D.T2.1.4
REGIONAL ACTION PLANS FOR GREENING NODES

Options for combining road freight with rail transport in Western Transdanubia

Version 1

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Index

1. Executive Summary

Within the framework ofthis document, the possibilities of combining road freight with rail transport will be presented in Hungary focusing on Western Transdanubia. Hungary is located in Central Europe.The EU Member State with a population of nearly ten million is surrounded by seven states, five of which are also members of the EU.

The Western Transdanubian Planning Region is located in the nearest part of Western Europe.The region is the third most developed region in Hungary after Central Hungary and Central Transdanubian regions.However, this development is relative, as the European Commission ranked 196th in the competitiveness ranking in 2019, based on the last analysis of the Competitiveness Index of 268 EU regions, while on the basis of GDP per capita it was ranked 192nd on a five-stage competitiveness scale (almost the weakest).

The geographical features of the region are excellent, but its current economic characteristics are still significantly influenced by some years of communist rule in some sectors.This, for example, also significantly determines the current development of transport.It is true that significant improvements have been made in the development of the road network and the rail network over the last three decades, but they can only catch up for decades of delay.Another important factor is that, unlike the th century, Hungary does not have a direct seaport, only the river ports on the Danube.In terms of air traffic, the only real airport in the country is the Budapest Airport.

In this document, in addition to the current situation assessments described above, the possibilities and benefits of switching to multimodal transport will be analysed on the basis of the described above.

2. Economic situation in the region of Western Hungary

Geographical and economic characteristics

The Western Transdanubian Planning Region comprises three counties: Győr-Moson-Sopron, Vas, and Zala counties. The region is uniquely bordered by four countries: Slovakia, Slovenia, Austria and Croatia.

Given the geographical characteristics of the region, the large number of medicinal and thermal water supplies, the proximity of Lake Balaton and the Alps are of outstanding importance. Among its landscapes are Szigetköz, Alpokalja, Őrség, Göcsej, Lake Hévíz and Kis-Balaton.

The region has an area of 11328 km, accounting for 12.2% of the country's territory, with a population of 989,343 (1 January 2019), accounting for 10% of the country's population. In Győr-Moson-Sopron County, almost as many people live in Vas and Zala counties combined. The average population density is 87 people/km^2, which is lower than the national average (105 people/km^2). The three counties had a total of 657 settlements in 2019.The largest cities in the region are: Győr, Sopron, Szombathely, Zalaegerszeg and Nagykanizsa.

The volume index of GDP per capita is EUR 21900 in purchasing power parity (Eurostat, 1 December 2019), reaching only 70.6% of the EU28 average, but ranks second among Hungarian regions.The structure of the economy is divided, industry and services each accounting for 48-48% of GDP, while agriculture accounts for only 4%.

The number of R & D sites is 260 in the Western Transdanubian region, with 3587 researchers working in 2018.The region accounted for only 5% (33 billion) of the R & D expenditure of 2018, with 66% of Győr-Moson-Sopron County, 25% Vas County and 9% Zala County.This shows that there is a large gap in the region, which is supported by the automotive industry, which is represented above the North (Audi in Győr)[1].

[1]Pannon Business Network Association (2020: Hungarian Regional Analysis:Building regional resilience to industrial change

Employment and unemployment

In terms of employment, from 2002 to 2015, we performed nationally every year below the EU28 average, with a gap of between 5-9%.2016 was the first year where we did better than the EU28 average of 71.5%, with a slight difference (0.4%).

In Western Transdanubia, the number of employees was 490.4 thousand in the last quarter of 2019, while 7900 people were unemployed. The employment rate was 64.1 %, while the unemployment rate was 1.6%. In the Western Transdanubian region, the lowest in Hungary is also significantly lower than the national average (3.5%) and the EU28 average (6.3% in October 2019).

Looking at the breakdown by national sectors, we see that 53% of people employed in the region worked in services in 2019, followed by 42% by industry and finally 5% by agricultural employment[2].

Number of active enterprises, sectoral distribution of the largest employers

In 2017, nearly 71 thousand of 717,71 operating companies were active in Western Transdanubia.This year, the number of companies operating in the Western Transdanubian County increased the most.There was a significant increase in regions, including in the case of Western Transdanubia (6-7%).

After Budapest and Central Transdanubia, the Western Transdanubian region is the third most attractive area for foreign direct investors (FDIs).Although the region's share of all FDI stocks has declined since 2012, foreign investments have strengthened the region's manufacturing specialisation (machine and equipment, automotive, electronics).

The most important automotive investors are Audi, Schaeffler, Opel Szentgotthárd, BPW Hungária, SMR Automotive Mirror Technology, Dana Hungary and Nemak Győr. The main representatives of the electronics industry are Aptiv Services Hungary Kft and TDK[3].

In 2018, HVG released a Top 50 list of companies with the highest turnover in Hungary, in which Audi Hungária Zrt., based in Győr based in West Transdanubia, ranked second[4].

When examining the largest employers ofWestern Transdanubia at county level, manufacturing companies are predominant in 2018. Győr-Moson-Sopron County increased, almost stagnating in Vas County, while in Zala county employment decreased somewhat by examining the fifty largest employers in all three counties.The diagram below contains the aggregate data of the 50-50-50 largest employers in Győr-Moson-Sopron, Vas and Zala county.

[2] Pannon Business Network Association (2020);Hungarian Regional Analysis:Building regional resilience to industrial change.

[3] https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/west-transdanubia

[4] https://hvg.hu/gazdasag/20180725_Az_50_legnagyobb_magyar_ceg__a_HVG_exkluziv_listaja

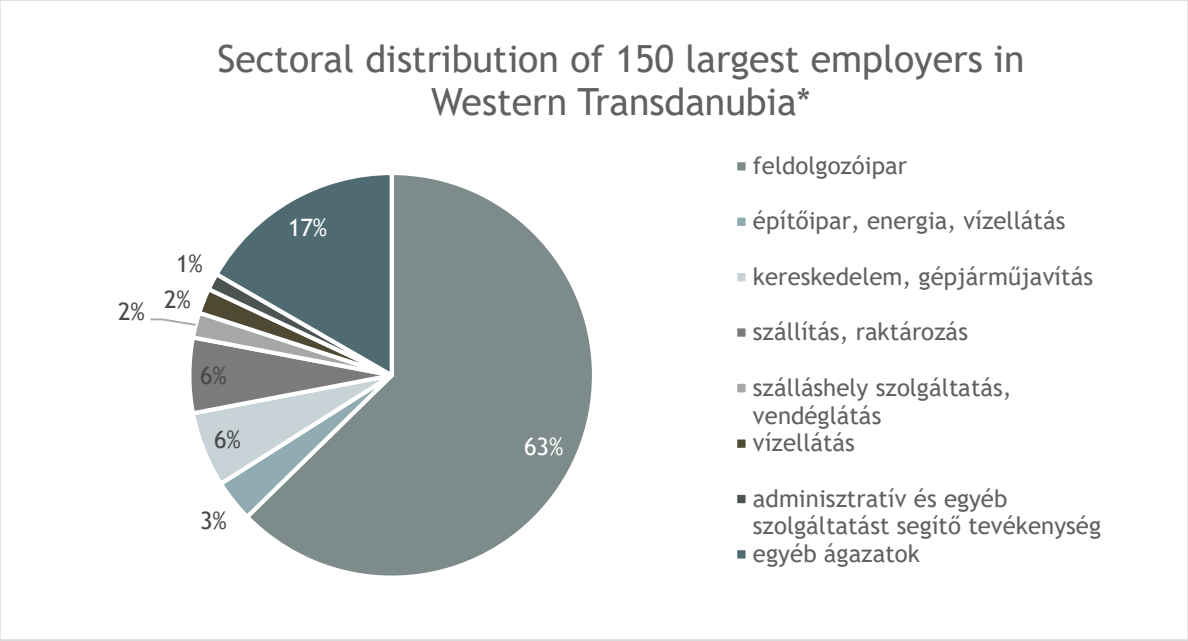


Figure 1: Sectoral distribution of 150 largest employers in Western Transdanubia (Source: Pannon Economic Network Association (2020)

3. Overview of modes of transport

3.1. Modes of transport

Companies can choose different modes of transport for the supply of raw materials and the delivery of goods. In general, the goods are not transferred directly from the warehouse of companies to the final consumer, and the supply chain may include various distribution points (e.g. central warehouse, regional warehouse, wholesale, retail). Companies need to make a specific management decision on which products they choose to carry.This may depend on the country of origin of the raw material, the destinations of the products, the size, strategy, operation and budget of the company.

Modes of transport:

- transport by rail,
- road transport,
- air transport,
- water transport (sea, river) and
- combined transport.

3.2. Combined transport

“Combined transport is referred to when the services of several branches of transport are used in the framework of a transport contract. In general, the goods remain in the same unit load forming device (e.g. container). Pre- and post-carrying is mostly carried out on a road vehicle, but most of the transport distance is carried out on an environmentally friendly means[5] of water or rail transport. Pallets, tanks, vehicle superstructures and trailers which are moved from one means of transport to another with special equipment.”[6]

[5] http://www.agr.unideb.hu/ebook/logisztika/kombinlt_fuvarozsi_mdok.html

[6] https://ko.sze.hu/catdoc/list/cat/7086/id/7089/m/4974

Hungary does not have a direct maritime connection, and as a result we will focus on the combined transport of rail transport and road transport in the study, more specifically on the examination of the possibility of achieving the objective of removing the burden of rail transport from the roads by reducing the volume of road freight.

In the case of combined transport resulting from the combination of road and rail transport, there are two options: in one case, the whole truck is loaded onto the train and the driver travels with it to his destination. It is known as "Ro-La" (Ro-La).In the case of the other type (unaccompanied traffic (Huckepack), only the trailer is placed on the train assemblies, and other staff at the departing station and destination carry out the carriage[7].

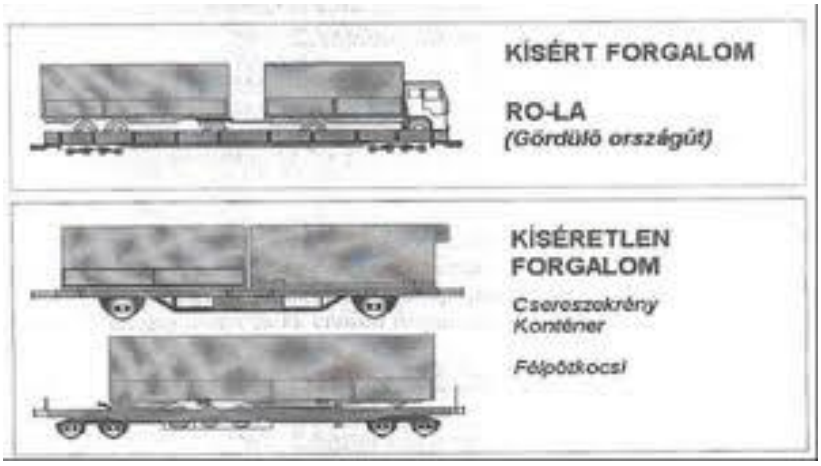


Figure 2: Combined modes of transport (Source: exim5.hu)

Rail-road transport contributes more to the maintenance of environmentally friendly transport than by road alone. Emissions and air pollution are carried out separately for both modes, but to what extent.Many more goods can be transported by rail at the same time, so greater mass can be transported.It was found that about half the amount of harmful material emitted during rail transport was found to be on the road.In addition, an important aspect is that trucks are less burdensome on the roads, and the quality of the roads does not deteriorate so quickly[8].

4. Transport links

4.1. Hungary's transport relations

The national roads are 32204 km long and the local roads are 181396 km long.Nearly 75% of the country's road traffic is run by the national road network (of which 9077 km is a main network, of which 2470 km of roads E, i.e. part of the European road network).

The motorway network, which includes motorways and motorways, is 1586 km long and 2076 km with highway node branches.National roads also play a significant role in the local traffic of settlements, as 27% of them pass through settlements[9].The routes of the TEN-T, the trans-European transport network and the Helsinki Corridors are also passing through Hungary.

4.2. Transport relations between Western Transdanubia

The most important road, waterway and rail transport routes enter Hungary from the more developed regions of Europe through the Western Transdanubian region.

[7] http://www.agr.unideb.hu/ebook/logisztika/kztivasti_fuvareszkzk_kombincija.htm
[8] https://ko.sze.hu/catdoc/list/cat/7086/id/7089/m/4974
[9] https://internet.kozut.hu/kozerdeku-adatok/orszagos-kozuti-adatbank/az-allami-kozuthalozatrol/

Between Győr and Szombathely who applied for the title of the region centre, Győr became the real centre, but Szombathely's location is much more advantageous in terms of transport connections.

The regional centre can not be reached by car or rail from the major cities of Vas and Zala counties in 90 minutes, alone from Szombathely. Szombathely is more geographically central to the region than Győr within 90 minutes of all the county towns in the region. The nature of the railway centre contributes to this, although it should be noted that it is lagging behind the centre of the region in terms of international relations. However, in recent years, a number of transport developments have been launched to increase the role of Zalaegerszeg in the region.

4.2.1. Road transport

Three Helsinki transport corridors are also relevant to the region:

- Pan-European Transport Corridor IV:connect Western Europe with the Balkans, part of this corridor is the M1, M15 expressway and Budapest-Hegyeshalom railway line,
- Number VII:indicates the waterway of the Danube River and
- Pan-European Transport Corridor V and one of its subdivisions (Corridor V/B):this includes the M7 motorway connecting Croatia, the M70 motorway connecting Slovenia and the Boba-Zalaegerszeg-Bajánsenye border (Hodoš) railway.

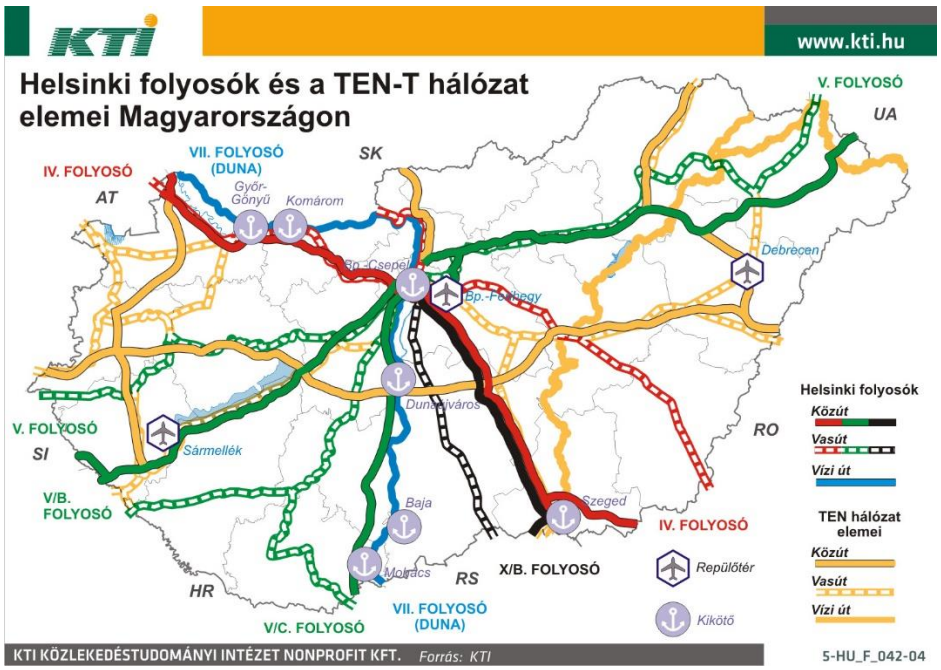


Figure 3: Helsinki Corridors and TEN-T Network elements in Hungary (Source: Kti.hu)

The international connection of the region is outstanding compared to other Hungarian regions, but the interconnection within the country leaves much to be desired due to its geographical location, as the region is located on the edge of the country.

In terms of internal transport in the Western Transdanubian region, there is a major transport corridor in the north-south direction. This shortfall is currently covered by Highway 86, which is extremely overwhelmed. There are up to 15, vehicles per day. Further reasons for the development of the road network – M9, the creation of a quality railway line – are the deterioration of the technical condition, the many sharp bends on the track, and the lack of bypass[10].

[10] http://geografus.elte.hu/web/tananyag/6/regiok/ny-dtul_kozl.doc

Territorial changes in the network of roads affecting the region in 2019:

- In Győr-Moson-Sopron County, the M15 road was extended to a motorway, so the motorway connection between Budapest and Bratislava became complete.
- The section of the M70 between Letenye-Tornyiszentmiklós has been handed over in Zala county, so it can be reached by motorway to Slovenia from the M7 motorway[11].

Counties with the most densest national road network can be found in Western Transdanubia:

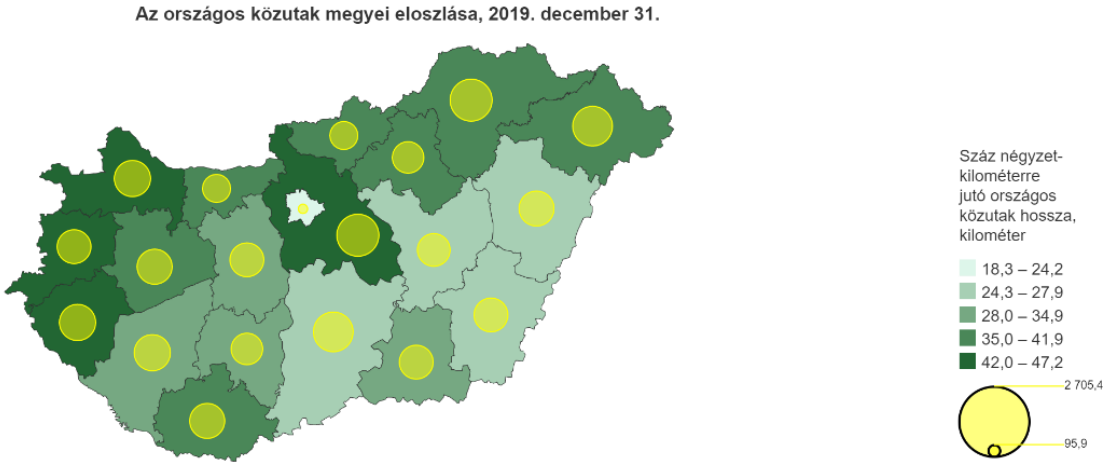


Figure 4: County distribution of national roads (Source: KSH.hu)

Western Transdanubian road traffic:

In Hungary, there were 260,000 trucks on the road in 2016, which could increase by up to 40% by 2030.On the M1 motorway section, there are the largest truck traffic at the M5000 border crossing, with around 5000 trucks crossing the border every day. This is followed by the Sopron border crossing, where 1700 trucks cross the border every day. There is significant traffic on the border crossings of the M70 and M15 roads, where 1300 and 500 trucks cross the border every day.

[11] https://www.ksh.hu/docs/hun/xftp/idoszaki/jelszall/2019/index.html

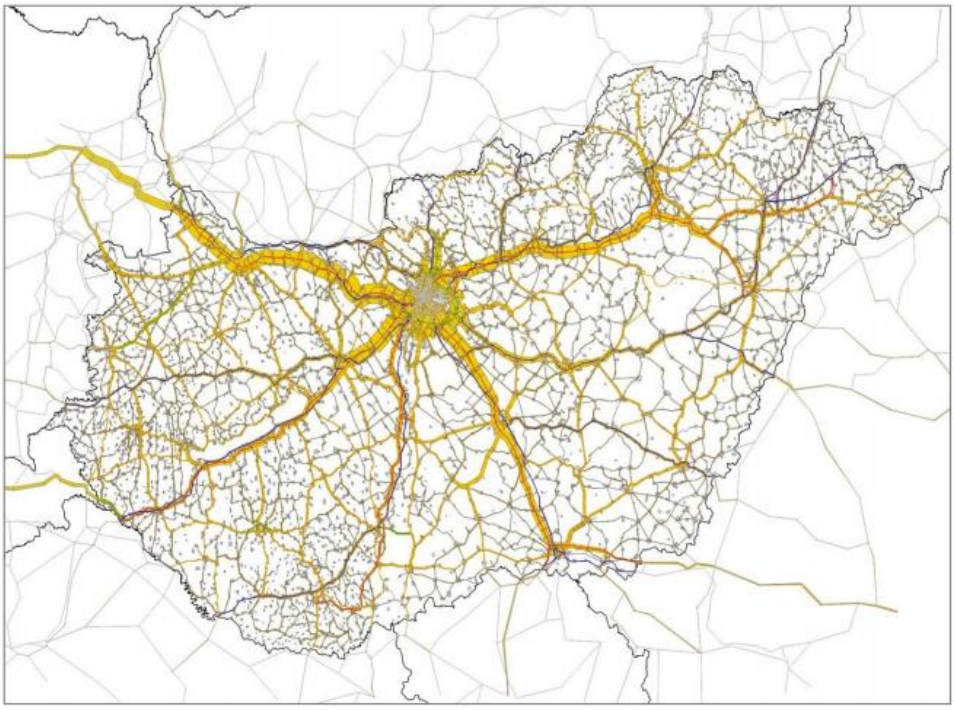


Figure 5: Truck traffic in Hungary (2016) (Source: KTI (2016))

With regard to heavy goods vehicles, traffic is significant in the Tatabánya-Győr section of the M1 motorway, where 11000 large trucks pass daily. On the way to Hegyeshalom, the border is crossed by 6200 pieces.The main destinations of exit traffic are Austria, Germany and the Benelux countries, while the motor vehicles that enter are moving towards Budapest and Romania.

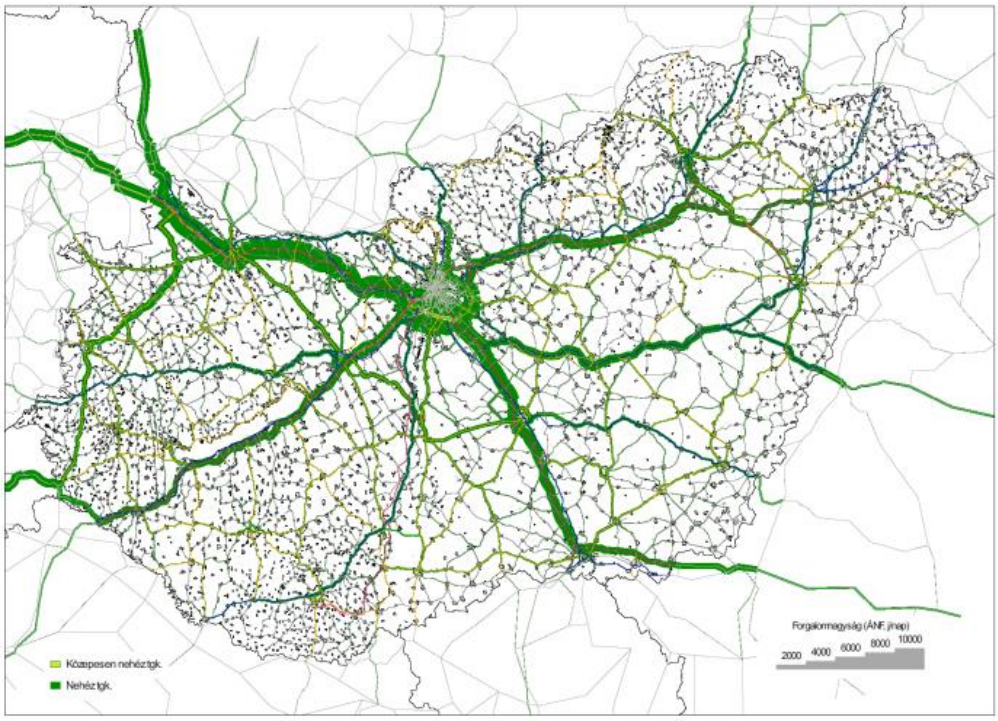


Figure 6: Traffic of large trucks in Hungary (2016) (Source: KTI (2016))

The following diagram shows the major motorway of the Western Transdanubian region, the M86 road, where 2200 large trucks run daily[12].

[12] KTI Institute of Transportation Nonprofit Lt.:(2016); National target traffic recording and matrices (OCF-2016)

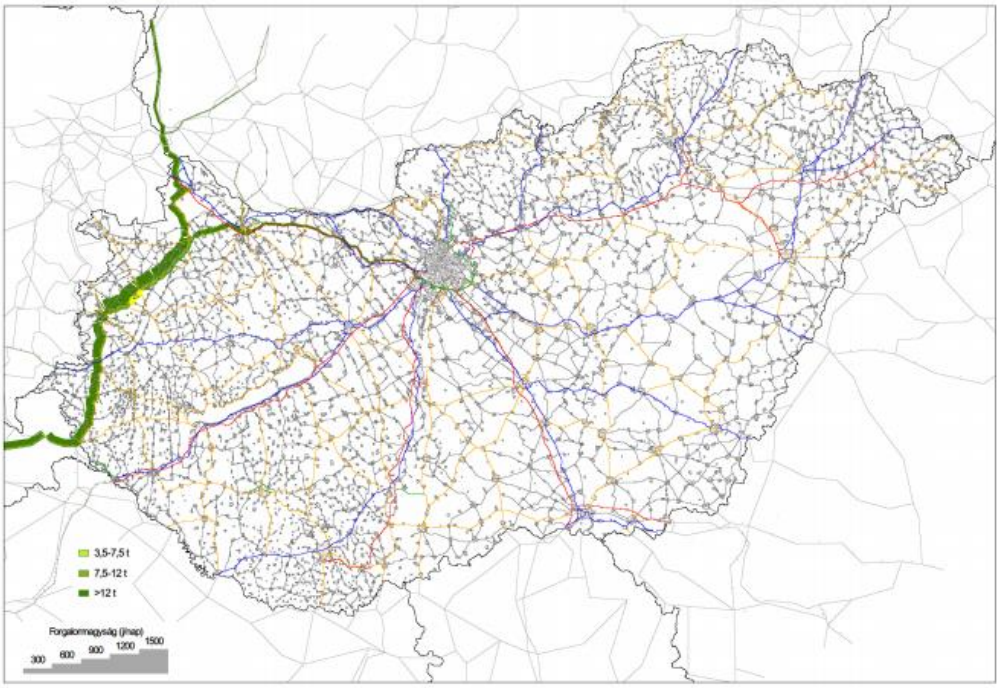


Figure 7: Truck traffic through Hegyfalu in one direction of motorway M86 (Source: KTI (2016))

Planned road developments over the next few years in Western Transdanubia:

M80 Körmend and Szentgotthárd-Rábafüzes, M85 Sopron East and Fertőrákos, M76 Fenékpuszta and Zalaegerszeg (in the project, besides the four-track connection of the Zalaa county seat, the Sármellék airport will be connected.) In the 28 km section, connected to the Zala Zone vehicle industry test track, a section suitable for carrying out high-speed road tests will be established.

4.2.2. Rail transport

In Hungary, the railway networkis 7552 km (December 31[13], 2019) long, but less developed than in Western Europe.There are 3 major railway stations in Budapest, the capital of the country.

Data of the railway infrastructure under the direction of MÁV (Hungarian State Railways) and GYSEV (Győr-Sopron-Ebenfurti Vasút Zrt.):

Magyarország vasúthálózatának adatai		
	MÁV	**GYSEV**
Vasúti pályahálózat hossza	7242 vkm	436 km
Kétvágányú pálya hossza	1202 vkm	17 km
Villamosított vasúti pálya hossza	2716 vkm	394 km
Nemzetközi törzshálózat hossza	2688 vkm	-
Állomások és megállóhelyek száma	743 db	78 db
Közlekedtetett vonatok száma 2019-ben		
Személyszállító vonat	1 036 476 db	104 db
Tehervonat	149 599 db	8 db

Figure 8: Domestic rail network (Source: mavcsoport.hu;Gesev.hu)

[13] https://www.ksh.hu/docs/hun/xftp/idoszaki/jelszall/2019/index.html

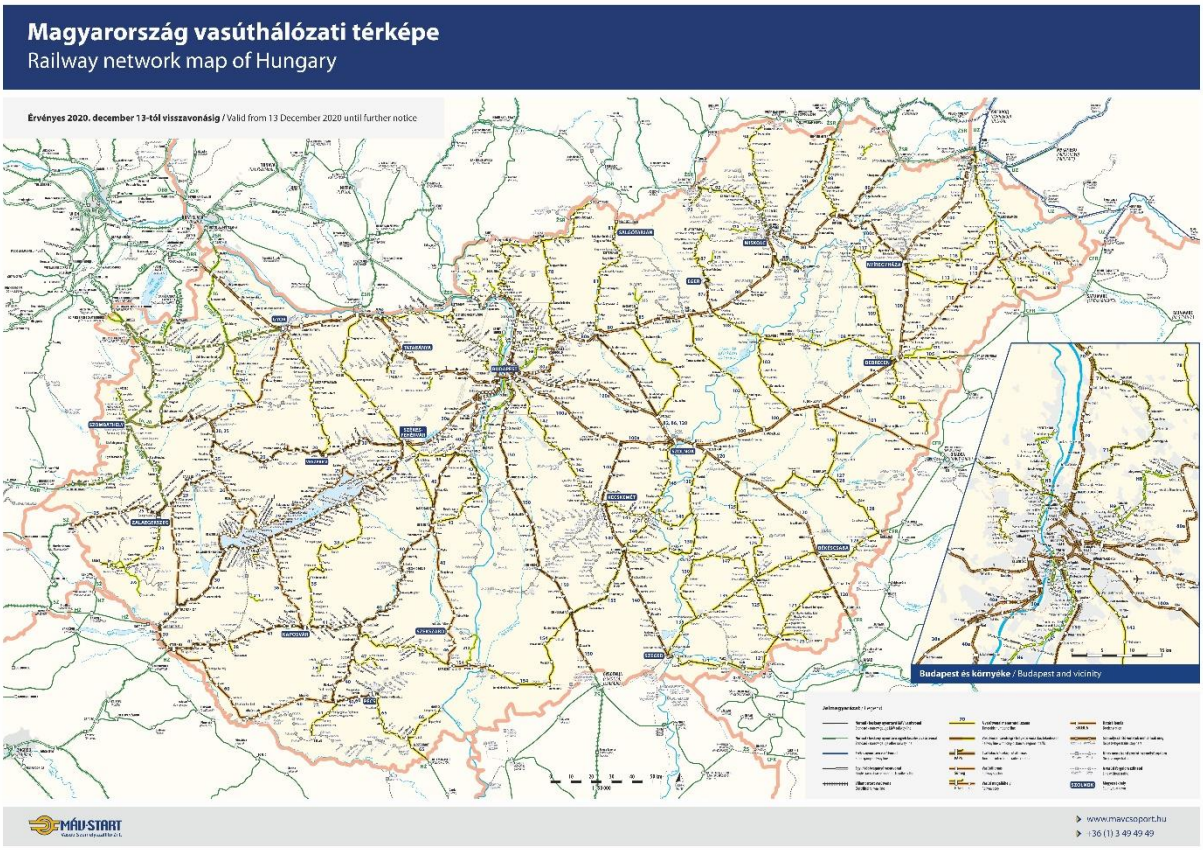


Figure 9: Map of the railway network of Hungary (Source: mavcsoport.hu)

With regard to the Western Transdanubian rail network, we see that Hegyeshalom, Rajka, Sopron, Szentgotthárd, Bajánsenye, Murakeresztúr are connected through border crossings between the capital and neighbouring countries through the international core network railways passing through the region.The north-south rail connection of the region is provided by the Sopron-Szombathely, Szombathely-Nagykanizsa and Győr-Celldömölk-Szombathely lines.Among the settlements of Western Transdanubia, Győr, Csorna, Szombathely, Celldömölk, Porpác, Zalabér-Batyk, Zalaszentiván, Zalaegerszeg, Zalalövő and Nagykanizsa can be considered as railway stations.

4.2.3. Airports

The region has two major airports, the airports of Sármellék and Pér – the former is Lake Balaton, the latter is located near Győr. Another five airports, mainly for sports purposes, are located in Western Transdanubia: Zalaegerszeg (Andráshida), Nagykanizsa (Bajcsa), Zalakaros, Szombathely, Fertőszentmiklós.

4.2.4. Water transport

The Danube – the VII.Helsinki Corridor – the only navigable watercourse in the region, and the only established and continuously operating freight port is the Győr-Gönyű national public port, where truck loaders (RO-RO loaders) and loading docks operate with road-water connections[14].

[14] http://geografus.elte.hu/web/tananyag/6/regiok/ny-dtul_kozl.doc

5. The role of the transport and storage sector in the Hungarian economy

5.1. Situation of the transport sector

In 2019, organisations operating in the transport and storage sectors contributed nearly HUF 2380 billion to GDP production, which accounts for 5.1 % of the total. The number of employees in the sector was 303,.312 million tonnes of goods were moved this year, an increase of 2.1 % compared to the previous year. Performance in tonne-kilometres also increased by 1.6 % compared to the previous year.17, social enterprises and 23, self-employed persons were registered in the branch on 31 December 2019[15].

(%)

Év	A szállítás, raktározás ág részaránya		
	a bruttó hozzáadott érték termelésében	a beruházásban	a foglalkoztatásban
2010	6,1	16,5	6,8
2015	6,5	17,5	6,4
2016	6,7	12,8	6,4
2017	6,2	14,7	6,6
2018	6,1	15,8	6,5
2019	6,0	16,3	6,7

Figure 10: Summary details of the transport and storage branch (Source: Ksh.hu)

Compared to the previous year, freight transport performance decreased by 13% in the third quarter of 2020.In the third quarter of 2019, the performance of freight transport was 14.5 billion tons/kilometres, which decreased to 12.5 billion tons-kilometres by the third quarter of 2020.

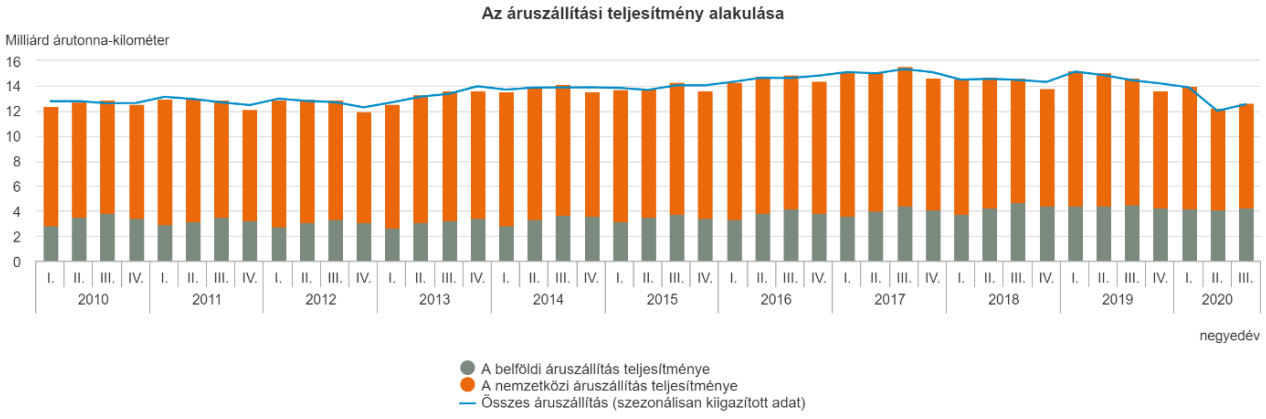


Figure 11: Development of freight transport performance (Source: Ksh.hu)

With regard to modes of transport, road freight continues to have the largest share – it accounts for nearly two-thirds of freight transport – although it lost performance in 2019.Rail freight transport shows no significant change in 2019, neither in tonnes of goods nor in tonnes of goods. However, there is a significant increase in inland waterway freight transport, which increased by 24% and the volume of goods transported by pipelines, which increased by 23% compared to the previous year's figures.

[15] https://www.ksh.hu/docs/hun/xftp/idoszaki/jelszall/2019/index.html

5.2. Transport of goods by road

Hungary accounted for 1.9%, 37 billion tonne-kilometres of EU road freight traffic. On a national basis, road haulage continues to play the largest role, thus carrying 65% of the weight of goods in 2019.Domestically, road transport performance increased by 2.8%, but its share in international terms was lower and its performance decreased by 5.5%, in which EU stricter regulations could play a role in road freight transport. The mass of goods transported by road decreased domestically (1.8%) and internationally (2.5%).

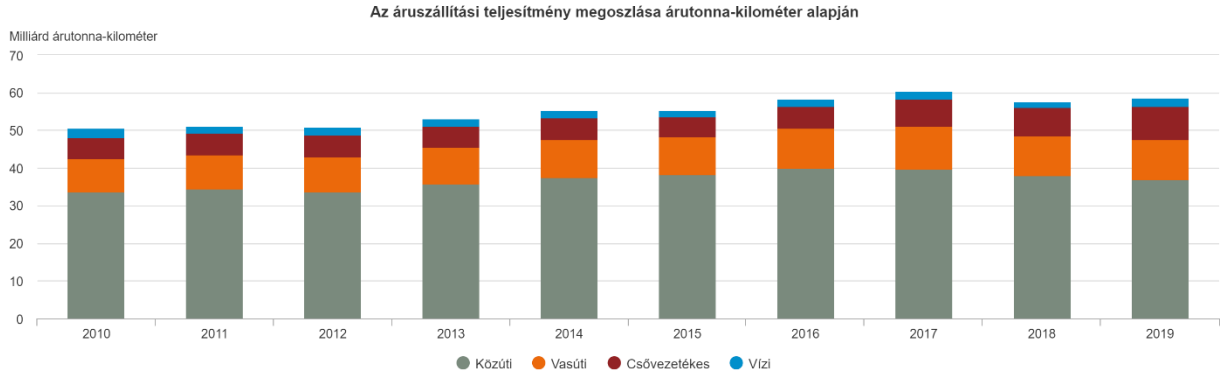


Figure 12: Distribution of freight transport performance (Source: Ksh.hu)

Hungary's main partners for the transport of goods by road:

- Exports by volume in descending order: Austria, Germany, Italy, Slovakia and Romania.
- In descending order ofimport turnover: Austria, Slovakia, Germany, Italy and Romania.

Figure 13: International road freight traffic – priority countries (Source: Ksh.hu)

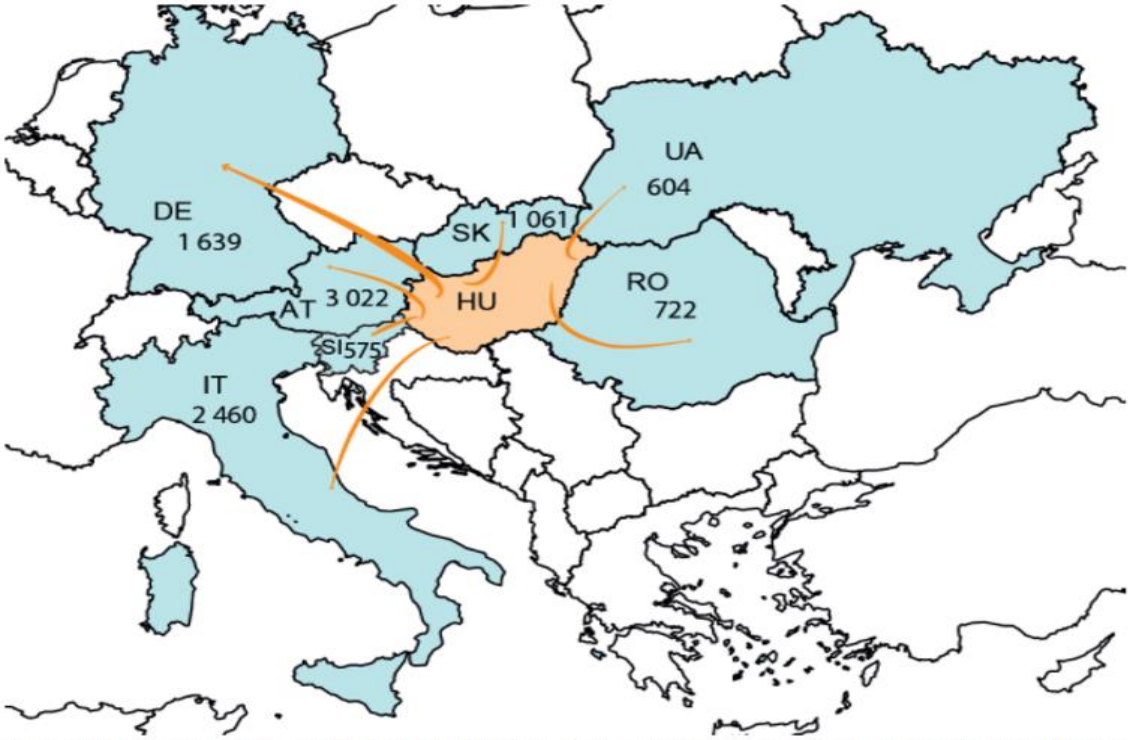
5.3. Transport of goods by rail

The share of rail transport is 17% by weight of the goods transported.

The average transport distance in the country was 121 kilometres in 2019.The performance of goods transported in domestic traffic in terms of weight as tonne-kilometres was below that of the previous year.In 2019, rail transport accounted for 72% of international traffic and 83 % of the tonne-kilometre power.

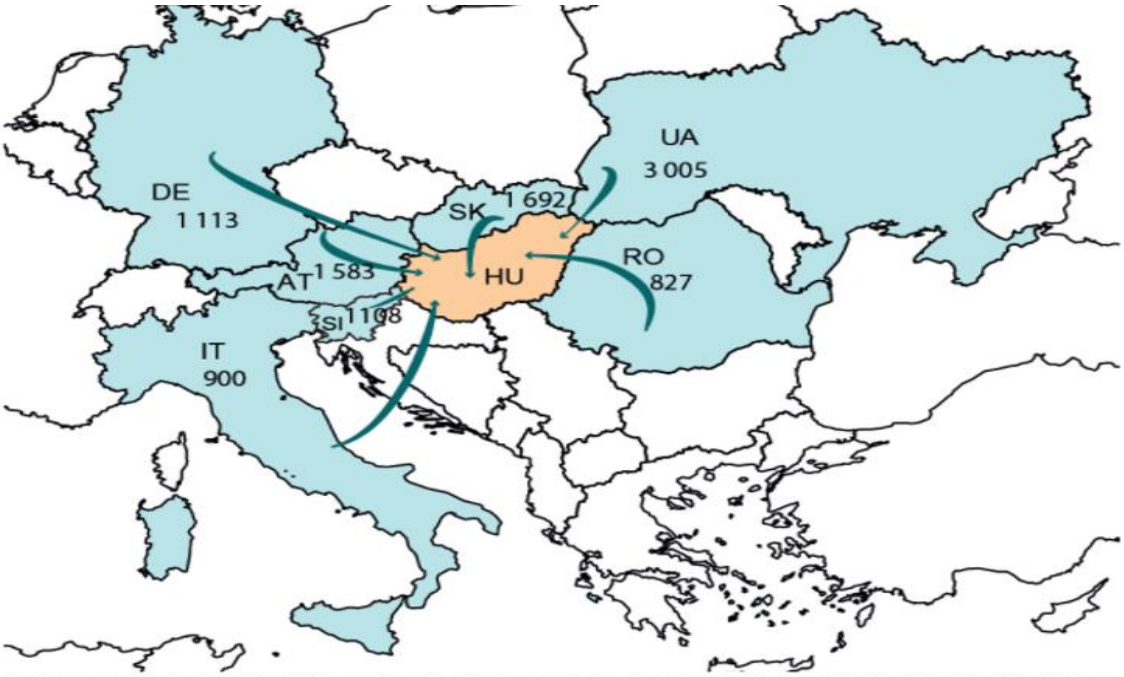
Hungary's main partners for rail freight transport:

- EU countries: Austria, Slovakia, Italy, Slovenia, Germany, Romania
- Non-EU countries: Ukraine, Russia, Serbia, Bosnia and Herzegovina



Országkódok: AT – Ausztria, DE – Németország, HU – Magyarország, IT – Olaszország, RO – Románia, SI – Szlovénia, SK – Szlovákia, UA – Ukrajna.

Figure 14: Weight of goods transported in export traffic (thousand tonnes) (Source: Ksh.hu)



Országkódok: AT – Ausztria, DE – Németország, HU – Magyarország, IT – Olaszország, RO – Románia, SI – Szlovénia, SK – Szlovákia, UA – Ukrajna.

Figure 15: Weight of goods transported in export traffic (thousand tonnes) (Source: Ksh.hu)

The performance of rail freight transport increased slightly in 2020.The volume of transported production increased to 2.6 billion, but the volume of transported goods decreased by 2.6%, representing 12.2 million tonnes in tonnes. In the third quarter of 2020 the transport of raw materials (e.g. gravel, wood) related

mainly to construction, automotive and steel industry decreased[16].As shown in Figure X, rail freight transport has been varied compared to the previous year. The volume of exports increased by 14%, whereas imports decreased by 8,7%. Transit also increased by 5.6%, while domestic turnover decreased by 16%.

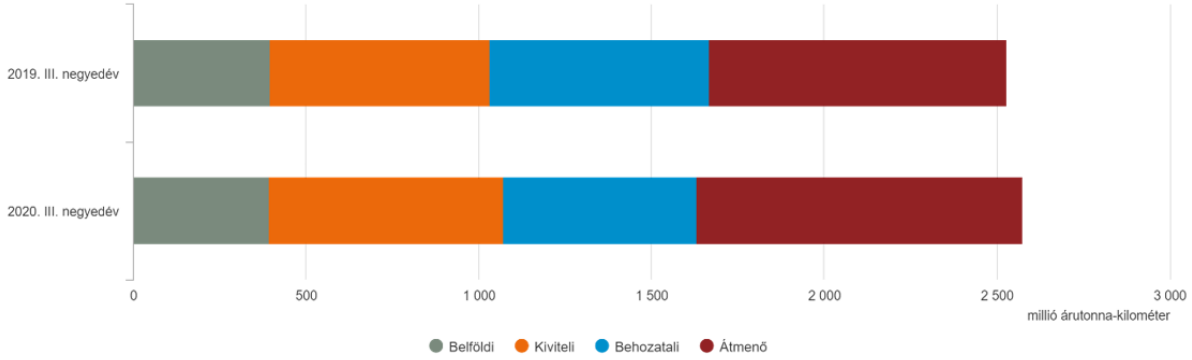


Figure 16: Rail freight performances (Source: Ksh.hu)

5.4. Inland freight transport

Inland waterway traffic increased to 8.6 million tonnes in 2019, an increase of 24% compared to the previous year, and also increased its tonne-kilometre performance by 32% to 2120 million.

The most important foreign carriers on the Hungarian part of the Danube were German, Romanian and Austrian ships, with a share of 22, 18 and 12% respectively, while only 9.2% of the goods were carried by Hungarian ships.

The largest volume of agricultural products was delivered on water (28%), followed by metal-containing ores, other mining and quarrying products (21%) and coke and refined petroleum products (19%).

In the European context, Hungary is ranked sixth in the total tonne-kilometre performance of inland waterway freight transport by 1.6%.

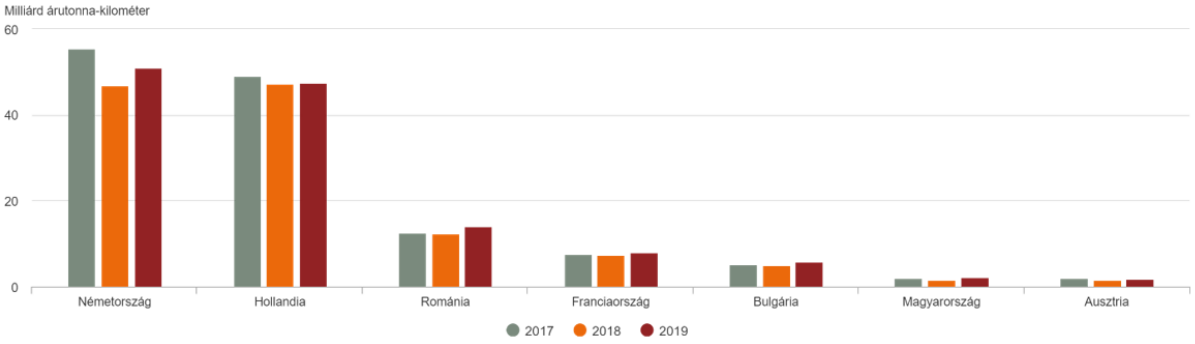


Figure 17: Change in performance of inland waterway freight transport in the European Union (Source: Ksh.hu)

5.5. Carriage and air freight transport

The total volume of goods transported by pipelines increased significantly by 23 % to 48 million tonnes in 2019.The share of air transport in total performance is negligible[17].

[16] http://www.ksh.hu/docs/hun/xftp/stattukor/sza/20203/index.html

[17] https://www.ksh.hu/docs/hun/xftp/idoszaki/jelszall/2019/index.html

6. Options for the transition to multimodal transport

6.1. Factors for implementation

European Green Agreement

One of the objectives of the European Union is to become climate neutral by 2050.This goal is supported by the European Green Agreement, which will enable Europe's economy to become sustainable.For this, however, it is essential that all economic sectors commit themselves and take the necessary steps.Key tasks to achieve climate neutrality:

- investment in green technologies,
- promoting innovation among industrial actors,
- introduction of cleaner, cheaper and healthier forms of transport, both for individual and public transport,
- decarbonisation of the energy sector,
- ensuring the energy efficiency of buildings and
- Cooperate with our international partners to improve global environmental standards.[18]

Sustainable transport

In terms of greenhouse gas emissions, a quarter of the EU's greenhouse gases are currently transported.It is also important in this sector to introduce the necessary regulations and invest in green technologies, as these indicators continue to grow as demand increases.The European Green Agreement aims to reduce greenhouse gas emissions by 90 %.More sustainable modes of transport are multimodal transport, rail transport and inland waterway transport.By developing and using them, the Member States of the European Union can contribute to achieving more sustainable transport.However, adequate network deployment, new investments and the creation of new sources of funding at national and European level are essential for the use of more **environmentally** friendly modes of transport[19].

Combination of freight transport involving rail freight transport

In recent years, there has been a growing tendency to move from road freight to rail freight transport. This is also encouraged by the European Commission, whose CEN/TC 256 Technical Committee for Railway Applications has developed and developed a number of standards to promote the efficiency and development of rail operations[20].

In the first half of2020, the pandemic caused a significant drop in road transport. Unlike road transport, rail transport had a positive impact on the epidemic. It caused an increase of 7,5% in terms of tonne-kilometres. Rail transport is a more favourable mode of transport in many respects[21].

With regard to freight, rail freight has the advantages of being more reliable in terms of speed, cost-effective and less environmentally polluting than road freight transport. It also contributes to reducing congestion by taking burdens off the roads, reducing the traffic of trucks passing through them. On average, a canned train can replace 76 trucks, which reduces our ecological footprint by 1.6 billion kilometres per

[18] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_hu#intzkedsek

[19] https://ec.europa.eu/transport/themes/sustainable_en

[20] https://prod.mszt.hu/hu-hu/szabvanyositas/hirek/2019/05/a-vasuti-teherszallitas-uj-europai-szabvanya

[21] https://iho.hu/hirek/a-vasuti-es-az-intermodalis-fuvarozas-lehet-a-pandemia-nagy-nyertese

year. On average, the transport of the same unit by freight on railways pollutes the environment by 80 % less than when transported by road[22].

According to other sources, a railway train can free the roads from an average of 35 trucks. On the other hand, many haulage companies face the problem that they do not have enough drivers and many other rules in the case of road transport[23].

Logistics is a service sector and needs to adapt to transport and storage needs. The state can partially influence trends and infrastructure developments through regulators. In the past, logistical developments were characterised by extensive character, i.e. expanding floor spaces and capacity development. During this period, major warehouses were built.

In Western Transdanubia it was essentially created in an agglomeration of cities, with the exception of GySEV. The characters typically provide a 50-80 km radius in the areas of Sopron, Győr, Mosonmagyaróvár, Keszthely, Zalaegerszeg, Nagykanizsa and Szombathely.In each region, medium-sized enterprises employing between 50 and 200 people were established with their own truck park and storage back. This status quo was first changed by the emergence of carriers from Eastern Europe.

Cabotage solutions, which were previously an integral part of the business model, have been discouraged, making the proven pricing system more cumbersome.The other general process was the 2008 crisis and then the industrial change.The former posed a temporary challenge, but for the latter there were changes that could not be resolved through temporary solutions.This direction has been enhanced by increased environmental awareness affecting the thinking of the European Union as a whole and transforming the support system and regulators.Finally, digitisation processes that transform the global economy were the last element of external factor changes.

This has had an impact on development in two directions:

- changes related to logistics and transport and
- transformation of the market customer side.

Of the new process directly related to logistics, environmentally conscious, sustainable and automated storage has become the most important component. The previous transport base is typically either degraded or necessary for more complex, higher added-value logistics processes to be carried out. Most large corporate customers expect a solution that can be fully integrated into their production processes and have a ready-to-use application. From the service providers' side, automation of complex workflows, cost optimisation and the development of agile systems have become priorities.

The above determines the development of the logistics market players in each priority settlement. Increased orientation towards multimodal systems has begun, primarily a combination of road and rail transport. Goods arriving by rail from long distances will be transported to the warehouse, where it is organised, stored, repackaged, and minor manipulations are carried out on the basis of individual customer needs.

Increasing automation – in many cases AGVs are already working between shelves – is a prerequisite for a uniform registration and storage registration system, relatively wide shelving distances, which are compensated by the possibility of larger indoor vertical construction. While the construction of buildings was the main investment factor in regional development, this has now shifted towards technical and technological supply systems.

The shelves are already developed by automated optimisation software in several cases or soon, and the fork lifter places the goods at the specified location. This must take into account both the speed of rotation, the value of goods and the likelihood of interventions required.

[22] https://prod.mszt.hu/hu-hu/szabvanyositas/hirek/2019/05/a-vasuti-teherszallitas-uj-europai-szabvanya

[23] https://iho.hu/hirek/a-vasuti-es-az-intermodalis-fuvarozas-lehet-a-pandemia-nagy-nyertese

Infrastructure costs are not related to the warehouse itself, but to the construction of rail and road transhipment and direct rail storage. Since GySEV Cargo has the greatest experience in this market, and in many cases accurate local market knowledge, a domestic medium-sized enterprise that does not enter on time is expected to lose a significant market. Therefore, the increase in multimodality will result in a concentration of market participants.

As stated in the previous chapter, the volume of water transport increased compared to the base year.

However, due to the natural unpredictability, the lack of construction of the dam and the time needed for river transport, this modality has strong limitations – in the case of bulk agricultural crops and bulk raw materials, its relevance remains, but expansion is not realistic. That is why railways remain essentially an environmentally friendly alternative in the region – clearly along with its limitations.

Therefore, market processes, regulatory changes, and public needs all affect the modalities of railway-road. This concentration is expected to appear geographically, not only in terms of service providers, but also for localisation. Therefore, for the years 2021 to 2027, there was a competition between cities in the region as to where this centre should be located. The advantage of Sopron's cross-border, rail-focused orientation, the modality of Győr 4 – water, air, rail and road complexity and the advantages of the related industry, Nagykanizsa's traditional role in the logistics translation era towards the Balkans, and the provision of the road-rail infrastructure of Szombathely. Finally, Zalaegerszeg became the character where logistics is declared as the main direction. This led to road developments – direct motorway connections, motorway connections – and railway developments started – with a direct line to the Balkans and direct connection to Sármell in air transport. In addition, terminal construction plans have been drawn up where container storage of goods by rail from tender ports can be carried out.

Overall, there is a continuous shift towards multimodality in relation to freight movements within the region, and a significant improvement in the rail-road conditionality of the rail-road conditionality of the movement of goods from outside gum.

Significant changes are also taking place on the market demand side, which are also in the direction of rail transport preferences. The region is dominated by international automotive suppliers and manufacturers, where units arriving in increasing volumes due to drivetrain changes, environmental awareness and the promotion of autonomous cars are characteristic. Complex engine blocks arrive and leave, where one can reach several hundred kilos. Road transport is limited to this type of goods.

6.2. Obstacles to implementation

There are several limitations to the spread ofrail-road modality.The most important aspect is that the industrial use of the goods to be transported is primarily given to the automotive industry, where delivery precision is the key aspect available.Therefore, an important prerequisite for the spread of multimodal transport is to ensure adequate stockholding and to ensure flexible availability.

This shall be subject to the following conditions:

- creation of modern transport infrastructure,
- creation of customised warehouse capacity and
- operation of an integrated IT system.

In all its components, strong expenditure and investments have been launched and plans have been drawn up. Thus, the main remaining obstacle is the nature of rail transport – slowness and economies of scale.

The quantity of goods required for the construction of guide trains is not enough for a customer, it is necessary to organise and integrate. This will result in further strengthening of market concentration.

7. Interviews

The following interviews with the managers and colleagues of relevant companies involved in multimodal transport in the Western Transdanubia region were conducted within the framework of the InterGreen-Nodes project. Their aim is to give an overview about the region regarding its current state, the directions of development and the plans for the future.

7.1. Budapest Free Port Logistics Ltd.

The port of the Budapest Free Port Logistics Ltd. (Budapesti Szabadkikötő Logisztikai Zrt.) provides complete railway and shipping services. It has 18 vessels in its three operating basins. On its territory 190,000 square meters of covered storage space is available. In 2005, it was certified as a national public port. The port, which plays a significant role in multimodality, has trimodal (road, water and rail) connections.

The commodity base of their customers consists of grain, bulk, container, piece goods (pallet and box version). According to the port, there have been no significant changes neither regarding the customers nor the commodity base compared to 2020.

The answer to the question of how much the port was affected by the pandemic, or to what extent are they exposed to these types of changes, was surprisingly that COVID-19 did not impact the port and the logistics services.

Its wide range of services – boating for watercrafts, ark handling, guarding; loading and storage of bulk and ferrous; railway operation services; container loading; customs services; road weighing; logistics services; Ro-Ro harbour operation etc. –are permanent, there are no significant changes regarding these. However, in the field of logistics services there is significant demand for the development of additional warehouses. As the requests for renting additional storage capacity are ongoing, customer needs justify the additional expansion of the capacity of the harbour with currently around 190.000 m 2 of storage.

With regard to revitalisation developments, the improvement of railway, road and waterside infrastructure are also in perspective. The newly built warehouses are already built with solar power and green roofs. The company managing the port is committed to the European Green Deal and considers it a forward-looking initiative for the future.

As the country's largest public port, river transport is given great importance as it is the most environmentally friendly mode of transport. This supports the transportation of cereals, bulk mass products and fuel in the most cost-effective and energy efficient way. The aim could be to increase the water share of container traffic if the regulation of the Danube river on the Hungarian section were resolved.

They say that the unpredictability due to water flow and potential icing during the winter period lead to significant disruptions. The low water level, which, according to their experience, can reach very critical levels in every 8-10 years can lead to a loss of up to 3-4 months in river transport and in the provision of port services. The icing typically causes problems every 3-4 years when water traffic is almost stopped for about 1-2 months. Another major problem is that ice breaking in the Hungarian Danube section, and thus in the harbour as well, have not been solved either, as there is only a minimal and technically inadequate icebreaker device available. As a result, service providers only perform ice breaks at unrealistically high prices.

Potential development opportunities for Budapest Free Harbour Logistics Ltd. (Budapesti Szabadkikötő Logisztikai Zrt.):

- Expansion of storage capacity, development of warehouses to satisfy customer needs.
- Prepare plans to resolve the river regulation of the Danube section in Hungary in order to reduce the unpredictability due to the flow of water and to increase the water share of container traffic.

- Finding new suppliers for ice breaking or building own infrastructure – feasibility study on the subject.

7.2. GYSEV (Győr – Sopron – Ebenfurti Rail Ltd.)

The already mentioned GYSEV Ltd. mentioned is an integrated railway company operating in the western part of Hungary and in Austria, having a total infrastructure of more than 430 kilometres.

We first asked them about the developments related to the infrastructure, including the situation of the transhiders, in terms of how Sopron and GYSEV Ltd. are affected by the developments in the Zahony Transhipment Area and the possible developments of transhiders in Szeged.

The developments in the Zahony Transhipment Area have no direct influence on the operation of the Sopron container terminal, but the company does not have accurate information.

The Zalaegerszeg development is expected to have a mutually reinforcing effect, not to be seen as competition. Due to the different nature and profile (ports – continental traffic) and good geographical location, the intermodal traffic in Hungary West Transdanubia can be managed by the two terminals. The company group welcomes the development in Zalaegerszeg, as it may be interested in using the terminal if it will be possible to do so.

The company does not have any specific information about the development in Szeged, but the intention is to manage the traffic on the so-called Balkan route, hopefully it can bring further combined traffic to the direction of Hungary, especially after the development of the Budapest-Belgrade connection.

As the group has no direct port traffic in the Northern Adriatic region (Koper, Rijeka, Trieste), currently, in 2021., there is no adequate information and experience on how maritime port traffic has changed and on how North Adriatic ports develop.

To our question about to what extent are the factory and production developments related to the railway developments, and whether developments regarding Mercedes and Audi and other suppliers provide a market for railways, we have received the answer that, of course, they are expected to do so. These industrial developments generate additional rail traffic in Hungary, from which Hungarian railway companies can acquire, compile and increase specific traffic. The company is pleased with the developments to this direction, it sees the development of the Hungarian economy and industrial developments positively. They are confident that as a result of these and other industrial developments, the volume of rail freight could increase, and their company, GYSEV CARGO, can take part in it and benefit from it. They see positive prospects for the future development of the Hungarian economy-industry-logistics (more rail traffic – not only regarding transit product flows).

This component of the Recovery and Resilience Facility (RRF) deals with sustainable green transport and its development. Three main reform areas have been identified – infrastructure and services, institutional systems and services, as well as logistical reforms – the first two of which are typically focused on rail passenger transport and increasing its competitiveness. For GYSEV CARGO – along with rail freight companies –the logistics reform area can be an opportunity, which aims to improve the competitiveness of Budapest as a freight hub in Central-Eastern Europe in the field of green mobility, referring to an adequate permeable capacity and a high-quality logistical base for rail freight operators in the vicinity of the intersection of the railway corridors passing through Hungary. Indeed, removing bottlenecks could lead to market expansion and the emergence of eco-friendly railways. The strategic aim of GYSEV CARGO is to operate the created high-quality warehouses and logistics centres in the future, since the company has experience in this field. It has been operating an intermodal logistics service centre in Sopron for many decades, which includes warehouses, terminals, marshalling yards and container repair and cleaning facilities with road and rail connections.

With regard to rolling stock, trains and locomotive development, information is available on the freight transport equipment used by GYSEV CARGO within the GYSEV group.

In 2017, GYSEV acquired 9 modern Siemens Vectron 471 series and 5 Siemens 1047 series so-called Taurus locomotives that meet the current technical requirements, freight transport needs and interoperability. In addition, GYSEV has 14 Ganz 430 locomotives, which can be used in 'domestic traffic'. These vehicles provide a towing vehicle based on the Cargo's needs and on the orders.

In 2018, GYSEV CARGO purchased 2 BR 233 high-performance diesel locomotives, that were renovated by DB railway, to serve the non-electrified section of the RFC 11 Corridor.

In 2019, the company purchased 1 of Siemens Vectron MS(AC/DC) high-performance electric locomotives from its own resources and will purchase a Siemens Vectron MS high-performance electric locomotive via its Austrian subsidiary in August this year.

Their aim is to gradually replace towing vehicles hired from external service providers with their own means, which provide them with an optimal and forward-looking solution in terms of cost-effectiveness and environmental protection.

Their own truck park tailored to customer needs: 128 open trucks, which are continuously equipped with quieted plastic brake blocks in accordance with EU rules, in addition 60 caravans and 19 covered railway wagons.

Their shippers, customers and partners express load and train length requirements with increasing parameters. On the Hungarian railway network, 21 tons of axle load is considered general on the main lines, while on the refurbished corridors axle load of 22. 5 tons (unfortunately mostly only on the main tracks) is ensured. The operation of trains with a length of 700-750 m, especially regarding combined transport which can be considered a general demand in traffic between terminals now days, has difficulties on the Hungarian infrastructure. This is also only possible on the rebuilt corridors. However, the majority of stations are only provided for the formerly general 600 m train length.

Professional controlling is an integral part of the company's operations, which supports more efficient operation and plays a significant role in the preparation of decisions. Changes in a wide range of indicators are constantly being examined, including asset utilisation indicators, hedging indicators, etc. Among the costs of rail freight transport, variable costs – track access charges, traction electricity – are very important, and in the case of traction costs, there are diverse types of construction: either working with own, but billion-dollar cost tools, or using leased tools, the goal is to achieve an optimum. In the case of too many own devices, the flexibility to reduce traction capacity in the case of possible relapsing traffic will not be maintained, so that it can be rebuilt in the short term. For years, GYSEV CARGO was around 800 and 900 million merchandise tonne-kilometres and around 4 million tons regarding its production, but it is very important that with continuously increasing operating results, consolidation and continuous efficiency gains can be seen.

Potential development opportunities for GYSEV:

- Taking advantage of the possibility that the development in Zalaegerszeg will not be considered a competition, but will have a mutually reinforcing effect,
- Management of traffic on the Balkan route and
- Operation of high-quality warehouses and logistics centres by GYSEV.

7.3. KTI (Institute of Transport Sciences)

The pool of activities within KTI includes the whole spectrum of transport. It covers both passenger transport, freight transport and infrastructure developments, but it is also linked to rail, road, waterborne and air transport modes, through aspects such as transport safety, the environment, energy use of transport and the use of smart technologies.

With regard to the situation of transhipping, the KTI considers that a multi-level transhipment system could ensure uninterrupted supply of goods, so there would be a need for non-urban (even in industrial parks) and smaller urban transhipment points (consolidation centres, transfer to LEFV devices).

With regard to national and international development goals, it is important to keep in mind that the national/international development goals must follow the state of the economy, transport and freight transport very accurately. Of course, one of the most important goals is to bring sustainable transport and sustainable logistics to a "new standard" so that the profession and the public cannot even distinguish sustainability from these sectors. Technological innovations can act as catalysts for this process, step by step, and it is necessary to introduce the use of digital and technological systems and standards in the daily life of the profession with the participation of all relevant actors.

City logistics – in their role as research institutes in the field of intra-urban freight transport, they seek to identify bottlenecks and their causes, develop and evaluate solutions through data analysis and simulations, and estimate their foreseeable impacts. In most cases, both the input data and the need to start the activity itself come from economic associations or authorities involved in the transport and logistics profession.

KTI is constantly looking for new development opportunities. Unfortunately, as a research institute, they are not directly affected by EU grants to the sector, however, they are looking forward to the new Horizon Europe calls. They see a lot of development opportunities. The development of multimodal and synchromodal processes also requires the development of digital and cooperative solutions that go beyond infrastructural investments.

They keep the objectives set out in the European Green Deal in mind and work every day to create solutions that support the achievement of these goals, however, consider that the complex issue of combined transport cannot be sufficiently characterised by the degree of reduction or increase in a single indicator. It would be necessary to consider together the nature of the goods to be transported, the customer's demand and a number of indicators of the economic operators actually carrying out the transport, but even then, we could only respond to the fact that it is 'dependent'. The aim would, of course, be to compete in the reduction of emissions.

With regard to quantitative tendencies it can be stated,that there is currently a stagnation in rail freight volumes.

Potential development opportunities for the KTI:

- Establishment of a multi-level transhipment system for uninterrupted supply of goods.
- Bringing sustainable logistics to a "new standard" level.
- Development of digital and cooperative solutions in the improvement of multimodal and synchromodal processes.

7.4. János Mag sole entrepreneur (Logisztikexpert)

János Mag is a transport engineer, a freight forwarding engineer, Chairman of the Logistics Cluster in South Zala, and Vice-Chairman of the Hungarian Academy of Sciences VEAB Logistics Working Committee, with whom we studied transport issues and multimodal transport from the business side, especially in the area of Nagykanizsa and its surroundings.

Compared to the company's capacity, there are few customers in the area, whether for transport or shipping. They must build customer relations from all over Hungary, but also from Europe on a significant extent. Polygonal transport transport is typical in international transport, given that the export and import tasks in Hungary do not bind its freight capacity. Classical transport is carried out on a minimal extent, shipping activity is much more typical.

Multimodal transport would be justified in the given district if container transport to the region could take place specifically. If the destination of the containers was the region, which would then have to be handled with finishing operations, they could see a chance for multimodal transport.

The terminal conditions for multimodal rail-road cooperation are not in place in the regions. The company does not take on such a costly task on its own. In their experience, it is not realistic to compete with large

multimodal freight forwarders in this area. They organise transport from ports to container terminals and do not deal with the afterlife of containers.

No company is positively affected by the increasing tax burden (increasing the tax burden due to environmental pressure). It is accepted that if companies are taxed equally both domestically and abroad (in the EU), this does not interfere with competition on the market. On the other hand, taxes on the road sector and their increase are no longer compatible with the competition, since the competitive position of the companies concerned is seriously deteriorating. The company believes that the competitive position of rail in Europe is not being solved by modernising rail services, but by imposing administrative sanctions on the highly competitive public roads.

Any planned development in the areas within the company's service portfolio in the vicinity of the Nagykanizsa region, including the planned terminal and logistical development in Zalaegerszeg, can be a major challenge for them, although the specific plans have not yet been outlined. Within the concept of the National Intermodal Container Terminal Network (OIKH), the infrastructure development plan of the Pannonia Logistics Centre and Container Terminal focuses essentially on the existing lines of MÁV and the future development of M7 highway.

With the inclusion of the Zalaegerszeg – Nagykanizsa railway line, they see a possibility of cooperation for handling railway container shipments further to the Nagykanizsa region at the railway station, for the entry of goods or for direct home delivery to consignees.

The profit content of international road transport is constantly decreasing, which is why they are awaiting the intervention of the Government and the MKFE. They hope that their joint work will improve the competitive situation as soon as possible, thereby achieving an adequate level of profit in road transport.

Warehouse technology in the world jumped forward. In particular, IT technologies and intralogistic robots (IoT, 5G network, AMR, AGV) have evolved, and storage activities in Hungary are lagging behind. The most important development for the company is the creation of computer operated warehouse management.

The company carries out contract warehousing and does not store its own goods. The number of their contractors is large, there are long-term (multi-annual), short-term (1-2 years) and occasional (single freight volume) orders. Basically, they focus on serving all the needs of their clients in warehousing, supported by computerised warehouse management at the appropriate professional level. Their goal is for their clients to outsource the most services possible to their company. The company wishes to be at least 3PL logistics service provider (3PL logistics service providers do not provide only one activity, but a complex operation package).

The system of tenders and their composition may not be fortunate for the company, given that, as a matter of principle, it is possible to apply for real estate development. Earlier attempts have been made to develop freight management hardware and software that would have been unique across Europe, up until today no tender has been published to support logistics operators' ideas in this regard.

Potential development opportunities for Logisztikexpert:

- Handling of container shipments at the railway station with the integration of the Zalaegerszeg (Zalaszentiván) – Nagykanizsa railway line.
- Taking advantage of the opportunities offered by digitalisation (logistic robots) in warehousing activities in Hungary, as well.

8. Summary, proposals and vision

There is a clear trend in the transport and logistics market that significant steps will be taken towards multimodality. This will be reinforced by both the market processes – the ever-increasing unit loads of customers – as well as the shift in the digitalised, automated and environmentally friendly direction, both by the increasing number of customers, as well as by the resulting political will – European Green Deal, sanctioning road air pollution, etc.

Of course, Western Transdanubia is no exception to these trends, and the system of previously established, urban-organised logistics service providers will go through an expected market concentration. On the one hand, those who do not move towards multimodality will lose a market, and on the other hand, the main regional undertaking of rail transport, GySEV Cargo, will also move towards economies of scale.

The necessary infrastructure improvements are under way. In order to attract as much freight movements outside the region as possible, a significant investment is launched for the construction of a multimodal container terminal with direct road connections. In the event of successful development, the role of logistics in the region will change significantly and will become even more prominent.

Overall, the challenge facing the region is significant, but individual and regional programmes can enable actors to benefit from complex expectations and regulatory changes. However, successful implementation will require professional work not only at regional level, but also at national and even EU level, as well as coordinated and planned and implemented developments over the coming years and decades.

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List of charts

Annexes

Interviews in original language (Hungarian):

Annex 1

GYSEV CARGO Zrt.

Infrastuktúrával kapcsolatos kérdések:

Átrakók helyzete, fejlesztése: Záhony (széles nyomtáv és ahhoz kapcsolódó átrakó), Zalaegerszeg és Szeged átrakófejlesztése hogyan érinti Sopront?

Záhony: az Átrakókörzetben történő fejlesztéseknek a soproni konténerterminál működésére nincs direkt ráhatása, pontos információkkal nem rendelkezünk.

Zalaegerszeg: egymást erősítő hatást várunk (nem konkurencia), az eltérő jelleg és profil (kikötői – kontinentális forgalmak) miatt és a jó földrajzi elhelyezkedések miatt a 2 terminál Mo.: Ny-Dunántúl intermodális forgalmát le fogja tudni kezelni, cégünk érdekelt lehet a terminál használatában, amennyiben erre lehetősége nyílik. Cégcsoportunk örömmel veszi a zalaegerszegi fejlesztést.

Szegedi fejlesztésről társaságunknak nincs konkrét információja, azonban a szándék az ún balkáni útvonal forgalmainak kezelése, remélhetőleg további kombinált forgalmak Magyarországot érintő útirányra terelését hozhatja, különösen a Budapest-Belgrád összeköttetés fejlesztését követően.

Tengeri kikötőkkel kapcsolatos forgalom hogyan változott, É-Adriai kikötők hogyan fejlesztenek?

Mivel cégünknek É-Adriai (Koper, Rijeka, Trieszt) direkt kikötői forgalma nincsen, így a kérdésről adekvát információkkal és tapasztalattal jelenleg, 2021-ben nem rendelkezünk.

Termelési pontok: A gyár és termelés fejlesztések mennyire kapcsolódnak a vasúti fejlesztésekhez? A Mercedes, Audi fejlesztések és egyéb beszállítók jelentenek-e vasút számára piacot?

Természetesen és reményeink szerint igen, jelentenek. Ezen ipari fejlesztések Mo.-on plusz vasúti forgalmat generálnak, amelyből a magyar vasúttársaságok konkrét forgalmakat akvirálhatnak, bonyolíthatnak, növekedhetnek.

Cégünk örül az ezirányú fejlesztéseknek, pozitívan látja a magyar gazdaság fejlődését, az ipari fejlesztéseket. Bízunk benne, hogy ezen, és más ipari fejlesztések eredményeképp a vasúti áruszállítási volumen növekedhet, és ebből cégünk, a GYSEV CARGO is kiveheti a részét, és profitálhat belőle!

Pozitívan látjuk a magyar gazdaság-ipar-logisztika jövőbeni fejlődési lehetőségeit (több vasúti forgalom – nem csak tranzit áruáramlatok tekintetében).

Keleti piacokban milyen lehetőség rejlik (pl. próbavonatok, irányvonatok behozatala Kínából)?

Amennyiben a távol-keleti (kínai) forgalom értendő a kérdés spektrumában: ezen forgalmak kiszolgálásában (ma jórészt Fehéroroszország – Lengyelország átmenet, Ny-Európa irányultsággal), azok fejlesztésében jelen pillanatban cégünk sajnos nem vesz részt. Így érdemben ezen korridor vasúti lehetőségeiről (Kína, Oroszország, stb.) cégünk naprakész információkkal, tapasztalattal nem rendelkezik, viszont a magyar állam többségi tulajdonában álló cargo (árufuvarozó) vasútvállalatként szakmai és üzleti potenciált látunk.

Bízunk benne, hogy a jövőben lehetőségünk nyílik szakmailag és üzletileg ezen piacokra belépni.

Jövőbeni fejlesztések: A green deal mennyi érinti a vasúti fuvarozást? RRF (helyreállítási és ellenállóképességi eszköz) vasúti fejlesztési forrás, hogy befolyásolja a vasúti szállítás lehetőségét?

A helyreállítási és ellenállóképességi eszköz E komponense foglalkozik a fenntartható zöld közlekedéssel, annak fejlesztésével. Három fő reform terület került megnevezésre - infrastruktúra és szolgáltatási, intézményrendszeri és szolgáltatási, valamint logisztikai reform -, melyek közül az első kettő jellemzően a vasúti személyszállításra, annak versenyképességének növelésére fókuszál, a GYSEV CARGO – ill. a vasúti árufuvarozó vállalatok – számára a logisztikai reformterület jelenthet lehetőséget, melynek célja, hogy Budapest mint Közép-Kelet-Európa áruszállítási csomópontja a zöld mobilitás területén is javítson a versenyképességén, vagyis a Magyarországon áthaladó vasúti korridorok Budapest metszéspontjának környezetében megfelelő áteresztő kapacitás és magas minőségű logisztikai háttérbázis álljon a vasúti fuvaroztatók rendelkezésére. Ha valóban sikerül felszámolni a szűk keresztmetszeteteket, az a piac bővüléséhez, a környezettudatos vasút előretöréséhez vezethet. A GYSEV CARGO stratégiai célja a létrejövő magas minőségű raktárak, logisztikai központok jövőbeli üzemeltetése, hiszen ilyen jellegű tapasztalattal is rendelkezik a vállalat, Sopronban hosszú évtizedek óta intermodális logisztikai szolgáltató központot üzemeltetünk, amely magába foglal közúti és vasúti kapcsolattal rendelkező raktárakat, terminált, rendezőpályaudvart valamint konténerek javítására és tisztítására szolgáló létesítményt.

Vannak-e regionálisan kialakuló centrumok Nyugat-Dunántúlon? Szállítmányozó és átrakó cégekkel közösen átrakó központ vagy szállítmányozó központok létrehozása van-e tervben vagy folyamatban?

Cégünknek ilyen központok, „szállítmányozói centrum" létrehozásáról, vagy fejlesztéséről nincs tudomása, a Ny-Dunántúli régió Logisztikai Központjaiként terminálok / iparlogisztika: GYSEV CARGO – Sopron (közút, vasút), Győr (közút, vasút, repülőtér), Zalaegerszeg (ua.), és opcionálisan a Sármelléki nemzetközi repülőtér értelmezhető. A legnagyobb szállítmányozó cégek, ismereteink szerint a régiót jellemzően Budapestről, vagy Bécsből menedzselik.

<u>Gördülő állomány:</u>

Szerelvény és mozdony fejlesztésben hol tart a GYSEV?

A GYSEV -csoporton belül a GYSEV CARGO által teherfuvarozásra használt eszközök tekintetében tudunk nyilatkozni.

A GYSEV 2017-ben beszerzett 9 db korszerű Siemens Vectron 471 sorozatú (köztük MS, AC, Dízel segédhajtással szerelt) és 5db Siemens 1047 sorozatú ún. Taurus mozdonnyal rendelkezik, amelyek a kor műszaki elvárásainak és a teherszállítási igényeknek, interoperabilitásnak megfelelnek. Ezen felül a GYSEV 14 db Ganz 430 mozdonnyal rendelkezik, ezek „belföldi forgalomban" használhatók. Ezen járművek a Cargo igényeikhez illeszkedően és a megrendelés alapján biztosít vontatójárművet.

A GYSEV CARGO 2018-ban 2 db BR 233-as sorozatú nagyteljesítményű dízelmozdonyt vásárolt és újíttatott fel a DB vasúttal az RFC 11 korridor nem villamosított szakaszának kiszolgálására.

2019-ben a vállalat saját forrásból vásárolt 1db Siemens Vectron MS(AC/DC) nagyteljesítményű villamos mozdonyt és ausztriai leányvállalatán a Raaberbahn Cargon keresztül idén augusztusban beszerzünk szintén egy Siemens Vectron MS nagyteljesítményű villamos mozdonyt.

Célunk a külső szolgáltatóktól bérelt vontatójárművek fokozatos saját eszközzel történő kiváltása, amelyek a költséghatékonyság és a környezetvédelem szempontjából is optimális és előremutató megoldást adnak számunkra.

Saját teherkocsi parkunk a megrendelői igényekhez igazodva: nyitott 128 db Ea.. sorozatú teherkocsi, melyeket folyamatosan szereljük fel csendesített műanyag féktuskókkal az EU szabályokhoz igazodva, ezen felül 60 db pőrekocsi és 19 db fedett vasúti kocsi.

Szerelvény súlya és pálya terhelhetőségének kérdése hogy áll most?

A fuvaroztató, megrendelő ügyfeleink, partnereink egyre nagyobb paraméterekkel terhelés és vonathossz rendelkező igényeket fogalmaznak meg. A magyar vasúti hálózaton a fővonalakon általános a 21 t tengelyterhelés, a felújított korridorokon a 22,5 t tengelyterhelés (sajnos többnyire csak az átmenő fővágányokon) biztosított. A 700-750m vonathosszúságú szerelvények közlekedtetése, -különösen a kombinált fuvarozásban ma már ez általános igényként jelenik meg a Terminálok közötti forgalmakban,- a magyar infrastruktúrán nehézségbe ütközik. Erre szintén csak az átépített korridorokon van lehetőség, azonban az állomások többsége csak a korábban általános 600m vonathossz kiépítés áll rendelkezésre.

Gazdaságosság:

Készülnek-e számítások, hogy üzletileg milyen áruforgalom mellett lenne nyereséges, és mit tesznek ennek érdekében?

A vállalat működésének szerves része a szakmai kontrolling, amely a hatékonyabb működést támogatja, a döntéselőkészítésben jelentős szerepe van. Sokféle mutató változását vizsgáljuk folyamatosan, ezek között találunk eszközkihasználtsági mutatókat, fedezeti mutatókat, stb. A vasúti árufuvarozás költségei között nagy súlyt képviselnek a változó költségek – pályahasználati díj, vontatási villamos energia -, a trakciós költségek esetében többféle konstrukció létezhet: lehet saját, de milliárdos bekerülési értékű eszközökkel dolgozni, de bérelt eszközöket is igénybe lehet venni, itt egy optimum elérése a cél. Hiszen túl sok saját eszköz esetén nem marad meg az a fajta rugalmasság, hogy az esetlegesen visszaeső forgalmak esetében csökkenteni lehessen a trakciós kapacitást úgy, hogy az rövidtávon akár visszaépíthető legyen. A GYSEV CARGO évek óta 800 és 900 millió árutonnakilométer, ill. 4 millió tonna körüli teljesítményt produkál, azonban nagyon fontos, hogy folyamatosan növekvő üzemi eredmény mellett, látható tehát a konszolidáció, a folyamatos hatékonyságnövelés.

KTI – Közlekedéstudományi Intézet

Fejlesztésekkel kapcsolatos kérdések:

Közlekedésszervezési szempontból hová terveznék az átrakókat (pl. ipari parkokba)?

Véleményünk szerint több szintű átrakó rendszer tudná biztosítani a zavartalan áruellátást, így szükség lenne a szűken értelmezett városokon kívüli (akár ipari parkokban) és kisebb városi átrakópontokra is (konszolidációs központok, LEFV eszközökre történő átrakáshoz).

Mit lehet tudni jelenleg az országos, valamint a nemzetközi fejlesztési célokról?

Fontos szem előtt tartani, hogy a nemzeti/nemzetközi fejlesztési célok a gazdaság, a közlekedés és az áruszállítás mindenkori állapotát nagyon pontosan kell, hogy lekövesse. A legfontosabb célok közé tartozik természetesen a fenntartható közlekedés és a fenntartható logisztika „új norma" szintre emelése, hogy ne is tudja gondolatban sem elválasztani a szakma és a közvélemény a fenntarthatóságot az említett szektoroktól. A technológiai újítások lehetnek ennek a folyamatnak a katalizátorai, lépésről-lépésre, minden érintett szereplő részvételével szükséges bevezetni a digitális és technológiai rendszerek és standardok használatát a szakma mindennapi életébe.

Milyen fejlesztéseket terveznek jelenleg?

Folyamatosan kutatjuk a lehetőségeket az új fejlesztési lehetőségek feltárására.

Az EU általi források mennyire érezhetőek ebben a szektorban? Milyen EU-s források állnak rendelkezésükre?

Kutatóintézetként nem vagyunk közvetlenül érintve a szektornak nyújtott támogatások által. Nagy várakozással tekintünk az új Horizon Europe pályázati kiírásokra.

Van olyan nemzetközi közlekedési folyosó, ami érinti a Nyugat-Dunántúli szakaszt?

Igen, a transzeurópai közlekedési hálózat (TEN-T)fejlesztés alatt álló szakaszainak egy része is ebben a régióban található.

Van-e folyamatban vagy tervben kikötőfejlesztés?

Általunk kezdeményezett nincs, nyitottak vagyunk a kikötők megkereséseire, a szakmai együttműködés folytatására.

City logisztika – a városokon belüli árufuvarozást jelenleg hogyan oldják meg?

Kutatóintézeti szerepkörünkben igyekszünk feltárni a szűk keresztmetszeteket és azok okait, adatelemzések és szimulációk révén megoldási javaslatokat kidolgozni és azokat értékelni, előre látható hatásaikat megbecsülni. Legtöbb esetben a bemeneti adatok és maga a tevékenység megkezdésének igénye is a közlekedési-, logisztikai szakmában érintett gazdasági tárulásoktól vagy hatóságoktól származik.

Milyen fajta multimodális fejlesztési lehetőségeket látnak?

Számtalan lehetőséget látunk, amelyek kifejtése meghaladja e kérdőív kereteit. A multimodális (és szinkromodális) folyamatok fejlesztésének nagy szüksége van az infrastrukturális beruházásokon túlmutató digitális és kooperatív megoldások kidolgozására is.

Környezetvédelmet is érintő kérdések:

A Green Deal hogyan és mennyire befolyásolja a munkájukat, fejlesztéseket?

Folyamatosan szem előtt tartjuk a dokumentumban megfogalmazott célokat és minden nap azért dolgozunk, hogy olyan megoldásokat hozzunk létre, amelyek e célok elérését támogatják.

A kombinált szállítás a káros anyag kibocsátást hogyan befolyásolja?

A kombinált szállítás komplex kérdéskörét nem lehetséges egyetlen jelzőszám csökkenésének vagy növekedésének mértékével megfelelően jellemezni. Az elszállítandó áru jellegét, a megrendelő igényét és a szállítást ténylegesen végző gazdasági szereplők számos indikátorát szükséges lenne együttesen számba venni, de még akkor is csak azt tudnánk válaszul adni, hogy „attól függ”. A cél természetesen az lenne, hogy az érintettek azon versenyezzenek, hogy a károsanyag kibocsátás csökkenjen.

Vasúti áruszállítás mennyiségének tendenciái?

Jelenleg stagnálás tapasztalható a vasúti áruszállítás volumenét tekintve.

Budapesti Szabadkikötő Logisztikai Zrt.

Alaphelyzet és változások:

Milyen raktárkapacitással dolgoznak jelenleg? Lenne-e igény a raktárkapacitás bővítésére?

Kb. 190.000m2 raktárkapacitás jelenleg. Igen, van igény a raktárkapacitás bővítésre.

A multimodális megoldásokhoz hogyan kapcsolódik a kikötő?

A kikötő trimodális, vagyis közúti, vízi és vasúti összeköttetéssel is rendelkezik.

Milyen szolgáltatásokat nyújt a területen és mit nem, amire lenne igény?

Vízijárművek részére hajóállítás, bárkakezelés, őrzés; Ömlesztett darabárú és vasárú rakodás tárolása; vasútüzemi szolgáltatás; konténerrakodás; vámszolgáltatás; közúti mérlegelés; logisztikai szolgálatások; Ro-Ro kikötő üzemeltetés stb.

Milyen céges igények vannak? Azok milyen szinten változnak? Mennyire van kitéve a covidnak vagy egyéb változásoknak?

Az előző pontban felsorolt igények vannak a betelepült vállalkozások részéről. Ezen a szolgálatások nem változnak. Természetesen a logisztikai szolgáltatások kapcsán jelentés igények vannak további raktárak fejlesztésére. A Covid nem volt kihatással a kikötői és logisztikai szolgáltatásokra.

Milyen fajta árualappal dolgoznak az ügyfeleik? Ebben van-e változás?

Gabona, ömlesztett tömegárú, konténer, darabáruk (raklapos, dobozos). Tavalyi évhez hoz képest nem történt szignifikáns változás az ügyfelekkel kapcsolatban.

Fejlesztési kérdések:

Milyen revitalizációs fejlesztések várhatók a kikötőben?

Infrastruktúrafejlesztés (vasút, közút, vízoldal). Az új raktárainkat napelemmel és zöldtetővel építjük.

Van-e elég raktárkapacitása a kikötőnek?

Folyamatos a megkeresés további raktárkapacitás bérlésével kapcsolatban.

Pozitívan érinti-e a Green deal a kikötőt is a vasút mellett?

Elkötelezettek vagyunk a Green deal iránt és a jövő szempontjából előremutató kezdeményezésnek tartjuk.

Folyami áruszállításnak milyen lehetőségeit látják? Folyami kikötő?

Az ország legnagyobb közforgalmi kikötőjeként a folyami szállításnak, mint a legkörnyezetbarátabb szállítási módnak, igen nagy jelentőséget tulajdonítunk. A legköltséghatékonyabban és legenergiatakarékosabban szállíthatunk a gabonaféléket, ömlesztett tömegárukat, üzemanyagot. A konténerforgalom vízi

részesedésének növelése lehetne a cél, amennyiben a magyarországi Dunaszakaszon a folyam szabályozottsága megoldásra kerülne.

Vízhozam miatti kiszámíthatatlanság kérdése mekkora problémát jelent? (Alacsony vízszint, jegesedés kérdése?)

Az alacsony vízszint, amely jelen tapasztalatunk szerint 8-10 évente nagyon kritikus mértéket tud elérni, akár 3-4 hónapos kiesést jelenthet a folyami szállításban, illetve a kikötői szolgáltatások nyújtásában. A jegesedés 3-4 évente okoz tapasztalataink szerint gondot, amikor kb. 1-2 hónapon keresztül szinte szünetel a vízi forgalom. Ugyancsak jelentős gondot jelent, hogy jelenleg a magyarországi Dunaszakaszon és így a kikötőben sem megoldott a jégtörés, mivel minimális és műszakilag nem igazán megfelelő jégtörő áll csak rendelkezésre. Ennek következtében a szolgáltatók a jégtörést csak irreálisan magas díjon végzik.

Annex 4

Mag János egyéni vállalkozó (Logisztikexpert)

Vállalkozói oldalról, hogyan látja a szállítmányozás/fuvarozás kérdéskörét, illetve a multimodális szállítmányozást?

Nagykanizsán és környékén a kapacitásunkhoz képest kevés megbízó van, akár szállítmányozásra, akár fuvarozásra. Szükségszerűen egész Magyarországról, de jelentős mértékben Európából is kell megbízói kapcsolatokat építenünk. Jellemző a nemzetközi fuvarozásainkra a sokszögfuvarozás, tekintve, hogy a magyarországi export és import feladatok nem kötik le a fuvarkapacitásainkat. Klasszikus szállítmányozást minimális mértékben végzünk, sokkal jellemzőbb a fuvarozási tevékenység.

A multimodális szállítmányozásnak annyiban van létjogosultsága a körzetünkben, ha kifejezetten a régiónkba irányul konténerszállítmányozás folyhatna. Ha a konténerek célállomása a régiónk lenne, amelyeket azután finishing műveletekkel kellene kezelnünk, akkor látunk esélyt a multimodális szállítmányozásra.

Vasút-közút közötti multimodális együttműködésnek a terminális feltételei nem adottak a régiónkban. Cégünk önmagában nem vállal fel ekkora finanszírozású feladatot. Tapasztalataink szerint a nagy multimodális szállítmányozókkal e téren nem reális a versenybe szállás. Ők kikötőkből konténerterminálokra szervezik a szállítmányozást, a konténerek utómunkálataival nem foglalkoznak.

Hagyományos fuvarozó és raktározó cégeket hogyan érinti az egyre fokozódó adóteher (környezetterhelés miatt adóterhek növelése)?

Egyetlen vállalkozás sem örül a fokozódó adóterheknek. Elfogadott, ha a vállalkozásokat belföldön és külföldön (EU-ban) egyformán súlytja az adóteher, ez így nem avatkozik bele a piaci versenybe. Ellenben a közúti szektorra kirótt adók és azok emelése, már nem verseny kompatibilis, hiszen az érintett vállalkozások versenyhelyzete erősen romlik. Úgy véljük, hogy Európában a vasút versenyhelyzetét nem a vasúti szolgáltatások korszerűsítésével, hanem az erősen versenyhelyzetű közút adminisztratív szankciókkal súlytásával igyekeznek megoldani.

Hogyan érinti a zalaegerszegi tervezett terminál logisztikai fejlesztés, mint zalai vállalkozót?

Nyilvánvaló, minden, a nagykanizsai régió közelségében tervezett, a szolgáltatási portfóliónkba tartozó területeken tervezett fejlesztés jelentős kihívást jelenthet cégünknek. Bár még a konkrét tervek nem körvonalazódtak. Az Országos Intermodális Konténerterminál Hálózat (OIKH) koncepcióján belül a Pannonia Logisztikai Központ és Konténerterminál infrastrukturális fejlesztési terve alapvetően a MÁV már meglévő vonalaira, illetve az M7-es jövőbeli fejlesztésére fókuszál.

Forrás: https://docplayer.hu

A Zalaegerszeg (Zalaszentiván) – Nagykanizsa vasútvonal beiktatásával látunk együttműködési lehetőséget a nagykanizsai régióba továbbirányított vasúti konténerszállítmányok vasútállomási kikezelésére, az áruk betárolására, vagy a címzettekhez történő közvetlen házhoz fuvarozásra.

A nyereség tartalom hogy változott a közúti fuvarozásban és mit vár a jövőben?

A közúti nemzetközi fuvarozás nyereségtartalma folyamatosan csökken. Éppen ezért várjuk a Kormány és az MKFE beavatkozását. Remélhetőlek a közös munkájuk mihamarabb hathatós versenyhelyzet javulást, ezen keresztül a megfelelő nyereségszint elérésér hozza a közúti közlekedésben.

Együtt tud-e dolgozni konténer terminálokkal vagy az egy teljesen zárt rendszer?

Ahogyan azt a 3. pontban kifejtettük, közös érdekből vezérelve, látunk lehetőséget a tervezett zalaegerszegi terminállal történő együttműködésre.

Raktárfejlesztési területén milyen lépéseket kell tennie, hogy versenyképes tudjon maradni?

A raktártechnológia a nagyvilágban óriásit ugrott előre. Leginkább az IT technológiák és az intralogisztikai robotok fejlődtek (IoT, 5G hálózat, AMR, AGV), amelyektől a magyarországi raktározási tevékenységek elmaradnak. Legfontosabb a raktárirányítási számítógépes irányítás fejlesztése nálunk is.

Cégünk bérraktározást végez, nem a saját tulajdonú áruit raktározza. A megbízóink száma nagy, vannak hosszútávú (több évre szóló), rövidtávú (1-2 év) és eseti (egy-egy fuvarnyi árumennyiség) megbízások. Alapvetően arra kell koncentrálnunk, hogy a megbízóink minden igényét kiszolgálhassuk a raktározásban, megfelelő szakmai szintű számítógépes raktárirányítással megtámogatva. Azt akarjuk, hogy a megbízóink mennél több szolgáltatást szervezzenek ki hozzánk. Ez a kiszervezés többfokozatú lehet, mi legalább 3PL logisztikai szolgáltató akarunk lenni (3PL logisztikai szolgáltatóhoz nem egy tevékenységet, hanem egy összetett művelet csomagot helyeznek ki).

„Összeköltözés" nagyvállalatokkal?

A jövőben nem zárjuk ki ennek a lehetőségét, bár jelenleg a megbízói hálózatunkban nem jelentkezett ilyen igény. A raktárunkból a közeli megbízóink termelésének JIT kiszolgálásával már foglalkozunk jelenleg is.

Pályázati források vannak-e? Hogyan érinti a pályázati rendszer változása?

A pályázatok rendszere, azok összetétele nem feltétlenül szerencsés, tekintettel arra, hogy alapvetően ingatlanfejlesztésekre lehet pályázni. Korábban próbálkoztunk olyan fuvarirányítási hardver és szoftver kifejlesztésével, amely Európában is egyedülálló lett volna, de a mai napig nem jelent meg olyan pályázat, amely a logisztikai szolgáltatók ilyen irányú elképzeléseit segítette volna. A 6. pontban jelzett fejlesztések alapvetően a logisztikai tervezők szürkeállományát dolgoztatnák meg, nem pedig az ingatlanberuházók ötletelését.