

INTEGRATED TRANSPORT SERVICE DEVELOPMENT THROUGH INTERREGIONAL COOPERATION BETWEEN MISKOLC AND KOŠICE

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Abstract: The study examines the development opportunities of cross-border public transport services between Miskolc and Košice. Despite the strengthening of economic, educational and labor market relations in the Košice–Miskolc Euroregion in recent years, the public transport offer has only partially adapted to the changed mobility needs. The article reviews the current rail and bus services and then outlines realistic service development directions (adapting to travel needs and considering infrastructure constraints), based on inter-regional cooperation. The expansion of the offer and intermodal developments can contribute to the transport integration and sustainable development not only of the border region, but also of the entire Euroregion.

Keywords: *interregional cooperation, Miskolc, Košice, Košice–Miskolc Euroregion, inter-city public transport, public transport service development*

1. INTRODUCTION

The importance of cross-border cooperation and its inherent potential have been recognized by both Hungary and Slovakia. This is shown on the Slovak side by the fact that already in 2011, the *Slovak Spatial Development Perspective* classified Hidasnémeti and Tornynosnémeti as the closest, type 3 cross-border cooperation areas, and the wider area as type 2 (SK Ministry of Transport, 2012) (Figure 1). On the Hungarian side, a 2014 *Hungarian Official Gazette* contains a map similar to the Slovak one, showing several agglomeration areas that also extend across the national border, including the Košice-centered agglomeration.

The attraction of Košice has had an increasingly intense impact on Borsod-Abaúj-Zemplén County, primarily its northern part, in recent decades. This is well exemplified, among other things, by the fact that, according to the 2022 census, a total of 724 people living in Borsod-Abaúj-Zemplén County now work in Košice, Moldava nad Bodvou and Turňa nad Bodvou, and that – in close connection with the former – the Slovak side has launched regional bus services between Košice and Hidasnémeti as part of a public service.

Interregional cooperation is facilitated by the fact that Miskolc and Košice are twin cities, so the relationship between the two cities is closer than average, but this type of partnership is still unexploited (apart from a few joint projects related to tourism, culture and sports, the cooperation has not yet had any practical results). The opening of the *M30* motorway in October 2021, which provides a fast connection between the two regional centers, gave the Košice–Miskolc Euroregion a big boost. The fact that, since the 2020/2021 timetable change, there are now 7 pairs of *InterCity* trains running between Budapest – Miskolc – Košice daily instead of the previous 2 pairs, which means a service every two hours on this route, has also helped and continues to help the closer ties between the settlements in the region.

There are many opportunities to strengthen cooperation and connectivity between regions in the Euroregion. In this article, the development opportunities for public transport connections in the region will be discussed, but before that, first the current services will be also presented in detail.

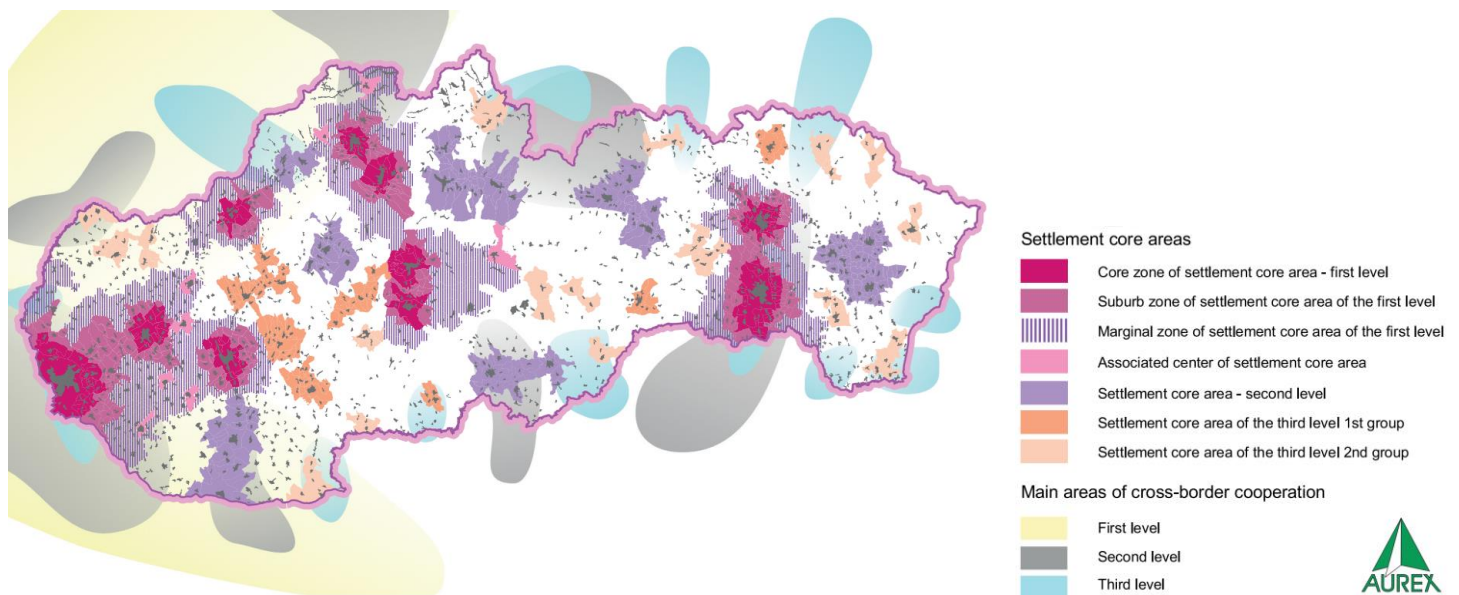


Figure 1

The settlement hierarchy and cross-border cooperation of Slovakia (SK Ministry of Transport, 2012)

2. HISTORICAL BACKGROUND

The exact location of the Czechoslovak–Hungarian border took 5 years after the Treaty of Trianon and was only completed in 1925. The border followed the lines of the Danube and Ipoly rivers in the western and central sections all the way to Balassagyarmat. East of Balassagyarmat, the Tisza was the next river that formed the border for a significant section (near Záhony). The transport and defense aspects of Czechoslovakia were the determining factors in choosing the exact location of the

border between Balassagyarmat and Záhony. Neither the previous administrative borders nor the ethnic borders were of great importance in the demarcation of the new border line.

The goal of the Czechoslovak state in the region was to have the entire length of the Lučenec – Fiľakovo – Rožňava – Košice – Sátoraljaújhely – Chop – Mukachevo railway line under their control. To achieve this, the new border even divided the city of Sátoraljaújhely into two.

Although the first Vienna decision (1938) made border adjustments favorable to Hungary, these were annulled after World War II, and the new border finalized in 1925 was almost completely restored. This border remained during the decades of socialism, and then became the southern border of Slovakia, which gained independence after the dissolution of Czechoslovakia in 1993.

The new border separated regions that had previously had close economic ties, with the biggest loser being the Lučenec–Salgótarján–Ózd–Rimavská Sobota region, where supply chains between mines and industrial facilities were disrupted, and the former single market was also abolished (Enyedi and Horváth, 2002).

The big losers of the border redrawing were also the regions that were separated from their former regional centers. This problem largely affected Hungary, where, with the loss of Rožňava, Košice and Kráľovský Chlmec, many areas became urban-deprived areas within the mother country and drifted into a peripheral position. On the Czechoslovak side of the border, the fact that most of Sátoraljaújhely remained in Hungary caused similar phenomena in the villages of the area that were now in Czechoslovakia.

On the Hungarian side of the border, the railway lines became perpendicular to the border, and because of the loss of the centers, the destination of traffic in the area of today's Borsod-Abaúj-Zemplén County became almost exclusively Miskolc. The railway network of Borsod-Abaúj-Zemplén County is now entirely Miskolc-centric, the two previously existing diagonal branch lines (Szerencs – Hidasnémeti, Eger – Putnok) have now been closed (Tóth, 2003).

As a result of the accession of Slovakia and Hungary to the Schengen Agreement (2007), border controls between the two countries were abolished, which enabled and is enabling closer cooperation and connectivity between the separated territories.

Today, ten cross-border settlement clusters can be identified along the entire Slovak–Hungarian border, which can be divided into three main groups (Ocskay et al., 2021):

- Hungarian extensions of the catchment areas of Bratislava and Košice,
- twin towns and their catchment areas along the Danube (Komárom – Komárno, Esztergom – Štúrovo),
- small border towns with limited attraction to the other side of the border (Balassagyarmat, Šahy, Sátoraljaújhely).

Among the settlement clusters, the catchment area of Bratislava and Košice stands out in terms of both size and population. In the case of Bratislava, due to the size of the city (its population is more than twice that of Košice) and the relative development of the settlements located near Bratislava, the agglomeration process

began earlier and is currently more intense than in the case of Košice (Balizs and Somogyi, 2024).

3. INTRODUCTION OF THE EXAMINED AREA

Throughout history, Košice was one of the most important cities in Upper Hungary. Its fortunate geographical location and the fact that Abaúj never fell into Turkish hands, and thus escaped the ravages of war, were significant advantages for it during its development. During the 19th century, Miskolc approached and then overtook it in terms of population, thus ending the city's "universal" status in the wider region. The rivalry between the two cities was temporarily ended by the 1920 Treaty of Trianon, which drew a border between Miskolc and Košice. This restored Košice's hegemonic role in the settlement hierarchy (in the eastern part of the newly created Czechoslovakia), but the city lost much of its southern sphere of influence. Miskolc not only acquired a significant part of Košice's former and potential catchment area, but also suddenly became the intellectual and cultural center of the Hungarian Uplands (Nagy, 2007).

According to the first Czechoslovak census (1921), Košice had a population of 53,000, which rose to 70,000 within ten years. This rapid growth was followed by a long period of stagnation; the city's population did not reach 80,000 even in the 1960s. However, in the 1960s, a huge iron and steel factory was built southwest of Košice, which became the largest ironworks in East-Central Europe (and thus the former Czechoslovakia) (Daly and Dalli, 2005). In parallel with the construction of the East Slovak Ironworks, several housing estates were built in Košice, offering a home for the workers and their families who had recently moved to Košice (Drabik, 2013). During the planning, great emphasis was also placed on the development of public transport connections between the new factory and the city. The city's population had almost doubled by 1970, and by 1980 it had reached 200,000. During the years of socialism, the number of inhabitants in the city increased fivefold and its built-up area increased roughly twentyfold.

In the decades following the change of regime, the population of Košice began to decline and strong suburbanization began around the city. In the 1990s, many factories were closed, but the ironworks – although still loss-making – avoided this fate and in 2018 was even the largest employer in Košice with 12,000 employees (Górka and Kušnírová, 2021).

With a population of nearly 230 thousand, Košice is today the second largest city in Slovakia, and its agglomeration is one of the fastest developing regions in the country. The latter is mainly due to its central role in Eastern Slovakia, which stems from its outstanding size, as the city's location is unfavorable for being the center of Eastern Slovakia within today's borders. To the west and northwest of Košice, the Slovak Ore Mountains rise, and to the east of the city, the north–south ranges of the Prešov–Tokaj Mountains separate it from the Eastern Slovak Lowland. This range greatly complicates the connection of Košice with the fertile Eastern Slovak Lowland and also limits the expansion of the metropolitan agglomeration in the east.

More than two-thirds of the city is located at an altitude of over 200 m above sea level, and hills from all directions except the south limit its further expansion.

Prešov can be reached in the south of the Košice Basin (open to Hungary) and in the north in the Tarca Valley. The motorway network was also built in the north–south direction, bypassing Košice from the east, in the Tarca Valley. The motorway initiative has already been built east of Rozhanovce, which will later connect Košice with the Eastern Slovak Lowland and Ukraine via the Prešov–Tokaj Mountains. The mountains can currently only be crossed via the main road number 19, the Dargov breakthrough. Due to the topography, during the 20th century, facilities requiring large spaces were almost all located south of the city center; as a result, many traffic-attracting facilities are located closer to the Hungarian border than to the city center of Košice, potentially increasing the attractiveness of the area to Hungarian regions.

Socialist settlement development focused mainly on the development of the city of Košice, but after the change of regime, the population of the settlements surrounding Košice increased due to accelerated suburbanization. This process particularly affected the settlements located south and west of Košice. These villages and smaller towns offered significantly lower real estate prices compared to the metropolitan average, while the center of Košice and the large employers and commercial facilities located south of it remained quickly and easily accessible. The significant population growth of the second half of the 20th century and the intensity of suburbanization are clearly illustrated by the fact that several previously separate settlements south of the city have now been partially or completely integrated (for example, Valaliky, Geča and Čaña, and Seňa, Kechnec and Milhost'). The trends observed on the Hungarian side of the border in recent decades can essentially be considered a continuation of these earlier suburbanization processes surrounding Košice.

The area that previously belonged to the counties of Abaúj-Torna and Zemplén became part of a Miskolc-centered unit (Borsod-Abaúj-Zemplén County) after the county reorganization in 1950, administratively. Since the border region is located at a considerable distance from both Miskolc and any other major Hungarian city, the area has been permanently placed in a peripheral position within the country. The extent to which cross-border cooperation did not arise during the state socialist period is clearly shown by the fact that the words “Košice” or “Slovakia” are not mentioned once in the study on the economic development prospects of Borsod-Abaúj-Zemplén County in 1988, even though the county has a border section of approximately 250 kilometers (Barta and Zsúgyel, 1988).

In the years after the regime change, the easing and then abolition of border controls created opportunities for the residents of the previously divided region, as the settlements, services and jobs on the other side of the border became accessible again.

The Hungarian side of the Hungarian Slovak border became underpopulated compared to the other side of the border. This is largely a consequence of the fact that the region was separated from its economic, administrative and cultural centers when the Trianon borders were drawn. The parts of the former counties that remained in Hungary suddenly became peripheral. A significant urban deficit area

developed in the northern part of Borsod-Abaúj-Zemplén County, where Miskolc cannot play a central role or is only able to play a limited role (HU Ministry of Interior, 2015).

4. PUBLIC TRANSPORT SERVICES IN THE BORDER AREA CURRENTLY

4.1. *InterCity* trains between Miskolc and Košice

Since the 2020/2021 timetable change (December 13, 2020), *InterCity* trains (named *Hernád IC* in Hungary, named *Hornád EC* in Slovakia) have been running every two hours between *Budapest-Keleti* railway station and Košice. The timetable currently includes a total of 7 train pairs.

From *Budapest-Keleti* – according to the currently valid timetable – the first *Hernád IC* departs at 06:25 (arrives in Košice at 10:14), and the last at 18:25 (arrives in Košice at 22:14) (Table 1). Each *Hernád IC* is connected in Košice by a passenger train to Moldava nad Bodvou, which departs in even hours at 21.

Table 1
Schedule of Hernád InterCity trains to Košice

train number	Budapest-Keleti	Miskolc-Tiszai		Košice
	departure	arrival	departure	arrival
IC 182	06:25	08:27	08:31	10:14
IC 184	08:25	10:27	10:31	12:14
IC 186	10:25	12:27	12:31	14:14
IC 188	12:25	14:27	14:31	16:14
IC 190	14:25	16:27	16:31	18:14
IC 192	16:25	18:27	18:31	20:14
IC 194	18:25	20:27	20:31	22:14

Table 2
Schedule of Hernád InterCity trains to Budapest via Miskolc

train number	Košice	Miskolc-Tiszai		Budapest-Keleti
	departure	arrival	departure	arrival
IC 181	05:42	07:10	07:35	09:47
IC 183	07:42	09:13	09:35	11:47
IC 185	09:42	11:13	11:35	13:47
IC 187	11:42	13:13	13:35	15:47
IC 189	13:42	15:13	15:35	17:47
IC 191	15:42	17:13	17:35	19:47
IC 193	17:42	19:13	19:35	21:47

From Košice – according to the currently valid timetable – the first *Hernád IC* departs at 05:42 (arriving in *Budapest-Keleti* at 09:47), and the last at 17:42 (arriving in *Budapest-Keleti* at 21:47) (Table 2). The services in Košice currently do not

connect with passenger trains arriving from Moldava nad Bodvou, which arrive there at odd hours at 59 (except 05:15, 07:15).

The trains between *Budapest-Keleti* and *Miskolc-Tiszai* only stop at *Hatvan* and *Mezőkövesd* stations, so they really fulfill an *InterCity* function. Between *Miskolc-Tiszai* and *Košice*, they stop at *Szikszo-Vásártér*, *Halmaj*, *Ináncs*, *Forró-Encs*, *Novajdrány* and *Hidasnémeti* stations (except for the train departing from *Košice* at 05:42, which currently does not stop at *Ináncs* and *Halmaj* stations), so in view of the number of stops and the fare application rules (can be used without a seat ticket on this section, also in domestic traffic), the trains on this section actually fulfill an *InterRegio* train role. On the Slovak section of the line, i.e. between the *Hidasnémeti* and *Košice* stations, the trains currently do not stop anywhere for passenger traffic purposes, which can be identified as a deficiency, especially in light of the fact that the railway stops between the border and *Barca* are currently not served by Slovak domestic trains, and that the *Hernád ICs* currently stop at the *Čaňa* station for technical reasons.

Nowadays, a significant number of people from the *Hidasnémeti*, *Encs* and *Miskolc* regions commute to *Košice* for work, but the current railway schedule does not even allow this for office workers, as the first train from *Miskolc* only arrives in *Košice* at 10:14. It is also worth taking into account the commuter traffic for higher education purposes, as there are several universities in *Košice* that welcome foreign students for short-term (1–2 week) mobility programs.

It is currently impossible to travel by scheduled train from *Miskolc* to *Košice* and from *Košice* to *Miskolc* for the 6 am shift start. It is also not possible to travel home, because the last train from *Košice* to *Miskolc* currently leaves at 17:42, so it is not possible to travel home to the *Abaúj* area or *Miskolc* by train either after the 6 pm or 10 pm shift change. (In the morning, the direction from *Miskolc* to *Košice* is relevant, while in the afternoon, the direction from *Košice* to *Miskolc* is relevant. The number of people who travel from *Košice* or its surroundings to *Miskolc* or its surroundings to work is certainly negligible.)

It is also worth mentioning a tariff obstacle, which currently significantly increases the cost of international rail travel, including travel to *Košice*, for passengers who are in possession of a county pass or a national pass and who follow the rules. According to the current regulations, passengers “must exchange an international ticket for the entire route in the case of a foreign destination”, as a result of which a passenger travelling to/from *Košice* (or any other foreign settlement) cannot legally use their county pass or national pass on the Hungarian section; this means that for a passenger travelling from *Miskolc*, this means an additional cost of 2,600 HUF (= 6.5 EUR) per round trip – according to the currently valid fare schedule – compared to if they had to buy a ticket only for the section across the border (*Hidasnémeti* – *Košice*). This significantly worsens the competitiveness of the railway compared to individual transport, and is also unfair to passengers with season tickets, so it is recommended to change the previous regulation, which was enacted long before the introduction of the new tariff system.

4.2. Hidasnémeti–Košice bus connection: A positive example of interregional public transport

The Slovak bus company *eurobus a.s.* operates bus services from Hidasnémeti railway station to Košice via Tornyosnémeti, Milhost', Kechnec, Seňa, Belža and Haniska pri Košiciach from October 1, 2019.

Due to the ban on cabotage, technically, the route is broken in Milhost' and is organized into two lines: the line number between Hidasnémeti and Milhost' is 802818, while between Milhost' and Košice is 802418. The timetable informs passengers on which route the 802818 trips departing from Hidasnémeti continue their journey from Milhost' (in some cases from the *Magna* factory in the *Kechnec Industrial Park*), and because the number of trips are the same, by placing the timetables of the two lines side by side it is also possible to read which domestic trips the trips from Milhost' to Hidasnémeti are continuations of. Since the trips continue immediately from the break point stop in both directions, passengers do not have to change or wait on the vehicle. There is no break-even point in terms of pricing, so passengers can travel from Košice to Hidasnémeti with one ticket (Pamer, 2021).

The service is provided by the bus company under a Slovak public service contract. (The customer is the *Košice District Municipality*, which is the organization responsible for public transport in the region.) Hungary currently does not contribute in any way to the operation of the service (apart from licensing) (Pamer, 2021).

The main target group of the 802818 services are manual workers working in the *Kechnec Industrial Park* but residing in Hungary. (The routes of the 802818–802418 trips do not touch the industrial park, but in Milhost' you can transfer to a route that runs through the industrial park. On weekends, however, there is a direct connection from Hidasnémeti and Tornyosnémeti to the *Kechnec Industrial Park*.) In addition to commuting to work, children also use the service, because many Hungarian residents and employees take their children to kindergartens and schools in Kechnec. Since Hidasnémeti and Tornyosnémeti have become part of the Košice agglomeration in recent years, it is likely that there are also people who travel all the way to Košice on the trips, but there is no specific information about this (Pamer, 2021).

The Slovak regional bus public service tariff system is also applied on the line 802818 crossing the Hungarian Slovak border. (Therefore, passengers are not charged any extra fee for crossing the border.) Tickets can only be purchased on the buses, but Hungarian forints are also accepted. Trips 802818 can also be used with a chip card pass valid for the Košice region. The service company recommends the use of a chip card pass to its regular passengers, as this not only provides them with a discount, but also speeds up the boarding process for passengers (Pamer, 2021).

The potential for tourism in cross-border transport has so far remained unexploited; one of the reasons for this is that there are 7 pairs of direct *InterCity* trains running between Miskolc and Košice every day, which provides a more favorable and comfortable journey for tourists, and also that the cross-border service of *eurobus* is practically unknown to those traveling to Košice for recreational purposes. The fact that there is currently no cooperation between *MÁV* and *eurobus*, neither in terms of connections (Table 3) nor in terms of advertising each other's services also

has a negative impact on the awareness of the service and the passenger numbers of the 802818–802418 trips.

Table 3
The railway connections of trips 802818 departing from Hidasnémeti

train number	Miskolc-Tiszai	Hidasnémeti	Trip 802818 departs from Hidasnémeti train station to Milhost'	
	departure	arrival		
-----	-----	-----	Mon–Fri 04:13 Sat 04:15 Sun 04:22	not connected
Sz 5310	03:34	04:37	Mon–Fri 04:50	connected
Sz 5320	04:33	05:42	every day 05:55	connected
Sz 5330	05:19	06:40	Mon–Fri 07:00	need to wait 20 min
			Sat–Sun 07:40	need to wait 60 min
Sz 5312	06:30	07:55	-----	-----
Sz 5342	07:48	08:59	Mon–Fri 09:00	the connection is uncertain
IC 182	08:31	09:34	Mon–Fri 10:00	need to wait 26 min
Sz 5332	09:48	10:59	-----	-----
IC 184	10:31	11:34	Mon–Fri 12:00	need to wait 26 min
			Sat–Sun 12:30	need to wait 56 min
Sz 5344	11:48	12:59	-----	-----
IC 186	12:31	13:34	Mon–Fri 14:00	need to wait 26 min
			Sat–Sun 14:03	need to wait 29 min
Sz 5334	13:48	14:59	Mon–Fri 15:15	connected
IC 188	14:31	15:34	Mon–Fri 16:00	need to wait 26 min
			Sat–Sun 16:24	need to wait 50 min
Sz 5326	15:48	16:59	-----	-----
IC 190	16:31	17:34	Mon–Fri 18:00	need to wait 26 min
			Sat–Sun 18:03	need to wait 29 min
Sz 5346	17:48	18:59	-----	-----
IC 192	18:31	19:34	every day 20:30	need to wait 56 min
Sz 5348	19:48	20:57	-----	-----
IC 194	20:31	21:34	Mon–Fri 21:55	need to wait 21 min
			Sat–Sun 21:59	need to wait 25 min
Sz 5328	22:04	23:10	-----	-----
Sz 5338	23:04	00:10	-----	-----

The timetable of the trips is currently only available on Slovak timetable search sites. Even though the 802818 trips are relevant for two Hungarian settlements, they are not currently listed in Hungarian timetable search and travel planning applications (*MÁVPlusz*, *Utas.hu*, *Menetrendek.hu*, etc.). It is true that the latter is greatly

complicated because *eurobus* does not publish its static *GTFS* database. (Since *eurobus* trips cannot even be found on *Google Maps*, the company probably does not have a *GTFS* database, which is a major shortcoming these days.)

5. SERVICE IMPROVEMENT OPPORTUNITIES

5.1. Increasing the number of railway connections between Miskolc and Košice

Launching more *Hernád ICs* than the current ones would not necessarily be appropriate at the moment, and in addition, on the single-track section of railway line 90, in addition to the *ICs* every two hours and the passenger trains every two hours, additional passenger trains could only be operated in a very limited number and with restrictions (waiting). Another factor against the expansion of *InterCity* service is that the now well-established timetable structure of railway line 80 (Budapest-Keleti – Hatvan – Miskolc-Tiszai – Szerencs – Sátoraljaújhely) would not allow for additional *InterCity* trains to be added to the timetable between *Budapest-Keleti* and *Miskolc-Tiszai*.

One realistic option for expanding the supply is that all passenger trains operating on the Miskolc – Hidasnémeti route would operate to and from Košice. The advantage of this solution is that with a small modification of the current departure times, hourly scheduled service would be implemented between Miskolc and Košice. The disadvantage of this scenario, however, is that it would be the most expensive of all the service development proposals that could be considered on this route and would require the involvement of the most additional resources (locomotives, passenger carriages, train decks), and it is currently not possible to substantiate with travel demand whether such a large volume increase in train-kilometer performance is really justified. (Calculating with 13 train pairs per day, this would mean a performance increase of 702 km / day. [The length of the Hidasnémeti – Košice section is 27 km.]

Another possible option is to extend the passenger trains running between Miskolc and Hidasnémeti to Košice only in time slots that are not well or not at all covered by the *Hernád IC*. This would solve the problem of servicing commuter traffic, i.e. it would enable both “white-collar” and “blue-collar” employees to get to their workplaces in Košice and get home from there.

Strengthening interregional connections, but especially due to the planned start-up of the *Volvo* factory in Valaliky at the beginning of 2027, it is worth considering the implementation of hourly transport between Miskolc and Košice. The *Volvo* factory, which is currently under construction, is the largest investment within a 100 km radius of Miskolc, with huge production targets (250,000 passenger cars / year) and, in connection with these, a huge workforce requirement (approx. 3,300 people) (Energy News, 2025). In addition to the “ideal” goals, the expansion of supply between Miskolc and Košice can therefore really be supported by the transport of workers commuting to the *Volvo* factory from Borsod-Abaúj-Zemplén County (primarily from the Hidasnémeti and Encs regions, but also from Miskolc and its surroundings).

When planning the timetable, in addition to ensuring regular and consistent transport, special attention will also have to be paid to ensuring that there are connections in Košice between Hungarian–Slovak international trains (i.e. the *Hernád ICs* and the Miskolc – Košice passenger trains) and Slovak domestic railway services (e.g. Košice – Zvolen fast trains [*Gemeran R*]; Košice – Moldava nad Bodvou passenger trains).

To improve the competitiveness of the railway, it would be important to find a solution so that neither the *Hernád ICs* nor the passenger trains continuing to Košice need to change locomotives at Hidasnémeti station, because this would shorten the travel time (by minimizing the station stay time). This will certainly be solved soon, because the *MÁV group* will have electric locomotives that will also be able to operate on the Hidasnémeti – Košice railway line electrified with 3 kV direct current. (The current type of most electric locomotives and electric multiple units of *MÁV* is 25 kV 50 Hz AC.)

On October 25, 2025, during a personal visit, the current condition of the stations and stops on the Slovak section of the railway line was assessed, as it would be justified for both passenger trains and *ICs* to stop between Hidasnémeti and Košice.

5.1.1. Stations and stops between Hidasnémeti and Košice

There are 8 railway stops / stations on the section between Hidasnémeti and Košice stations, i.e. on the Slovak railway line number 169 (Figure 2):

- *Kechnec* stop,
- *Seňa* stop,
- *Gyňov* stop,
- *Čaňa* station,
- *Geča* stop,
- *Valalíky* stop,
- *Barca* station,
- *Košice predmestie* stop.

Of the listed stops and stations, only *Barca* station and *Košice predmestie* stop currently handle passenger traffic (passenger trains between Košice and Moldava nad Bodvou [9 train pairs per day] stop at these places). *Čaňa* station functions as a diversion and a waiting area for freight trains. Trains pass through the other stops in the list above without stopping.

The stops between the national border and Barca have become dilapidated over the years and decades, so they cannot be used in their current state (except for *Čaňa*), and they are also far from the settlement that gave them their name. *Čaňa* station may be worth renovating if it were to be put into regular use again in the event of the extension of the *Hernád ICs* and/or the Miskolc – Hidasnémeti passenger trains to Košice.

If some Miskolc – Hidasnémeti passenger trains are extended to Košice, it would be worth stopping them at *Čaňa*, *Barca* and *Košice predmestie* stations. The

argument in favor of stopping at the *Čaňa* station is that, supplemented by connecting Slovak bus trips, it could cover several settlements, and that the industrial park being built next to Valaliky (including the *Volvo* factory) is currently closer to this station by road, and not to the *Valaliky* railway stop. (This may change soon, because a new road is also being built between the industrial park and Valaliky, after which the closest railway connection to the industrial park will be the *Valaliky* railway stop. However, in its current state, it cannot be used for passenger safety reasons [there is no platform], so interested companies will probably urge decision-makers to renovate and put the station into use.)

The potential of *Barca* station is that it is closer to numerous workplaces and Košice Airport [*Letisko Košice*] than the main railway station in Košice. (*Barca* was once an independent settlement, today it is a part of Košice.) The Miskolc – Košice Airport free-market *Volán* service, which may be established within the framework of a service development program, could connect at *Barca* station primarily to the passenger trains in the relevant direction running on the Miskolc – Hidasnémeti route, and secondarily to the passenger trains in the relevant direction running on the Košice – Moldava nad Bodvou route. The stop at the *Košice predmestie* stop is justified by the nearby prefabricated housing estates. (It is important to know that although the Slovak name of the railway stop in question means suburb, this area is not considered a suburb at all today.)

It is a realistic possibility that the *Hernád* ICs should also stop at the *Čaňa* and *Barca* stations, since the legitimate goal of a railway service fulfilling an *InterRegio train* role is to bring as many people as possible closer to their destination (even at the cost of stops classified as “unnecessary” from the perspective of a long-distance passenger). The *Hernád* ICs currently stop at the *Čaňa* station for technical reasons, but passenger transfers – officially – do not take place here.

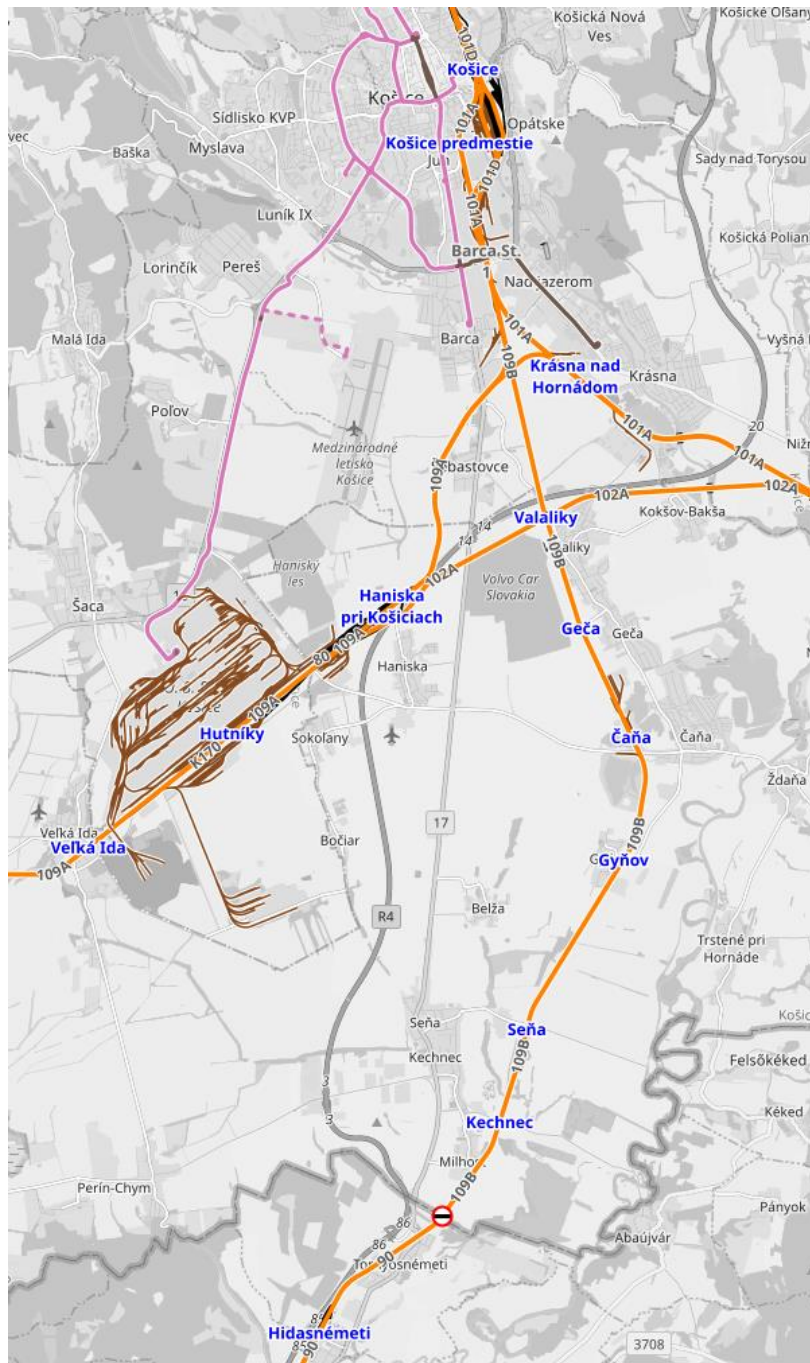


Figure 2
Stations and stops on the rail line between Hidasnémeti and Košice
(screenshot from OpenRailwayMap)

5.2. Launch of the bus service to Košice Airport

Although Košice Airport is closer to Miskolc (87 km) than Budapest (187 km) or Debrecen (121 km), it is not yet typical for Miskolc residents to use Košice Airport. Naturally, the fact that Košice Airport is a “rural” airport also plays a role in this, so significantly fewer destinations can be reached from there compared to Budapest, and the fact that it is difficult to reach from Miskolc, even despite the *Hernád IC*. (In Košice, from the *Hernád IC*, you would have to transfer to the local bus number 23, which runs typically every hour on weekdays and every two hours on weekends, so it is not very attractive for a passenger heading to the airport.)

For those living in Miskolc and its surroundings, their access to air travel would be improved if they could get to Košice Airport more easily. As residents of Miskolc, the authors can say from their own experience that for a person from Borsod, the fact that it takes 2 hours and 12 minutes to get from Miskolc to Budapest even by an *InterCity* train, and the fact that the last train from Budapest to Miskolc leaves at 22:00 (after 22:00 it is not possible to get back to Miskolc even with a transfer), really limits international travel options. Flights departing from Budapest airport early in the morning and arriving late in the evening are therefore actually out of the question for those who, for some reason, do not want to add a night in Budapest to their trip. If decision-makers also want a service development that would improve the access of the people of Borsod to Košice Airport, then there are basically two options available, as explained below.

5.2.1. Shuttle service from Hidasnémeti to Košice Airport via rail connection

This would be the extension of Hungarian regional bus line 3823 (Hidasnémeti – Tornyosnémeti) to Košice Airport. When developing the timetable, efforts should be made to “fusion” several current trips 3823 into trip to/from Košice, as this would also reduce the amount of additional vehicle kilometers.

Strengthening interregional cooperation, the trips would also stop at all the relevant stops on the Slovak section, but if the Slovak side did not agree to this for some reason, the *Volán* trips would not stop anywhere between the national border and Košice Airport. In the latter case, demand-driven (= demand-based) transport would be recommended on the Tornyosnémeti, national border – Košice Airport section. (Therefore, the trips would only continue from the national border to Košice Airport if there is a travel demand. Passengers wishing to board at Košice Airport would have to indicate their travel demand by phone or via the *MÁVPlusz* application.)

From a pricing perspective, this route would be a mix of public service and free-market service: on the Hidasnémeti railway station – Tornyosnémeti national border section, it would definitely qualify as a public service (thus it would be available with a county and national pass), but on the Tornyosnémeti national border – Košice Airport section, it would be free-market service.

The advantage of this solution would be that since the trips would depart from Hidasnémeti, there would not be many additional vehicle kilometers between Miskolc and Hidasnémeti. The disadvantage is that if the trips were to stop at all the

stops involved on the Slovak section, they would have to continue to Košice Airport at the times announced in the timetable, regardless of travel needs, which would generate many additional vehicle kilometers. The other, perhaps even more significant disadvantage is that a Hidasnémeti – Košice Airport bus route would not be an attractive alternative for the target group (middle-class people living in Miskolc and its surroundings), as the Miskolc – Hidasnémeti railway line has a bad reputation due to public safety problems.

For the Tornyosnémeti, border – Košice Airport section, the fare would be recommended to be set at 5,300 HUF, to make the service competitive with private car travel and transfer services. Thus, for a passenger who is not entitled to discounts and does not have a national pass or Borsod-Abaúj-Zemplén county pass, it would cost 7,000 HUF to travel from Miskolc to Košice Airport, which, with appropriate marketing and strict adherence to railway connections, would probably be attractive to a significant proportion of the target group. A passenger with a national pass or Borsod-Abaúj-Zemplén county pass would only have to pay for the Tornyosnémeti, border – Košice Airport section (i.e. 5,300 HUF) (Table 4).

Table 4
Price of the trip between Miskolc-Tiszai and Košice Airport with a connecting trip

	Miskolc-Tiszai – Hidasnémeti (62 km)	Hidasnémeti – Tornyosnémeti, border (3,9 km)	Tornyosnémeti, border – Košice Airport (23,1 km)	total (89 km)
	<i>Hernád IC</i> or passenger train	<i>Volán</i> trip		<i>Hernád IC</i> + <i>Volán</i> trip
passenger without a national / county pass	1 300 HUF (without seat ticket)	400 HUF	5 300 HUF (recommended price)	7 000 HUF
passenger with a national / county pass	0 HUF	0 HUF	5 300 Ft (recommended price)	5 300 HUF

5.2.2. Launch of *Volán* trips from Miskolc to Košice Airport as a free-market service

A direct, i.e. non-stop bus service would certainly be a more attractive service for residents of Miskolc and its surroundings, even though this would of course be more expensive than the alternative presented in the previous subsection.

The services would operate between Miskolc, the bus station and Košice Airport [*Letisko Košice*], optionally stopping at *Miskolc-Tiszai* railway station and/or Hidasnémeti railway station. Between Miskolc and Tornyosnémeti, they would basically operate on the *M30* motorway and would only enter a settlement on the route if there were passengers boarding towards the airport and passengers disembarking towards Miskolc. (Therefore, the trips would not have a predetermined, fixed

schedule, but their routes, stops and departure times would also change dynamically depending on travel needs.)

The service would work very similarly to the previous *Adria Express*, i.e. it would only be available with a pre-purchased ticket, and the passenger would have to specify – during the ticket purchase process – exactly which stop they would like to get on at in the direction of Košice Airport, and which stop they would like to get off at in the direction of Miskolc. (The list of selectable stops would include all stops that are in the immediate vicinity of the *M30* motorway and main road 3, as this would be the most passenger-friendly service.) Tickets for the trips would be available online and at ticket offices until 23:59 on the day before the departure of the given trip.

Since the operator would already know on the morning of the departure day of the given service how many people had bought tickets for the “there” and “return” directions of the given service, the type of bus used in the service could be selected based on the expected number of passengers, so it would dynamically change from day to day, from service to service, depending on the number of passengers who bought tickets.

The fare for the direct, free-market *Volán* service would be worth setting below the price of private transfer services. Our suggested price is HUF 15,000, given that the *Volán* service would have a longer journey time compared to passenger cars or minibuses providing transfer services.

Initially, as an introduction, *Volán* trips would only be connected to more distant destinations, such as flights to London, Liverpool and Dublin. According to the company's official announcement, *Ryanair* will also launch flights to Malaga from Košice on Mondays and Thursdays from March 30, 2026, to which it would be worth connecting a *Volán* trip.

The schedule of *Volán* trips would be fully aligned with the current schedule of Košice Airport. (So, in case of a change in the airport schedule, the schedule of *Volán* trips would also change.) From the point of view of operational organization and costs, it is fortunate that 1 trip pair could cover an arriving plane and a departing plane, i.e. the same bus could pick up and drop off. (In some cases, it is also possible to connect to two arriving and two departing flights, which would enable an even better schedule from the service provider's side and help minimize the mileage and costs associated with providing the service.) Although the drivers would have to wait approximately 1 hour at Košice Airport, but in our opinion, this is an acceptable compromise in exchange for the fact that fewer trips would have to be operated than if each arriving and departing flight were accompanied by a separate bus service.

6. CONCLUSION

There is significant potential in the development of public transport services in the Hungarian Slovak border region, which is supported not only by the positive effects of strengthening interregional relations on tourism and culture, but also by labor market factors (e.g. the staffing requirements of the *Volvo* factory in Valaliky).

The main service development directions can be summarized as follows:

- Basic principles: regular timetable, as consistent as possible, intermodality, integrated service (connections, common fare products, etc.).
- Extension of the Miskolc – Hidasnémeti passenger trains to Košice, which would enable hourly scheduled service between Miskolc and Košice.
- Stopping the *Hernád ICs* for passenger traffic purposes on the Slovak section as well, at the *Čaňa* and *Barca* stations. Passenger trains extended to Košice would also stop at the *Košice predmestie* stop in addition to the *Čaňa* and *Barca* stations.
- Connecting bus services departing from and arriving at Hidasnémeti (*Volán* services and *eurobus* route number 802818) to trains.
- Dissemination of information about the *eurobus* cross-border service to Hungarian passengers (on the relevant sub-pages of the *MÁV group* website, on travel planning platforms [*MÁVPlusz*, *Utas.hu*, *Menetrendek.hu*, etc.], in the form of visual and audio passenger information on the vehicles, in brochures, etc.).
- Launching a *Volán* bus route from Miskolc to Košice Airport as a free-market service, initially connecting to flights to more distant destinations (London, Liverpool, Dublin, Málaga). Such a service would certainly be attractive to the people of Borsod, primarily those of Miskolc, because it would make it significantly easier to reach an international airport from which the popular destinations listed above can be reached.

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