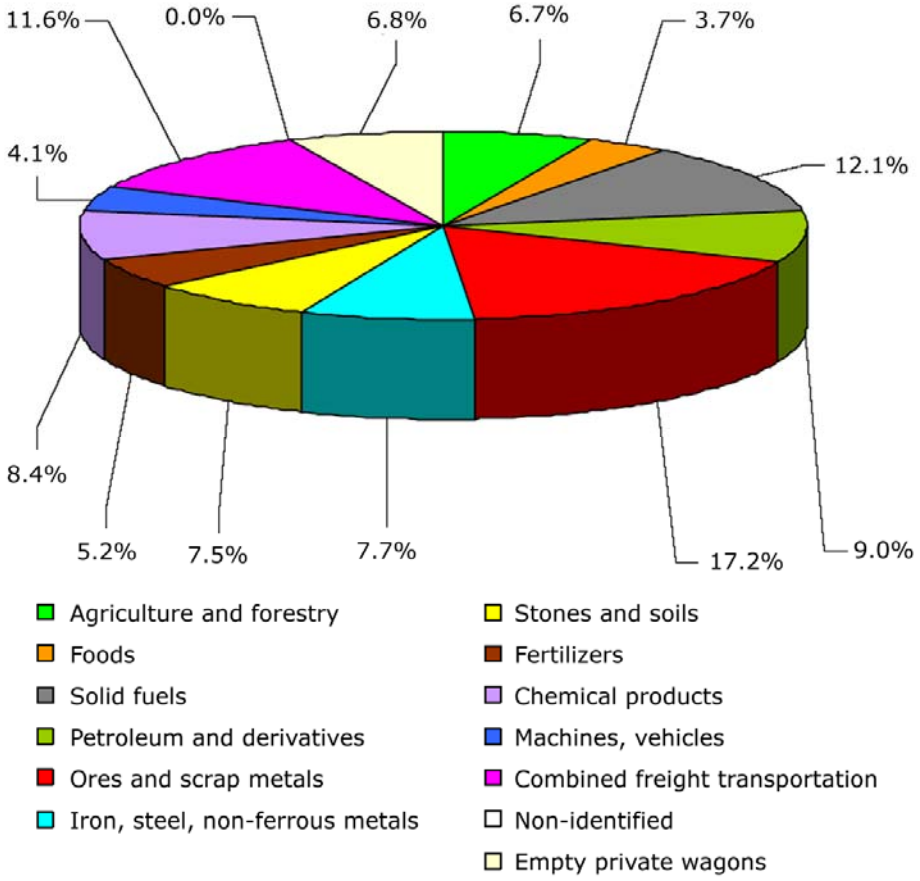


Figure 10: Road and railway export freight traffic by groups of materials in 2001 (tonnes)

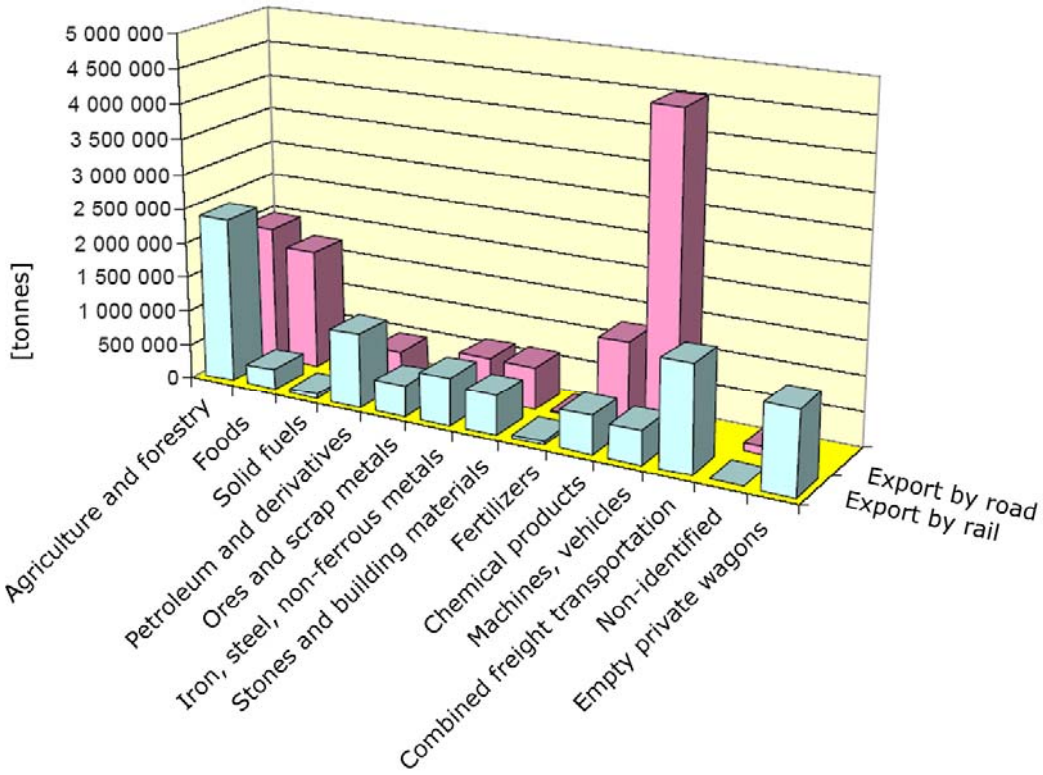
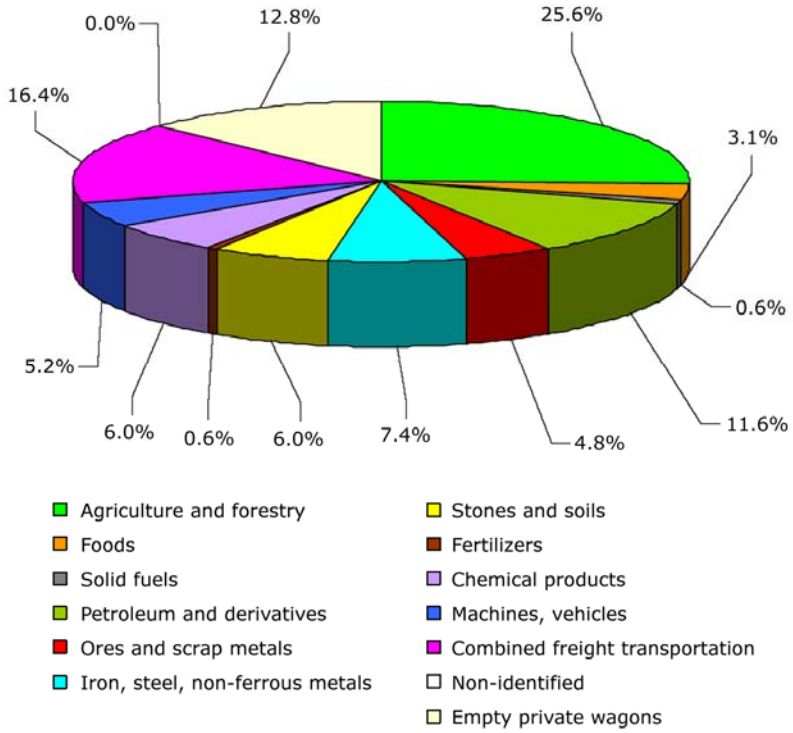


Figure 11: Distribution of railway export freight traffic by commodity groups in 2001



In the period prior to the change of political regime in Hungary (in 1989-1990), goods were brought to customers through the supply chain via central supply systems. These distributing companies usually operated in Budapest. The distributing system of that time induced massive concentrated movements of goods, enabling railway wagon-loaded and containerized (medium and large-sized containers) freight transportation within inland goods forwarding. The railways' potential was further strengthened by the underdeveloped motorway network, as well as by the small size and lack of modern road vehicles.
In that period, unprocessed primary materials represented substantial transport volumes, especially in metallurgy, mining and sugar manufacturing, as well as in the milling industry and the manufacture of building materials.
As a consequence of the establishment of market economy and the closing of privatization processes in Hungary, the transportation need of unprocessed primary materials dropped significantly. Metallurgy today requires much less raw materials; mills are served and supplied almost entirely by road; within the building and construction industry, the large factories producing pre-fabricated building panels were closed; from among the former Hungarian sugar factories, only one remained; and also the domestic use of coal by households fell to just a fraction of its earlier level thanks to the household gas supply programme. This process necessarily increased the proportion of goods with higher value and higher level of processing within the total freight transportation. On the other hand, the large-scale development of Hungary's motorway network and the surging number of modern road vehicles also contributed to a rise in the share of road haulage – in line with Western European trends.
In recent years, within the rail-road and rail-water combined freight traffic there has been an ever growing demand for the transportation of high value goods, which trend was further strengthened by the manufacturing of electronic and clothing products in the Far East.
Pilferage risks of the cargo during transportation are not any smaller on roads than on the railways. Rail Cargo Hungaria ensures property protection accompaniment for the trains.
We cannot precisely determine how much less goods were transported by rail as a consequence of the growing share of higher value freight. We are not aware of any research con-

ducted on the subject. We can safely say, however, that this trend had a significant impact on the Hungarian railways.
Again, rail traffic was adversely affected by the fact that the distribution centres of multinational trading companies (shopping malls) in Hungary (Tesco, Auchan, Cora, etc.) were not located along railway lines, but rather next to road junctions, without any possibilities of rail service.
Considering the entire goods structure, imports by rail exceeded by around four times the level of imports by road. Even if we do not take into account combined freight transportation and the volume of empty private wagons, in national data the multiplier is still 3.3 in favour of the railway goods quantity.

When comparing railway export by commodity groups, two new categories appear in addition to those in the distribution of road export:
(1) combined freight transportation, which includes the traffic of containers, swap bodies and semi-trailers, as well as the RoLa traffic; and
(2) the traffic of empty private wagons, which, despite its considerable volume, cannot be classified as freight traffic.

Combined transportation and empty private wagons represent 18.4 % within railway import traffic, which would be by 1.5 million tonnes less if only the net freight traffic was taken into account.
The railway transportation of containers, swap bodies and semi-trailers increased by nearly 50 per cent as from the turn of the millennium, and in 2007 it totalled 3.6 million tonnes.

As regards the freight forwarding streams between Western Europe and the Balkans, as well as between Western Europe and the CIS, Hungary enjoys a logistically favourable geographical location; however, keen competition emerged with the railway lines of the neighbouring countries (see Figure 12). Hungary has to compete with these routes in order to retain its traffic and/or to increase its share. Appropriate value-added services and pricing can reinforce the competitive position of the Hungarian railways.
In the Balkan relation (Western Europe–South-East Europe) a suitable alternative is offered by the route bypassing Hungary to the south (Graz–Zagreb–Belgrade–Istanbul/Thessaloniki).
In the CIS (east-west) relation, the route crossing Slovakia (Uzhgorod–Kosice–Zilina–Vienna) presents a strong competition. It is to be noted that the Russian Railways (RZD) recently (on 6th April 2010) signed a quadrilateral agreement (between Austria, the Ukraine, Slovakia and Russia), which makes preparations for the financial feasibility study of the wide-gauge railway line connecting Kosice and Vienna (the study is carried out by Roland Berger Strategy Consultants).
By extending the wide-gauge railway line up to Bratislava and up to Vienna, respectively, it is aimed to establish a competitive direct railway link between European countries situated to the west of the CIS, and Russia and the Asian countries, respectively. The elimination of reloading or axle-changing may indeed halve the transport times from these areas and Western Europe (and its ports): they may be reduced from the current 30 days to just 14 days. It is expected that by 2025 the transport volumes may reach 23.7 million tonnes on the Kosice–Bratislava railway line, and 15.5 million tonnes on the Bratislava-Vienna railway line.
In the Polish–Romanian relation, freight forwarding over normal-gauge railway lines through the Ukraine may also pose serious competition for the Hungarian rail transit.
Transport routes that are rivals for the Hungarian railways are the following:

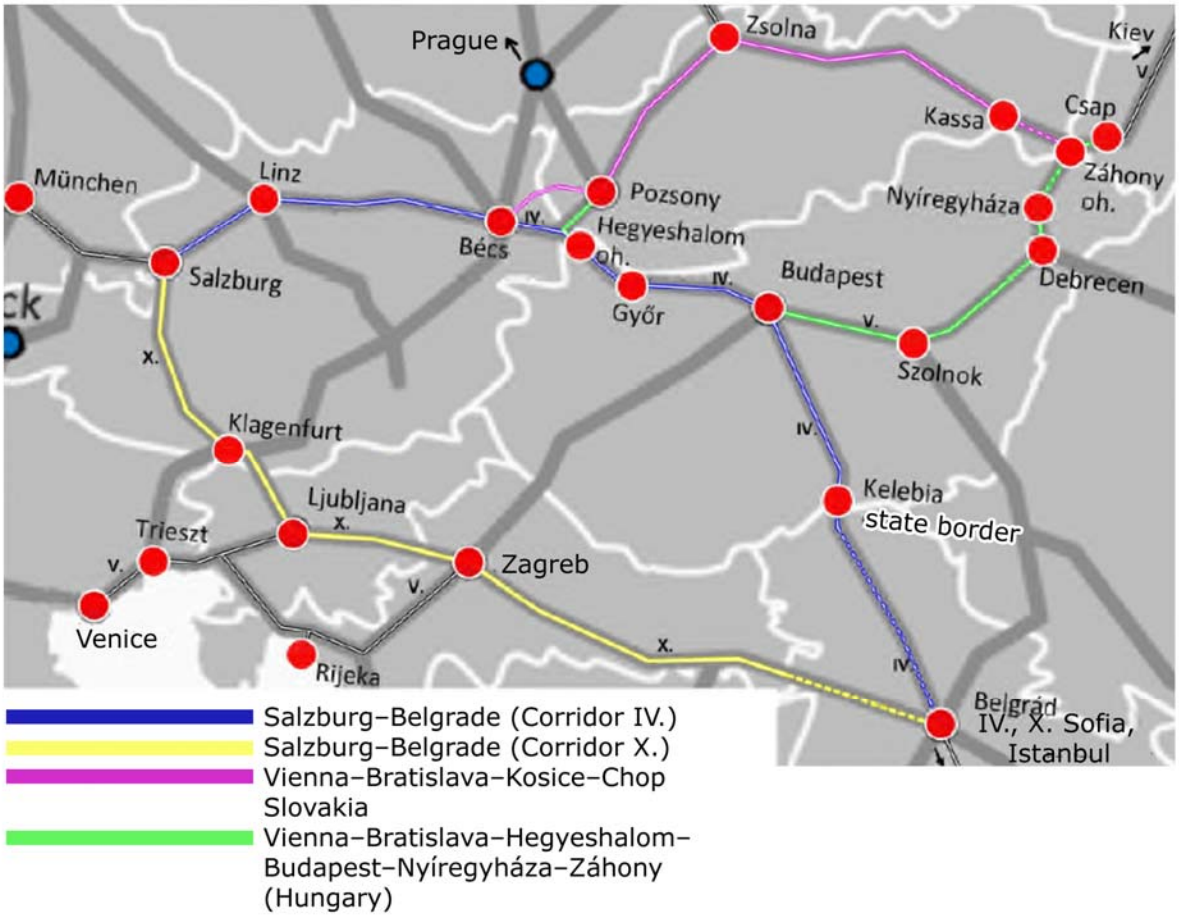
- CIS–Austria / Western Europe: through Slovakia. The track utilization charges of the Slovakian railways are lower than the Hungarian ones, and Slovakia is planning to cut further back these charges (the representative of the Slovakian Transport Ministry announced at the UIC project meeting held in Vienna on 25th March 2010 that they were going to drastically reduce their track utilization charges in the near future). Railway tracks in Slovakia have a higher load-bearing capacity ((railway line category “D” = maximum axle load of 22 tonnes) than in Hungary (railway line category “C” =

maximum axle load of 20 tonnes). The Slovakian equivalent of the Záhony intermodal re-loading facility (Cierna nad Tisou) possesses adequate re-loading and storage capacities (its bulk goods re-loading capacity has recently been enlarged). They built up strong customer relations, primarily in wood transportation.

- Austria/Western Europe–Balkan: offers an appropriate transportation possibility through Slovenia, Croatia and Serbia (Corridor X). Two-thirds of the trains with Greek, Turkish and Bulgarian destination are traversing Hungary, while one-third of the traffic uses Corridor X.
- Italy/Slovenia–Romania: through Slovenia, Croatia and Serbia. In general, direct destination train traffic is being implemented, under competitive terms.
- Traffic in the direction Poland/Czech Republic/Slovakia–Romania: through the Ukraine, over normal-gauge railway lines. Forwarding through this route has been simplified and traffic volumes have increased in recent years.

In the wake of the EU accession process, and in parallel with the economic upturn prevailing up until 2008, railway traffic levels generally increased both in Hungary and on the bypassing routes. We are not aware of any major traffic diversion within the transit traffic.
Within intermodal traffic, the transit traffic crossing Hungary towards Greece and Turkey has remained significant. However, great interest has also been shown for train traffic in Corridor X, which bypasses Hungary to the south.

Figure 12: Transport routes competing with Hungarian railways in the west-east relations



The corridors referred to above are the so-called Helsinki corridors (see Figures 13 and 14).

Figure 13: The Helsinki corridors and the TEN-T[3] network in Hungary (railways)

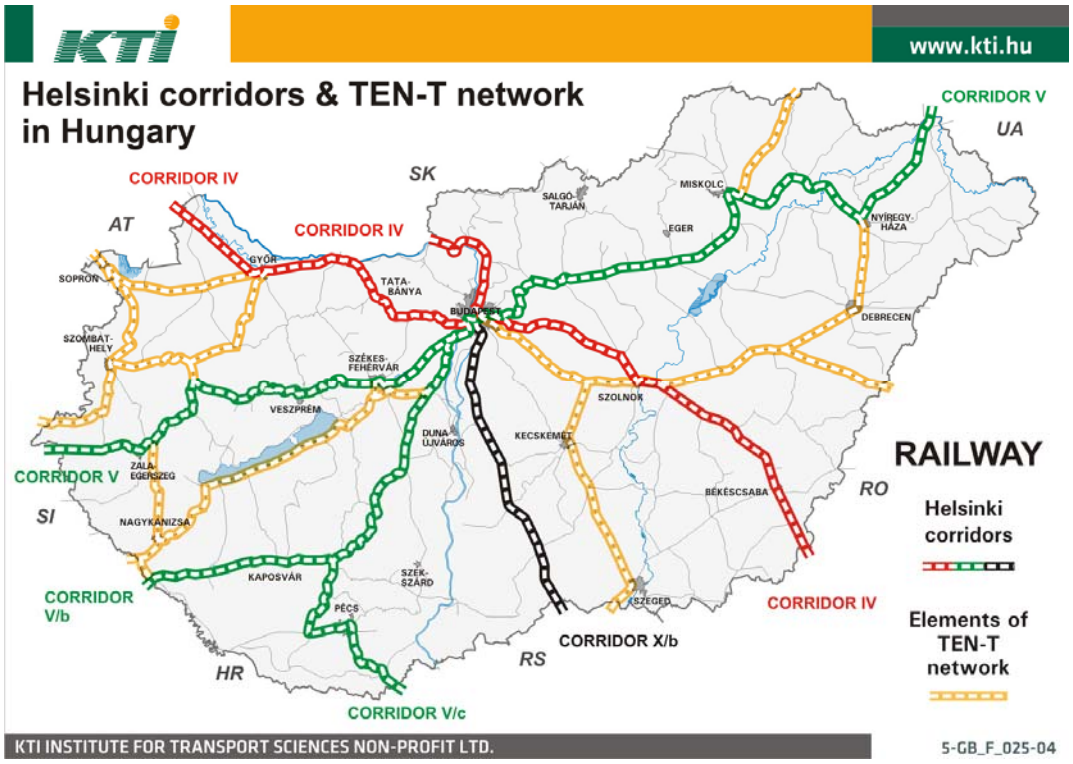
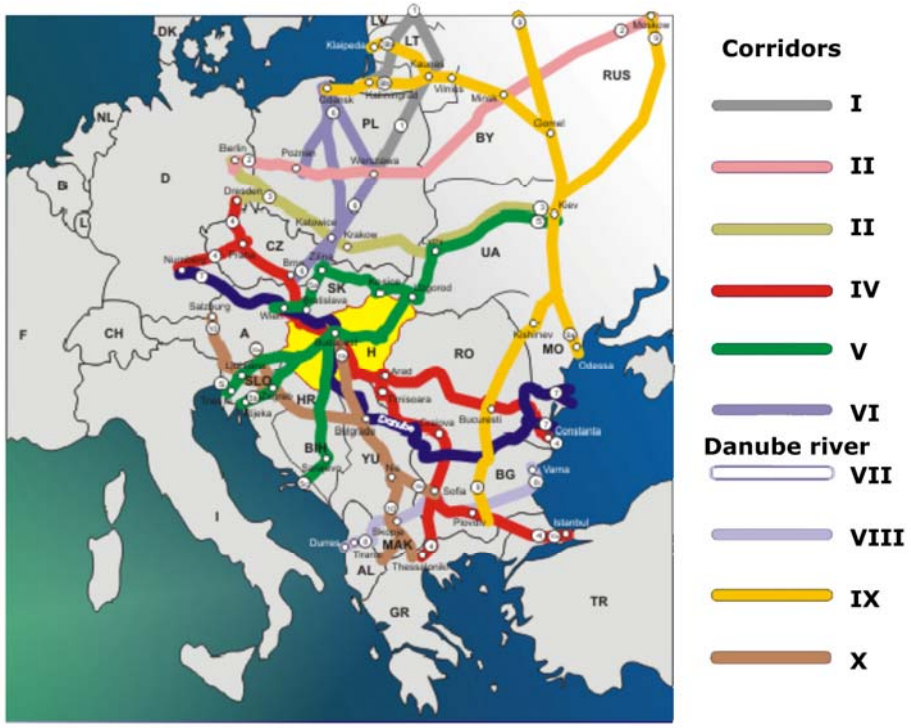


Figure 14: The Helsinki corridors and the TEN-T network in Hungary in European perspective (railways)



In 2008, RoLa trains carried almost 37 thousand heavy trucks, which diminished loads on the roads by nearly 1 million tonnes. The traffic of RoLa trains dropped significantly after Hun-

[3] Trans-European Network – Transport

gary's EU accession, i.e. as from 2004; then, as a consequence of the accession of Romania and Bulgaria, another serious downturn took place in 2007 (Figure 15). This was caused by the fact that in the case of carriers of EU member states, road haulage permits may not be required as a precondition for the operation. In the new member states, this abolished the restrictions that formerly imposed substantial costs upon carriers, making it worthwhile for them to use RoLa transportation for which haulage permits were not required. Under the new conditions, even the current level of RoLa can only be sustained thanks to the state subsidies granted for the operation. However, the cutback of these subsidies may soon lead to the complete disappearance of RoLa transport in Hungary.

By providing these subsidies, the Hungarian transport policy aims to make the Ro-La traffic competitive in a manner which is similar to how other member states are doing it in the European Union. The budgetary funds needed for maintaining the Ro-La traffic will more than pay off as a result of the reduced maintenance costs of roads and the prevented costs of accidents and congestion.

The state subsidies granted to Hungarian Ro-La traffic have a term of four years, with gradually decreasing amounts for each of the four individual years. These subsidies are annually determined by the Hungarian Parliament in the relevant State Budget Act: for 2008, subsidies in the amount of HUF 900 million were allotted; in the course of 2009, the originally planned sum of HUF 730 million was cut back to HUF 500 million because of the economic crisis; the planned sum for 2010 is HUF 700 million; and for the year 2011 it is HUF 650 million.

The subsidization programme was approved by the European Commission with its Decision N 78/2008.; C(2008)3185 issued in Brussels on 2nd July 2008.

All over Europe, combined freight transportation is considered to be an activity of outstanding importance. Numerous legislative measures were introduced by the European Union and by several individual states with a view to facilitating and improving conditions for combined freight transportation.

In Hungary any railway company is eligible for subsidies, which has a registered company seat in the EU, in the European Economic Area or (in the case of an international treaty or reciprocity) in other states concerned, and which company is entitled to carry out railway goods forwarding on the area of the Republic of Hungary and possesses an operation licence issued in accordance with Directive No. 95/18/EC, and which concludes a contract with MÁV Zrt. for the purpose of making use of the subsidy and meets the requirements specified therein, and which is able to provide creditworthy documentation about the utilization of the subsidy.

Grant amounts can only be used in the course of the given budget period, for the subsidization of rolling highway (Ro-La) trains departing from, or arriving to, Hungary, in respect of the railway track section used on the area of the Republic of Hungary .

MÁV Zrt. makes the subsidy amounts payable in the arrival order of the requests.

The highest subsidy amount is EUR 6.00 per train kilometre, but not more than EUR 2500 per train, the amount of which in a given subsidization period may not exceed the amount of grants remitted by the Hungarian Ministry of Transport, Telecommunication and Energy for the given subsidization period and the amount of grants brought forward from the previous subsidization period.

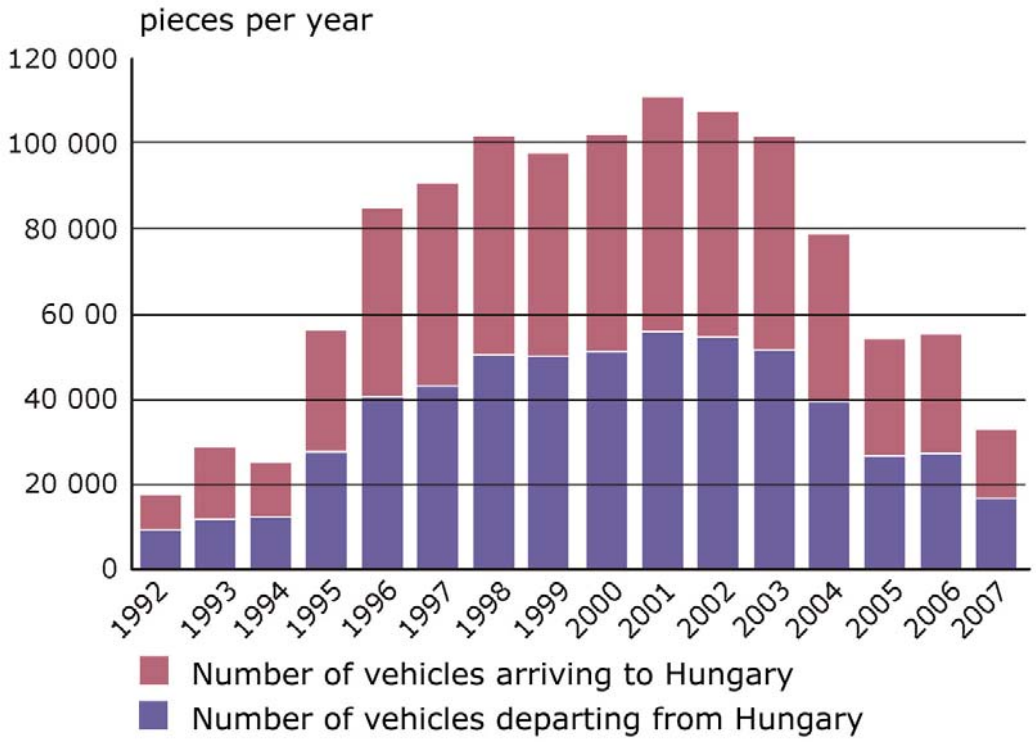
The amount of the grant passed on by the subsidy manager, together with subsidies from other sources (including subsidies granted by other EU member states), for one truck may not surpass 30 per cent of the costs connected to the transport relation involving combined freight transportation.

It is mandatory to pass on fully the highest amount if on the average at least 15 heavy trucks are forwarded on a train in the accounting period. If the calculated average truck number remains under that level, a proportionately reduced part of the highest amount is to be passed on.

In recent years, it was MÁV Cargo Zrt./RCHUN that was able to make use of the Ro-La grant applications, since Ro-La combined rail transportation was carried out by this company, and traffic organizing work was performed by Hungarokombi Kft.

The state-owned Hungarian State Railways Co. (MÁV Zrt.) sold its freight transportation company, MÁV Cargo Zrt., which was purchased by the Austrian state-owned Rail Cargo Austria (RCA). At present, it operates under the name Rail Cargo Hungaria (abbreviated as RCHUN). The ownership structure of Hungarokombi changed on several occasions; currently it is in the majority (72 %) ownership of the RCA Group. In practice, the subsidy amount was directly received by the trucking company through the freight allowance. In theory, Ro-La subsidies can be utilized by any railway company that performs rail transportation of trucks in Hungarian relation.
Today, only foreign heavy trucks participate in the Kiskundorozsma–Wels relation Ro-La traffic. Within the overall traffic, Turkish trucks represent 90 %, while Romanian, Serbian and Bulgarian goods vehicles account for the remaining 10 %.

Figure 15: Development of Hungarian RoLa traffic (arriving and departing traffic) between 1992 and 2007



KTI (Institute For Transport Sciences Non-Profit Ltd.), Hungarokombi Ltd., 2008

Hungary, as a land-locked country, mainly used North-West European ports to carry out its overseas freight traffic. With the saturation of these ports, and in the wake of the EU enlargement, the ports of the Adriatic Sea and the Black Sea gain more importance than previously. Through related transport infrastructure developments and appropriate infrastructure charges, Hungary may become one of the hinterlands for these ports. Within Hungary's overseas foreign trade traffic, the ports of Hamburg, Koper, Rotterdam, Bremen and Triest play a major role; their efficient operation may influence the competitiveness and market radius of Hungarian goods. The position and role of the Trans-Siberian Railway and other alternative railway lines is also becoming ever stronger, as they allow quicker freight transport between Asia and Europe than ships. This may strengthen the growth potential of re-loading districts situated along permanent Schengen borders (e.g. Záhony).
Figures No. 5, 6 and 7 illustrate the directions of Hungarian export-import and transit freight transportation in the last decade. Even today, these are the most important transport flows.

1.2. Analysis of the situation of road and railway transportation competition

Road and railway subsectors account for some 85 per cent of the overall freight transportation performance; this means that the competition between road and railway transportation is a predominant feature of the freight transportation sector. Recent decades saw a gradual expansion of the road haulage subsector's market share. The main reasons for this trend were that, on the one hand, the state carried out major improvements in Hungary's road infrastructure, while it let the country's railway infrastructure become degraded; and on the other hand it granted very substantial direct and indirect subsidies to road haulage, and at the same time it drained away considerable funds from railway freight transportation. Moreover, after the change of the political system in 1989-1990, heavy industries and much of the traditional trade in collapsed in Central and Eastern Europe as well as in the (former) Soviet Union, which substantially reduced the need for bulk cargo.

Competition in the freight transportation sector involves the following market segments:

(1) Competition between subsectors (i.e. freight modes): the regulation thereof is a national and EU responsibility; the regulation should be focused on the safety of service provision, energy efficiency, environment protection and the issue of bearing the burden of external costs.

(2) Competition within subsectors: this is a competition of service providers working in the same subsector, with different sizes, domiciles business and offered service quality. Within this segment, the general rules of market competition prevail.

However, competition is not only going on between specific transportation subsectors, but also between countries, regions and national economies. Efficient operation of the transportation sector may significantly influence the economic competitiveness of individual countries, while its pattern, especially the share of polluting subsectors and the congestion of roads, also affects the livability of a country. Therefore, each and every problem of the transportation sector must be addressed with a complex approach, instead of treating them separately.
When the cost structure of railway freight transportation is compared with that of road haulage, in Hungary significant differences arise from the following facts:
– At present no road charges based on the distance covered and the degree of road use are imposed on road freight transportation. With the exception of expressways and some sections of other main roads, there is no road charge payment obligation at all. Road charges (where they exist at all) are time based (one can buy vignettes for 4 days, 10 days, a month or a year). These charges are very low: they do not cover by far even the road maintenance costs of the roads for which the charges are paid.
– The excise duties of fuels paid by road hauliers do not even cover the construction, maintenance and operating costs of the infrastructure they use. (This is particularly so in the case of vehicles with a permitted gross weight above 12 tonnes. Namely, road wear-and-tear is a function of the 7^{th} power of axle weight, so heavy trucks do much more damage to roads than light duty vehicles.) Moreover, road hauliers do not compensate for any of the environmental and healthcare costs caused by their vehicles (air pollution, noise, climate change, congestion, accidents).
Development and maintenance of the infrastructures of the subsectors also greatly vary: recent years have seen significant expansion of the expressway road network, as well as of the road network's accessibility and quality. On the other hand, the railway track network's total capacity – despite the EU investment projects actually completed up until now – has hardly changed at all; in fact, the railway network's quality and capacity deteriorated significantly owing to the unreliability and gradual cutback of track maintenance resources. However, regarding the magnitude of EU development resources it can be stated that in the period between 2007 and 2013, railway projects will only receive EU resources in a much less favourable proportion than road projects. Road projects will be granted EUR 3200 million (appr. HUF 860 billion), while railway projects will be granted around EUR 2500 million (appr. HUF 550 billion).

In addition to the foregoing, through PPP-schemes (Public Private Partnership) substantial quantities of private capital flew into road infrastructure investments (construction and operation of new expressways), whereas the railways' private capital attraction capacity is minimal. The reasons for this are the following:

- Road PPP schemes in Hungary are in fact tantamount to a type of extremely expensive state borrowing. So far the method used was that the state gave the right for construction and operation of the new motorway to a private company. The company built the motorway with loans (mostly from international financial institutions, first of all the European Bank for Reconstruction and Development). The Hungarian Government guaranteed the repayment of the loan. After the construction of the motorway was completed, the revenues of the private company came from the tolls on the road. Furthermore the Government committed itself to pay to the company all the costs not covered by the tolls, including the profits of the company. Such PPP-schemes were in fact tantamount to an extremely expensive borrowing by the Government.[4]
- The Hungarian Government has been ordering passenger transport services from Hungarian State Railways (MÁV) since decades and also determined the price of the tickets. The revenues from the tickets never covered the full costs of the services, but for a long time the state did pay the difference. However since the beginning of the 1980's the situation changed. Then the Government did not pay for the full sum of the difference, but ordered MÁV to cover its losses from its passenger transport with the profits of its freight transport. This led to a total deterioration of MÁV, because it lacked the means to maintain and modernize the tracks and the rolling stocks. Although the freight section of MÁV was privatised in 2008, the situation practically did not change even today. As it became impossible to directly regroup the profits of freight services to cover the losses of the passenger services, the Government applied a trick: it raised substantially the charges for the use of railway infrastructure. Now this charge is one of the highest in Europe. This measure further decreased the competitiveness of rail freight transport.
- There are many different railways of Europe which all have more or less different national characteristics from the geographical, technical and legal standpoints, which generally end at the frontiers of each country. This means, among others, also technical incompatibilities between the various railways and differences in their structure and organization. In many cases this makes cross-border operations quite cumbersome. Such problems practically do not exist for the road sector within the European Union. This situation often makes rail unable to compete with road just where it is most competitive (in principle): on long distances.

On the other hand, in connection with some railway development segments (for example electrification projects and railway station real property developments) attractive opportunities can be found even for the private capital. It is to be investigated and determined what sort of preconditions are to be met in order to improve the railway's above-mentioned conditions. It is reasonable that a well-considered resource allocation concept should be in place for the track railways, which would present the existing resource opportunities and the recommended utilization thereof.

The charges payable for using the railway tracks are proportional to the actually covered distance and the utilization of the track infrastructure and its related facilities. This means that the "user pays" principle is being effectively implemented within railway transport. In contrast, as already mentioned above, charges are payable only on a small part of the entire road network, and the amounts of these charges are very small.

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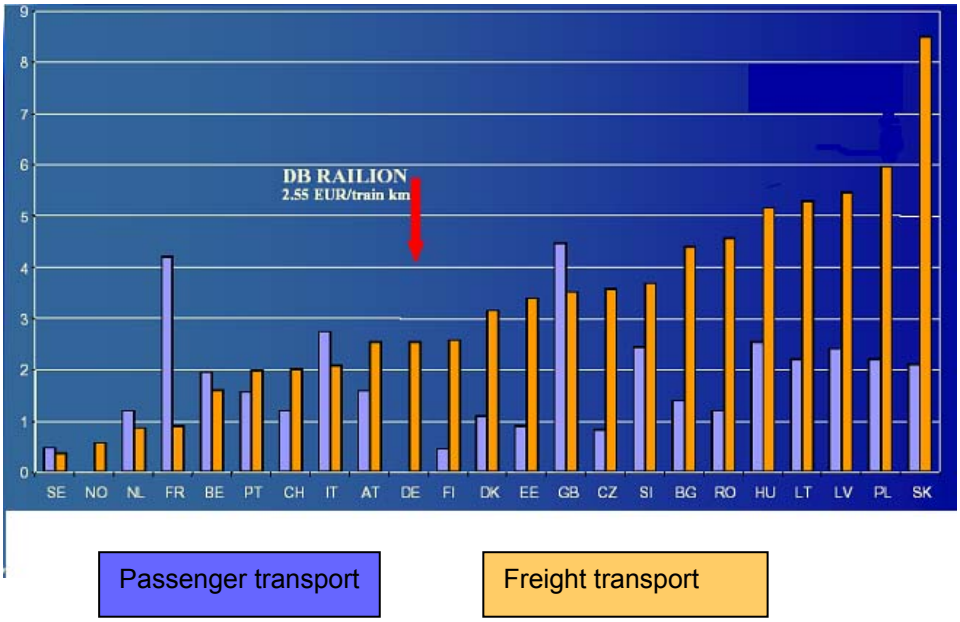
[4] Detailed description of PPP in Hungary can be found in CAAG's study, **Public-Private Partnership: Trick or Opportunity?** (2006), http://levego.hu/kiadvanyok/ppp_public_private_partnerships_trick_or_opportunity See especially Chapter IV.: "The PPP model of motorway constructions in Hungary – theory and practice"

Several studies have shown that the externalities arising from railway transport are only less than one-fifth part of those resulting from a similar road performance, while in terms of local air pollution, when comparing electrified railway traction with the pollutant emission of a "Euro 4" class truck, the result is fifteen times less emission.[5]
Comparing the real costs and expenses of rail and road freight transport is a very complicated task. Recently the Ministry of Transport, Communications and Energy commissioned the Institute for Transport Sciences and the Clean Air Action Group to make detailed calculation to determine these figures. This work is to be completed until June 2010.
It is also important to consider that virtually no compensation whatsoever is paid by the operators of those road vehicles that drive through Hungary but do not purchase any fuel here. This is generally characteristic both for foreign trucks and Hungarian trucks carrying out transport across the border; due to the lower fuel prices in neighboring countries, these trucks fill their tanks there.
While the condition of the railway track infrastructure – which essentially determines the standard of railway services – has degraded, current Hungarian track access charges are among the highest within the European Union (Figure 16), and the railway tracks' accessibility is also cumbersome. Thus, the railways' private capital involving capability, standard and opportunities are pre-determined; this is one of the reasons why the demand for its services is relatively modest at present. This holds true both for freight transportation and passenger transport.
Cumbersome accessibility of railway tracks means that much more official licences are required for it, and that these licences are significantly more expensive and more time-consuming than in the case of road haulage. Just the costs of obtaining the railway company licence and the safety certificate required for starting such an activity may come up to HUF 20 million, with a lengthy (possibly decade-long) payback period.
The other reason is the unsettled and immature legal environment prevailing in Hungary. In the near future, already a second amendment will be issued to the Railway Act of 2005, and neither of these modifications favours the newly established enterprises. On the other hand, the issuance of statutes to regulate the Railway Act's implementation is being delayed (e.g. a statute to regulate the training, education and testing of railway workers is still only in its preparatory phase).

[5] For the European Union the most authoritative study is the following: IMPACT (Internalisation Measures and Policies for All external Cost of Transport), CE Delft, 2008, http://www.ce.nl/publicatie/deliverables_of_impact_%28internalisation_measures_and_policies_for_all_external_cost_of_transport%29/702 . See also: Are trucks taking their toll? The environmental, safety and congestion impacts of lorries in the EU. CE Delft, 2009, http://www.ce.nl/publicatie/are_trucks_taking_their_toll/874 . For Hungary, see: Tiltandó támogatások. Környezetvédelmi szempontból káros támogatások, L'Harmattan Kiadó, Budapest, 2006, www.levego.hu/letoltes/kiadvanyok/tiltandotamogatas.pdf (only in Hungarian; English summary: Environmentally Harmful Subsidies in the Hungarian Economy, Clean Air Action Group, http://www.levego.hu/english/environmental_fiscal_reform/harmful-subsidies.pdf).

Figure 16: Railway freight track access charges in the European Union in 2006 (EUR/train-km) [6]



1.3. Stakeholders of railway freight transportation in Hungary

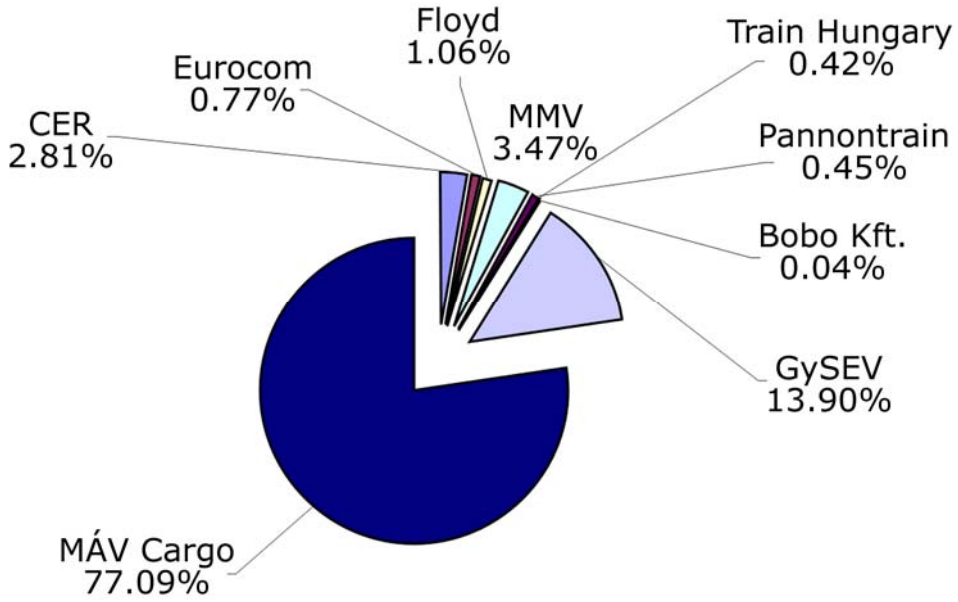
Prior to the change of political system in Hungary (1989-1990), both the road transport subsector and the railway transport subsector were practically state-owned. Private ownership only represented an insignificant share within the transport sector: on the roads, some private carriers operating just a few motor vehicles were engaged in freight haulage and passenger transport activities.
After the change of regime, partial privatization took place in the transport sector, too. Road freight transportation, as part of the privatization process, became privately owned, with a non-concessionary procedure.
Since the market opening implemented in 2005, within railway freight transportation the Hungarian state-owned rail tracks can also be used by the so-called enterprising railway companies that meet the required conditions. Since that time, a number of newly established enterprises, or already existing enterprises that formerly were engaged in other activities, have been entering this subsector. It was an important milestone when MÁV Co.'s freight transportation business line was organized into a separate company; within the framework of that process, MÁV Cargo Zrt. was formed in 2005. Immediately after the opening of the market, only a few enterprises entered the railway freight transportation sector.
In January 2008, MÁV Zrt. sold its freight transportation business line, MÁV Cargo Zrt. (currently: RCHUN); as a result, practically the entire Hungarian railway freight transportation sector became privately owned. It is to be noted though that the international tender's successful professional investor tenderer, Rail Cargo Austria (RCA) is owned by the Austrian state. Today, the Hungarian state's share in the joint-stock company GYSEV (Győr-Sopron-Ebenfurth Railways, Raaberbahn) represents the only direct Hungarian state ownership in the domestic railway freight transportation sector.

[6] Source: ECMT Railway Group, 2006

The Hungarian National Transport Authority issued national freight transportation operating permit for 25 railway companies.[7] Among them, MÁV Cargo Zrt. carries out 77 per cent of the total Hungarian transportation performance as measured in freight tonne-kilometres.

From among the firms that possess a railway company licence and that are entitled to carry out goods forwarding only some firms take part in the freight transportation market competition. Part of the enterprises merely perform goods forwarding activities for themselves, and they do not transport the freight of outside customers. There are also companies which are only engaged in passenger transport services, while certain enterprises provide traction services.
Figure 17 shows the market share of railway companies that effectively carry out goods forwarding activities.

Figure 17: Players of the Hungarian railway freight transportation market



Source: NAVIGÁTOR, February 2010

[7] These are the following (the date of permit issuance is shown in brackets): Balatoni Iparvasút Szolgáltató Kft. (28th October 2007), Bobo Kft. (30th May 2008), BSS 2000 Energetikai Szolgáltatóipari és Kereskedelmi Kft. (3rd December 2008), CER Zrt. (30th July 2007), Colas Építő Zrt. (4th August 2008), Eurocom Rail Cargo Zrt. (21st December 2007), FLOYD Kft. (17th July 2007), G&G Növényvédelmi Kft. (21st December 2006), GySEV Zrt. (30th June 2007), JÁSZ-VASÚT Műszaki, Tervező Kft. (18th June 2008), Logistic Center Hungaria Kft. (26th May 2009), Masped Rail Cargo Zrt. (15th January 2008), Mátrai Erőmű Zrt. (24th July 2007), MÁV Cargo Zrt. (27th June 2007), MÁVÉPCELL Zrt. (18th June 2008), MÁV FKG Felépítmény-karbantartó és Gépjavító Kft. (10th September 2008), MÁV-GÉPÉSZET Vasútijármű Fenntartó és Javító Zrt. (11th May 2009), MÁV Nosztalgia Idegenforgalmi és Kereskedelmi Szolgáltató Kft. (25th Juy 2007), MMV Magyar Magánvasút Zrt. (28th June 2007), MTMG Logisztikai Zrt. (25th May 2009), Pannontrain Zrt. (6th June 2007), Szentesi Vasútépítő Kft. (14th November 2006), Train Hungary Magánvasút Kft. (30th June 2007), Vasútépítők Kft. (3rd August 2007), Záhony Port Logisztikai és Rakománykezelési Szolgáltató Zrt. (31st March 2008)

1.4. Specific factors determining railway freight transportation

The key factors of, and principal reasons for, the poor standard, low-level reliability and lesser overall competitiveness of Hungarian railway freight transportation services are as follows:

(1) Bottlenecks

In some track sections there are bottlenecks, and problems arise because the Hungarian network is Budapest-centred. The possibility of east-west passage is practically missing to the south of Budapest; as a consequence, Budapest cannot be bypassed in an economical manner in the case of Balkan–Western Europe transit transports. Construction of such a railway line is currently not included in MÁV's short- and medium-term (2008-2013) plans.

(2) Axle load

Classification of the railway track network by UIC[8] categories shows that MÁV's network, with a typical permitted axle load of 210 kN, is the weakest link of the chain within Central Europe, as opposed to the neighbouring countries and Western Europe, where an axle load of 225 kN can be used on the main transportation routes.

Axle load is an important competitiveness and efficiency criterion for freight transportation. In the Hungarian railway network, while the permitted axle load is 210 kN on the average; on the secondary lines (over a length of nearly 1600 km) only an even smaller axle load is possible. In contrast, the required axle load in Europe, 225 kN, is only met by a fraction of the Hungarian network (4.5 % of the entire network and 13 % of the TEN-T network). On a further 78 % of the network, trains are allowed to pass with an axle load of 225 kN if a special permit is obtained and the train's speed is reduced.

(3) Speed permitted for the railway tracks; general technical condition of the railway track network

In terms of permitted speed, the Hungarian railway network is lagging far behind the advanced European railways. The Hungarian network has a rated speed of 100-160 km/h on the main track sections, 60-100 km/h on other main lines and 40-60 km/h on the secondary lines. Higher speed sections can only be found on the railway line of Hegyeshalom. (This line of about 170 km is one of the most important freight lines. It connects Budapest with the Austrian border of Hungary.) There will be some other high-speed sections as a result of the ISPA[9] and other EU-funded projects . This situation is in sharp contrast to the old EU member states' main line networks that have a permitted speed of 160-200 km/h. All these rated parameters have been further degraded as a consequence of minimized maintenance costs in the past two decades. This manifests itself in the introduction of permanent speed limits, as well as in the growing number and increasing length of various restrictions. Because of unperformed maintenance works, considerable speed restrictions have been imposed on MÁV's railway network (Figures 18 and 19). In international relations, the low permitted speeds and unperformed maintenance works lead to restrictions in the operation, which further deteriorate the efficiency and competitiveness of railway transportation.

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[8] International Union of Railways, www.uic.org

[9] The Instrument for Structural Policies for Pre-Accession was the EU financial aid to assist the candidate countries of Central and Eastern Europe in the period 200-2006 in the preparation for and immediately after the joining the European Union.

Figure 18: Extent of permanent and provisional speed limits on MÁV's 7600 km long network

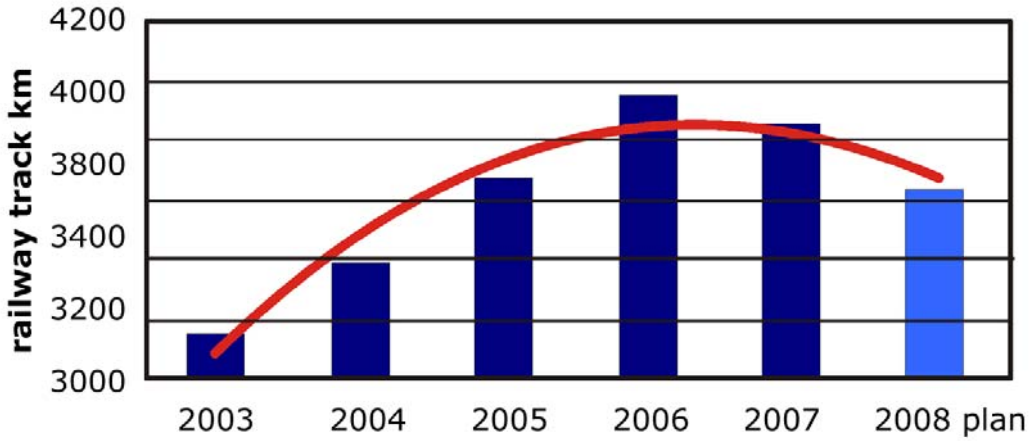
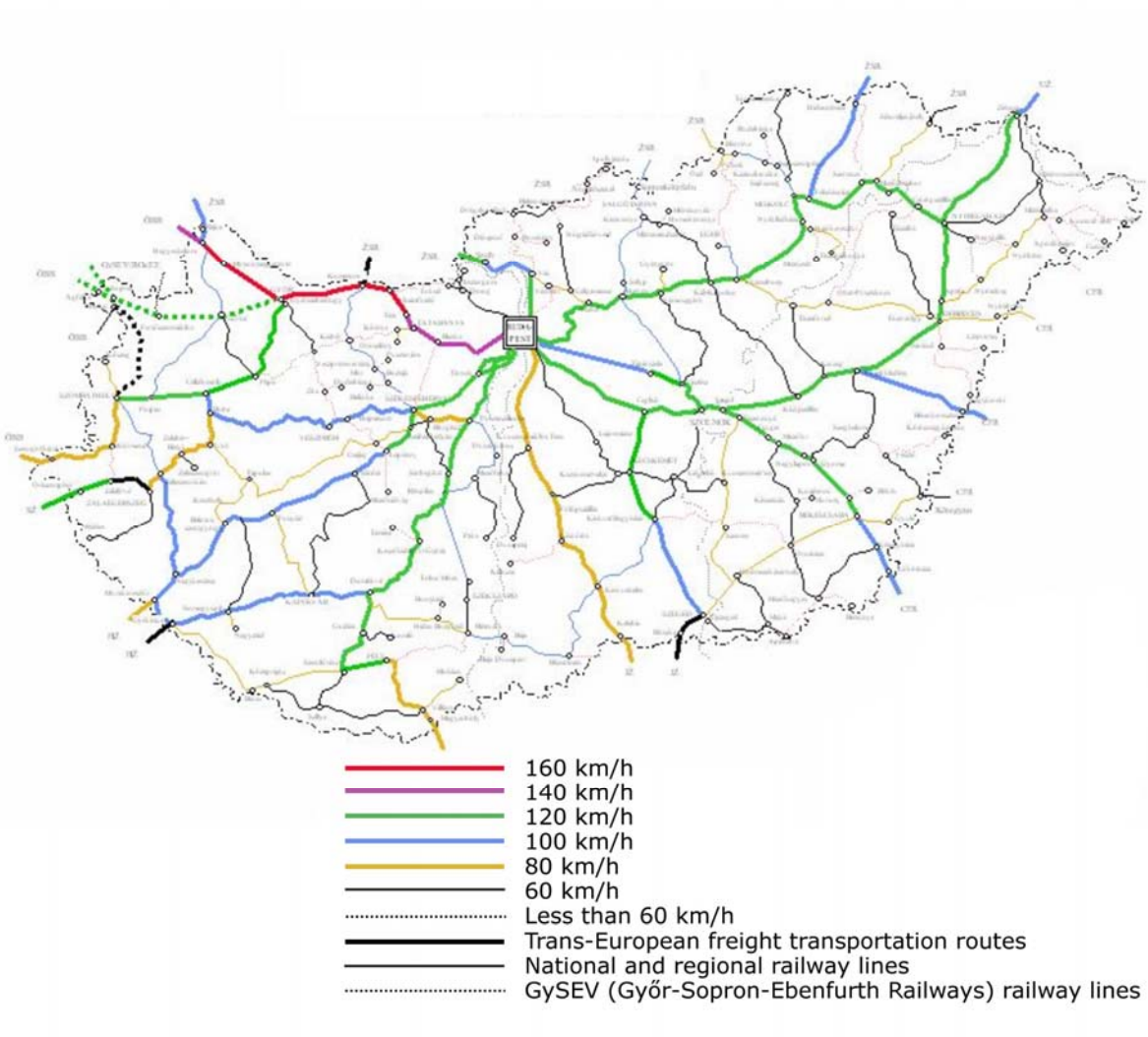


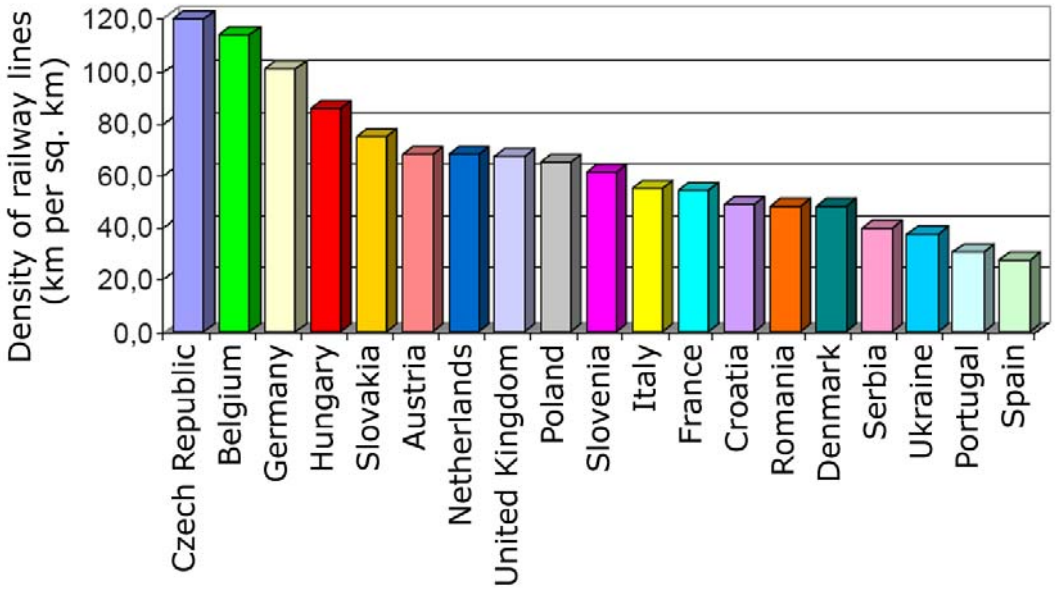
Figure 19: Highest permitted speeds on the Hungarian railway lines



(4) Network density

The density of Hungary's railway network is favourable, even in European comparison. Calculated on the basis of construction length, it is 85.5 km per 1000 km^2, which even surpasses the network density of the majority of advanced European railways (Figure 20). In terms of quality indicators, however, we can observe severe insufficiencies.

Figure 20: Railway network density in some European countries in 2001



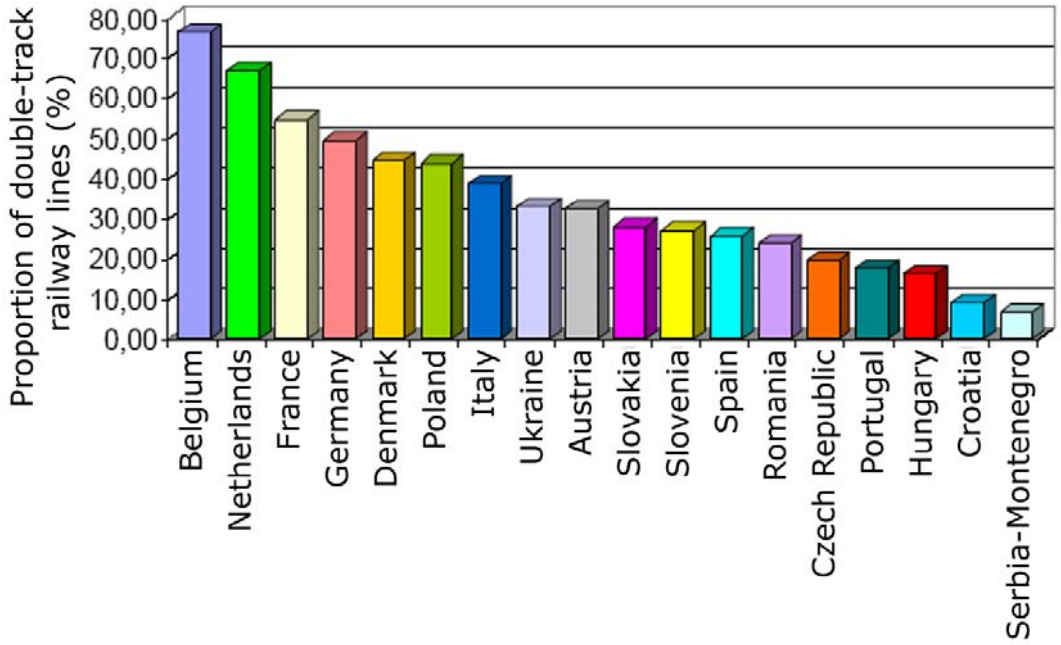
Source: KTI (Institute For Transport Sciences Non-Profit Ltd.) Transorg

Out of the 7727 km long normal-gauge railway network the TEN-T network accounts for 2727 km. Within that, the track length of the core network made up by the Hungarian sections of Corridors IV, V, V.B, V.C and X.B represent 1619 km.

(5) Proportion of double-track railway lines

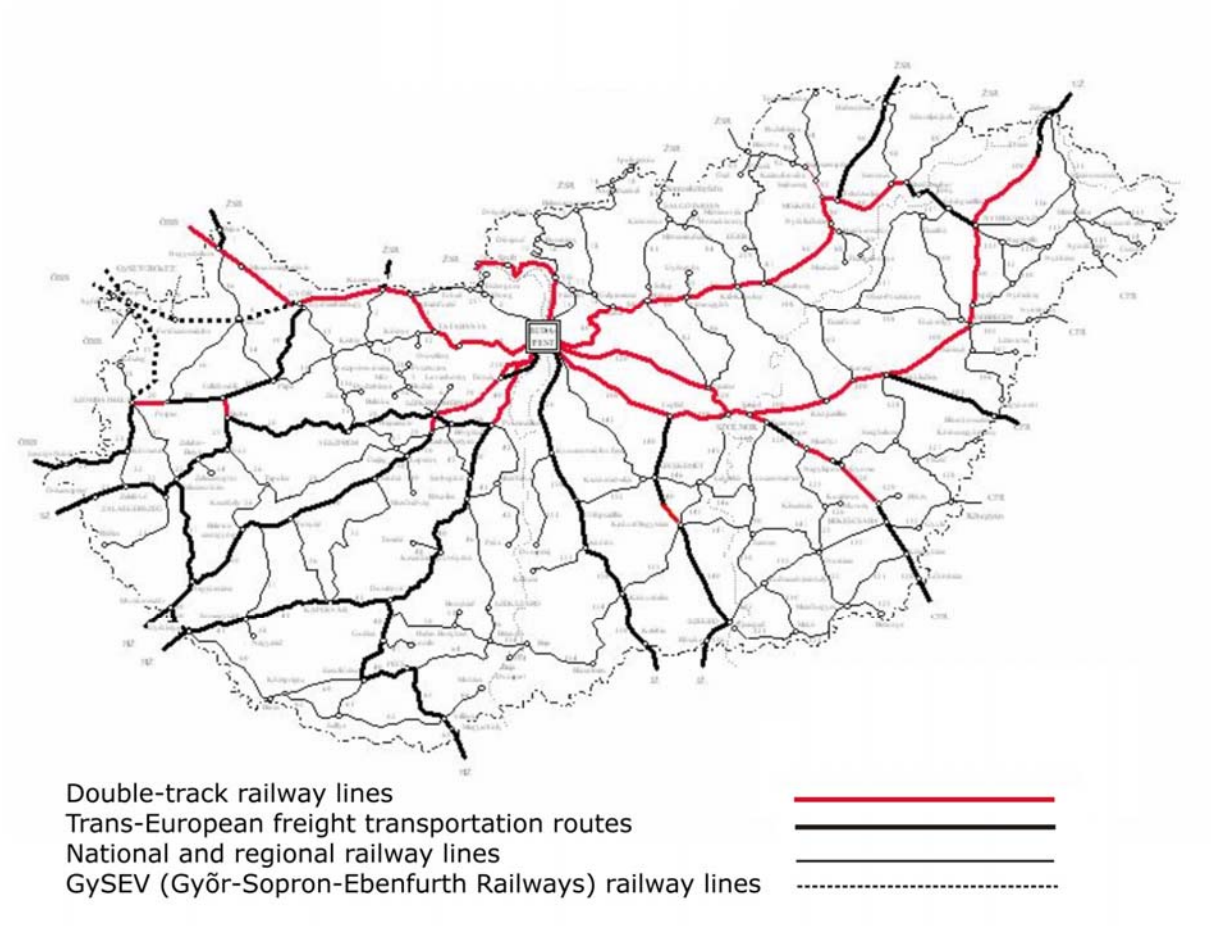
As regards the proportion of double-track railway lines, the Hungarian network significantly lags behind the European average. As it can be seen in Figure 21 and 22, in 2001 in Hungary only 16.3 % from the total construction length were double-track railway lines. (This figure decreased to 15.4 % in 2008 due to the construction of a new single-track line.) Within the countries shown in Figure 15, out of the total construction track length of railways, 39.4 % were double-track railway lines in 2001 (41 % in 2008). Within the foreseeable future, the Hungarian railways will not catch up with this average value; consequently, the opportunities are less flexible for a modernization of the timetable structure and for the optimization of maintenance works. As a result, the network offers longer travel times, with unnecessary train stoppages, lower specific efficiency and smaller revenue-earning capability.

Figure 21: Proportion of double-track railway lines in some European countries in 2001



Source: KTI (Institute For Transport Sciences Non-Profit Ltd.) Transorg

Figure 22: Double-track railway lines in Hungary



(6) Proportion of electrified railway lines

Within the Hungarian railway network, currently 2784 km are electrified, which represents a share of 34 % (Figure 23). In the case of the railways shown in Figure 24, this proportion averages 46 %. To reach this proportion common to the EU, Hungary would have to still electrify about 1000 km of its rail lines. The current Hungarian proportion of electrified railway lines is primarily the result of development projects implemented in the1970s and 1980s. While during the 10 years between 1999 and 2008 electrified railway line sections increased by 18 % (11 000 km) in the EU countries, this rate was only 4 % in Hungary. As a consequence, customer needs can only be satisfied with higher-than-justified costs and with a more environmentally polluting traction technology in several railway line sections.

Figure 23: Electrified railway lines in Hungary

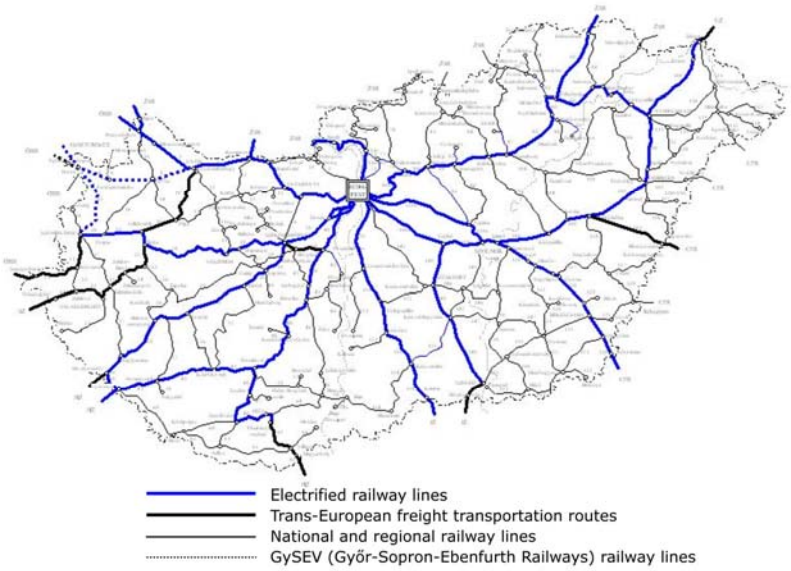
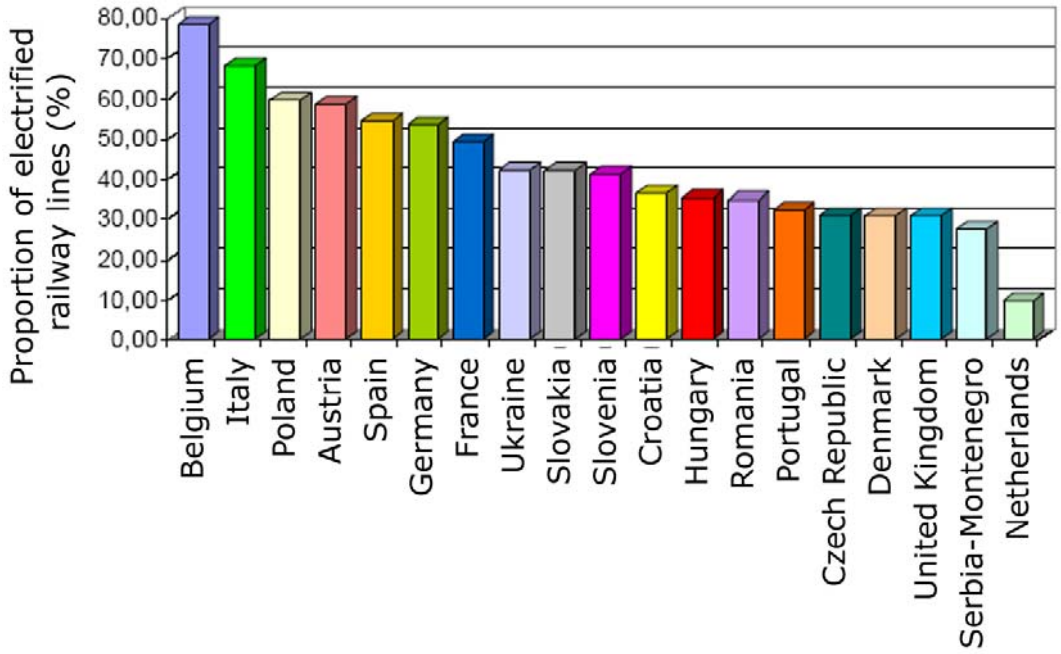


Figure 24: Proportion of electrified railway lines in some European countries in 2001



Source: KTI (Institute For Transport Sciences Non-Profit Ltd.) Transorg

(7) Railway station density

The railway station density of Hungarian railways, with an average railway station distance of about 11 km (645 railway stations and 942 stops), can be considered as a high density among European railways.

As compared to European railways, the Hungarian railway station density is high, which ensures high network coverage and allows better accessibility and better access to railway services. However, this is not always coupled with high-standard services. For instance, as from 13th December 2009 the Hungarian Government suspended rail passenger transport public services on 27.5 secondary railway lines; which, of course, adversely affects the goods transportation services, too.

(8) Number of level crossings

Nearly 5900 road-rail level crossings place Hungary into second position after Portugal on the list of European railways with the highest proportion of level crossings. Out of these crossings, 46 % are secured with barriers (flashing crossing lights: 32.8 %; half-barriers: 7.4 %; full barriers: 6.6 %).

(9) Rail safety systems

In terms of rail safety systems, the Hungarian railways belong to the group of Europe's middle-ranking railways. Up-to-date railway station safety systems, however, are extremely sparse, and the central rail traffic control is far below the required standard. From among all the railway stations of Hungary's rail network, only 65 per cent are equipped with rail safety systems. To make things worse, even the existing safety systems are mostly out-of-date and labour-intensive apparatuses, increasingly unable to meet current safety requirements. The operation of these obsolete pieces of equipment (which are outdated both morally and technically) is often interrupted by breakdowns, which renders the necessary planning work impossible and poses ever more hindrance to the proper arrangement of rail traffic. Even today, the main railway stations of Budapest have some mechanical safety systems in operation, which is not acceptable from either a service provision or a railway safety point of view.

(10) Demise of low-traffic railway stations

Until 31st December 2008 MÁV Cargo to a large extent practically performed a public service activity. It had services on all lines where it was required. It was flexible and open to perform freight transport even in cases where it was not profitable (or at least not as much as in most cases). It strived to satisfy transport policy expectations aiming at making freight transport more environment-friendly.

However, at the start of 2009, MÁV drastically raised its track railway and traction charges on the secondary lines. Thereafter MÁV Cargo (by virtue of Amendment No. 4 of its effective Freight Transportation Business Code) only undertakes railway freight transportation and related services on the basis of separate agreements on those MÁV railway stations where the service of goods traffic is of low level or temporary. In essence, this means that it imposes such high prices upon its customers that they are not able to pay them anymore. As a consequence, a large part of the freight traffic that formerly used these railway stations is now carried out by road hauliers, adding to the existing road traffic.

This change affects 329 railway locations out of the 700 railway locations served by MÁV Cargo. These railway stations are typically situated on low-traffic secondary railway lines. Even though only a relatively small part (1 to 2 per cent) of MÁV Cargo's total freight traffic was carried out on these railway stations, the resultant increase of road transportation means substantial additional load for the trunk roads and especially the secondary roads, which are in urgent need of repair as it is.

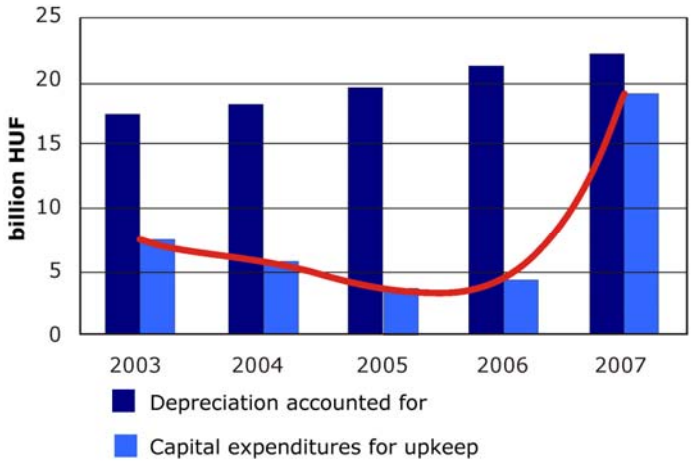
Act CLXXXIII of 2005 on Railway Transport, as well as the joint decree of the Hungarian Ministry of Economy and Transport and the Hungarian Finance Ministry No. 83/2007 (X.6.) GKM-PM on the General Rules of the Pricing and Application of Network Access

Charges appointed the Railway Track Capacity Distributing Organization as charge determination entity in respect of the network access charges to be applied by integrated (not independent, i.e. comprising both the track railways and the freight and/or passenger transportation) railway companies that operate open-access railway tracks.
By virtue of the stipulations set forth in the pricing decree, it is the duty of the charge determination entity to prepare once every fifth year the Pricing Methodology as a methodological document for the determination of network access charges.
The charge determination entity determines the specific network access charges to be applied for a given railway schedule year on the basis of the Pricing Methodology, the factual data of the track network operator's last business year, other data sources specified in the Pricing Methodology, as well as the expected amount of the state budget subsidy (cost reimbursement). The charge determination entity lays down in the Charge Calculation Document the detailed calculations related to the determination of network access charges, as well as the data that served as a basis for the calculations.
We have no information about whether any cost-benefit analysis or environmental impact assessment had been prepared before the decision on the latest modification of the network access charges. By virtue of the above-referenced laws, it would be the duty of the Hungarian National Transport Authority and/or of the Railway Track Capacity Distributing Organization to conduct such analyses.
The Logistical Reconciliation Forum (the joint platform of the most important Hungarian organizations of the logistical trade), upon the initiative of the Association of Hungarian Logistical Service Centres and after discussion with the Hungarian Rail Association (Hungrail), wrote a letter to the Ministry of Transport to call their attention to the unfavourable impacts of the above mentioned measure upon railway traffic. However, no change occurred.

(11) Insufficient developments

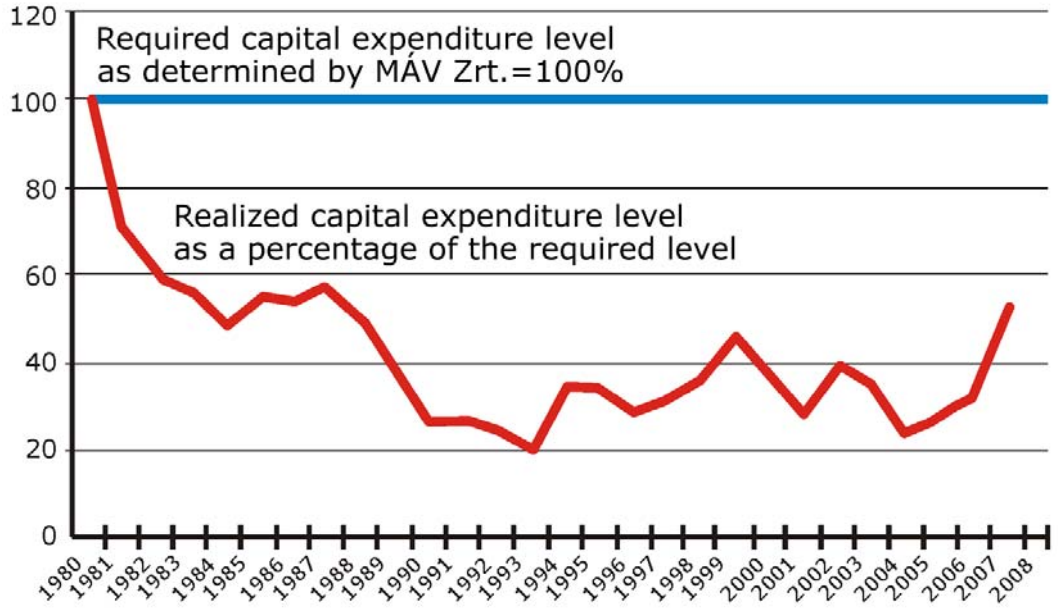
A report of July 2008 by the Hungarian State Audit Office stated that the value of absolutely necessary but unfunded (and therefore not implemented) railway developments "at MÁV Zrt. reached HUF 2100 billion (EUR 7,8 billon) by 2006, as against HUF 1320 billion (EUR 4,9 billion) in the year 2001.
Furthermore, it is typical that once an investment project is completed, the necessary maintenance works are not performed for lack of adequate financing. For instance, travel time on the Hegyeshalom railway line, reconstructed in 2007-2008, was 2 hours and 40 minutes between Budapest and Vienna right after the reconstructed line's inauguration; however, today this journey already takes 3 hours because of the tracks' poor condition."
Figure 25 shows that only a small portion of the accounted depreciation was ploughed back by MÁV into investments and maintenance of railway assets.

Figure 25: Value of accounted depreciation and of upkeep investments and renovation



The proportion of development needs to actual developments is shown in Figure 26.

Figure 26: Relation between MÁV's actual developments and its development needs



2. Commodity types the transportation of which may be shifted from road to railways

Hereafter we are going to analyze the position of key commodity types within the competition between railway and road transportation, as well as the possibilities for diverting the transportation of these commodities to railways. The concrete numbers were given by MÁV Cargo Zrt. (now called Rail Cargo Hungaria) which made detailed calculations and forecasts on these issues. However, the latter is not public.

Railways play an important role in the transportation of bulk commodities in most European countries, and this is also supported by the European Union (White Paper "European transport policy for 2010: time to decide", Marco Polo[10], etc.). Environment protection is ever stronger in the EU member states; on the other hand, often the highest economic efficiency, too, can be achieved by using railway and inland water transportation.

In Hungary, however, practically the opposite process took place, as substantial inland bulk commodity transportation was diverted to the roads in the last two decades, and the state did not introduce any regulation whatsoever in order to prevent this (which is exemplified by the continual postponement of the introduction of distance-based road charges).

During the period of the recent economic crisis, the performance of Hungarian railways did not follow the general trends in terms of railway goods transportation volumes. Hungarian railways registered less downturn in 2009 than the neighbouring countries' railways.

[10] Marco Polo is the European Union's funding programme for projects which shift freight transport from the road to sea, rail and inland waterways.

2.1. Inland traffic

(1) Agricultural products

Recently, significant grain storage capacities (1.7 million tonnes) were constructed, predominantly by means of state resources, almost invariably next to the growing areas, without any railway connection. Construction of these grain storage facilities was not harmonized with the Hungarian transport policy expectations.
From the growing area, grains are primarily carried by road into the grain storage facilities, grain mixing plants and mills. The processing capacities of two major companies (the distilleries of Győr and Szabadegyház) exceed the regions' grain growing potential. A part of the grain produced in distant growing regions could be transported into the distilleries by rail. This may result in about 300 to 400 thousand tonnes of railway freight transportation.
Out of the nine sugar factories that had operated in Hungary before the change of regime, at present only one factory remained operational (in Kaposvár). Sugar beet is carried from the growing area into the factory by road within a radius of 100 kilometres, while from larger distances it is predominantly transported by rail. The quantity that may be diverted to railway is appr. 300 thousand tonnes of sugar beet.

(2) Building materials

From the Hungarian stone and gravel pits (Nyékládháza, Hegyeshalom, Adony, Délegyháza, Gyékényes, Uzsabánya, Tálya, Nógrádkövesd) about half of the 3.5 to 4 million tonnes of building materials are transported to the users by road, while the other half by rail.
Because of the level of railway track use charges and the costs of transportation to and from the railways, railway transportation costs are rather high, and they are not adequately competitive against road haulage. Since some 4000 road vehicles of large carrying capacity (above 40 tonnes) will be freed as a result of the slow-up of motorway constructions, the railways' competitiveness may be further impaired.
Railway transportation of stone and gravel is only carried out in closed trains. In unserved areas (where there are no gravel or stone pits) at least 630 thousand tonnes of freight could be diverted back to railways annually out of the traffic of the Great Plain and Central Hungary. In order to achieve that, railway distribution depots should be established, which requires a fundamental change of mentality in the sales of stone and gravel.
Two types of depots are conceivable: one which can be established near fixed mixing plants, and one the location of which is frequently changing. Since major road constructions and building projects are always taking place in ever changing sites within Hungary's territory, it is advisable to take these into consideration and to determine the possible depot locations at the beginning of a given year. Sensibly, the stations most suited for this purpose are the ones that are situated closest to the project sites and that possess large capacities and service facilities, from where the transports to the building sites can be completed by affecting to the least possible degree the neighbouring towns and villages. Depots can be established by any entity; however, since these are depots of changing location, it is advisable that they are always operated by the investor builder or its subcontractors.

At present, due to the characteristic features of railways, often significantly longer transportation distances are required for a given construction project than in the case of direct road transportation. Over and above that, transportation to and from the railway station is also necessary, which impairs the competitiveness. However, if investor builders are willing to accept some small extra cost to favour the more environmentally friendly transportation mode, then the quantities carried by rail may increase. In order to achieve that, it is also indispensable that the specific costs of railway and road transportation come closer to each other.

(3) Wood

Domestic wood transportation basically involves timber to be used by power plants. This represents an annual traffic of some 3 million tonnes, out of which appr. 1.2 million tonnes

are transported by rail. With appropriate railway services and competitive charges, 500 thousand tonnes could be diverted from road to rail. However, it would also be possible to implement such types of track renovation projects through which this quantity could be substantially increased.

(4) Unaccompanied combined transportation (containers, swap bodies, semi-trailers)
On account of Hungary's geographical size, domestic combined transportation as such does not exist: the location of production units and the composition of goods do not make it possible to operate such traffic.
Until recent years there was a collection and distribution traffic , meaning that containers arrived from the foreign ports (predominantly from North-German and Adriatic ports)to Budapest by direct trains, and then they were distributed to the regional terminals in the country (Debrecen, Miskolc, Pécs, Szeged, Szolnok, Szombathely) by trains, too. (Similar system operated also in the opposite direction, i.e. from regional terminals to the foreign ports.) From the regional terminals the containers were carried by trucks to their final destinations (and also in the opposite direction). However, such transportation has been gradually decreasing in recent years, and by now it has virtually disappeared. Owing to the massive rise of railway track charges, the unreliability of railway services, the more modern road vehicles and the construction of the motorway network, this considerable traffic was diverted to the road.
With appropriate and competitive charges and railway services, the pre- and post-railway transportation of appr. 10 thousand containers annually could be diverted back to railways. This accounts for 5 to 7 per cent of the total current railway container traffic.

2.2. Export and import traffic

(5) Agricultural products
In general, the average annual Hungarian grain export amounts to 3 million tonnes. One-third of that quantity is overseas traffic through the ports of Koper (Slovenia), Rijeka (Croatia) and Rotterdam (The Netherlands), and in a smaller part through Constanta (Rumania), while two-thirds are European traffic (see Figure 27). The bulk of the European grain export goes to Germany, Italy and France for industrial use.

Figure 27: Location of major European ports with the greatest importance for Hungary

Approximately 1.2 to 1.4 million tonnes of grain are transported by rail, appr. 1 million tonnes by road, and 0.6 million tonnes by water.
Towards Rotterdam, Rijeka and Northern Italy, grains are mostly transported by rail, while in the traffic through the port of Koper, road haulage plays a more important role.
From Western Hungary, 200 to 300 thousand tonnes of rape are transported annually into Burgenland (Austria), exclusively by road vehicles. The reason for that is because there is no appropriate loading station and adequate quantities of wagons for the railway transportation.
Concerning grain exports, about 500 thousand tonnes of railway freight transportation could be realized.
Grain imports essentially involve soybeans, which are primarily imported into Hungary through the ports of Rotterdam and Koper. Since there is no regional distribution centre in Hungary, closed train transportation cannot be used. Thus, imported soybeans are carried to the users by road, in small quantities.
In total, transportation of some 500 thousand tonnes of soybeans could be diverted to the railways.

When establishing railway depots, their location is to be selected on the basis of two key considerations:
– the site of utilization, where the loading/utilization needs emerge,
– primary railway line (preferably with an already existing industrial side track) which has appropriate road connection.
In the transportation of cereals, a private enterprise has already put forward some initiatives aiming for that. A company was formed for this purpose, which is planning to establish a grain loading and unloading agrarian logistical centre in the vicinity of Ács, Nagyrécse and Kaposvár, on an area with existing industrial railway side tracks. Such logistical centres would provisionally store the grains transported by road from the neighbouring region, and they would load the railway wagons by using large capacity loading equipment. Besides that, these centres would also supply by road the grain and soybean that arrive in by rail.
According to information provided by the investor builder, the acquisition cost of one grain logistical loading centre is about HUF 200 million (EUR 750,000), without industrial railway side tracks. As planned, at least 400-metre long industrial railway side tracks will be necessary. They are planning to ensure the requisite financing partly from the investors' own sources and partly from EU funds by applying for grants.

(6) Wood
As compared to previous years, fire wood export fell significantly; at present, it amounts to about 200 thousand tonnes. This commodity is predominantly carried by road from South-West Hungary to Northern Italy.
Out of export timber goods, some 100 to 120 thousand tonnes could be diverted to railway transportation.
Import timber goods arrive into Hungary from Romania and the Ukraine. At present, some 600 thousand tonnes arrive only by road from Romania for MOFA (Mohács) and for Interspan (Vásárosnamény and Szombathely), as the Romanian railways significantly raised their fees, and so they are not competitive against road transportation. This traffic was primarily shifted to the roads because of the Romanian price rise for railway goods transport.

Romanian railway transportation charges were significantly raised on 1st January 2008, presumably for reasons similar to the Hungarian price rise.
In Romania, railway freight transportation remained a state monopoly up until 1998, operated as one of the business lines of CFR (Romanian State Railways). Following the privatization of the railways, the first private railway companies specialized in freight transportation appeared at the start of the new millennium. Even today, however, most of the total goods transportation is carried out by CFR Marfa, the specialized company of CFR.
The majority of private railway companies were founded by large industrial corporations for the purpose of carrying their own products. Today, 14 private railway companies op-

erate on the market of Romanian railway freight transportation; among them the largest one in goods transportation is GFR (Grup Feroviar Roman).

- **CCCF** – operated by CCCF S.A., a building and construction company (the company's core business is railway infrastructure maintenance)
- **CC 33 ICIM** – operated by Căi Ferate 33 Intreprinderea Construcţii Industriale şi Montaj, a building and construction conglomerate
- **CF** – Clasfer
- **CTF** – Compania de Transport Feroviar
- **CTV** – Cargo Trans Vagon (specialized in the transportation of chemical industrial products)
- **GFR** – Grup Feroviar Roman (the largest private company in goods transportation)
- **LCR** – Logistics Center Romania (the Romanian subsidiary of Railion)
- **MIS** – M.I.S. Grup Transport Feroviar
- **RPL** – Rompetrol Logistics (the railway company of Rompetrol SA petroleum industrial company)
- **SEFER** – (transports petroleum products between the port of Constanta and the refinery)
- **SI** – Servtrans Invest SA
- **ST** – Softrans (rents MÁV locomotives)
- **TGF** – SC Transferoviar Grup SA
- **UT** – SC Unifertrans SA (transports petroleum products between the port of Constanta and the refinery)

The log timber arriving from the Ukraine to Záhony border-crossing railway station in wide-gauge railway wagons is mostly transported to the users (Interspan, Vásárosnamény) by rail. Out of import timber goods, appr. 100 thousand tonnes could be diverted to railway transportation.

(7) Combined transportation

Most of the Hungarian unaccompanied (containers, swap bodies, semi-trailers) export and import is performed in railway traffic through North-German (Hamburg, Bremen) and Adriatic (Koper, Triest, Rijeka) ports.

For the container direct train traffic the most important port is Koper. Besides the Hungarian market, it also supplies the Slovakian, Czech, Polish and Ukrainian markets. Annually, 40-50 thousand TEU traffic arrives by rail to the Hungarian market. This would correspond to the same number of heavy trucks arriving by road, which would be practically impossible due to the limited capacity of roads.

Container trains arrive to the terminals of Budapest (Budapest Intermodal Logistical Centre, Csepel Port, and to a smaller extent the Törökbálint Depot), and also depart from there. The containers are at present entirely supplied by road from Budapest to users in the country because of the low standard, unreliability and high freight charges of the railway services as well as the low prices and shorter time of road transport.

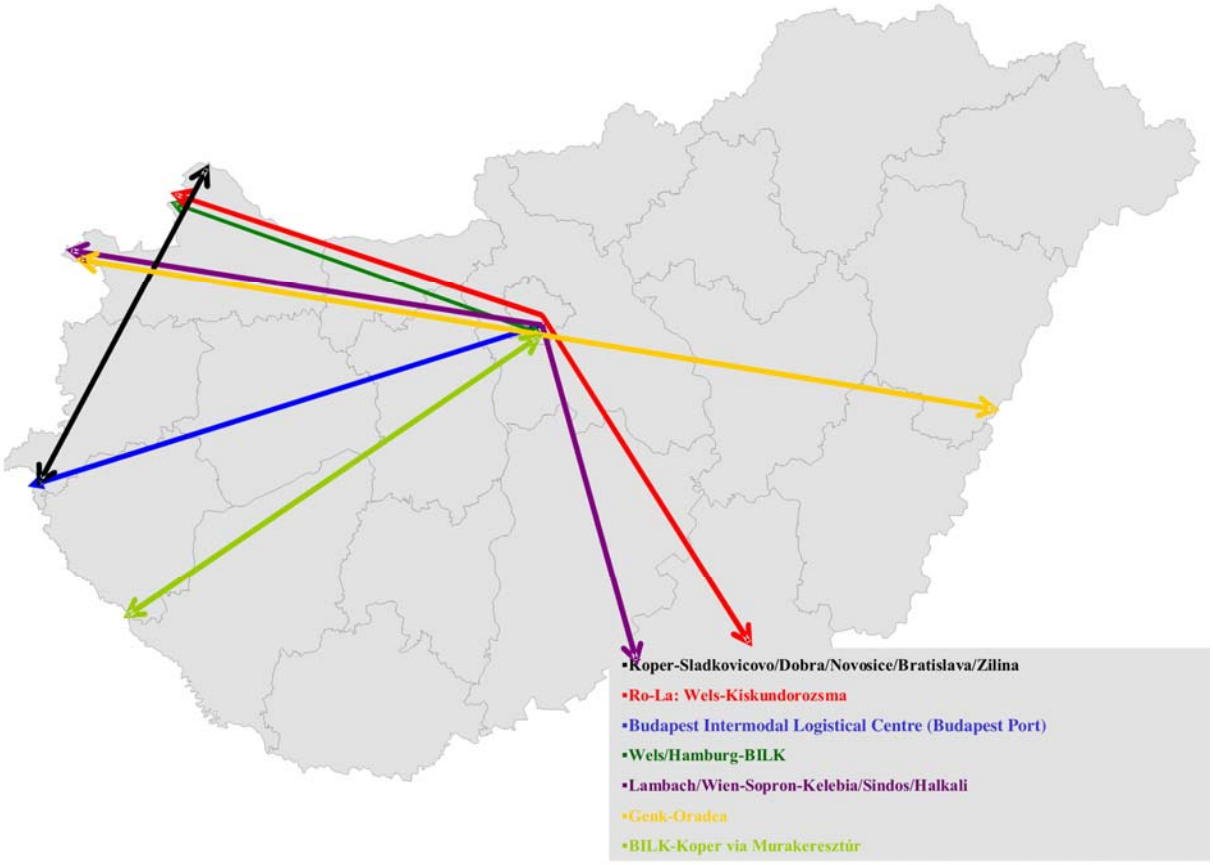
This means some 10 to 15 thousand containers. Containers arrived by rail to Székesfehérvár for Philips but this stopped due to the financial crisis. They still arrive by rail to Szolnok for Samsung, and from there they are carried by road.

It is to be mentioned that from the terminal of Dunajská Streda (Dunaszerdahely) in Slovakia, annually appr. 35 000 to 40 000 containers are distributed to Hungarian users by road. A substantial part of this quantity, about 10 thousand containers, could be optimally served from the terminals of Budapest, with a Dunajská Streda–Budapest railway connection of appropriate standard and pricing. Thereby, considerable road freight volumes could be replaced by railway transportation.

In accompanied (RoLa) traffic, prior to the EU enlargement, annually 55 to 60 thousand heavy trucks were transported by rail in the Kiskundorozsma–Wels relation, and 50 thousand in the Sopron–Wels relation, while at present – with state and Marco Polo subsidies – 35 thousand heavy trucks are transported. Ninety per cent of the users are Turkish heavy trucks. The fundamental reason for that is the significant (5 times) difference of railway and

road charges (and the EU-accession of Rumania and Bulgaria in 2007). Therefore, the introduction of usage-proportional road charges could considerably facilitate and expand the railway transportation of heavy trucks. The Kiskundorozsma RoLa terminal has a capacity for serving 6 pairs of trains per day, which corresponds to the railway transportation of 70 thousand heavy trucks a year.
Within accompanied traffic, there is a substantial potential for diverting to rail the heavy trucks that arrive from the direction of CIS countries in large numbers: this would ease the traffic load upon Hungarian roads by around 30 to 50 thousand heavy trucks annually.
In total, 75 thousand heavy trucks could be diverted to rail, if competitive conditions are in place.

Figure 28: Intermodal projects involving Hungary



On 25th March 2010 in Vienna, DIOMIS (Developing Infrastructure Use and Operating Models for Intermodal Shift), UIC's work group dealing with railway freight transportation, held a project meeting titled "Increasing Intermodal Transport in the Central and Eastern European Countries". Participants shared with one another their experience with respect to the possibilities of combined transportation in the region. The UIC study there presented prognosticates an 8 % diversion of the railway goods traffic from the North-South axis to the East-West axis.
The project meeting's participants talked about their views concerning the infrastructural developments and investments needed to achieve such traffic growth (see Figure 28). It is necessary to reckon with heavier trains, to launch coordinated terminal and facility developments, and to create the interoperability of border crossings. As a top priority, the market expects discrimination-free access to the terminals, reliable services and predictable network access charges. As regards the latter one, the representative of the Slovakian Transport Ministry officially announced that Slovakia was going to drastically reduce the network access charges in the near future.

Oliver Sellnick, UIC's freight transportation director said that even though the current economic crisis had had an adverse impact on the 2009 results, it could be evaluated as a positive outcome that it provided an opportunity for rethinking the business. Upturn in the economy is already perceptible, and a tremendous potential is inherent in the growth of combined freight transportation; it is in the interest of all stakeholders of the sector to make the most of this potential.[11]

2.3. Summary of commodity quantities the transportation of which may be diverted to railways

Hereafter, we are going to summarize the types of goods and the quantities that may be diverted to rail with acceptable costs within a period of 1 or 2 years, if appropriate conditions are ensured.

Table 1: The types of goods and the quantities that may be diverted to rail with acceptable costs within a period of 1 or 2 years

Type of goods	**Quantity that may be diverted yearly** (1000 tonnes)
domestic grains	300
domestic sugar beet	300
domestic stone and gravel	630
domestic dolomite, artificial fertilizers	250
domestic motorcars (Suzuki)	20
domestic containers pre- and post-transportation	100
domestic cement	80
export-import RoLa, 75000 heavy trucks	1500
export grains	500
export chemical products	400
export motorcars	125
export-import containers	200
import artificial fertilizers	100
export-import wood	250
import soybeans	500
domestic wood	500
Total	**5755**

As it can be seen from Table 1, nearly 6 million tonnes of goods could be diverted yearly from road to rail by relatively simple and low-cost measures. This corresponds to about 2.5 per cent of the goods carried by road transport today.
Furthermore, physically there is no obstacle to diverting as much as 30 million tonnes of goods annually from road to rail, which corresponds to about 12 per cent of the goods carried by road transport today. However, this requires appropriate economic conditions and regulation, which are listed below in this study.

[11] Source: UIC Press Release (No. 9/2010), 29th March 2010

As most of the goods shifted from road to rail would come from long-distance transport, the shift measured in tonne-kilometers could be much greater and might even reach 25 to 30 per cent.
The measures necessary for such a shift include first of all a proper pricing system where road freight transport pays its full costs, and the railways are compensated for the losses due to the market distortion caused by the inappropriate pricing and investment policies by the government during the past decades.

2.4. Railway developments necessary for the shift of freight from road to rail

In order to achieve a shift of 12 per cent of the goods transport (measured in tonnes) from road to rail, among other measures a number of railway developments should be implemented. It must be noted that these developments are needed both for the passenger transport and the goods transportation.

The total value of MÁV's development proposals determined on the basis of traffic/technical needs exceeds HUF 5,500 billion (EUR 20 billion), out of which HUF 2,500 billion (EUR 9 billion) falls to the period 2007-2013.
Based on reconciliations of the Transport Operational Programme, the railway projects that may be planned with EU subsidies for the period 2007-2013 are as follows (see also Table 2 and Figure 29):

- For infrastructure development: HUF 753 billion (EUR 2.8 billion),
- For suburban development: HUF 110 billion (EUR 400 million).

Railway development needs significantly surpass the funding possibilities; therefore, it is important to determine the priorities:

- International and inland traffic load of the transit route concerned; traffic prognostication,
- Actual condition of the infrastructure; urgency of the reconstruction's implementation deadline,
- Fitting into recent key development projects (ISPA, EIB),
- The project's level of technical/financing preparation,
- Railway operational considerations influencing the scheduling of implementation.

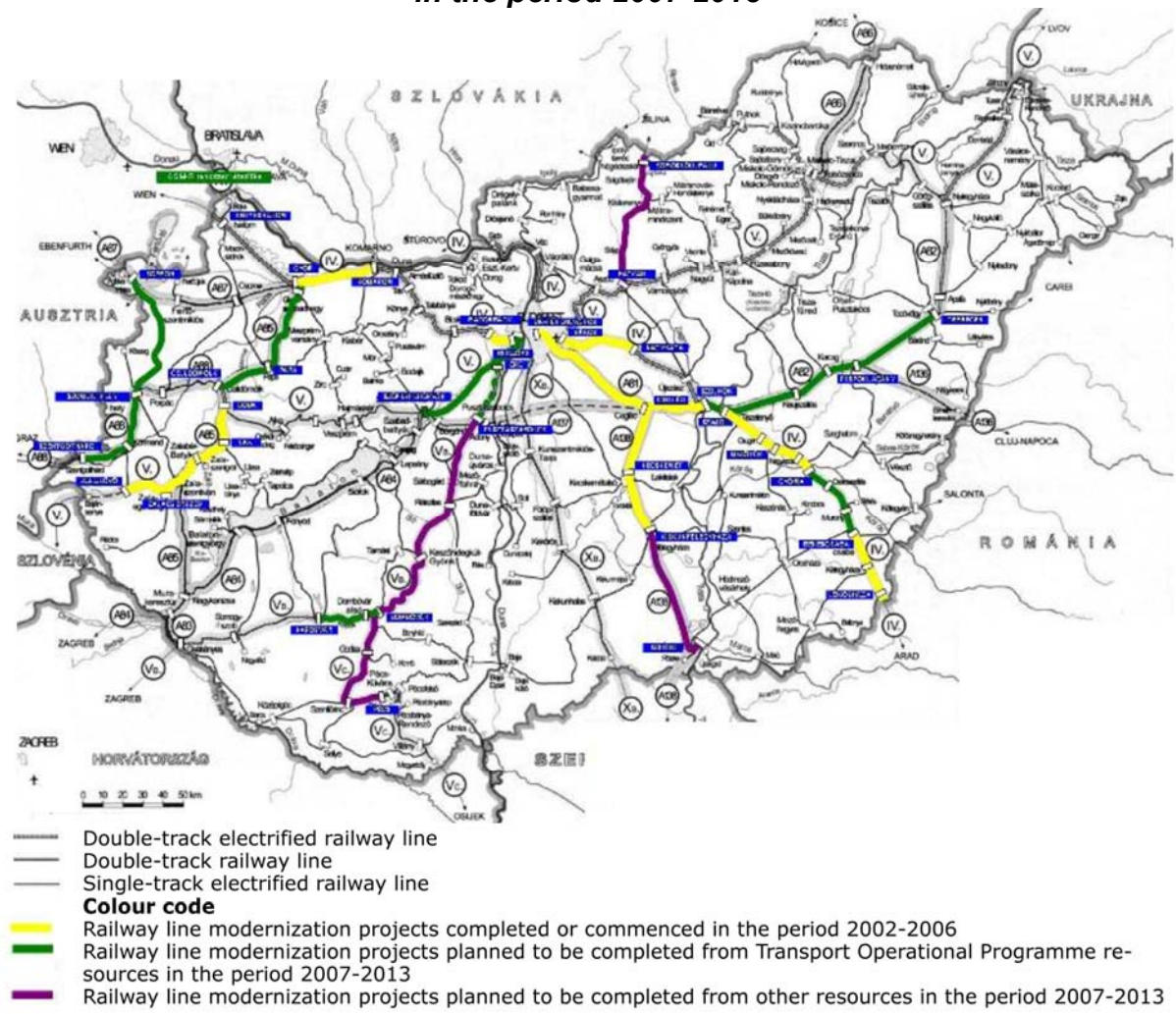
Table 2: Transport Operational Programme railway developments in the period 2007-2013

Description	Parameter			MÁV proposal (Sept. 2006)	Revised cost plan	Reconstruction period
	track	speed	kN	billion HUF	billion HUF	
Corridor IV						
Szolnok – Lőkösháza, Phase III	2,1	120-160	225	111	**105**	2008-2012
Corridor V						
Szolnok – Püspök-ladány	2	160	225	180	**120**	2008-2013
Budapest – Székesfehérvár (+ railway station reconstruction)	2	120-160	225	123	**154**	2008-2012
Győr – Pápa – Celldömölk – Boba	1	160	225	99	**6**	2009-2013
Corridor V.B						
Budapest – Pusz-taszabolcs	2	120-160	225	111	**0**	2014-2020
Dombóvár – Ka-posvár	1	120	225	44	**0**	2014-2020
Network devel-opment						
Building up a GSM-R system				85	**58**	2008-2010
Total:				**753**	**458**	
Budapest suburban project				110	**98**	2008-2013
Grand total:				**863**	**550**	

Source: MÁV

In contrast to the reconciled projects, the state reviewed the necessary projects, and due to the lack of financial resources, it cut back railway developments to HUF 550 billion (EUR 2 billion) in the period 2007-2013. Even as compared to this reduced investment amount, the actual developments are lagging behind time-proportionately.

Figure 29: Development tasks of the Hungarian national railway network in the period 2007-2013



In terms of quantities, the current combined freight transportation terminal network is able to provide adequate services for the Hungarian and international intermodal traffic. It is necessary to ensure that the technical standard and the capacity of the terminals meets the needs of the ever growing intermodal traffic; coverage for that could be provided by the New Hungary Development Plan (2007-2013) and by own funds.

Examples for the elimination of railway station bottlenecks:

- Budapest-Ferencváros central marshalling yard: the railway station is characterized by poor technical condition and obsolete technology.
- Budapest Intermodal Logistical Centre (BILK) terminal station: the station's train receiving capacity is inadequate.
- Miskolc marshalling yard: the station's marshalling yard is obsolete and its technical condition is poor. A part of the track network can only be used at a speed of 5 km/h, which reduces significantly the hump's performance.
- Kelebia border-crossing station: the available track network is unable to carry the current and continuously growing train traffic without serious congestions.
- Dunaújváros railway station: the local iron works would steadily increase its goods traffic, but this is hindered by the station's inadequate track network and obsolete rail safety systems.

Examples for the elimination of railway line bottlenecks:

- Railway line No. V/0 (owing to the limited capacity of railway lines linking to Budapest): Construction of the railway line bypassing Budapest to the south (it is not included in the plans of Hungarian State Railway Co., MÁV until 2020).
- Railway line No. 2: Resolving the problem of supplying the Suzuki car manufacturing plant based in Esztergom. The rail tracks are too short and the empty trains have to be moved in for the loading from other railway stations in a manner that the trains are separated into several smaller parts.
- Railway line No. 100a, Kőbánya-Kispest–Vecsés (Ferihegy 1 Airport): On the high-speed railway line leading to Ferihegy Airport, the railway line's rhythmic scheduled traffic load causes serious congestions in the freight train traffic.
- Railway line No. 150, Budapest-Soroksári Road–Soroksár/Kelebia: Congestions occur on the single-track line because of the service provided to the Budapest Intermodal Logistical Centre and the increased traffic on the primary railway line of Kelebia. It is necessary to ensure connection for the Budapest Intermodal Logistical Centre terminal station from the direction of Kelebia.
- Railway line No. 49, increasing the throughput on the section between Dunaújváros and the Duna Iron Works: resolving the problem of traction changes.
- Railway line No. 1-100-140: increasing the crossing possibilities of Ro-La trains on the railway line sections permitted for Ro-La traffic. The switches on the traffic route should be made suitable for routing trains into rail-sidings without speed reduction.
- Railway line No. 80, Bükkábrány–Mezőkeresztes, Nagyút-Visonta line section: track speeds, which are currently only 30 km/h in some places, should be raised to at least 80 km/h, and the temporary slow runs should be eliminated.

2.5. Examples of mistaken measures that impair the position of railway transportation

In recent years, numerous cases occurred when railway freight transportation would have been feasible, and yet, road haulage was chosen. We list some examples below. (The last two examples concern water transport. This is to show that not only rail, but also water transport is unduly disadvantaged in comparison to road transport.)

- In the Budapest Agglomeration, the logistical centres established in the past 10 years (with an aggregate area of around 500 thousand square metres) were constructed without any railway connection.
- In Dunaújváros, in the case of the Hankook factory (which started production in 2007), even though tyre manufacturing involves a considerable transport, the planned industrial tracks were not constructed; thus, all goods transported to and from the factory (which are suited for railway transportation) are now carried by road.
- The railway connection of Gönyű Port on the Danube was constructed in August 2008 by means of substantial state resources; due to construction problems, however, use permit has not been issued for the industrial tracks up until now, and so the facility is unable to carry out any railway transportation..
- From the Mátra Power Plant, around 100 000 tonnes of flue ashes are carried annually by road to Beremend (situated at a distance of 380 kilometres), while this could be done by rail, too.
- From the quarries in the vicinity of Recsk, the stone was carried (and is being still carried) by heavy trucks for the construction of motorways and other roads, even though a railway line passes along the quarries.
- For the reconstruction of the railway line between Ukk and Zalaszentiván, huge quantities of stones are carried by road from Uzsabánya, despite the fact that there is a railway track next to the quarry.

- Large quantities of gigantic concrete tubes necessary for the Budapest metro construction were carried by road from Bratislava (Slovakia) to Etele Square in Budapest, even though there are railways both near the Bratislava loading site and at Etele Square.
- Along Lake Balaton, stones were carried from Ordacsehi by road for the construction of motorway M7, although there is railway connection all along the transport route.
- In Tatabánya, annually 100 000 tonnes of limestone are carried by road over a distance of 16 kilometres – through a populated area – from the Vértes Power Plant, despite the fact that a parallel railway line is available.
- During the reconstruction of the Suburban Railways (HÉV) of Szentendre, the complete railway track and the substructure are replaced between Békásmegyer and Szentendre. It is planned to move all the soil, road-metal and rails along the jammed roads of Budapest and its Agglomeration, even though railway transportation is also possible on this area.
- During the metro construction at Gellért Square and Fővám Square (on the banks of the Danube River), the excavated soil has been carried away by trucks, even though ships could be used for this purpose, and along the Danube there are territories where this soil – which is practically free from any contamination – could be utilized.
- For the constructions going on at the Buda-side Danube quay, the stone and gravel excavated from the Danube River were carried on road No. 11 (which is congested as it is, without this additional traffic), going through the towns and villages situated along the road, while there was no technical obstacle for carrying it on water.

The reason given by those who placed orders (mostly government instances) for road haulage was invariably the lower costs as compared to transportation by rail or by water. On the other hand, local governments demand funds of often running up to several hundreds of millions of Forints (or in some cases even billions of Forints) for repairing the roads damaged by heavy trucks roaring across their towns and villages. Inhabitants complain about the damage caused to their real properties, about the deterioration of their health and the loss of their earlier quiet living conditions. Both local residents and drivers report increased risks of accidents, which also impair their living conditions. Thus, all things considered, it is an everyday practice that road haulage costs much more at the national economic level than transportation by rail or by water; however, this is not reflected in the prices of road transports.
It is to be mentioned here that concerning the industrial tracks (side-tracks), serious unsettled issues arose after the change of regime. The unsettled ownership conditions of own-purpose railway tracks and of the land on which these tracks are situated, pose fundamental obstacles to achieving an upswing of rail traffic related to industrial tracks. Legally clear ownership is a precondition for obtaining permits and for being eligible for grants Various rules of law and authority decrees are to be harmonized, and uniform terminologies and definitions are to be applied. Furthermore, there are substantial backlogs in the maintenance of traction tracks and industrial tracks managed by MÁV.

2.6. Further developments facilitating railway transportation

On the other hand, there are also good examples which demonstrate that even under the present conditions, the development of railway freight transportation is justified and reasonable in Hungary.

- The good location and well-considered establishment of the Budapest Intermodal Logistical Centre (BILK) contributed to generating important railway freight traffic here. A separate MÁV railway station was constructed to serve the logistical centre. Both the con-

tainer terminal and depot, and the logistical centre have their own track network. The intermodal logistical centre serves annually 120 000 TEU[12] containers, and carries out a conventional railway traffic of several thousands of railway wagons.

- Heavy-traffic regional logistical centres in Székesfehérvár, Debrecen, Szolnok, Miskolc, Kecskemét and other places were built with railway connections, and they serve considerable combined transport volumes.

- The RoLa terminal of Kiskundorozsma was constructed in 1993. Since that time until March 2010 746 000 heavy trucks were transported by rail from that terminal.

- **Supplying Audi Hungaria Motor Kft. by rail**
  The Audi car manufacturing factory of Győr carries out an important part of its transport by rail, and it has a sizeable industrial track network. In the traffic between Győr and Ingolstadt, 16 thousand trains ran from the start of the service in 1997 to the end of the first half of 2008.
  Audi Hungaria Motor Kft. manufactures almost the entire range of engines of Audi Group, and supplies engines for the makes Volkswagen, Seat and Skoda. Audi Hungaria is the one and only factory in the world where Audi TT sports cars and Audi A3 Cabriolet cars are assembled, under a cooperation manufacturing arrangement between the plants in Győr and in Ingolstadt.
  Rail transportation services provided for the production are fundamentally based on the cooperation manufacturing arrangement. Closed train transportation between the parent company in Ingolstadt and the Győr plant was started in October 1997, with the participation of the railways DB, RCA and MÁV Cargo (currently: RCHUN).

Figure 28: The 15,000th Audi train arrive to the Győr pre-marshalling station

[12] Twenty-foot equivalent unit, a measure used for capacity in container transportation

Initially 6 pairs of trains ran every week; then this traffic was stepped up to 18 pairs of trains per week. Up until today 17,000 trains ran, which means that more than 50 per cent of all supplies to Audi Hungaria were transported by rail.
The trains are 650 metres long, with a gross load of 1400 tonnes. These trains run with a very tight schedule: they cover the distance between Győr and Ingolstadt in 11.5 hours, without any change of locomotive or any stay at border-crossing. Audi Hungaria's railway logistics in Győr are performed by DB's subsidiary, LCH Hungaria.

Figure 29: The company LCH Hungaria sets the AUDI train on the industrial side-track

Car-bodies and other car components arrive from Ingolstadt for the assembly of the Audi TT and the Audi A3 Cabriolet cars, plus the components needed for engine manufacturing. The finished motorcars and the engines to be built into other cars of the VW Group are transported from Győr to the logistical centre of the German parent company.

Figure 30: The finished cars are loaded into the AUDI train

Supplies to Audi Hungaria are organized according to the “just-in-time” (JIT) principle: the plant keeps no stocks at all; the components are put onto the manufacturing line directly from the railway wagons.

Figure 31: In accordance with the JIT principle, the railway wagons are loaded in the manufacturing hall

- The Mercedes car manufacturing factory to be established in Kecskemét is also planning to use railway transportation.

3. Recommendations for measures to lessen the competitive disadvantage of railway freight transportation

It is indispensable that the government elaborates a programme with the aim of gradually levelling out the favourable competitive conditions which currently are only granted to the road carrier subsector and not to the railway transportation subsector, and with the aim of creating thereby a fair competitive environment, in line with the strategic goals of the European Union and Hungary. Relevant professional organizations should also be involved in the programme’s preparation. With the participation of representatives of the freight transportation subsector, the model of Hungarian sustainable transport could be elaborated, along with the measures necessary for its implementation and the timing of these measures.

3.1. Amendment of the Act on Railway Transport

The Railway Act aims to enforce the principles determined in the national transport policy, to fit Hungary’s railway transport into the ever more unified international railway transport systems, to facilitate the expansion of demand for the environmentally sound transport services provided by railways, and to ensure the safety of railway transport.

The Railway Act covers railway systems situated within the territory of the Republic of Hungary, domestic railway transport and railway transport activities carried out within Hungary, the rights and obligations pertaining thereto, as well as the natural persons and entities that

manage, operate, and participate in, railway transport activities carried out within the territory of the Republic of Hungary.

In 2009, the Hungarian Parliament passed another law on railway transport, which became effective as of December 2009. The new law's only objective is to meet the law harmonization requirements of the European Union.

With the amendment of the Railway Act and with its transformation into an infrastructure statute, the preconditions for a network access tariff system facilitating the improvement of track railway service standards and the reduction of rail track charges can be effectively created, and at the same the obligation for assuming responsibility for the standard of track railway services can be declared. In order to achieve that, the following key modifications are necessary:

- The term "railway public service" must be formulated more precisely by determining its quantitative and qualitative parameters so performance and cost-effectiveness, considering externality costs, can be measured, monitored, and made a factor in allocation of funding and investment.
- The entity participating in the development must determine the technical content of railway track constructions, development projects and renovations by taking into consideration the opinion of companies holding railway operating licences.
- Minimum required quality standards are to be determined for the technical parameters of some elements of the railway track infrastructure and for the services related to traffic management.
- In its annual business plan, the operator of the national railway track network must ensure adequate service standards and the improvement thereof, and it must provide relevant assets for that purpose.
- In the property management agreement related to the operation of national, suburban and regional railway track networks, it is necessary to determine the minimum technical standards to be maintained for the track infrastructure elements.
- A railway freight transportation public service agreement must be concluded, and the concept of railway freight transportation public service agreement must be defined. This relates to state financing for the railway part of combined freight transportation.
- Training, education and examination for jobs associated with the safety of railway transport must be performed by an educational institution that obtained accreditation.
- The operator of the railway track network must be obliged to publish in an up-to-date manner the free railway track capacities accessible for eligible users, on the basis of which the railway companies can prepare their orders.
- Traffic rules for railway transport must be regulated in a statute. At present, these are comprised in MÁV's internal instructions (F1, F2), and these also apply to railway track networks that are not owned or operated by MÁV.

3.2. Conclusion of a track railway public agreement

It is necessary to conclude a railway track infrastructure operating (public) agreement for a duration of at least five years, which will render the financing of track railways predictable. This may be the initial step for shifting the approach related to the Hungarian track railways (which essentially determine the competitiveness of operative railway activities) from the "cost-saving at any price" mentality to a "service provider" mindset – in the spirit of "achieving the greatest social benefit". This agreement should set forth:

– the rules of cost reimbursement by the state in the case of costs incurred, and admitted as justified, in connection with the operation of the national railway track network, and/or the

operation of regional and suburban railway track networks comprising state-owned railway tracks;

– the rules pertaining to the development or closing down of the national railway track network.

3.3. Cancellation of the decree concerning the General Terms and Conditions of Railway Freight Transportation

Cancellation (or a drastic abbreviation) of the pertinent decree is necessary, since in a liberalized railway freight transportation there is no need for a detailed separate regulation (similarly to road freight transportation). The provisions of the Hungarian Civil Code relating to haulage contracts constitute appropriate regulation; based on that, individual railway companies can prepare – if they deem it necessary – their own general terms and conditions. There is no such special (detailed) statutory regulation in the case of road haulage either.
Railway passenger transport's current absolute advantage is to be eliminated in the case of low-priority trains. Modern combined transportation must have priority when planning railway freight timetables. For priority freight transportation routes, adequate quantities of track capacities are to be reserved during the preliminary timetable planning.

3.4. Determination of the railway development programme's elements

The railway development programme is currently financed through EU subsidies. It is in the interest of both the European Union and Hungary that the investment projects meet the Union's objectives, and that they result in the greatest social and economic benefit. Therefore, it is justified that during the programme's elaboration, the opinion of the actual users of railway services are also taken into consideration. It is important that resources are available even for the preparatory work of railway projects, and that the preparation is started in due time.

3.5. Modification of the preconditions of subsidization for new production units to be implemented by means of state subsidies

When a new investment into a production facility is subsidized by the state, a precondition for the subsidy should be that the facility is accessible by railway and rails are used for transportation whenever this is technically possible and economically reasonable. Moreover, appropriate state incentives should be in place. Good railway service should be one of the criteria already at the time of selecting the development area.

3.6. Railway connection of logistical centres

In the case of logistical centres to be constructed in the future, it must be a fundamental requirement that railway services are ensured for the centres.

3.7. Creating container handling capabilities for the existing logistical centres, and for freight senders and/or recipients

In order to ensure that the advantages of modern logistical systems do not only benefit newly established enterprises, a state subsidization programme should be launched, through which the already operating logistical centres could make themselves suited for receiving and handling containers. This could be carried out with EU aid as a part of the New Hungary Development Plan.

3.8. Expansion of state subsidization funds granted to combined transportation

he Hungarian Government and the European Commission should help expand combined freight transportation (this is the most advanced type of railway freight transportation, having the greatest potential even in Western Europe), including the transportation of semi-trailers, swap bodies, containers and trucks as well. Combined transportation is the only railway transportation form for which state subsidization is permitted by the European Union. The EU attaches great importance to combined freight transportation's role in the modal change that was set as a goal in its transport policy. The extent of annual state subsidies granted through track use tariff preferences should be significantly increased (at least up to three times their current level, i.e. up to HUF 2.7 billion) until road charges reach the necessary level. This will make it possible to re-establish the collection and distribution traffic between Budapest's terminals and the regional terminals; as mentioned above, this traffic is currently performed by trucks.

3.9. Reduction of railway track use tariffs

As an administrative measure, the position of railway transportation can be improved by introducing track use tariff preferences for certain goods, until distance-related road charges are imposed:
– in transit traffic, in the case of closed trains: 20 %
– in combined traffic: 50 %
– in international grain and timber export traffic: 20 %
It is necessary to make the freight charges of railway combined transportation competitive in relation to road haulage, the less environmentally friendly transportation mode, by means of market-based regulations which also take into account the external costs. A healthy cooperation should be created between the road transport and railway transport subsectors.
It is not about higher combined transportation freight charges, but rather about the subsidization of railway tariffs in order to improve the competitiveness of the environmentally friendly transportation mode, and about granting preferences, not only in the case of accompanied Ro-La traffic, but also in the case of unaccompanied container transportation. In Europe, there are examples for such practice: e.g. in Austria, both the accompanied Ro-La and the unaccompanied container transportation receive state subsidies.

3.10. Introduction of a usage-based road charging system

For heavy motor vehicles, a usage-based (distance-based) road charging system should be introduced on all roads in Hungary. Simultaneously with that, a statute should provide that a certain portion of the revenues must be spent on railway developments which contribute to sustainability. (The situation of road pricing in Hungary is described in more detail in Chapter 5.) The arguments for such measures in Hungary can be found in other studies by CAAG.[13]

3.11. Elimination of network bottlenecks

The utilization rate of wagons would significantly improve as a result of getting rid of the losses of efficiency ensuing from the speed and weight limitations (described already above) and the frequent railway engine changes due to insufficient electrification. This would reduce the need for renting and purchasing additional wagons, and so it would cut the operational costs of railway companies.

[13] Some of these studies and other materials can be found in English on the website http://www.levego.hu/kamionstop/eng/indexe.html

Since the privatization, MÁV Cargo (currently: RCHUN) as a market leader Hungarian railway freight company, has been continuously analyzing the efficiency of its assets. For the purpose of improving the efficiency of freight wagons, the number of loadings completed in a given period of time can be a fundamental indicator. Although it is not a perfect indicator, as it is influenced by several factors, it can show how many times the wagon series were used. Last year this indicator remained under the expected level, since as a consequence of the economic crisis the demand for freight transports dropped, whereas the freight wagons had already passed their general technical examinations earlier.
At MÁV Cargo (RCHUN), capacity optimization has already been partly completed, which has resulted in increased efficiency. Besides the capacities, its level is also influenced by the wagon turn-round times, an element of which is the time spent in running. It is necessary to implement here the anticipated developments: e.g. running at a speed of 100 km/h, which brings about advantages in the case of closed trains, while in the case of dispersed shipments not necessarily so.
In the past 3 to 5 years, railway goods transportation predominantly moved from individual wagon traffic towards wagon group traffic and direct train traffic, which also greatly contributed to efficiency improvement.
We have no data for an international comparison; in fact, it would be difficult to prepare any such comparison because the neighbouring countries have different endowments and characteristics than Hungary.

For the purpose of catching up with backlogs of maintenance work and carrying out the necessary renovations, MÁV should be granted earmarked subsidies in the value of at least HUF 5 to 7 billion (EUR 19 to 26 million) annually.
This amount is necessary for easing the network's inadequate capacity and for reducing slow signals on the primary railway lines. Of course, this cannot make up for the considerable backlogs of maintenance and development, but could greatly contribute to enhancing the tracks' throughput capacity.
Railway development projects should render the railway station infrastructure suited for providing intermodal services. Investigations should be conducted regarding the feasibility of a new track section bypassing Budapest to the south (which would greatly improve the speed of east-west railway transit). A preliminary study should be prepared about this project in order to lay the foundations for decision-making.

3.12. Weekend traffic restriction for heavy trucks

The ministerial decree issued to introduce a weekend traffic restriction ("truck stop decree") must be reinstated in accordance with its original objective. Namely, in 2009, the decree was substantially weakened, allowing much more heavy truck traffic during the weekends than previously.

In the 1990s, restriction of the weekend traffic of heavy trucks (vehicles with a total permitted weight above 7.5 tonnes) became a general practice in most European countries. It was justified by the need to improve traffic safety and to allow free leisure time traffic for citizens. In Hungary this aim was effected by the enactment of Government Decree No. 111/1995. (IX. 21.) on the Restriction of the Traffic of Heavy Trucks. In Hungary, too, the main reason for introducing this restriction (among others due to the unsatisfactory technical condition of the transit roads) was the intention to preserve people's weekend peace and quiet and to facilitate free leisure time traffic. Overall, the duration of this restriction does not significantly reduce the traffic of heavy trucks and the environmental pollution that they cause, since before and after the restriction period most of this traffic does take place anyway. On the other hand, the weekend traffic restriction contributes to some extent to the expansion of RoLa traffic.
Road carriers, however, did put pressurize and still keep putting pressure on the Government in order to have the weekend traffic restrictions eased. As a result (despite pro-

tests by Hungrail and by Clean Air Action Group), the weekend traffic restriction was relaxed in 2008 as compared to the previous practice.
In contrast to the earlier regulation, the following key changes were introduced:

- *Modification of the restriction period:* the summer weekend restriction is in effect between 1st July and 31st August, whereas formerly this restriction period started on 15th June; the restriction begins at 3 p.m. on every Saturday (instead of the earlier starting time of 8 a.m.) and lasts until 10 p.m. on Sundays;
- *Traffic to the registered depot:* the restriction does not apply to trucks arriving to their registered Hungarian depots, allowing them unrestricted homecoming (formerly there was no such possibility).

The restriction remains in force all year long on Sundays and on public holidays until 10 p.m., from 10 p.m. of the preceding day.
Exemption may be granted to heavy trucks which are classified at least into environmental protection category 7 (EURO 3), in the case of performing any of the transportation activities specified below:

- freight transports that cannot be completed by any other means of transportation,
- production and commercial supply systems in continuous goods supply,
- elimination of emerging troubles and defects,
- transports related to production technologies of continuous operation,
- unique type transports requiring special arrangements.

The traffic restriction does not apply to heavy trucks:

- operated by the Hungarian Defence Forces, the police, the national security services, the law-enforcement agencies, the fire protection, civil defence and disaster management agencies, as well as by the National Customs and Finance Guard,
- performing combined goods transportation (defined in a separate statute[14])
  - between the reloading station (combined terminal) and the unloading or loading site, or
  - between the reloading station situated nearest to the border-crossing station and the border-crossing station,
- performing disaster and water damage control and prevention, or rendering assistance,
- performing technical, post-accident and cargo salvage,
- performing communal duties (including communal hygiene services, communal waste treatment, public hygiene activities and public utility trouble-shooting),
- used for the construction of roads, railways or public utilities, and for the maintenance, repair or cleaning of roads, railways or public utilities,
- used for freight transportation associated with the harvesting of agricultural produces, for forage transportation, or for the relocation of agricultural machinery or slow vehicles,
- transporting live animals, fresh milk, dairy products, fresh and frozen meat and meat products, fresh bakery products, quickly perishable foodstuff, eggs, fresh vegetables (goods) (as defined in a separate statute),
- running between the state border and the nearest parking facility designated for this purpose by the transport authority,
- running from the state border to their registered Hungarian depot or unloading site, without using the routes specified in Appendix 4 in the period stipulated in item a) of paragraph (1) of Section 2,

- used for transporting equipment and animals for cultural, commercial and sports events (including transports associated with radio and television recording sessions and film shooting sessions on outside locations),
- transporting shipments treated as humanitarian type shipments based upon the initiative of a humanitarian organization,
- used for moving furniture and belongings of private persons,
- performing transportation to and from railway stations, ports and airports (from and to the station situated nearest to the business premises of the sender or the recipient company) of goods arriving or being forwarded during the period of the traffic restriction,
- carrying shipments of fresh flowers or cargos comprised of live plants,
- performing the transportation of postal letters, parcels and newspapers,
- running empty for a transportation purpose defined under item h),
- running without tow, and being a tractor truck construction with a total weight of at most 7.5 tonnes, classified at least into environmental protection category 7 (EURO 3),
- running in the period stipulated in paragraph (1) of Section 2, on the basis of a consent issued by the public road management entity in accordance with the provisions set forth in a separate statute,
- performing the transportation of liquid or gaseous fuels intended for commercial distribution and for consumption, classified at least into environmental protection category 7 (EURO 3).

3.13. Reducing tax evasion in road freight transport

Tax evasion is very widespread in road freight transport. In railway transport it is practically impossible to evade taxes. Obviously, it means a highly preferred status for a subsector if it does not have to pay a considerable part of the applicable taxes and customs duties, in contrast to the competing subsectors (mostly the railways) which do have to pay all these public charges. Strict measures must be taken in order to reduce tax evasion by road transport companies.[15]

3.14. Reducing violation of safety rules in road freight transport

Violation of road safety rules and other similar regulations is much more widespread in road freight transportation than in rail transport. This is partly due to more lenient rules, but mostly to the lack of control. This is also constitutes a shockingly great preference to road transportation. Therefore more strict safety regulations should be introduced for road freight transport, but most importantly, at least the existing rules must be enforced. The police, transport authorities and other competent agencies should intensify their controls in order to prevent infractions and criminal acts. Severe punishment should be inflicted upon speeding, loads exceeding the permitted weight, non-observance of technical requirements, infringement of requirements concerning rest times, avoidance of payment of taxes and customs duties, as well as upon other illegal acts.

[15] For more detailed description see: **Freight: From Heavy Trucks to Rail** by András Lukács and Lázár Pavics, Clean Air Action Group, Budapest, 2006, http://levego.hu/kamionstop/kamionbooklet1.pdf

3.15. Compensation of the costs of passenger transport

It represents a further preference for road transportation that the profits realized by the goods transportation division of the Hungarian State Railways Co. (MÁV) have been siphoned off year after year in the past two decades, making it practically impossible for the company to implement any improvements or even the necessary maintenance and upkeep works. The Hungarian state ordered MÁV, a state-owned company, to perform its passenger transportation activities with a loss, and to try and cover the deficit so incurred by using the profits realized on rail freight transportation. This practice is totally contrary not only to the principles of market economy but also to the regulations of the European Union. Although there have been some improvements in the last few years in this regard, it is necessary that the Hungarian government pay to the railways the full debt it has accumulated during the past years by not paying for the services it ordered. This would greatly improve the competitiveness of both passenger and freight railway transport, as this way funds would be available for renewing the infrastructure.

3.16. No preferential treatment for motorway investments

It means a further significant preference for road transport that since the entry into force of Act CXXVIII of 2003 on the Public Interest Character and Development of the High-Speed Road Network of the Republic of Hungary (the so-called Motorway Act), the construction of expressways is subject to much more lenient statutory requirements than other investment projects. The environmental protection and building licensing procedures have to be conducted at an accelerated pace, and civil organizations' commenting and intervening possibilities are very much limited – such and other similar preferences are being granted only to motorway constructions. Other investment projects, for example railway investments, are not eligible for such preferences. Therefore these preferences should be abolished.

3.17. Making rail freight transport compulsory in certain cases

As we have shown in Chapter 2.4, in a number of cases goods are transported by road when the possibility exists to transport them in rail without any special difficulties. In order to reduce the number of such cases, in each case, it is necessary to explore the possibility that construction and other materials be transported by rail over the entire transportation distance or at least a part of it. If such possibility does exist, then it should be compulsory to use that possibility in the case of state orders, e.g. road constructions. In the case of private investments serious arguments must be given for not using railways as a condition for permitting the investment. (It cannot be a criterion for decision that the partial railway transportation is seemingly more expensive for the state because of the additional re-loading. Firstly, if the construction materials are transported by trucks, the residents of the affected settlements will sustain much more damage than the sums which may be saved by the state. Secondly, as was laid down by the Supreme Court of Hungary in its judgment No. Gf.IV.30.879/1998/17, passed on 13th May 1999, in the event of endangerment of the environment, economic interests may not be considered.)

3.18. Easing the administrative burden associated with railway management and the railway authority

The costs payable in connection with obtaining and maintaining the operating permit are exceptionally high in the railway subsector. It is also unjustified that the railway authority im-

poses a reporting obligation when subcontractor agreements are modified, and that it levies railway management charges.
The system of currently applied railway management charges should be revised, in view of the fact that there are no charges of similar nature for road and water transport, and that these railway management charges impose unjustified administrative burden and costs upon railway operators.

Fees associated with the procedures of the Hungarian railway management agency

1. Procedures related to operation licences	*HUF/piece*
a) issuance of operation licences	
1. *a)* national, track network operation	2 271000
1. *b)* national, enterprising railway	2 271000
2. *a)* suburban, track network operation	454 000
2. *b)* suburban, track network operation with exemption from open access	681 000
2. *c)* suburban, enterprising railway	227 000
3. *a)* regional, track network operation	454 000
3. *b)* regional, track network operation with exemption from open access	681 000
3. c) regional, enterprising railway	23 000
3. *d)* regional, if it is of narrower gauge than the national railway track networks, track network operation	23 000

1 Repealed by paragraph (2) of Section 3 of Decree No. 9/2008 (VI. 30.) of the Ministry of Transport, Telecommunication and Energy. Effective: 2nd July 2008
1

3. *e)* regional, if it is of narrower gauge than the national railway track networks, enterprising railway	23 000
4. *a)* local, track network operation	454 000
4. *b)* local, track network operation with exemption from open access	681 000
4. *c)* local, enterprising railway	23 000
4. *d)* local ski lift, track network operation	23 000
4. *e)* local ski lift, passenger transport	15 000
5. *a)* for own purpose, track network operation	38 000
5. *b)* for own purpose, track network operation with exemption from open access	265 000
5. *c)* for own purpose, goods forwarding	38 000

b) 1. fee charged for the modification of the operation licence: 50% of that of the issuance of the licence
(including: reclassification of a provisional operation licence into operation licence, reclassification of a suspended operation licence into operation licence, extension of deadline for the commencement of activities, modification necessary on account of a review ordered in the case of mergers)

c) 2. modification of the operation licence with respect to exemption from open access or its revocation	227 000

d) the fee charged for the compulsory review of the operation licence every 5 years is equal to that of the issuance of the licence

2. Litigation procedures upon the request of organizations entitled to open access or of the integrated railway company

a) procedures instituted on account of any violation of any of the obligations set forth in the Network Business Code by the track railway company, the Railway Track Capacity Distributing Organization or the integrated railway company	227 000
b) procedures instituted on account of any provision in the Network Business Code which is contrary to the requirement of discrimination-free procedures	227 000
c) procedures instituted on account of any provision which is contrary to the provisions set forth in Act CLXXXIII of 2005 on Railway Transport or in a separate statute with respect to the amount or structure of the network access charges determined in the Network Business Code	454 000

d) procedures instituted on account of any violation of the procedural rules in the course of distributing the railway track network capacity 227 000
e) procedures instituted on account of any result of the procedure related to the distribution of the railway track network capacity which is in violation of any applicable statutes or contrary to the provisions set forth in the Network Business Code 454 000
f) procedures instituted on account of any violation of the procedural rules committed in the course of handling any individual request related to the provision of railway track network capacity or any result of the procedure related to the distribution of the railway track network capacity which is in violation of any applicable statutes or contrary to the provisions set forth in the Network Business Code 227 000
g) procedures instituted on account of any violation of the agreement concluded on the subject matter of open access to the railway track network 227 000
h) procedures instituted on account of any determination of the network access charges payable for using the railway route, which is in violation of any applicable statutes or contrary to the provisions set forth in the Network Business Code 227 000
3. *Approval of business codes (passenger transport, freight transportation, traction) and the amendments thereof*
a) per standard page 3 000
b) minimum fee 69 000
c) regional business code prepared on the basis of a model business code 15 000
d) ski lift business code prepared on the basis of a model business code 15 000
4. Approval of general agreements 2 2710 00
5. Approval of the internal agreement of the integrated railway company 2 271 000

It is apparent from the above list that very severe and complicated fee payment obligations apply to railway freight transportation. This is in stark contrast to road haulage, where only a much smaller number of fees are payable, and where the rates of such fees are also much lower than in the case of railways.

3.19. Elimination of EU funding for roads

All funding from EU sources for road construction and maintenance should be stopped. Road infrastructure use must be paid completely by the users. The detailed arguments for this recommendation can be found in Chapter 4.

4. EU funding for transport

The website of the European Commission summarizes the EU funding for transport to Hungary as follows[16]:

Operational Programme 'Transport'

Programme under the Convergence Objective, co-funded by the European Regional Development Fund (ERDF) and the Cohesion Fund

On 1 August 2007, the European Commission approved Hungary's Operational Programme for Transport for the period 2007-13. The Operational Programme falls within the framework laid out for the Convergence Objective and has a total budget of around €7.3 billion. Community assistance through the European Regional Development Fund (ERDF) and the Cohesion Fund amounts to some €6.2 billion, which represents approximately 24.5% of the total EU investment earmarked for Hungary under the Cohesion Policy for 2007-13.

1. The purpose and aim of the EU investment

The Operational Programme will support the development of transport infrastructure, which is seen as essential to increase economic competitiveness and stimulate job creation – the two key objectives of the EU's Lisbon Strategy for growth and jobs.

Good quality transport links make it easier for people to commute to and from work. The better the links the greater distances people can travel efficiently, which in itself can enable more people to enter the jobs market. What's more, improving transport links can also strengthen social and territorial cohesion.

The programme has the following specific objectives:

- *Improving Hungary's integration into the European economy and developing transport infrastructure that can support the country's emerging markets;*
- *Improving accessibility to Hungary's regions, both within and between individual regions;*
- *Improving the intermodality of Hungary's transport systems in a way that supports economic competitiveness;*
- *Contributing to the sustainable and economical development of public transport systems.*

2. Expected impact of the investment

The Programme's impact will be seen in various infrastructure developments, which include:

- *constructing about 330 km of new expressways;*
- *modernising about 500 km of railway track, including the upgrade of IT, safety and traffic control equipment;*
- *upgrading about 1100 km of roads so that they can take an 11.5 tonnes axle load capacity.*

The Programme will also provide Hungary with a host of new urban transport systems including a sub-urban railway for Budapest. In addition, urban transport will be improved in Hungary's major regional centres through investment in infrastructure such as trams, trolley buses, intermodal hubs, etc. Money will also be set aside to build metro line No 4 in Budapest.

3. Priorities

The Operational Programme is structured around the following priorities:

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16 http://ec.europa.eu/regional_policy/country/prordn/details_new.cfm?gv_PAY=HU&gv_reg=ALL&gv_PGM=1183&LAN=7&gv_per=2&gv_defL=7, updated 06-09-2009

Priority 1: Improving international accessibility to the country's road network and regional centres [approximately 19.0% of total funding]
Increasing international access to Hungary is vital for the country's economic prospects. Access to regional centres via the road network must also be improved. Work to address these issues includes developing Hungarian motorways and expressways that form part of the EU's Trans-European Transport Network (TEN-T). The new expressways, which are to be built using programme funding, will help to improve accessibility, reduce environmental load and increase transport safety.

Priority 2: Improving international accessibility to the country's rail and waterway networks [approximately 27.7% of total funding]
The objective is to better integrate Hungary into the European economy and to maximise the potential of emerging markets by developing the country's rail and water transport infrastructure.
Activities will include:

- *developing Hungarian railways lines that are part of the TEN-T rail network;*
- *developing relevant information technology and telematics and investing in safety measures; and*
- *developing the Danube as an EU inland waterway corridor.*
-

Priority 3: Improving regional accessibility [approximately 24.5% of total funding]
This priority focuses on improving accessibility to Hungary's regional centres. In practice, this will mean developing main roads to improve links between regions and the TEN-T network. Programme funding will also be used to strengthen the load-bearing capacity of main roads to comply with EU standards.

Priority 4: Linking modes of transport and improving the intermodality and transport infrastructure of economic centres [approximately 2.4% of total funding]
Improving the intermodality of national and regional transport systems is a key priority. The programme will help to develop infrastructure for intelligent traffic management while improving accessibility in economical and environmentally friendly ways. Plans will be drawn up to develop better infrastructure links between the country's main transport networks and important commercial hubs like ports and industrial estates.

Priority 5: Improving urban and sub-urban public transport [approximately 25.0% of total funding]

This priority access intends to make it easier for people to get in and out of Hungary's cities. The focus is on tackling overcrowding on urban transport networks, thereby improving conditions and services for users. These changes will be achieved by establishing an efficient and economic urban transport system.

Priority 6: Technical assistance [approximately 1.3% of total funding]
There is also provision for technical assistance which can be used to implement the programme. Financial support is available to cover administration, monitoring and control.

Breakdown of finances by priority axis

Priority Axis	***EU Contribution***	***National Public Contribution***	***Total Public Contribution***
Improving international accessibility to the country's road network and regional centres (Cohesion Fund)	*1 182 619 139*	*208 697 495*	*1 391 316 634*
Improving international accessibility to the country's rail and waterway networks (Cohesion Fund)	*1 721 106 773*	*303 724 725*	*2 024 831 498*
Improving regional accessibility	*1 526 986*	*269 468 227*	*1 796 454 844*

(ERDF)	*617*		
Linking modes of transport and improving the intermodality and the transport infrastructure of economic centres (ERDF)	*152 074 457*	*26 836 669*	*178 911 126*
Improving urban and sub-urban public transport (Cohesion Fund)	*1 558 804 069*	*275 083 071*	*1 833 887 140*
Technical assistance (Cohesion Fund)	*81 838 094*	*14 442 017*	*96 280 111*
Total	*6 223 429 149*	*1 098 252 204*	*7 321 681 353*

As one can see, 43.5 % (Priorities 1, 3) of the EU transport aid in Hungary is directly financing road constructions. About another 2 % is also spent on roads indirectly (Priorities 4, 5, 6). Besides smaller transport projects (mostly roads) are funded not from the Transport Operational Programme, but from the Regional Operational Programmes. Therefore, altogether more than 50 % of the EU aid to Hungarian transport is spent on road projects. About 25 % of the aid is spent on rail, and a similar sum on urban public transport. (It must be noted, however, that the latter is almost all used for financing a single 7-km metro line in Budapest. This line is now being constructed at tremendous cost, but will do little to influence traffic demand and car traffic. It even encourage car traffic by freeing up more surface space, namely, part of the present surface public transport will be eliminated after the new metro line begins to operate. Other options such as improved traffic priority for buses and trams, and renewal of the very obsolete bus fleet would have been much less costly and bring much more benefits than building the new metro line.

Some of the road constructions funded by the EU can be considered useful also from an environmental point of view. For example, they might help relieve the roads going through densely populated areas. There are being built or planned, but certainly should not be constructed. (Among such roads are those which, for example, will serve mainly urban sprawl, new out-of-the-city shopping malls and real estate speculation, with all their detrimental consequences.

Nevertheless, the Clean Air Action Group and other NGOs are of the opinion that no EU funding should be given at all to road construction and maintenance. The reason for this is that the road users should pay for the costs they cause. (Nobody would think, for example, that the EU should fund the construction and repair of electricity transmission lines. These cost should be paid by the consumers of electricity. There is no reason why this should be otherwise for road transport.)

Road transport users do not pay the full costs of their activity even today. For example, in Hungary each year heavy trucks cause costs amounting to several billion Euros which are not paid by the operators of these vehicles, but by the whole society. Another example is the illegal accounting of private use of cars as company use which results in a loss of revenues for the Hungarian state budget equaling to about 3 per cent of the GDP. All these costs should be internalised into the prices in accordance with the polluter pays principle (Treaty establishing the European Community, Article 174) and with the principles of market economy (Treaty establishing the European Community, Articles 3 and 4). The construction of new roads should be also financed in this way instead of putting more burden on the EU taxpayers.

The Strategic Environmental Assessment of the Transport Operational Program of Hungary came to the conclusion that this Program, if implemented, will promote environmentally un-

sustainable activities. Therefore further EU financial aid for this purpose would violate the EU legislation which allows EU aid only for environmentally sustainable projects.

This structure of the EU aid for transport enhances processes in Hungary which are unsustainable socially, economically as well as environmentally. Environmental NGOs have already warned the European Commission, the European Parliament and the Hungarian governments about these problems, however without real results. It is known that the European Commission has tried on many occasions to refuse those demands of national governments which consider only the short term interests of certain business circles and which are unsustainably on the long term. However, finally the Commission ceded too much to the pressure of national governments, even though these demands violate the basic principles and even the legislation of the European Union concerning market economy, environment and sustainability.

5. Road charging in Hungary

5.1. A brief history of road charging in Hungary

Before the political changes in 1989-1990, for many years, authorities kept the price of motor fuel low and kept the use of roads free of charge as a central element of modernization and industrialization policy for Hungary.
The history of road charging in Hungary is connected to the motorway network, as it is written by Árpád G. Siposs, now the Head of the Toll Strategy Bureau, at the Coordination Centre for Transport Development[17].
In the 1960's the construction of motorways and expressways began, and in the seventies there were some plans to give concessions to private companies to build toll motorways. So the administration has begun to plan road tolls which would have been paid only on motorways. Their attempts did not get the support of politicians, and in 1976 it was declared that "there is no need for foreign investment and toll collection in the socialist Hungarian motorway network". The source of financing remained the central budget.
From 1989 part of the revenues from the motor fuel excise duty was earmarked for the Road Fund which became the only financial source of road maintenance. These improvements helped a little, but the traffic demand grew much faster than the road supply.
By 1994 five toll-free motorway and expressway stretches (M0, M1, M3, M5, M7), altogether a 383 km network was put into operation. But there were not enough resources to maintain the rest of the 30 000-kilometer long national road network. (Besides, there was even less money for the maintenance of the 100 000-kilometer network belonging to the local governments.) For this reason, the administration's attention turned to private financing as an extra financial source.
The first such project were the M1/M15 motorways in the North-Western part of Hungary as a part of the European routes E60, E65, and E75. This project was financed by the private First Hungarian Concession Motorway Co. Ltd. (ELMKA Rt.) and has opened a short era of the direct toll collection on the Hungarian speedway network. The toll collection was implemented and operated by the private Hungarian Transroute Co. Ltd.
At the beginning of 1999 there were 2 private concession companies, 2 private motorway operating companies and 2 state owned motorway companies in Hungary including the State Motorway Management Public Purpose Co. (ÁA Rt.) which was responsible for the still toll-free motorway and expressway sections.
On yearly average, the toll motorway captured only 45% of the traffic from the corridor in comparison to the initially projected rate. Due to the traffic shortage, the concessionaire could perform only 50% (about net EUR 11 million/year) of the initial toll revenue forecast. The project needed a restructuring, so negotiations started between the Shareholders, Lenders and the Transport Ministry. The purpose of the negotiations was an agreement to extend the length of the toll collecting section by 90 km and at the same time to decrease the average toll rate. After the general elections of 1998, the concept was changed and the negotiations detoured towards the buying out the private company. After a yearlong discussion, the parties agreed on the application of the Substituted Entity[18] clause of the Concession Contract.

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[17] Tolling on the Hungarian Motorway Network. Árpád G. Siposs at the PIARC Seminar on Road Pricing with emphasis on Financing, Regulation and Equity, Cancun, Mexico, 2005, April 11-13
Source: http://publications.piarc.org/ressources/documents/actes-seminaires05/c11c12-mexique05/7.1-Siposs-0405C11.pdf (1st of May 2009)
In this historical part we used a lot of information and built in parts from Árpád G. Siposs's lecture.
[18] The Substituted Entity means any Company selected by the Ministry or the Lenders to replace the Concession Company in the Concession Contract who has to enter into the agreements instead of the original Concession Company.

The Ministry established a state owned company, the West Hungarian Motorway Co. Ltd. (called as NyUMA Rt.) which was appointed by the Lenders in September 1999. Through this company the state bought out the Concession Company in a way that this did not incur any losses for the latter; in fact they recovered their part of the investment with a positive rate of return. In short, the state took over all the losses and future risks. Neither lending banks nor the concession company was found in default. As far as it is publicly known, the question of the responsibility of any of them was not even raised by the Government. This case showed that lending to the Hungarian Government for motorway constructions is an excellent business for international financial institutions as there is no risk at all: both the capital and the interest will be completely repaid – if not by others, then by the taxpayers.
After the substitution, the state cut the tolls by half, which resulted in an average 30 % increase of the traffic on the tolled section with a capture rate of 55 %. The revenues decreased by 35 % compared to the previous term. The traffic came from the parallel roads, of course, so this is a good example of the vehicle-oriented thinking in the Hungarian politics. The story shows the importance of a closed network where nobody could find a free of charge alternative.
This was the lesson of the M5 motorway concession, too. That project incorporated a 26 km already existing full motorway reconstruction plus a 30 km 'half motorway' or expressway extension to a full motorway plus a 44 km of new construction financed by the private Alföld (Great Plain) Concession Motorway Co. Ltd. (AKA Rt.).
Right after the opening to traffic of the already existing sections (which were at the same time changed to tolled roads), the inhabitants of villages and towns along the parallel national road began protests against the tolls as the diverting traffic heavily burdened the parallel toll-free national road.
Here the state did not buy out the company but came an agreement with the operating company and paid a certain sum so that the tolls could be lowered. The change was partly successful, from 1997 to 2004 the traffic has grown on the motorway and somewhat decreased on the parallel routes, but still 75% of the heavy goods vehicles in the corridor continued to use the parallel toll-free national road.
In February 2004, it was announced that the Hungarian Government purchased for EUR 83 million 40 % of the shares of AKA Rt.. The high toll on the motorway was abolished and the national vignette toll collection system[19] was introduced on this motorway, too, in March. For refinancing the construction of phase I (Budapest–Kiskunfélegyháza), as well as for the construction of phase II, and for the maintenance, operation and renovation of the entire motorway, AKA Rt. receives from the state a so-called availability charge. The availability charges are paid on a monthly basis, and they vary according to the degree of meeting the performance requirements specified by the state, and the degree of accessibility of the motorway ensured for motorists. At the same time serious restrictions were introduced on the parallel main road, and as result the traffic on this road decreased substantially.

An interesting mixed direct toll collection and vignette based user charge system was introduced on a third newly developed motorway, the M3 in January 1999. As the motorway was (re)constructed with a closed toll collection system, all users (i.e. all vehicles) had to stop at the control gates where there was a possibility "to pay as you go". This method was very popular, as the frequent users used the vignettes and the occasional users paid the toll. (For frequent users it was much cheaper to buy the vignette instead of paying the toll each time.)

[19] For the use of motorways and some other main roads, a vignette must be bought. A vignette can be valid for 4 days, 10 days, a month or a year. There are four categories:: motorcycles and motor vehicles with a maximum total weight of 3.5 tons; motor vehicles and motor vehicles with attached trailers (long vehicles) having a maximum permissible total weight of more than 3.5 tons, but not more than 7.5 tons; motor vehicles and motor vehicles with trailers (long vehicles) having a maximum permissible total weight of more than 7.5 tons, but not more than 12 tons; all motor vehicles that do not fall in the previous three categories. For more information, see:
http://www.motorway.hu/engine.aspx?page=payment

Because 100 % of the traffic was controlled, there was no payment evasion. Roughly 50 % of the users had vignettes but more than two-thirds of the total income was paid by them. As a result of this system, the traffic diversion was less than 10 %.
At last a unified vignette system was introduced on the whole length of the M1 and M3 motorways in 2000. This cancelled the direct toll on the M1/M15 and the mixed toll on the M3, and extended the vignette system to the formerly free M1 section.
In 2001 all motorways were made usable under the unified vignette system without any physical toll gates or check points. The political decision was to drop the well-developed regular vignette checking at the gates. The government ordered to implement a never tried non-audited electronic selling and enforcement system by the beginning of 2002. The toll gates were demolished in 2001.
That electronic vignette selling system has two parts. The first is the selling network working with Point of Sale terminals mainly at the petrol stations, but one can buy it on mobile phone or on the web too. The second is the enforcement network based on cameras and license plate recognition software. The electronic system became fully operational in 2005. Until that the main type of vignette was not virtual but a real plastic sticker glued on the windscreen. The selling of plastic stickers was stopped in 2008.
When the road toll vignette is bought, the vehicle's license number and the range of validity of the vignette is saved in a central information system. If a camera on the road recognizes an unregistered license number, the authority will try to collect the toll (and the fine) directly from the registered owner of the license. This IT system could be used to levy a territorial congestion price too, as one can see it in London or Stockholm. Namely the camera recognizes the license number and the IT system records the passing through the cordon. But the collection of the toll from those who fail to pay is possible only, if the vehicle had been registered beforehand in some database to which the concerning authority has an access.
Now one can use the motorways and some parts of other national roads after he or she bought the vignette (see Figure 32). The effectiveness of enforcement is quite good when the penalty must be paid by a Hungarian driver, but the foreign vehicles can slip out. Due to the lack of proper international agreements, it is practically impossible to collect the toll from the owner of a foreign vehicle after it left Hungary. Moreover in Hungary the free flow of traffic is respected above all and the motorway police is hardly prepared to catch a vehicle on the road after an alert about non-payment. Consequently the information system drops the foreign licenses. So it is not possible to count the leakage rate.
Since 2008 it was not been able to finance even the maintenance of the motorway network from the revenue coming from the vignettes. These prices cannot be increased because they are at the maximum level for trucks permitted in EU for time-based charging.[20] (For example, today the daily charge for trucks is a little over 10 EUR.) The only possibility to change this situation is to change the system to distance-based charges where the maximum levels are much higher.[21] As far as cars are concerned, their users even today pay a price out-of-proportion in comparison with the truck operators.
This means that in the present road charging system there is hardly any more possibility to force freight transport from roads to railway. For this reason, too, it is a must to implement a distance-based charging scheme.

Figure 32: Roads with time-based fee (vignettes) in Hungary

[20] The maximum for time-based user charges are set forth in Annex II of the EU Directive 1999/62/EC of the European Parliament and of the Council of 17 June 1999 on the charging of heavy goods vehicles for the use of certain infrastructures. The Directive was amended by the Directive 2006/38/EC of the European Parliament and of the Council of 17 May 2006 and the Council Directive 2006/103/EC of 20 November 2006

21 For example, when Slovakia changed the system of time-based charges to distance-based tolls (at the start of 2010), the prices of motorway use for heavy trucks increased 10 to 15-fold (depending on the distance covered and the vehicle's environmental performance).

Source: http://www.motorway.hu/Root/Autopalya-HU/Letoltheto_Doksik/Dijmentes_szakaszok_terkep2010.jpg

5.2. Possibilities of introducing a distance-based charge for trucks

It would have been possible to introduce a distance-based charging for the HGV's based on the tachograph data, but the government keeps aloof from this method. The Clean Air Action Group (CAAG), which has been working on the issue of road charging for 20 years, in 2002 and 2003 intensively tried to get political support to introduce the most developed GPS and GSM based free-flow electronic toll collecting system but did not succeeded in getting enough political support. The officials in the ministry responsible for transport began the preparation work of the distance-based electronic toll system in 2003. That was the year when the GPS and GSM based toll collection had been planned to start in Germany (it finally started in 2005).
In 2004 János Kóka became minister of economy and transport. He came from the infocom industry and recognized the great possibilities in the electronic toll collecting. (Although there have been accusations that this will be only a new possibility for stealing public money in a ministry which has been involved in a number of highly corruption-suspicious cases.) The work began and in 2007 the Hungarian Parliament decided to start the system on 31 January 2009. Unfortunately certain political forces stopped the project. Now it seems that from the government's side only some officials in the transport ministry are trying to restart the process. At the same time there is growing pressure from NGO's, the railway organizations as well as from some local governments to introduce the distance-based fee.
There are also problems with how the fee would be implemented.
The government wants to implement the distance-based fee only on part of the motorways and some main roads. This might divert part of the traffic to secondary roads going through towns and villages, increasing the environmental problems in these places. (This occurred to some extent in Germany and to a greater extent in the Czech Republic after the introduction

of the distance-based toll.) Therefore CAAG demands that the fee should be introduced on all roads at the same time (similarly to the Swiss model)
The government is planning to introduce the fee at about 40% of the Austrian level (which, in turn, is only about 20% of the Swiss level), and raise it to the Austrian level gradually in 10 years. This is very small and will not cover even infrastructure costs. CAAG demands that in the beginning the fee should at least be of the same level as in Austria, and after that within a few years it should be raised high enough to include all infrastructure and all external costs as far as it is permitted by the EU laws.

6. The importance of communication

In the last few years the Clean Air Action Group (CAAG) carried out a nationwide campaign to introduce a kilometer-fee for heavy trucks. In 2006 the campaign included among others television and newspaper advertisements, 300 billboards all over Hungary, letters to many politicians and a number of events. The objective of the campaign was to raise awareness among the general public and politicians in Hungary about the damages and costs caused by heavy trucks, in order to have the external costs of road freight transport completely internalized by a kilometer-fee, and the revenues gained in this way to be used for environment-friendly transport modes. The campaign played an important role in the government's decision to start dealing seriously with the issue. The campaign was funded for two years by the Oak Foundation. However, by 2008 due to the lack of further funds, the campaign practically came to a halt. This was a very serious problem, because the stakeholders interested in delaying the introduction of the fee until the distant future, became very active and succeeded in stalling the process, and CAAG had very little means to counteract. All this shows the extreme importance of well-planned, efficient campaigning of NGO's, and the necessity of resources for such a purpose. It also shows that without reliable, long-term funding much of the effort might be wasted. Among others this is due to the fact that it is much harder to restart a campaign with a pause of several years than to carry it out continuously. For example, some people who worked for the campaign and gained a lot of experience and established important contacts might take another job in the meantime (as it happened with CAAG).
During the campaign CAAG received a number of arguments (mostly from hauliers) opposing the introduction of the fee. These arguments have been collected and answered. Below the main arguments and counter-arguments concerning the introduction of a distance-based fee for heavy trucks are listed.

1. **"Heavy truck traffic in Western Europe is of much larger volume than in Hungary, and yet, roads can endure it over there. If Hungarian roads were up to European quality standards, heavy trucks would not cause so much damage here either."**

It is true that Hungarian roads are not in as good a condition as the roads of Western Europe generally are; however, even the highest quality roads will get wrecked in 10 to 12 years' time if they carry intense heavy truck traffic. It is not without a good reason that in a growing number of European countries, road carriers have to pay for using the roads in proportion to the distance they cover. In Germany, for example, the introduction of road charges was underpinned by arguments as follows: *"Geographically located at the heart of Europe, Germany is a central hub of international truck traffic. Rapid growth in the volume of freight transport has placed a tremendous burden on German motorways. This has resulted in increased investment requirements for maintenance and expansion. Germany's Federal Government decided to introduce a distance-based toll for all trucks of twelve tonnes gross vehicle weight and above, in order to cover these costs. This truck toll is imposed on all road users, both German and foreign."*[22]
This shows that not even the richest countries are able to cover any more from public funds the costs related to road freight transportation, and that they increasingly move towards applying the "user pays" and/or the "polluter pays" principle.[23]

2. **"How would bread, milk and washing powder be delivered to shops if there were no heavy trucks? It is not possible to transport each and every product by rail or by water to every destination."**

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[22] http://www.toll-collect.de (English / Truck toll system / Introduction)
[23] Further information about the Swiss and German road charging system can be found at:
http://www.are.admin.ch/are/en/verkehr/lsva/index.html
http://www.toll-collect.de

Even some decades ago, there was bread, milk and washing powder in the shops all over Europe, though at that time heavy truck traffic was much less intense than today. Moreover, milk and other products are not transported into the shops by heavy trucks (except in the case of large shopping malls) but rather by smaller lorries.
In 2007, trucks with a load capacity above 10 tonnes performed 71 per cent of the total freight transportation in Hungary as calculated in vehicle-kilometres, and 88 per cent as calculated in freight tonne-kilometres. This means that such portion of the overall freight performance is made up by road haulage of large volumes of goods over long distances – i.e. a type of freight transportation for which the railways are best suited. Similar data can be found with respect to the European Union as well: nearly 70 per cent of the total road freight transportation as calculated in vehicle-kilometres is performed over distances longer than 150 kilometres.[24]
Distance-based road charges were not introduced with the aim of eliminating road freight transportation, but rather with the intention of rationalizing and channelling it. Freight transportation should not rely on road haulage to such a great extent as it is nowadays, especially when large volumes of goods are carried over long distances, because this transport mode places a heavy burden on both the society and the environment. For a unit of freight performance, road transportation requires ten times more energy and six times more land area than rail transportation, while it causes several hundred times as many accidents with personal injuries. The burdens it inflicts upon society are even more serious: let us just mention our roads damaged by heavy trucks, the public utilities shattered and the cracking homes along roads that carry intense freight traffic, the resultant noise pollution, deteriorated living conditions and loss of value of residential buildings...
It is true that trucking is often the only practical means of freight shipping, especially for goods that need to get to dispersed locations quickly. However, the costs of that high quality freight mobility should be properly internalized for shippers so the undesirable impacts are mitigated and minimized. More efforts should be made to design a high efficiency, environmentally sustainable logistics and goods movement system. Heavy truck traffic should be managed and rationalized. The freight and logistics industry should be modernized so that it supports economic needs while respecting communities and the environment. A distance-based fee covering all the costs of trucking would a strong incentive to attain these aims.

3. **"Hauliers pay lots of money into the state budget but they get virtually nothing in return. Why should they pay even more?"**

All things considered, road haulage costs the society much more than the amount of revenues it generates for the state budget. In 2004, excise duties of fuels, motorcar taxes, various duties and charges (excess weight surcharge, motorway tolls, product charges, etc.) altogether brought revenues of HUF 81 billion (EUR 320 million) to the Hungarian state, while the social costs related to heavy truck traffic can be estimated at more than HUF 1000 billion (EUR 4 billion). The distribution of the revenues and costs is shown in tables 1 and 2.[25]

[24] See: http://www.foes.de/pdf/London-GBE0907-Lukacs.pdf (Page 39)
[25] **Environmentally harmful subsidies in the Hungarian economy**. Clean Air Action Group, 2004. http://www.levego.hu/english/environmental_fiscal_reform/harmful-subsidies.pdf . At present a new study is being prepared jointly by the Clean Air Action Group and the Hungarian Institute for Transport Sciences which will provide more precise and more up-to-date figures. The study is to be completed in August 2010.

Table 1: The distribution of state revenues from road freight transport in Hungary (2004)

	Item	Percentage of total revenues
1.	Excise duty on fuels	66,7
2.	Annual vehicle tax (on Hungarian vehicles)	14,8
3.	Vehicle transfer fee	1,2
4.	Environmental product charges	6,2
5.	Excess weight fee	1,2
6.	Motorway toll	7,4
7.	Vehicle tax (on foreign vehicles)	3,7
8.	TOTAL	100,0

Table 2: The distribution of state expenditures of road freight transport in Hungary (2004)

	Item	Percentage of total costs
1.	Road building and maintenance	8,3
2.	Environmental, health damages, including accidents	34,0
3.	Environmental damages of up- and downstream processes	3,6
4.	Congestion	0,8
5.	Damages to roads, buildings, utilities	7,9
6.	Damages to other vehicles due to road damages	23,7
7.	Tax evasion on wages	4,3
8.	Other tax and customs evasions	7,1
9.	Violation of regulations on road safety etc.	5,1
10.	Preferential per diem abroad	0,4
11.	Free parking	0,8
12.	Anti-market measures for rail freight	4,0
13.	TOTAL	100,0

Remarks to table 1:

1. Includes only the expenses directly paid by the state and local governments in 2004.
2. Calculated on the basis of the OECD study “External Cost of Transport in Central and Eastern Europe, Final Report” (2003). According to the “polluter pays” principle these external costs should be internalized by the state by the means of taxes and charges. If they are not internalized, as it is the case now, they are to be considered state subsidies.
3. Vehicle manufacturing, road building, disposal of used vehicles etc.
4. Calculated on the basis of figures for Austria.
5. The costs of those damages for roads is taken into account here which were not rectified in 2004 and 2005. In Hungary there is an enormous backlog in road maintenance.
6. The damage to other vehicles due to roads in bad condition is much bigger than the direct damage to roads caused by heavy vehicles. Although this cost is internal to transport, but it is not internal to heavy truck transport: it is a cross-financing within the transport sector.
7. According to surveys by the Hungarian Central Statistical Office and the Hungarian Tax Authority, tax evasion is much more common in the trucking industry than in most other sectors of the economy.
8. This is based on data of the Hungarian Customs and Finance Guard.
9. This figure is partly based on data from Germany and Austria. The actual figure for Hungary might be even higher.
10. Hungarian truck drivers can receive a much higher tax-free per diem abroad than employees in other sectors (e.g. railways)

11. Free occupation of public space for parking
12. Such measures include among others the regrouping of the profits of rail freight transport to subsidize rail passenger transport.

These costs keep swelling up as road freight transportation is expanding. The way to halt this trend is to gradually abolish these huge hidden state subsidies in the transportation sector and to ensure (by applying the "polluter pays" and/or the "user pays" principle) that the prices of freight transportation reflect the actual costs of this activity.
According to the latest study (prepared in 2009) of a renowned Dutch research institute[26], the taxes and charges paid annually in the European Union by operators of heavy trucks in connection with their vehicles amount to some EUR 50 billion. This sum practically covers the construction and maintenance costs of the infrastructure used by heavy trucks. However, over and above these costs, heavy utility vehicles also cause environmental and health damage (corresponding to EUR 90 billion annually), which is not paid for at all by truck operators.

4. **"The continuous growth of road freight transportation is inseparable from the development of modern economies."**

Rapid growth of road haulage does not necessarily accompany economic development. Indeed, having analyzed pertinent data of the European Union's member states it can be concluded that in recent years, economic development was just the quickest in countries where road freight transportation's growth rate was the lowest! Very high transportation demand per unit of economic activity reflects low transportation efficiency, which inevitably drains away resources from other sectors.
As we have already mentioned above, one of the main reasons for the quick expansion of road freight transportation is that its market price is significantly lower than its true costs. To put it in another way: most of its costs are currently not paid for by those placing orders for road haulage services but rather by the society as a whole, and the so distorted market conditions have led to a disproportionately high demand for road freight transportation. This has also been recognized by various institutions of the European Union and by the OECD, and they urge that external costs (those shifted upon the society) should be incorporated into transportation prices. Concerning this issue, the European Union's transport policy published in 2001 states that *"… one of the important reasons why imbalances and inefficiencies have arisen is because transport users have not been adequately confronted with the full costs of their activities ... As prices do not reflect the full social cost of transport, demand has been artificially high. If appropriate pricing and infrastructure policies were to be pursued, these inefficiencies would largely disappear over time."*[27] (It is to be noted that negative external costs do exist in each sub-sector of motor vehicle transport; however, these are particularly high in the case of heavy trucks.)

5. **"Railway freight transportation is not competitive: even over longer distances, it is more expensive than road haulage; no wonder it is losing importance and market share."**

It is true that at present, railway freight transportation is often more cumbersome than road haulage; however, it can be rendered much more competitive than it is today with appropriate arrangements, by implementing new developments and by setting prices right. The European Union also seeks to achieve the same goal, which is set forth in its above-mentioned

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[26] **Are trucks taking their toll? The environmental, safety and congestion impacts of lorries in the EU**. Delft, CE Delft, January 2009,
http://www.transportenvironment.org/Publications/prep_hand_out/lid:525
[27] **WHITE PAPER. European transport policy for 2010: time to decide,**
http://ec.europa.eu/transport/strategies/doc/2001_white_paper/lb_texte_complet_en.pdf

transport policy as follows: "*Rail transport is literally the strategic sector, on which the success of the efforts to shift the balance will depend, particularly in the case of goods."*
In Hungary, the government's misconceived economic policy has especially afflicted railway freight transportation. Just an example: in the past 20 years, the state has regularly drawn away the profits produced by Hungarian State Railways' (MÁV) freight division in order to lessen the losses made by the passenger transport division. As a result, it has become practically impossible to carry out any developments within railway freight transportation, or even to perform the necessary maintenance and upkeep work. In addition, road freight transportation receives state subsidies and various preferences which are not granted to the railways. Nevertheless, the situation is not hopeless. In the last few years, several European countries have made effective steps in order to ensure that the costs of their transport systems are financed on a "user pays" basis – all we should do in Hungary is to follow these existing and well-functioning examples.
In Switzerland, truck tolls were introduced in 2001, which are payable by each and every truck weighing more than 3.5 tonnes, on the entire Swiss road network (including dirt roads!). The toll's amount depends on the length of the road covered, on the vehicle's permitted total weight and on its air pollutant emission. Most of the revenues collected from tolls are allocated for the development of railways. In Austria, trucks weighing more than 3.5 tonnes have been required to pay tolls (based on the distance covered) on the motorway network since 2004.
In 2005, Germany imposed road charges upon trucks heavier than 12 tonnes. Tolls (the actual amount of which depends on the length of the road covered, on the number of axles and on the vehicle's air pollutant emission) are charged for the use of motorways and some other trunk roads. The Czech Republic introduced a toll system similar to the German model in 2007, while Slovakia commenced charging distance-based road tolls in 2010. France and the Netherlands, too, have already decided about the introduction of road charges, and further European countries, including France, Sweden and the United Kingdom, intend to follow these examples.

6. **"The continuous expansion of road freight transportation is creating jobs, thus it is indispensable for the growth of our economy and welfare."**

As a consequence of road freight transportation being kept artificially inexpensive, a very large number of Hungarian jobs are actually eliminated (or are not even created at all), since the subsidies granted to road haulage drain away massive resources from other sectors where much more jobs could be created by using the same per-unit expenditures. (Road freight transportation and the activities related to it, for example motorway construction, require much less per-unit live labour than many other sectors of the economy.) This is proven by several studies.

- The GRACE project (Generalisation of Research on Accounts and Cost Estimation)[28] showed that substantial improvements in public welfare can be achieved in most European countries by internalising the external costs of transport, and by using the revenues thus gained for reducing taxes on human labour.
- The petrE project (Productivity and environmental tax reform and sustainable growth in the EU-27)[29] modelled the impact of a tax on carbon required to achieve specified CO2 emissions reduction targets. Modelling indicated that while a high carbon price is required to meet EU reduction targets, this has a positive impact on growth of between 0.2-0.8% of GDP, generates revenues of 1.8-6.2% of GDP, and results in an increase in employment of between 1.1% and as much as 2.7%.
- Similarly, the UK Green Fiscal Commission found that a broad-based green tax shift could enable the UK to meet its greenhouse gas emissions reductions targets for 2020.

[28] For more information, please see: http://www.grace-eu.org/
[29] For more information, please see: http://www.petre.org.uk/

The resulting reduced cost of labour would create about 455,000 extra jobs by 2020, while economic growth would hardly be effected.[30]

- The COMETR project (Competitiveness Effects of Environmental Tax Reforms)[31] investigated and modelled ex post the impacts of environmental taxation on competitiveness and growth. In those countries that had implemented a revenue neutral Environmental Tax Reform (ETR), CO2 emissions were reduced by an average of 3-4%. For five of the seven countries in the study, modelling revealed GDP growth of 0.5% due purely to the ETR. There was evidence of a moderately positive impact of energy taxes on economic performance consistent with the energy tax pressure having stimulated energy savings and innovative product and process developments that improve competitiveness. (Revenue neutral ETR means that the revenues from extra taxes on environmentally polluting activities have been used to reduce taxes on human labour.)
- The study "Climate Change and Employment – Impact on employment of climate change and CO2 emission reduction measures in the EU-25 to 2030" by the European Trade Union Confederation (ETUC), Instituto Sindical de Trabajo, Ambiente y Salud (ISTAS), Social Development Agency (SDA), Syndex, and Wuppertal Institute showed that by using MBI for combatting climate change, more jobs will be created in energy efficient industries than the jobs lost in energy-intensive sectors. [32]

It is also to be taken into account that road freight transportation does not just promote domestic production, but also facilitates the process of some production centres and factories (e.g. in the food sector) moving out from Hungary, as it is often less expensive to have certain goods produced elsewhere and then to transport them here at cheap prices.
Another fact worth considering is that unemployment is often very high even in Western Europe, despite its extremely dense motorway network and vast volumes of road freight transportation. Hungary's motorway construction in recent years has done little to reduce long-term unemployment.
As far as economic growth is concerned, in the period between 1990 and 2008, the total length of expressways increased from 346 kilometres to 1113 kilometres (i.e. by 222 per cent), and the aggregate performance of road haulage swelled from 10.8 billion freight tonne-kilometres up to 35.7 billion freight tonne-kilometres (i.e. by 230 per cent). During the same period, Hungary's GDP grew by 40 per cent, although quality of life indicators deteriorated in several respects. (For example, according to recent studies lead by the renown Hungarian psychologist Maria Kopp, between 2002 and 2006 distrust in the Hungarian society has increased tremendously. According to an opinion poll, in 2002 48 % of the population expressed the opinion that "nobody cares about the others", while in 2006 this proportion increased to 80 %. Another survey showed that in the Hungarian population the proportion of persons in the population who are in need of depression treatment rose from 16 % to 20 %.)
In the light of these facts we may raise the question: To what an extent does the continuous expansion of road freight transportation really contribute to the development of our economy and welfare? International data demonstrate that the more transport-intensive a national economy is, the lower is its level of competitiveness.[33]
It is also to be taken into consideration that Liebig's Law of the Minimum applies to economic development, too. According to this law, formulated by the German scientist in 1840, a plant's growth is always limited by the nutrient which is in the shortest supply as compared to the needed quantity. Similarly, economic growth is primarily limited by the tightest bottleneck.

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[30] The Case for Green Fiscal Reform, http://www.greenfiscalcommission.org.uk/images/uploads/GFC_FinalReport.pdf
[31] For more information, please see: http://www2.dmu.dk/cometr/
[32] For more information, please see: http://www.tradeunionpress.eu/Web/EN/Activities/Environment/Studyclimatechange/rapport.pdf
[33] See:CAAG's calculation on the basis of EUROSTAT data: http://www.foes.de/pdf/London-GBE0907-Lukacs.pdf (Pages 19 to 21)

And it can hardly be claimed that road freight transportation represents the tightest bottle-neck for Hungary's economy.
Several studies have proved that if the costs caused by road haulage are made to be borne by road haulage itself, job numbers will increase and competitiveness will improve at the national economic level. For instance, the GRACE[34] study ordered by the European Commission revealed that public welfare in Hungary would improve by more than HUF 1000 billion (EUR 4 billion) annually if the costs of the environmental and health damage caused by road transport was required to be paid by transport participants, and the extra tax revenues so generated were used for lessening the taxes and levies imposed on live labour. This positive effect is due to the lower level of environmental and health damage, as well as to the fact that prices will be much less distorted, and so economic stakeholders will take much more rational decisions that today.

7. **"Where do you take your data from when claiming that a single heavy truck causes several hundred thousand times more damage to roads than one passenger car? This number is incredibly huge!"**

According to relevant international technical literature, as a vehicle's axle load grows, the damage caused to roads increases exponentially. The degree of road damage changes as a function of the fourth power (other experts claim that even the fifth power) of a vehicle's axle load. This means that one heavy truck destroys roads to an extent which is at least 10 000 times as much (but may even be 1 000 000 times as much) as the damage caused by one passenger car.[35]

8. **"Heavy utility vehicles emit less pollution into the air than, for example, diesel railway engines. You should rather be concerned about them!"**

Obviously, the pollutant emission of diesel railway engines must also be reduced. Railway companies in Western Europe have already made great efforts in recent years in order to cut back on such emissions, and the results they have achieved are noteworthy. However, even as it is now, the pollution caused by railway freight transportation is by several orders of magnitude less than the harmful emissions of road haulage. Data of the European Union show that for the same freight performance, railway transportation's air pollution is only one-tenth part of that of road haulage (having also taken into account the pollutant emission of power plants generating electricity for electric railway engines).
In 2005, in Hungary heavy trucks emitted 2000 times more carbon-dioxide, nearly 40 thousand times more dust, 800 times more nitrogen-dioxide and 6000 times more carbon-monoxide than diesel-powered railway transport (including both passenger transport and freight transportation).[36] On the other hand, the aggregate performance of road haulage was only 3 times as much as that of the railways: in 2006, road hauliers recorded 30.5 billion freight tonne-kilometres, while railways totalled 10.2 billion freight tonne-kilometres.[37]

9. **"Thanks to the increasingly stricter environmental requirements, today's modern heavy truck engines virtually do not pollute the air at all. Therefore, instead of that, why don't you rather care about the contamination emitted by passenger cars and industries?"**

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[34] **The socio-economic impacts of transport pricing reforms.** Authors: S. Proost, S. Van der Loo, E. Delhaye, B. Van Herbruggen, O. Ivanova, L. Cretegny, S. Suter, J. Bröcker, A. Korzhenevych, N. Schneeckloth, A. de Palma, N. Picard. 2008. http://www.grace-eu.org/deliverables.htm (Del. 9)
[35] According to the German Ministry of Environment, a heavy truck of 40 tonnes causes 60 thousand times more damage to the roads than a passenger car.
http://www.bmu.de/english/mobility/current/doc/5834.php
[36] **Determination of the national, regional and local emission cadaster of Hungary's road, rail, air and water transport for the year 2005.** Közlekedéstudományi Intézet Kht. (Institute for Transport Sciences Non-Profit Co.), Division of Air Quality and Engine Technique, Budapest,
http://www.kvvm.hu/dokumentum.php?content_id=893&section_id=0
[37] Source: www.ksh.hu

Recent research studies have revealed that under real-life conditions, the engines' air pollutant emission is higher than under laboratory test conditions. A Swiss report on road transport's air pollution concludes: *"The specific NO_x emission of heavy trucks is higher than we had thought, and the emission reduction is slower than we had expected. ... NO_x emissions by engines meeting the Euro 2 standard are higher under real-life conditions than emissions by Euro 1 engines. Euro 3 engines emit less pollutants than Euro 1 engines, but the difference is much smaller than what a comparison of the limit values would suggest."*[38]
What is more, most of the heavy trucks moving along Hungary's roads are obsolete. Current conditions are clearly illustrated by the following data, related to the year 2005, published by the Ministry of Environment and Water:
In Hungary, heavy trucks are responsible for

- 72 per cent of the total flying dust emission,
- 63 per cent of the total sulphur-dioxide emission,
- 40 per cent of the total carbon-dioxide emission,
- 35 per cent of the total nitrogen-dioxide emission, and
- 15 per cent of the total carbon-monoxide emission

of the road transport sector.
It is also worth giving a thought to the question: When can we realistically expect that the Hungarian stock of heavy trucks will become modernized? In Switzerland, heavy utility vehicles of a classification lower than the Euro 3 standard still accounted for 40 % of the total heavy truck traffic in 2006, and the truly modern Euro 5 class vehicles are only expected to be widely used around 2015. In all likelihood, we must wait even more before seeing motor vehicles powered by modern engines driving along Hungarian roads.
In the meantime, the stock of heavy trucks and the vehicles' mileage performance are gradually growing – and, together with that, the resulting air pollution, too.
Finally, we must note that we also attach great importance to the reduction of air pollution caused by passenger transport, industries, households and other activities.

[38] Cahier de l'environnement N° 355, Air, **Émissions polluantes du trafic routier de 1980 à 2030**. Office fédéral de l'environnement, des forêts et du paysage, 2004
www.umwelt-schweiz.ch/imperia/md/content/luft/fachgebiet/f/verkehr/1.pdf

7. Conclusions

After the change of regime in 1989-1990, freight transportation performances severely decreased. This was true for all modes, but railways were hit especially hard: rail freight dropped by more than 60 per cent. However, from the year 2001 a sharp increase could be observed, there was an 80 per cent growth until 2007. That year almost 67 per cent of the freight volume was transported by road, 18 per cent by rail, 11 per cent through pipelines and 4 per cent by water Most of the increase was due to road transport, while rail practically stagnated. Overall, the quantity of performed freight tonne-kilometres increased at a much quicker rate than the volume (tonnes) of transported goods. This means that the goods quantity carried only grew to a relatively small extent, but these goods were transported over an increasingly long distance. This also means that road just captured that part of freight which is most suitable for rail.

The main reasons for this trend were that, on the one hand, the state carried out major improvements in Hungary's road infrastructure, while it let the country's railway infrastructure become degraded; and on the other hand it granted very substantial direct and indirect subsidies to road haulage, and at the same time it drained away considerable funds from railway freight transportation. Moreover, after the change of the political system in 1989-1990, heavy industries and much of the traditional trade in collapsed in Central and Eastern Europe as well as in the (former) Soviet Union, which substantially reduced the need for bulk cargo.

Physically there is no obstacle to diverting as much as 30 million tonnes of goods annually from road to rail. As most of the goods shifted from road to rail would come from long-distance transport, the shift measured in tonne-kilometers could be much greater and might even reach 25 to 30 percent of the goods now transported by road. This would substantially reduce the environmental pollution caused by transport. However, this requires appropriate economic conditions and regulation. To achieve that, a number of railway developments should be implemented. These developments are needed both for the passenger transport and the goods transportation.

The total value of Hungarian Railways' (MÁV) development proposals determined on the basis of traffic/technical needs exceeds HUF 5,500 billion (EUR 20 billion).

Besides, also other measures must be implemented. By far the most important of these is proper pricing. This means that road freight transport must pay its full costs, including the environmental costs. One of the most important means for this is the introduction of a distance-based fee for trucks.

European Union funding for road construction must be halted. If the construction of new roads is necessary, this should be funded completely from special taxes and fees paid by road users.

The Hungarian government must compensate for the losses due to the market distortion caused by the inappropriate policies of the government during the past decades.

The state must pay the full compensation for the passenger railway services it orders, if the revenues from tickets do not cover the costs of these services (this is required also by EU law).

The unnecessary administrative burdens of railways must be eliminated.

If a new development is to generate substantial new traffic, then preference should be given to it if it is going to have railway connection.

The already existing weekend ban for the heaviest trucks must be strengthened: the time should be extended (at least as much as has been in force already several years ago) and there should be strict enforcement.

Strict measures must be taken in order to reduce the widespread tax evasion by road transport companies.

The police, transport authorities and other competent agencies should intensify their controls in order to prevent infractions and criminal acts by road hauliers.

Temporary subsidy should be given for rail freight transport services (especially for combined transport) as long as the full costs of road transport are not internalized.

Communication campaigns should be carried out in order to raise the awareness of the public and the politicians about the environmental and other problems caused by freight transport and about the possible solutions.

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