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Mobility Industries, Sustainable Development and Social Dialogue in the Hungarian Northern Great Plain – Policy Report Hungary

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Executive Summary

Since 2015, the traditionally less industrialised Northern Great Plain (NGP) region, especially the city of Debrecen at its centre, has been targeted for development as a new green automotive region. Major investments have been made in the city since 2015, culminating in the announcement of the opening of the BMW plant in 2018. Following the Covid-19 crisis, the automotive industry has become a leading sector in the region in terms of production and employment, albeit not quite to the expected extent. While public infrastructure development is lagging behind due to financial constraints, developments in skills training show that both secondary schools and universities have adapted their curricula and capacities to meet the needs of the largest employers, particularly in the electric vehicle manufacturing sector. Inadequate adult education, and demographically driven decrease of regular students in secondary schools pose structural problems of adequate labour supply. Employers in the countryside are more affected than at the new industrial centre of Debrecen.

There are two competing discourses and governance mechanisms regarding the green transition in the NGP region. The dominant discourse and governance is driven by an optimistic logic and the needs of green investors, focusing predominantly on sustainable development, infrastructure and skill formation in the industrial hub of Debrecen and its immediate surroundings. This is complemented by green agenda initiatives in many soft urban initiatives, but these lack a real anchor. A more in-depth conceptualisation of regional sustainable development only occurs in academic and smaller environmental initiative circles.

The three self-governing regional authorities (counties) of the NGP region — Hajdú-Bihar, Szabolcs-Szatmár-Bereg, and Jász-Nagykun-Szolnok — do not have their own financial resources and depend on the central state for infrastructure and human capital development funding. The governance of territorial development is predominantly shaped by a centralised triangle of national institutions, municipal bodies at the city level, and new agencies driven by employers, such as the Automotive Cluster Debrecen (ACD). In the NGP region, large companies that have recently relocated and operate with new technology or products advocate for a green transition and also take the lead in the ACD. The financialisation of regional infrastructure development projects predominantly comes from EU funds, which are available for investment in regions with a lower GDP per capita, such as the NGP region. This generates sustainable development and a green transition in a top-down manner, resulting in uneven, concentrated governance and investment-based development. Despite traditions during economic restructuring in some sectors, such as mining, there is no meaningful tripartite social dialogue at the sectoral-regional level regarding the requirements for or implementation of the green transition or sustainable territorial development. Based on data concerning uneven developments in production, employment, skill formation and infrastructure development over the last few years, there is a real risk that Debrecen will be developed as a regional hub while the broader surrounding region's prospects for sustainable development will deteriorate, also in terms of employment and prospects of business development. In the metal and automotive industries, communication and interaction between the regional branches of the employers' organisation and the regional branches of the metalworkers' trade union is informal and covers information sharing and the occasional discussion. At company level, the green transition is not considered a significant issue for workers or unions and is also outside the scope of collective bargaining.

The NGP region is becoming an even more commuter-focused area, with rising infrastructural needs. The working population of the NGP region is highly mobile, and this trend is growing. New investments in Debrecen and changing employment opportunities in other parts of the region mean that employees have to adapt, which increases their commuting demands and opportunities. Large employers typically contracted private transport companies to secure worker commuting, but the number of used cars and their average age increased in the region too, which risks higher GHG emissions. Housing is an acute issue, too: in the NGP centre of Debrecen,

rental prices are at or above the level of housing poverty for employees. Moreover, rental and real estate prices have grown faster than wages. While infrastructure development has responded somewhat to these changing needs, it has not done so to the required extent, so far resulting in suboptimal outcomes.

There is a need to develop social dialogue at a regional and sectoral level. While the interests of some large employers concerning the necessary infrastructure development for a sustainable labour supply are well articulated, there are no avenues for the voice of workers and their trade union representatives. This is particularly alarming when we consider the current crises facing Hungarian households, the fragile regional economy, and the employment-related insecurities stemming from it.

The policy report is based on statistical data obtained from annual county-based reports of relevant institutions, statistical databases from the Hungarian Central Statistical Office (KSH), and 13 interviews with representatives of employers, trade unions, public authorities and experts.

I. Overview - General contextual information

Introduction

The Hungarian Northern Great Plain (NGP) region lies to the east of the Budapest metropolitan area, stretching as far as the Ukrainian and Romanian borders. The NGP region consists of three counties (*vármegye*), territorial self-governments: Hajdú-Bihar, Szabolcs-Szatmár-Bereg, and Jász-Nagykun-Szolnok. The regional centre is Debrecen, a university city and county capital of Hajdú-Bihar County. Compared to other Hungarian regions, the NGP has been less industrialised than the northwest of the country. After 1989, the region attracted significantly less foreign direct investment, particularly in the automotive and mobility industries. FDI was concentrated along the north-west–south-east dividing lines, particularly along the Sopron–Miskolc axis and in the Budapest conglomeration. After 2010, reindustrialisation occurred in an area where a significant proportion of the population still derived at least some of their income from agriculture, including NGP.

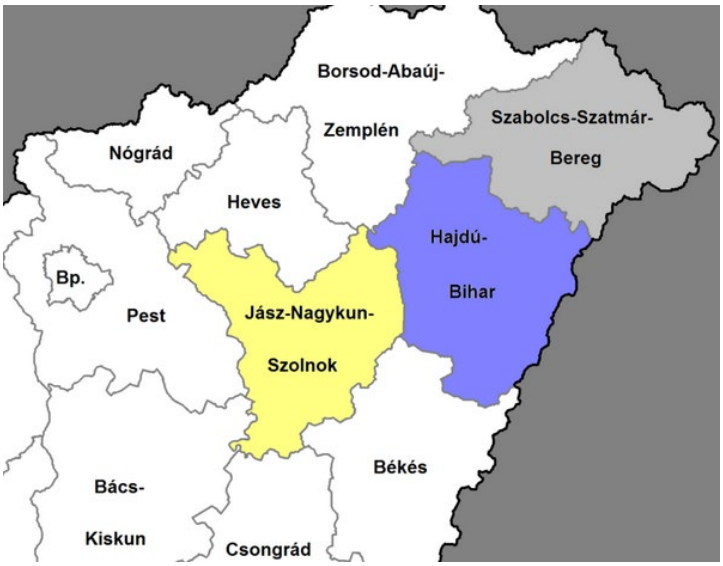


Figure 1.1.: The Northern Great plain and Eastern Hungary.
Source: https://hu.wikipedia.org/wiki/F%C3%A1jl:HU_NUTS_23_EA.png

Since 2015, major investments occurred especially in the city and the area of Debrecen, which culminated in the announcement of the BMW plant opening in 2018. Especially after the Covid-19 crisis, automotives became a leading industry in the region in terms of both production and employment, but arguably not to the extent of expectations yet. Along with investments, there was more attention to infrastructure development, especially roads, transport and other service-related infrastructure, which has developed too, but is by and large lagging behind production facilities.

Similarly to the entire Hungary, demographic trends are continuously negative in the region: due to both a negative rate of natural increase and negative migration balance the population is decreasing and becoming older. Internal mobility and commuting is concentrated towards larger towns, especially Debrecen, which experiences population growth.

The policy report is based on statistical data obtained from annual county-based reports of relevant institutions,

statistical databases from the Hungarian Central Statistical Office (KSH), and 13 interviews with representatives of employers, trade unions, public authorities and experts. Secondary materials include information from websites of key institutions, publications, publicly available statistical databases, annual reports and press releases. Especially the national and county-level organisations of the Chambers of Commerce, General Assemblies of the analysed counties, the University of Debrecen and Vocational Training Centres. As many interviewees preferred to remain anonymous, we decided not to mention the names of our informants.

1. Sustainable development, greening industrial production and infrastructure

Dominant discourses surrounding the green transition

The green transition is a popular topic in official and mainstream discourse, particularly when linked to foreign direct investment and job creation. However, these discourses are fragmented and uneven. The dominant discourse focuses on the positive role of newly arriving large companies that produce with a lower carbon footprint and have the potential to create a spillover effect on local suppliers and the economy, as well as infrastructural development that occurs directly as a result of their arrival. In terms of geography, the focus is more on city-level developments. In the case of the NGP, the focus is on Debrecen, with less attention paid to other towns and the implications for regional development. Beyond academic and smaller, urban-based associations, discourse on the concepts of green transition and sustainable development lacks relevance, platform and depth. Overall, while the official discourse is optimistic and driven by economic logic, questions regarding sustainable development, infrastructure and skill formation receive less attention, particularly at the regional level. The green agenda is present in many soft initiatives, but lacks a real anchor.

Overview of relevant policies

Since 2008, Hungary has adopted 5 major action plans related to green transition, in line with EU requirements. The First National Climate Change Action Plan (I. Éghajlatváltozási Cselekvési Terv, duration: 2008-2020) set the aim to reduce emissions by 40 per cent in comparison with the 1990 level until 2030, as well as the fulfilments stated in the EU ETS and ESR strategies. The Second National Climate Change Strategy (Második Nemzeti Éghajlatváltozási Stratégia) of 2018 adapted to the 13 per cent threshold. The National Energy and Climate Plan (Nemzeti Energia- és Klímaterv – NEKT) was fully in line with EC set indicators and goals of energy and climate policy in the member states: decarbonization (decreasing of the GHG emissions by 40 per cent in comparison with the 1990 level until 2030) and defining a renewable energy policy, energy efficiency, energy security, internal energy market, and the research, innovation, and competitiveness. Adopted almost simultaneously with NEKT, the National Energy Strategy 2030 (Nemzeti Energia Stratégia NES) was adopted as an instrument to implement changes, also in line with EU requirements: 90 per cent share of carbon free electricity energy production, fulfilment of 6,000 MW photovoltaic capacity until 2030 and 12,000 MW capacity until 2040, reach lower than 70 per cent gas import until 2040, and to level down the GHG emissions output below 40 per cent (in comparison with 1990). Finally, the 2022 National Recovery and Resilience Facility Plan of Hungary, has implications for the green transition. The implementation of these policies enjoys a lower priority compared to macroeconomic stability, investment in manufacturing and job creation.

In September 2020, the central Hungarian government decided to establish four economic development zones (later increased to five), each of which was assigned a government commissioner. The largest macroeconomic zone, Northeastern Hungary, included the three counties of NGP, as well as Borsod-Abaúj-Zemplén, Heves and Nógrád. The governance mechanism covered the management of sub-national territorial economic development and the launch of programmes in infrastructure, transport, energy, business development and vocational training. Industrial development and job creation with skill formation were strategic priorities. The zones were aligned with EU development regions to ensure the efficient use of resources. At the subnational level, counties

and cities were encouraged to develop their own general strategic plans for economic and employment projects and apply for funding. These strategic documents also included territorial needs in terms of infrastructure, the environment, and the development of water supplies, in connection with envisaged economic development. (See: *Megyei foglalkoztatási-gazdaságfejlesztési együttműködések - TOP PLUSZ Terület- és Településfejlesztési Operatív Program Plusz* projekts for all counties, especially employment pacts). Overall, the process of implementing regional development is not transparent when orchestrated in this way. Information on municipal and county-level projects on territorial and infrastructural developments, which are mostly financed through EU cohesion and other funds, is fragmented. Based on this strategic document, all six counties, including the three NGP counties, formulated their own regional territorial development plans. These plans include new industrial parks and the enhancement of the infrastructural capacity of existing industrial parks (greenfield and brownfield investments), which are necessary for the development of logistical hubs and centres. Furthermore, cities with county-level status have also formulated adjustment plans. These plans also include conscious and targeted investment promotion at municipal and/or county level. As will be highlighted below, since self-governing regional authorities do not have their own financial resources and depend on the central state for infrastructure and sectoral development funding, regional development plans cannot autonomously reflect the implementation of their strategies nor include monitoring and evaluation components.

Role of regional social dialogue

At the national or regional level, there is no meaningful tripartite social dialogue regarding the requirements for, or implementation of, the green transition or sustainable territorial development. Despite the tradition of social dialogue during economic restructuring in some sectors, such as mining, there are no established channels for territorial-sectoral social dialogue. While there are formally operating channels for social dialogue at county and municipal levels, these are not widely participated in by employer organisations or trade union federations, except in the public services sector. In the metal and automotive industries, communication and interaction between the regional branches of the employers' organisation and the regional branches of the metalworkers' trade union is informal and covers information sharing and the occasional discussion at public events. This communication is irregular and ad hoc. Overall, social dialogue is highly fragmented and uneven across companies, localities, and smaller communities.

Trade unions in the automotive industry are active at company level, focusing on bread-and-butter issues such as improving working conditions and ensuring that employers comply with the law. The green transition is not widely considered to be a significant issue for workers or unions, nor is it within the scope of collective bargaining.

Despite the need for discussion, and the ease with which online forums can be organised, the issue of the green transition or sustainable development is not encouraged or streamlined into active, deliberative, democratic forums. Local community action focuses on mobilising against environmentally hazardous investments or decisions in their territory only, with no greater action taken. Small initiatives dependent on external financing, such as providing higher energy efficiency infrastructure (e.g. insulation), are also prevalent.

2. Relevant (regional level) actors shaping the transition, their role and capacities

Both sectoral social partners, the Metalworkers' Trade Union Vasas and the Association of Hungarian Industrial Employers Organisation MGYOSZ operate at the regional level too, gathering company-level trade unions and employers respectively, based in the Northern Great Plain region. In general, actors at the regional level are weak in terms of both their institutional links and their organisational and financial capacities. This applies not only to social partners, such as trade unions and employers, but also to territorially organised county-based administrative and self-governing bodies.

Governance of sustainable development and green transition

Overall, territorial development governance is predominantly shaped by a centralised triangle of national institutions, municipal city-level authorities, and dominant employers — especially OEMs — who introduce new technology. The process of infrastructure development and financialisation is driven by the central government and, to some extent, the city in terms of implementation. Although national-level authorities play a key role in allocating resources for infrastructure development and strategic decision-making, the city-municipal level dominates infrastructure and territorial development in operational terms. Municipal authorities, particularly those in the city centre of Debrecen, which attracted the majority of investments for a greener economy, have significantly more influence over the process than regional authorities. In the case of the NGP and Hajdú Bihar, Debrecen, the county capital, is both the centre of new investments and the location of new city-level agencies. In 2015, Debrecen established a separate institution, the EDC (Debrecen Urban and Economic Development Centre), to attract foreign direct investment (FDI). Within a broader company (cégcsoport), a separate unit was created for the infrastructure development of Debrecen (Debreceni Infrastruktúra Fejlesztő Kft., or DIF) and a separate unit for real-estate development (Debreceni Ingatlanfejlesztő Kft., or DING). As a local FDI agency, the EDC was established in 2015 to accelerate FDI and create industrial jobs in Debrecen and the surrounding area. Its other objectives were to support local businesses and encourage university graduates and skilled workers to remain in the area. Its main tasks are to promote economic development by attracting foreign capital and supporting local small and medium-sized enterprises through competence development (training and information) and providing them with the infrastructure to integrate into global supply chains.

A specific feature of the NGP region is that large companies which have recently relocated and operate with new technology or products advocate green transition. A notable example is BMW, which has established a plant dedicated to producing electric vehicles and sets high environmental standards for all its service and production suppliers. Interestingly, although the original plans considered the production of hybrid vehicles, the plant was redesigned to produce the new Neue Klasse platform after the Covid crisis. In December 2024, the Automotive Cluster Debrecen (ADC) was founded with ten members, including BMW and its suppliers, as well as local service enterprises, research institutions, higher education institutions and other professional organisations operating in the region. The ADC also advocates for sustainable development in Debrecen and the surrounding region. For example, it plays a key role in promoting sustainable economic development in Debrecen and the surrounding region[1].

This state of affairs results in uneven, concentrated governance and development based on investment. The EDC has established and expanded two industrial parks on the outskirts of the city, including a special zone for SMEs. While the EDC attracts foreign direct investment (FDI) and services the needs of technologically advanced manufacturers looking to establish operations in Debrecen, it also assists local businesses by providing information and training to enable them to participate in the supply chain, together with the county-level chamber.

The financialisation of regional infrastructure development projects comes from EU funds invested in regions with lower per capita income. According to an OECD report, Hungary was among the nine OECD countries where the difference in income per capita between large metropolitan regions and other regions explains the largest share of regional income inequality (OECD 2023: 20). The NGP region is the second worst-performing macro region in Hungary and is among the poorest EU macro regions in terms of per capita GDP. Alongside the creation of a wealthy metropolitan centre, there is a real risk that Debrecen will be developed as a regional hub, while the broader surrounding region's prospects for sustainable development will deteriorate. Implementation depends on external financing: the three regional self-governing bodies do not have their own

[1] The Debrecen Automotive Cluster Brings New Momentum to the Automotive Industry https://hajduauto.com/news-details/the-debrecen-automotive-cluster-brings-new-momentum-to-the-automotive-industry/31529

budget, but depend on national resource allocation. Their role is limited to implementing EU-financed regional and territorial operational programmes, as well as participating in international cooperation projects. The latter involve raising awareness and presenting best practice models.

3. Needs and perceptions of primary stakeholders

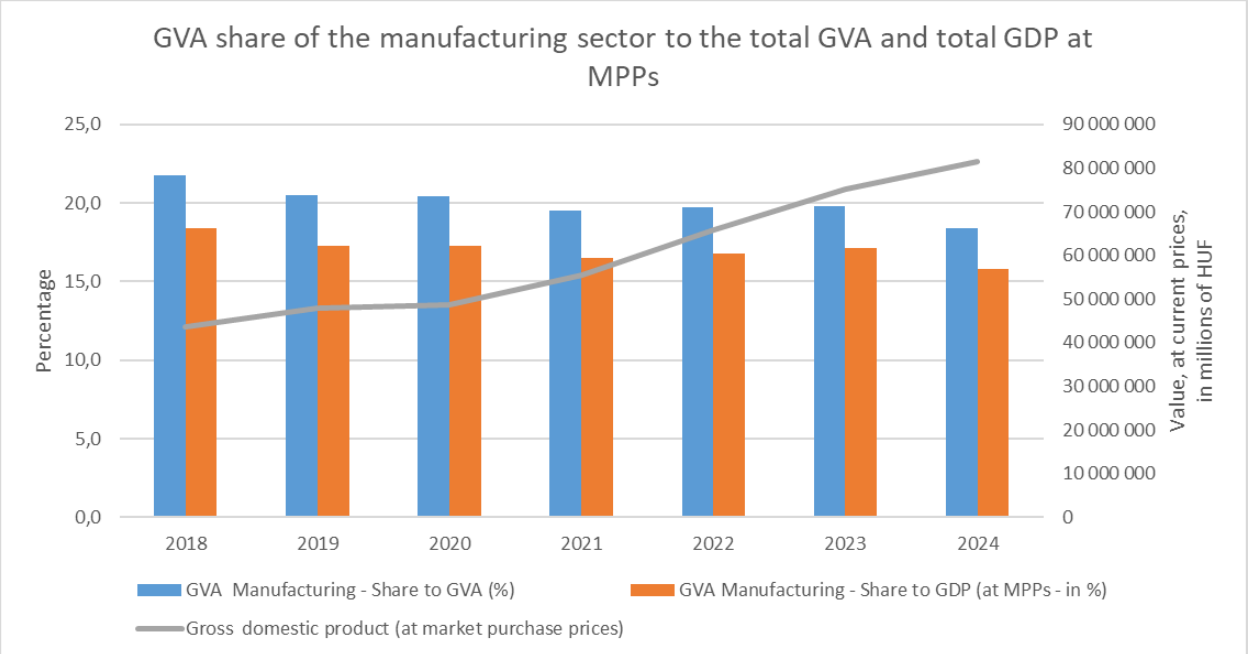
There is no regular or established contact or exchange of information between social partners and the relevant national, regional and municipal authorities at the regional level. In Debrecen, information sessions are held at city level, but social partners, especially trade unions, do not play a sufficiently prominent role. Decisions are not based on sufficient information, and most of our union informants said that decisions are made and implemented without extensive prior information or preparation.

II. Employment and production: stakeholder assessment with triangulated data

Overview: Present production and employment

In general, publicly available data is relatively broad, and some of it is hidden. More detailed data can be obtained on a commercial basis, which is not an option for smaller employers and organisations with a tight budget.

The manufacturing sector retains a structurally significant position in the Hungarian economy, consistently contributing a large share of the country´s Gross Value Added (GVA) and Gross Domestic Product (GDP). Manufacturing grew in both dimensions in the 2010-2018 period, and it had been strongly embedded in the Hungarian export-driven economy. Especially since the Covid-19 crisis, and apart from the partial exception of 2023, a consistent decline in the share of GVA from manufacturing in the national economy is evident. In 2024, this share was 18.4%, representing a steady decrease from 21.8% in 2018.



Graph no. 1: GVA of manufacturing in Hungary
Source: KSH (2025)

Within manufacturing, vehicle production (NACE 29) accounted for 3.36% of the total GVA in 2024 and for 17% of the sectoral GVA. Since 2019, it has shown a declining share within the manufacturing sector. Within vehicle

production, there is a significant difference between the manufacture of road vehicles and other vehicles: road vehicle production accounts for 93% of total vehicle production, but in the last decade, the share of other vehicle production, especially buses more than doubled. ACEA data (2024) indicate that automotives are a key manufacturing sector, with 12.4% share of total manufacturing output in the country in 2022. For Hungarian automotive manufacturing the same trend manifests itself as on the EU level. During the Covid-crisis period in 2020 and 2021, the total number of produced vehicles decreased and rebounded for a brief period of 2022 and 2023, but declined again since 2024 to the level of 2020.

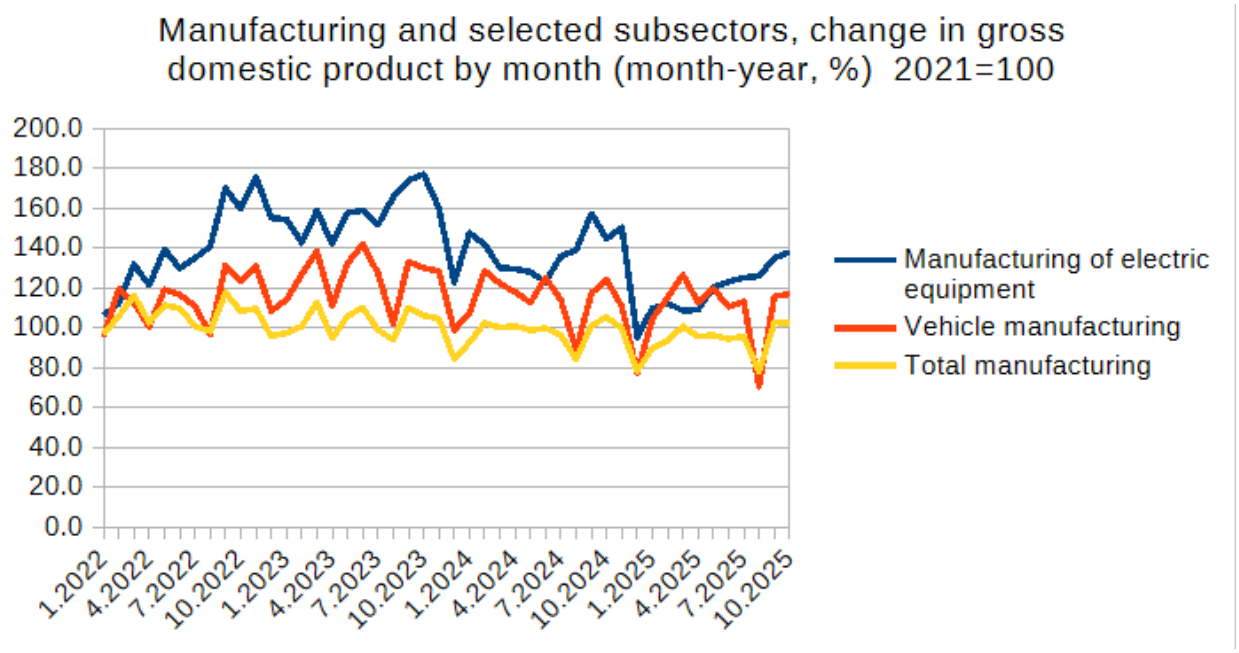
	Europe					Hungary				
	Cars	**Vans**	**Trucks**	**Buses**	**Total**	**Cars**	**Vans**	**Trucks**	**Buses**	**Total**
2020	10,810,265	1,707,247	435,976	24,655	**12,978,143**	432,603	0	0	464	**433,067**
2021	9,946,696	1,679,141	470,388	29,085	**12,125,310**	413,750	0	0	826	**414,576**
2022	10,890,123	1,642,121	503,155	23,727	**13,059,126**	452,551	0	0	799	**453,350**
2023	12,160,492	2,022,201	603,437	28,125	**14,814,255**	508,734	0	0	1,093	**509,827**
2024	11,408,469	1,901,203	478,103	25,255	**13,813,030**	435,541	0	0	839	**436,380**

Table no. 1: Development of the vehicle production: comparison of Europe and Hungary (2020-2024)
Source: ACEA - The Automobile Industry Pocket Guide (2021/22 - 2025/26) - Data for 2020 to 2024

Total industrial production in Hungary fell both in 2023 by a 5.5% and by 4.0% in 2024 compared to previous years, and continued to fall in the first 10 months of 2025 by 3.3% compared to the same period of the previous year. Performance of industrial subsectors varied greatly, but in 2024 compared to 2023 vehicle manufacturing fell by 9.0%, which accounted for 26% of manufacturing output[2]. In the first half of 2025 the trend remained the same, with a 3.3% decrease in the output in the subsector of vehicle manufacturing. Electrical equipment manufacturing, which includes battery production rose significantly in 2023, but decreased by 13.6 percent in 2024 compared to 2023[3] and continued to fall by in the first half of 2025 by 14.7%[4].

As Graph no. 2 shows, monthly development output oscillated significantly during the year, especially in electrical equipment manufacturing.

[2] https://www.ksh.hu/kiadvanyok/helyzetkep/2024/#/kiadvany/ipar
[3] https://www.ksh.hu/kiadvanyok/helyzetkep/2024/#/kiadvany/ipar/a-termeles-volumenvaltozasa-az-elozo-evhez-kepest-az-ipar-agaiban-es-alagaiban-2024
[4] https://www.ksh.hu/s/kiadvanyok/magyarorszag-2025-i-felev/index.html

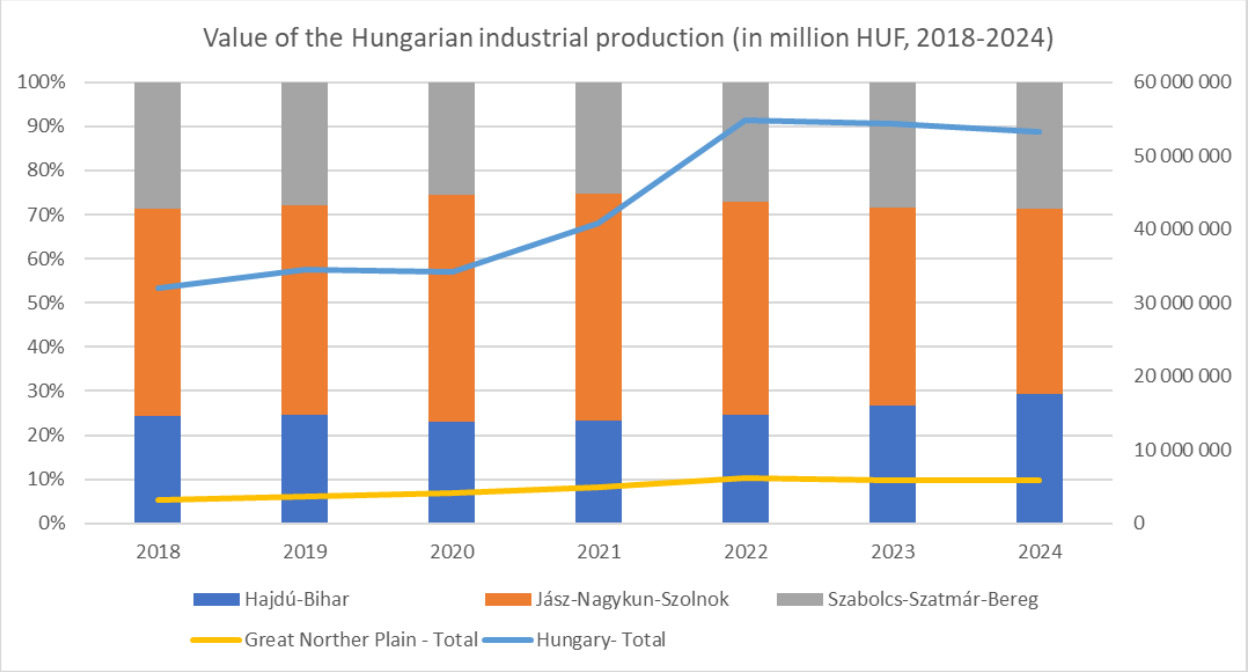


Graph no. 2: Production in selected subsectors
Data source: https://www.ksh.hu/stadat_files/ipa/hu/ipa0037.html

In the NGP region, labour market informants confirmed that many suppliers and battery-related plants operate with fluctuating capacity and are exposed to demand swings and corporate/political decisions especially in Germany and Western Europe. Temporary agencies also sense a structural insecurity in the labour market, with no sign of employment swing. From a regional perspective, the relative share to national GDP of NGP region altogether stagnated, even fell slightly and remained below 10 percent. Out of the three countries only the weight of Debrecen/centred Hajdú-Bihar slightly increased, while that of most industrialised Jász-Nagykun Szolnok decreased and Szabolcs-Szatmár Bereg remained the same. As mentioned, the most notable development was the rapid growth of plants specialising in the production of electric vehicles, especially battery manufacturers.

	GDP of the Northern Great Plain - share to country GDP levels (in %)	Share of GDP - Hajdú-Bihar County within NGP (in %)	Share of GDP -Jász-Nagykun-Szolnok County within NGP (in %)	Share of GDP - Szabolcs-Szatmár-Bereg County within NGP (in %)
2018	9,60	40,85	25,50	33,65
2019	9,51	40,82	25,22	33,96
2020	9,70	39,98	26,33	33,69
2021	9,55	40,09	26,21	33,70
2022	9,45	41,44	24,66	33,90
2023	9,42	41,82	24,55	33,63

Table no. 2: Share of GDP of NGP region of the national GDP, and the weight of the three counties of NGP, 2018-2023.
Source of data: KSH (2024)



Graph no. 3: Relative and nominal value of industrial production by counties of the Northern Great Plain (2018-2024)
Source: KSH, 2025

The three counties of Northern Great Plain show markedly different manufacturing structures, yet in all cases, vehicle production has a relevant and rapidly expanding role in the industrial production.

Between 2022 and 2024, the manufacturing sector in the three counties developed along different trajectories, reflecting contrasting structural conditions and sectoral roles within regional industry. In Hajdú-Bihar, manufacturing underwent strong development between 2021 and 2024, with vehicle production increasing about sixfold. Electrical equipment production, in which battery production is the most important commodity, showed turbulent performance, but overall, a significant production increase. Vehicle production was responsible for one-sixth of the total manufacturing production in 2024. In Szabolcs-Szatmár-Bereg county vehicle production, in comparison with Hajdú-Bihar county, has a smaller share, representing only 7% of the total manufacturing production. In Jász-Nagykun-Szolnok, manufacturing development was characterised by a continuous decline. Electrical equipment manufacturing showed a stable even stagnating production level for 2022 and 2023, yet it also eventually decreased for 2024. Jász-Nagykun-Szolnok has remained the most industrialised among the three counties, despite a recent decline in total manufacturing production. Vehicle production has long been a pillar of the county's economy, with production in 2023 and contraction in 2024. Even after this contraction, the vehicle production sector accounts for around 13.56% of manufacturing production.

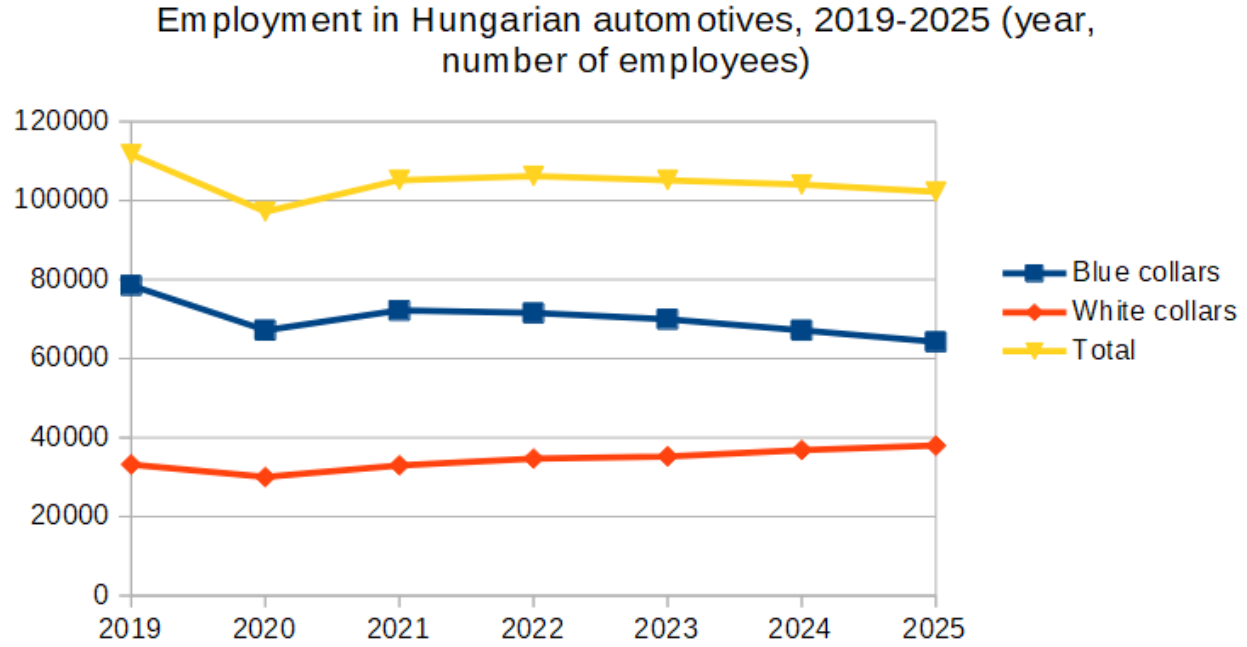
In the traditional segment of automotives, there were comparatively fewer suppliers in the NGP region than in the rest of the country. Established automotive suppliers produce parts and components for both electric vehicles (EVs) and traditional cars (main products as *suspension gear / csapágy, chassis / futómű*). Interviewees and data highlight that relatively few automotive suppliers were present until the early 2010s, and more in the comparatively more industrialised Jász-Nagykun Szolnok region. BMW's decision to relocate production to Debrecen signalled a significant shift in the role of the automotive and mobility industries in the region. Debrecen and its extensive catchment area, which partly overlaps with the NGP, became a location for establishing and relocating production, including that of traditional automotive suppliers. Since the mid-2010s, existing suppliers have expanded their capacities. There is also an electric bus producer in the region. BMW originally planned to produce hybrids as well as electric vehicles (EVs), but ultimately decided to focus solely on EVs. Informants praised the Neue Classe model as revolutionary in its use of recycled materials, estimated at 40–50%, a figure which could improve further in the future. The OEM places great value on this and is encouraging its suppliers to adapt to the requirements as quickly as possible. Production of EVs has expanded at a rate of around 20 per cent annually, led by battery producers and their suppliers.

Due to BMW's requirements, the EV supply chain is expanding, with a particular focus on battery production and, to a lesser extent, EV component manufacturing. Since the pandemic, the OEM has required suppliers to be closer to them geographically, and is willing to pay more for this proximity. In the NGP region, there are also suppliers beyond the dominant OEM, and the supply chain is broadening. The main suppliers are battery producers and battery subcontractors, but they operate outside the same ecosystem. Battery production is expanding to serve a broader range of regional OEMs. There has been stable growth in recent years, and similar growth in terms of output is expected until 2030.

An informant highlighted that the development prospects of employers, particularly automotive suppliers of production and services in rural areas or further from Debrecen, are not being addressed systematically, and their production prospects are more precarious.

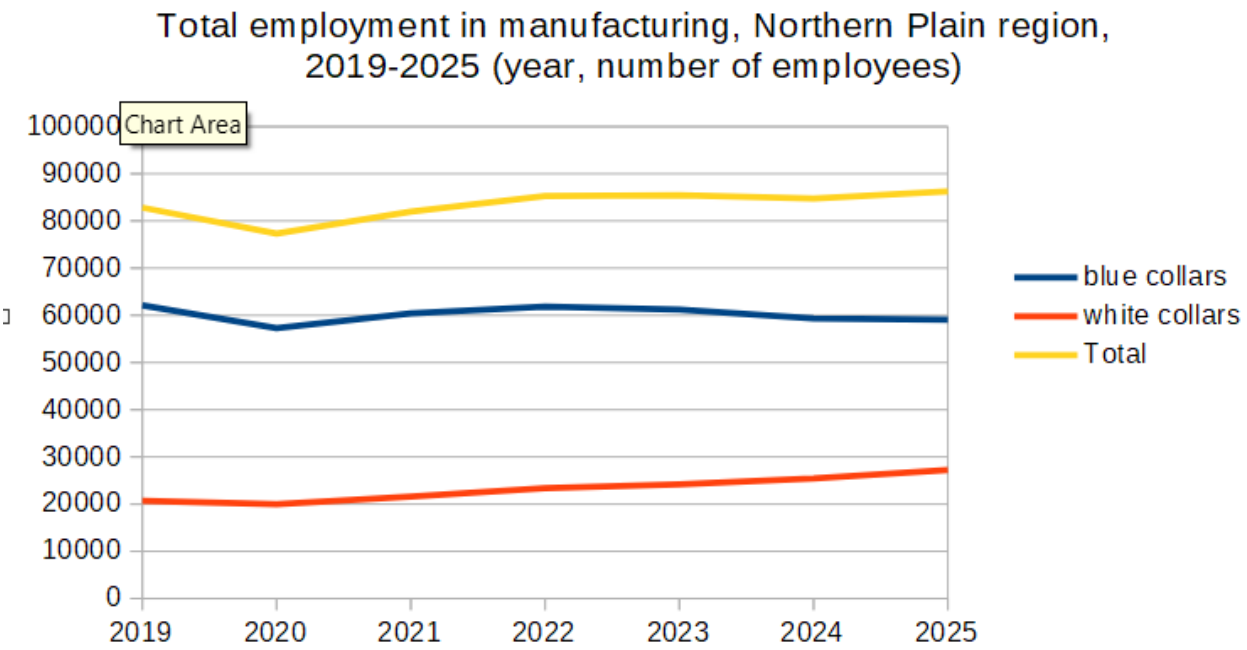
Employment

The following three graphs indicate changes in employment in automotives at the national level, at the NGP region level, but also total manufacturing at the NGP level.



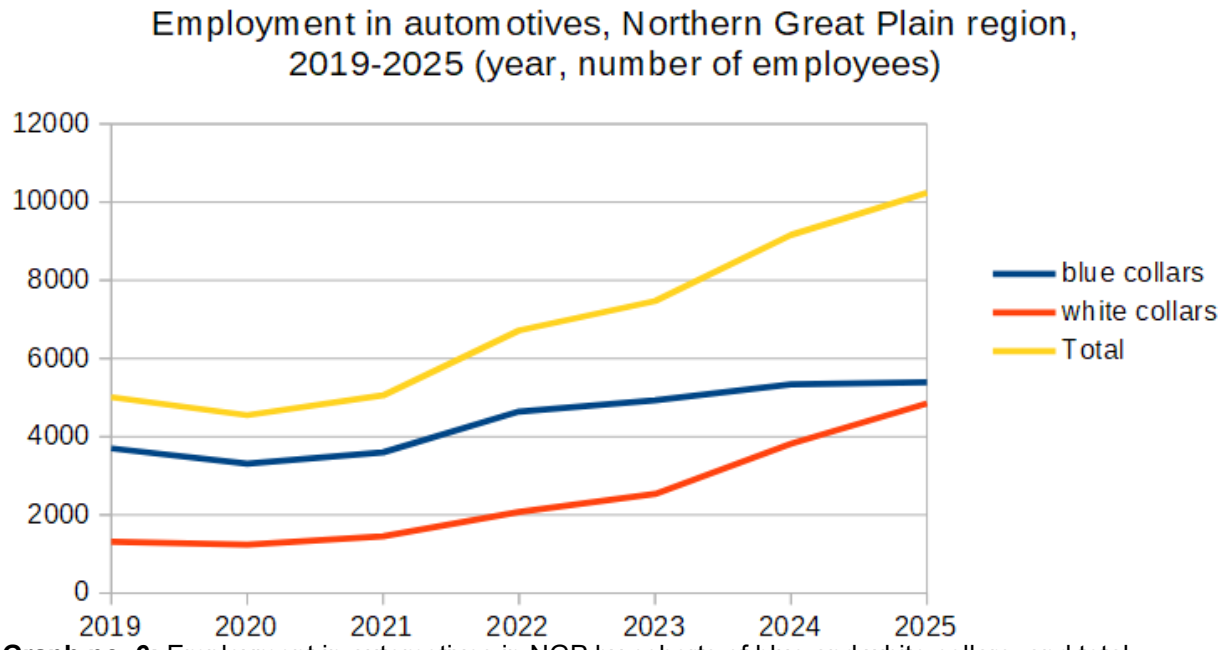
Graph no. 4: Total employment in statistically defined automotives in Hungary (járműgyártás): car manufacturers and automotive suppliers.
Source: Hungarian Central Statistical Office (2025), Tájékoztató Adatbázis

As Graph no. 4 indicates, Hungarian automotives faced a crisis and in the first half of 2025 stood at the Covid-low of 2020. Interviewees active on the national level reported a crisis situation increasingly affecting the automotives and the labour market.



Graph no. 5: Total employment in manufacturing in NGP region.
Source: Hungarian Central Statistical Office, Tájékoztató Adatbázis

Compared to the national level, labour market developments in the NGP region have been more positive, but uneven: there was a rebound in 2022, after which employment levels have remained stable. Interestingly, the number of white-collar workers in total manufacturing in NGP has grown continuously, while the number of blue-collar workers has decreased slightly since 2022, reaching the level seen during the Covid-19 pandemic. In 2024, 64.4% of manufacturing employees worked in manual occupations, while 35.5% were in non-manual roles. While the total number of employees increased only slightly compared to 2019, the ratio of blue-collar to white-collar workers changed significantly, increasing from 1:3 to approximately 1:2.



Graph no. 6: Employment in automotives in NGP by cohorts of blue and white collars, and total
Source: Hungarian Central Statistical Office, Tájékoztató Adatbázis

The growth in total manufacturing employment in the NGP region was largely due to the expansion of the automotive sector. As Graph 6. shows, blue-collar jobs increased continuously. Interestingly, it was the number of white-collar workers that increased dramatically from 2022 onwards to an extent that their number almost reached the number of blue collar positions, calculated for the first three quarters of 2025.

As one informant explained, although a few suppliers such as Schaeffler and ThyssenKrupp were present in Debrecen and the surrounding area, the city's manufacturing sector was relatively small compared to north-western Hungary and Budapest. A significant shift occurred in the last decade, with the announcement of more than 2 billion EUR of foreign direct investment (FDI) and the creation of more than 20,000 new jobs in the local-regional economy. A significant number of informants, who are typically not involved in production, are optimistic that automotive companies are about to start production, with BMW and its suppliers expected to drive strong employment growth. City-level public bodies in particular have voiced the expectation that the mobility industry will continue to grow until 2030. As BMW has decided to produce only electric vehicles (EVs), their associated suppliers, particularly battery producers, also have the potential to grow.
High turnover was characteristic of manufacturing companies in Debrecen and the surrounding area in 2023, with less turbulence since 2024. During this period, the number of fixed-term contracts and temporary agency workers decreased, showing no signs of recovery, which many interpreted as a sign of crisis. With the exception of battery producers, both union and employer informants reported greater insecurity in the traditional supply chain and a slight decrease in blue-collar jobs. Practical examples were given of positions not being refilled when employees retired or left, as well as mass layoffs and continuous job closures on a smaller scale. At companies with stable product markets, workloads increased due to a combination of labour reduction through attrition and workload intensification. The ultimate effect was gradual and disguised downsizing. Informants reported layoffs (employment shock) at some classic and new suppliers in the NGP region. However, many of the laid-off workers found new jobs quickly, particularly in the EV production segment and at battery manufacturers. In 2023, employers and suppliers did not hire in net terms. There was even a slight contraction in companies and suppliers, with no temporary agency workers or fixed-term contracts being renewed, as in crisis periods. Only a few companies were hiring, with fluctuating expectations of new hires, starting from a very high level.

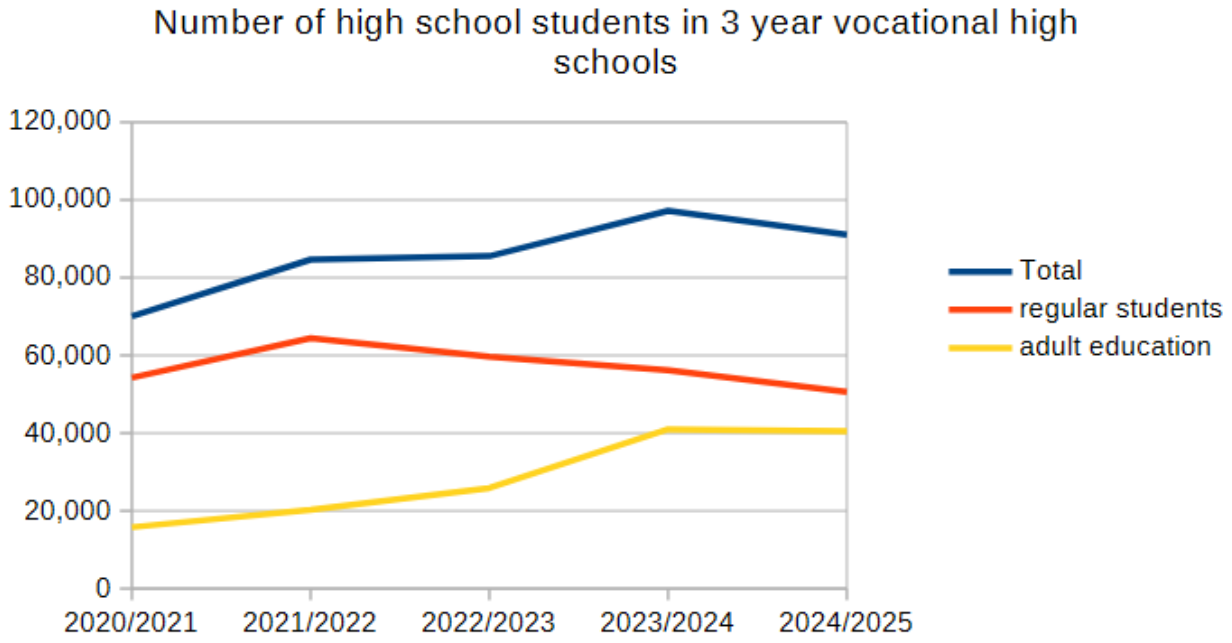
An acute labour shortage and high staff turnover led to a more insecure labour market in 2025. The number of temporary agency workers decreased overall, with interviewees estimating a contraction of around 25% since 2023 and no sign of recovery. It was estimated that half of temporary agency workers were employed in the mobility industries, particularly automotive suppliers. Employers in other sectors, particularly among a wide range of suppliers, have also complained about the high level of insecurity in the labour market within a 60 km radius of Debrecen. This affects not only classic automotive production, but also various services, including IT. There is still no end in sight to the crisis. Interestingly, producers active in both classic and electric automotive manufacturing are faring better than those that have moved exclusively to electric manufacturing, with one plant closing down. Union informants have highlighted that production workers' wages at suppliers have not kept pace with rising living costs, particularly the soaring cost of housing, including rents and mortgages. CNC operators and welders, for example, have been unable to find better opportunities elsewhere.

In terms of broader mobility sectors, including services, there has been an increase in private transport services for management and workers, such as contract-based bus services. These new services have generated employment in areas such as security, but due to higher quality demand, these jobs require greater skill sets.

III. Skill formation

General info on the national and regional vocational training schools and technicums

Since the 2020/21 academic year, data of the Hungarian Central Statistical Office on student numbers in the Hungarian vocational education[5] show a rise in absolute numbers. However, whereas the significance of adult education increased tremendously, there is a constant decline in the number of enrolled children.

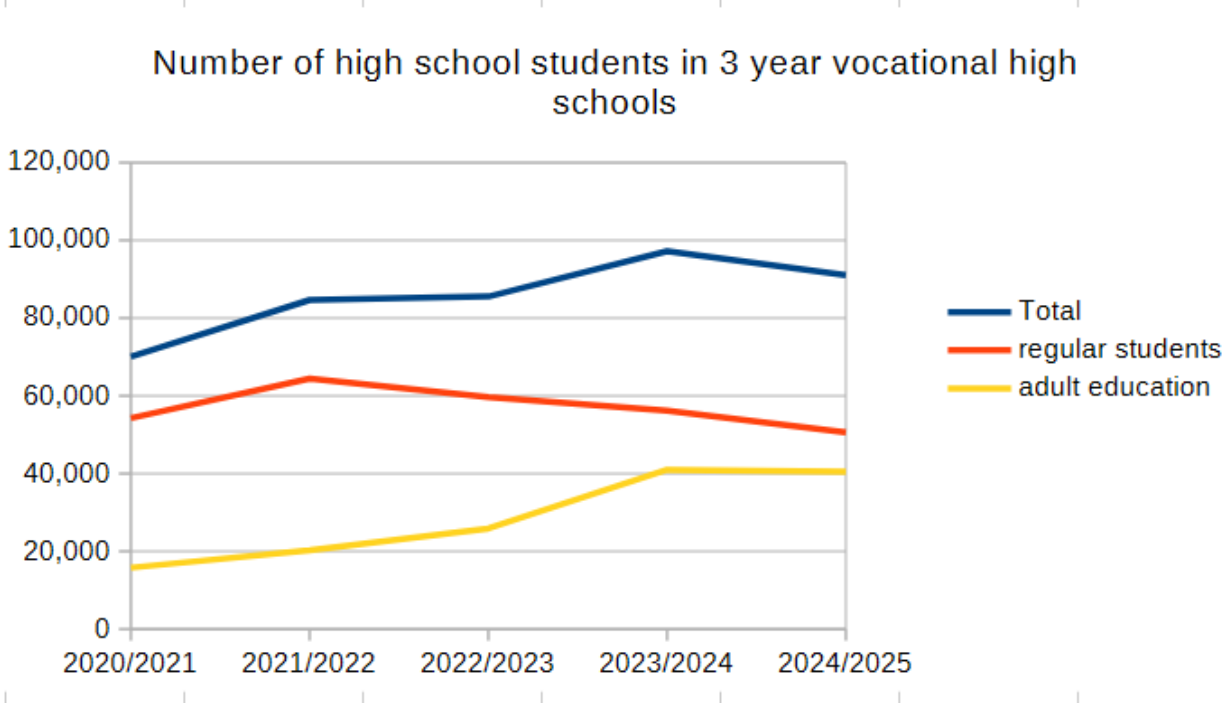


Graph no. 7: Evolution of student numbers in 3 year vocational schools, total and by status.
Source: KSH (2025)

High school-level education in Hungary underwent several rounds of reform in the last 15 years. The official programme of Vocational education 4.0 grounds its action plan on the expectations of employers and flexible adaptation to labour market developments, but the need to increase knowledge-based society, achieving higher competencies necessary for higher-value work and adaptation to regional specificities (see esp. Velkey, 2025).

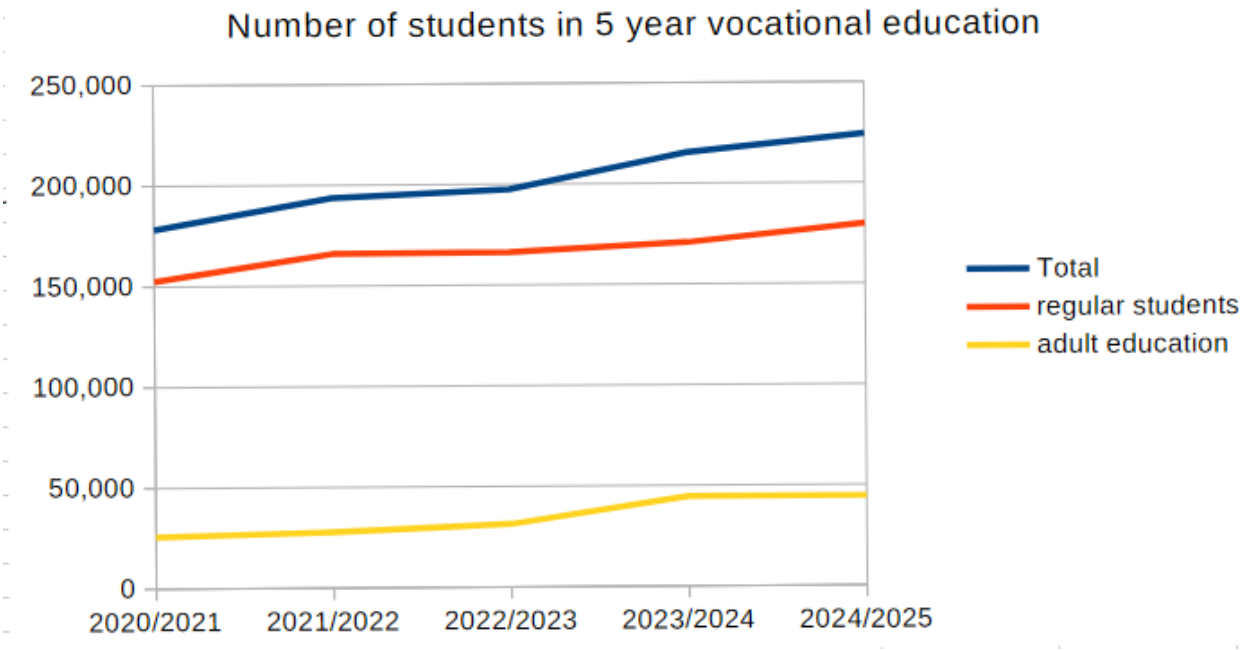
Vocational high schools receive more funding and state support to achieve this aim. The Hungarian dual education model is based on the German model, in which students also spend time in specially designed shops of concrete, certified employers. Data indicate that classical general education in high schools (gimnázium) remain on the same level, whereas there is expansion in student numbers both 3-year vocational and 5-year vocational high school education. However, as the following two graphs present, the growth was due to booming numbers in adult education.

[5] KSH (Central Statistical Office) Stadat Database - Table 23.1.1.13 - “Education at vocational training schools”



Graph no.8: Evolution of student numbers in Hungary in 3-year vocational education, by status
Source: KSH (2025)

The number of regular students increased only in the 5-year vocational education, in schools which participate in dual education programmes.



Graph no. 9: Evolution of student numbers in Hungary in 5-year vocational education, by status
Source: KSH (2025)

Adult education and requalification have been criticised as they fall between the cracks of state-provided educational opportunities for individuals, providing rather general skillsets, while employers demand workers with

specialised knowledge. Moreover, an informant deemed adult education at vocational schools and universities insufficient for securing employment, as further specialisation would be required, but this is not available. The decrease of regular students and inadequate adult education fuels both labour market mismatches and labour shortages.

In the NGP region, altogether there are five general vocational programme areas, that are closely linked to skill needs of the automotive industry:

- Electronics and electrical engineering;
- Mechanical engineering;
- Information technology and telecommunications (ITT);
- Specialised machinery and vehicle manufacturing;
- Chemical industry (esp. pneumatic production and chemical processing of rubber components)

In 2024, NGP ran 21 three-year vocational schools for students with special needs, with a total of 790 students. Ten of these schools were located in Jász-Nagykun-Szolnok. There are 81 three-year vocational training school facilities with 11,148 regular students, and 125 five-year vocational schools and vocational high schools with 25,818 regular students (*nappali*) across the region. The majority of these are located in Szabolcs-Szatmár-Bereg County.

Box 1: VET Enrolment Trends in the NGP region

The annual reports of the county-based vocational centres to the county authorities indicate that there was consistently high enrolment in key technical fields in Hajdú-Bihar County, centred on Debrecen. In electronics and electrical engineering, student numbers increased from 463 in three-year vocational schools and 241 in five-year technical vocational schools in 2021/22, to 688 and 461 by 2023/24, and then to 575 and 539 in 2024/25. A similar trend is evident in mechanical engineering, with numbers nearly doubling for both three-year vocational and five-year high schools (440 + 312 in 2021/22, rising to 595 + 466 in 2023/24 and 564 + 532 in 2024/25). IT is similarly dynamic, with the largest programme growing from 809 students in 2021/22 to 1,524 students in 2024/25. The number of students enrolled in the specialised machinery programme also grew significantly (from 170 to 254 and from 728 to 1341). These data confirm Hajdú-Bihar County's role as the regional VET hub, where there is high demand for IT and engineering-related skills.

In Jász-Nagykun-Szolnok County, there has been more moderate but stable growth in the number of enrolled students, with a similar distribution tilting towards new automotive sectors, as in Hajdú-Bihar County. In electronics, the number of high school students rose from 206 + 225 in 2021/22 to 336 + 393 in 2024/25. Mechanical engineering remains dominant, with numbers rising from 449 + 161 in 2021/22 to 583 + 278 in 2024/25. Meanwhile, specialised machinery enrolment increased from 155 + 292 to 192 + 516 over the same period. ITT enrolment has also grown, rising from 406 to 813 between 2021 and 2024. According to the available datasets, however, ITT is not represented in the vocational schools of the county. These patterns indicate a strong engineering backbone with expanding ITT demand.

Szabolcs-Szatmár-Bereg has the smallest baseline, yet shows the sharpest proportional growth. The number of students enrolled in electronics increased substantially, rising from 574 + 94 in 2021/22 to 1392 + 292 in 2024/25. Similarly, mechanical engineering rose from 751 + 264 in 2021/22 to 988 + 357 in 2024/25, peaking in 2023/24 with 1,288 + 329 enrolled students. Specialised engineering also increased, rising from 143 + 695 to 218 + 1,032 in the same period. IT specialisation enrolment grew from 668 in 2021/22 to 1,106 in 2024/25.

Data for the 2022/23 to 2024/25 academic years also indicate dropout rates from vocational education and training. Generally, dropout rates in 2022/23 in the three counties were similar to significantly exceed the national average, ranging between 7.9% in Hajdú-Bihar, 12.2%. In Szabolcs-Szatmár-Bereg county and as high as 15.1%

in Jász-Nagykun-Szolnok. In 2024/25 national average of dropout rate was at 5.86%, and all three counties performed better than a few years before (Hajdú-Bihar County 5.5%, Jász-Nagykun-Szolnok 7.3%, Szabolcs-Szatmár-Bereg 8.1%).

The data from the Hungarian Chamber of Commerce's *Register of Dual Training Institutions* presents the maximum admission capacities for four technical specialisations relevant to the Hungarian automotive industry between 2021 and 2025. The numbers we obtained seemed to be nevertheless inconsistent. In Hajdú-Bihar county, for example, specialised machine and vehicle manufacturing consistently has the highest capacity, totalling 1,791 places in 2025 and ranking first or second every year, increasing from 171 in 2021 to 412 in 2024 before slightly decreasing to 340 in 2025. Mechanical engineering follows as the second-largest field with a total of 1,461 places, peaking at 450 in 2022 and showing strong values until a sharp drop to 42 in 2025.

Altogether thus, at least in Debrecen, student numbers for specialised vocational training in relevant fields for mobility industries approximately doubled in the last decade. The popularity of these programmes might be associated with the needs and prestige of employers in the (new) mobility industries. The appearance of high-tech manufacturers also creates demand for skill upgrades, including from services, foreign language skills etc. and adult education.

Box 2: BMW Group Education Programmes in Debrecen

In Hajdú-Bihar county capital Debrecen, one of the most renowned educational workshop for students was established by The BMW Group, which established its dual vocational training programme in 2021, in collaboration with the Debrecen Vocational Training Centre (DSZC). The programme was focusing on six professions: mechatronics technician, electronics technician, automotive mechatronics technician, IT system and applications technician, industrial IT technician, and high-voltage electrical technician. In its first year, which was in 2023, 100 students enrolled in this programme, with an annual increase of 100 students, aiming for a total capacity of 300 students by 2025. The dual training is coordinated by the BMW Group Plant Debrecen's Training Centre, utilising its own educational infrastructure, in partnership with three member institutions of the DSZC. BMW Group also maintains a close relationship and cooperation with the University of Debrecen. In 2025, they launched the "FastLane" dual master´s degree, aimed at creating career pathways for university students. Additionally, a newly established Vehicle Industry Research Centre was created through collaboration between the University and BMW Group to bolster engineering education. These initiatives are part of the strategic cooperation agreement signed by both parties in 2023. At least two informants praised the novel knowledge and workshops the Debrecen Vocational Training Centre doubled student numbers in 10 years (from 6,500), with around 200 students already in BMW-specific dual programmes even before serial production would start.

There are two vocational training centres in Jász-Nagykun-Szolnok County: the Karcag Vocational Training Centre and the Szolnok Vocational Training Centre. According to the official documents of the county's general assembly, information is only available about the operation of the Karcag centre. Vocational education is offered in 19 sectors and 47 professions, ranging from healthcare and engineering to IT, transport, special vehicle manufacturing, social care, and tourism. In comparison to Hajdú-Bihar, Jász-Nagykun-Szolnok has only 70 dual training partners, primarily SMEs in sectors such as construction, commerce, electronics, tourism, specialised machine and vehicle manufacturing, and mechanics. There are over 400 active vocational training contracts, with 45% of students receiving practical training directly at partner companies. The largest proportion of students is studying in the specialised machinery and vehicle manufacturing sector (20%), followed by mechanical engineering (16%) and electronics and electrical engineering (3%). The Szolnok Vocational Education Centre focuses on similar areas, but detailed data is not available.

Annual reports of vocational centres and county-level plans and programmes show that there is a significant shortage of professionals in healthcare (nurses, healthcare assistants, practising nurses and paramedics), the food industry (butchers, meat product makers, bakers, dairy product makers and food preservation product

makers), construction (many professions), social care (childcare workers, caretakers, social workers, caregivers and social and child protection assistants) and hospitality (confectioners, waiters and chefs). There is also a shortage of skilled labourers in vocations that supply new automotive sectors, such as electronics and electrical engineering (industrial IT technician, electrician), mechanical engineering (building and structural locksmith, mechanical technician, machine manufacturing technology technician, machine and CNC machinist, welder, industrial mechanic, tool and equipment manufacturer), ITC (all professions) and specialised machine and vehicle manufacturing (car manufacturer, automotive mechatronics technician). Examples include industrial IT technician, electrician, building and structural locksmith, mechanical technician, machine manufacturing technology technician, machine and CNC machinist, welder, industrial mechanic and tool and equipment manufacturer. ITC covers all professions, while specialised machine and vehicle manufacturing includes car manufacturer and automotive mechatronics technician.

According to a representative of the regional authority, there is soft coordination and no outright competition between high schools for vocational training places. One informant highlighted that adult education and requalification did not meet expectations. On a more positive note, informants also reflected on the fact that vocational schools are open to adjustments based on employers' needs. This avenue is mostly used by medium and large employers, typically those involved in lower- to medium-value activities. Interviewees also confirmed that certain professions (e.g. electronics technician and electrician) are becoming more popular and relevant due to the switch to EV production. Employer informants evaluated that the needs and dynamics of small and medium-sized enterprises (SMEs) differ from those of large companies, depending also on specific industrial vocations. SMEs in high-value sectors such as IT rely on internal training and high investment, but cooperate less with schools and universities. Large companies directly influence dual education and have their own specialised workshops for students, where young people can learn skills related to the latest technologies. In this sense, the region and Debrecen in particular have benefited from new technologies and BMW's investment. Some professions, such as maintenance technicians, still require significant in-house training or experience elsewhere, compared to assembly line workers, for whom general vocational schools provide a solid foundation.

While some interviewees praised the technological novelty and equipment at employer-training shops, others reflected on the fact that this growth had come at the expense of other sectors, particularly services. Furthermore, the high school student body increased more and became more concentrated in Debrecen than in smaller towns in the broader region. For example, the total number of students at the Mátészalka Vocational Centre decreased between 2021 and 2025, with a total decrease of 17% among students in schools educating for traditional service-based vocations. Such development goes in line with the further increase of commuting or boarding students: the majority of vocational school students are non-local (Velkey, 2025).

In terms of the demand for blue-collar workers and managers, new EV suppliers do not require new classes of workers for assembly line work, but work with machines requires adaptation and is more psychologically demanding than physical labour. Workers from old suppliers fulfill tasks such as battery production. Management roles at automotive suppliers require general white-collar skills, regardless of whether production is for the traditional or EV segments. In the EV ecosystem, particularly in battery production and assembly, there is demand for workers, but the work is more high-tech and involves greater interaction with machines and AI.

Higher education

At the University of Debrecen, which has 14 faculties and 24 doctoral schools, the total number of students remained stable and grew during the period from 2021 to 2024, including in the faculties of technology and natural sciences. A notable development is the increase in the number of foreign students, who now make up around 30 per cent of the total student population. Between 2022 and 2024, the university experienced moderate but steady growth in total student enrolment, rising from 32,265 in 2022 to 34,842 in 2024 — an increase of 8% over two years. Two faculties at the University of Debrecen — the Faculty of Informatics (IK) and the Faculty of Engineering (MK) — are particularly important for developing the skills needed by manufacturing companies. The IK expanded by 14 percent between 2022 and 2024 (growing from 2,567 to 2,933 students), while the number of students at the MK remained almost unchanged. Students also come from other parts of the country, but parents face an increasing financial burden due to the cost of studying. Housing costs are extremely high, whereas incomes for middle-class parents, for example, have not increased significantly. Overall, the data show that ICT-related education is expanding more dynamically than engineering programmes. In ICT, there was an overall growth of more than 30% over four years.

Providing education for employees is more difficult. Talented young employees typically take a distance learning programme (levelező), which limits their choices and is therefore problematic. One issue that remains unresolved is the lack of support from companies for their employees to participate in regular programmes. For example, there are no distance learning programmes in automotive engineering, only regular programmes that require attendance. Employers generally do not support their employees' education, so employees usually need to solve this problem themselves, e.g. by taking days off for study. However, this seems to be changing. Companies are discussing potential solutions. Due to the acute labour shortage, many people who complete their bachelor's degree secure well-paid employment and choose not to continue their education. However, there is also a shortage of higher-level positions and leadership roles.

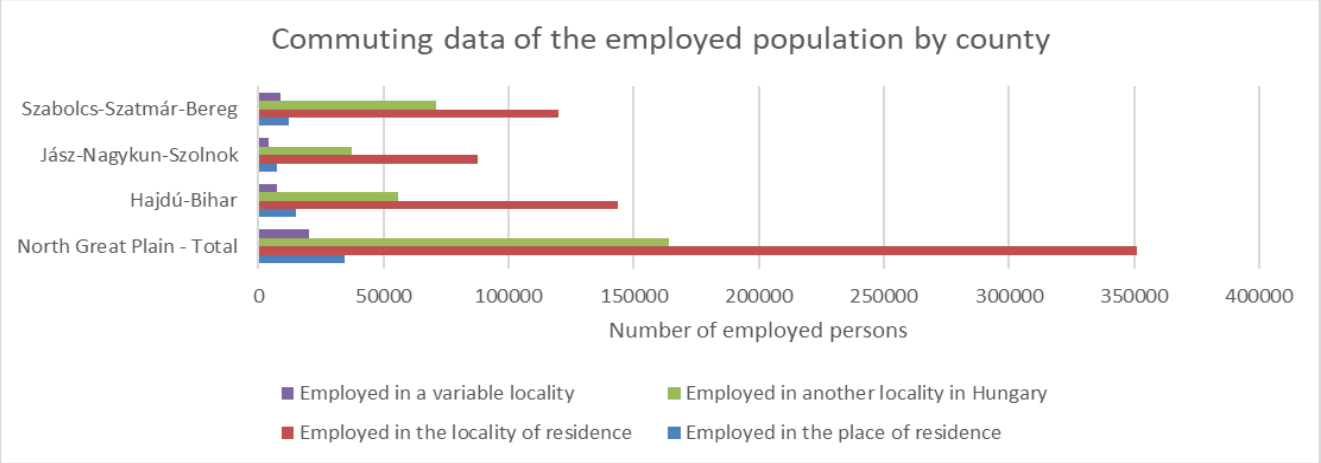
Both vocational high schools and universities are adjusting flexibly to employer needs. Faculties are initiating communication with enterprises, offering input and acting as partners to help them articulate their needs. While universities were searching for contacts around 2021–22, it is now enterprises knocking on their doors, as this trend has reversed in the last year. Competence requirements are updated based on ongoing requests and feedback from employers. Several companies also offer external classes (kihelyezett tagozat), where an average of three people are responsible for teaching and setting up the education programme. Some classes or courses are taught by company personnel. Universities also introduce new specialisations and modify syllabuses. Specialised further (advanced) education (szakirányú továbbképzés) was created in response to enterprises' communicated labour needs. This programme enables BA degree holders to progress onto highly specialised, demand-driven MA programmes. According to one informant, there is a relatively stable group of companies with which the university cooperates. However, labour shortages and employers' desperate need for skilled labour can sometimes produce suboptimal outcomes. For example, talented students sometimes leave their studies after achieving a BA without specialising further, since employers offer them attractive salaries for their first jobs.

IV. Infrastructure development and services

Beyond annual reports on road construction and statistical information on public railways and buses, information on infrastructure development at the regional level is scarce. Information on housing and commuting also is lacking details, despite the fact that both pose a significant challenge to a wide range of social and public policies.

The NGP region is becoming an even more commuter-focused area, with rising infrastructural needs. The working population of the NGP region is highly mobile, and this trend is growing. New investments in Debrecen and changing employment opportunities in other parts of the region mean that employees have to adapt, which increases their commuting demands and opportunities. While infrastructure development has responded to these changing needs, it has not done so to the required extent, resulting in suboptimal outcomes.

The latest census, conducted in 2022, revealed that Debrecen was one of the few Hungarian urban settlements where commuting for work had increased significantly, while the labour market participation of locals had decreased in relative terms. This indicates an uneven, territorially concentrated geography of jobs.



Graph no. 10: Employee Commuting
Source: 2022 Census (KSH)

As Graph no. 10 shows, in 2022, only a minority of employees did not commute at all. Most employees commute within the municipal border. Field observations in Debrecen, interviews and media reports highlight that the tendency to commute has intensified further since 2022. Overall, although commuting has increased, the development of mobility infrastructure has been uneven and, in some respects, conflicts with the principles of sustainable development. In the NGP, road expansion occurred in only one county, while rail capacity decreased and both individual and public transport performance increased. These trends reveal both structural development dilemmas and internal territorial disparities within the region.

According to the available datasets, more than half of the region's motorway infrastructure is located in Hajdú-Bihar County, which reinforces the transport and economic importance of Debrecen and the surrounding area. Meanwhile, growth in lower-order road segments has increased, particularly in Hajdú-Bihar County, indicating improved internal accessibility. In contrast, reductions in other national roads may suggest a functional restructuring of the network. Table 3 shows that, in terms of public roads, only local roads were built between 2023 and 2024, and these were concentrated in Hajdú-Bihar County centred on Debrecen. In contrast, the length

of railway decreased slightly, mostly due to the temporary closure of tracks between Debrecen and Oradea. The number of passenger cars increased by 2.5 percent in all counties and the entire NGP region, and by 3.1 percent in the Debrecen-centred Hajdú-Bihar region. Due to the population decrease, the relative number of cars increased by a somewhat more significant 3.1 percent in the total region over the year. More alarmingly, the ratio of vehicles per capita increased more significantly in the NGP region, with the already high average age of passenger cars rising from 16.9 to 17.3 years. The average age of vehicles in the Northern Great Plain (17.3 years) consistently exceeds the national average (16.2 years in 2024) and continues to rise. This indicates that the expansion of mobility is primarily driven by personal mobility solutions rather than by the development of public transport and infrastructure. The long-term increase in the number of passenger cars, coupled with the rising number of vehicles per 1,000 inhabitants (up from 356 in 2020 to 395 in 2024), further entrenches personal/private mobility. Jász-Nagykun-Szolnok County has the highest level of motorisation.

In contrast the number of buses decreased in the NGP region, only in Szabolcs Szatmár the numbers increased slightly. Analysis of vehicles by fuel type indicates the continued expansion of diesel-driven vehicles, particularly among trucks. This points to the strengthening of logistics and industrial functions. Interestingly, the number of motorcycles increased by a greater percentage in just one year: 4.6 percent in the NGP region and 5.3 percent in Hajdú-Bihar, which indicate an increase in cheaper, individualised commuting.

Although the number of local lines remained roughly the same, the importance of local bus transport increased considerably. With the partial exception of Szabolcs-Szatmár-Bereg County, there was an increase in both the number of passengers carried and the number of passenger kilometres travelled. As Table 4.1 shows, passenger transport increased by more than 13 percent in the total region and by almost 20 percent in Hajdú-Bihar county, centred on Debrecen. This development is even more significant in absolute terms since Hajdú-Bihar's already high share of 66.5 percent of passengers rose to 70.4 percent of the total NGP, while its share of total passenger kilometres increased from 68.1 to 71.3 percent of the regional total. This highlights the further urbanisation of the Debrecen-centred NGP region and the relative de-urbanisation of other parts of the NGP.

			2023				2024			
	Region, county		Northern Great Plain	Hajdú-Bihar	Jász-Nagykun-Szolnok	Szabolcs-Szatmár-Bereg	Northern Great Plain	Hajdú-Bihar	Jász-Nagykun-Szolnok	Szabolcs-Szatmár-Bereg
Public road infrastructure	National public roads total (km)		5 386	1 758	1 399	2 228	5 376	1 758	1 399	2 218
	Local public roads total (km)		31 692	10 288	9 949	11 455	32 201	10 867	9 838	11 496
Length of standard gauge railway lines (in kms)	Built length of railway lines		1 448	481	459	508	1 379	449	435	495
	Of which	Multi-track lines	305	88	134	83	293	80	130	83
		Electrified track lines	458	131	201	126	455	130	196	129
Motor vehicles for passenger transport	Passenger cars		535 413	197 301	137 569	200 543	549 017	203 438	139 445	206 134
	Buses, coaches		1 614	386	684	544	1 582	381	620	581
	Motorcycles		25 947	9 801	7 875	8 271	27 139	10 325	8 228	8 586
	Motor vehicles for passenger transport, total		562 974	207 488	146 128	209 358	577 738	214 144	148 293	215 301
	Average age of passenger cars, years		16,9	16,4	17,3	17,1	17,3	16,7	17,6	17,6
	Passenger cars per thousand inhabitants		383	379	389	382	395	391	399	396
Local bus transport	Passengers carried, thousands		84 998	56 540	13 393	15 064	96 229	67 783	13 568	14 879
	Passenger kilometres, thousands		312 244	212 659	46 331	53 254	355 626	255 097	46 553	53 976
	Number of local buses		297	153	60	84	302	158	56	88
	Length of the network, kilometres		602	229	138	236	615	240	138	238
	Number of local routes		218	96	56	66	215	92	55	68
	Room-capacity kilometre, thousands		1 571 226	838 084	285 170	447 972	1 672 951	954 237	279 090	439 624

Table no. 3: Statistics on road, number of vehicles, by type, 2023-2024.
Source: KSH (2025)

Public transport infrastructure is being adapted to meet the needs of larger employers, especially in the Debrecen hub. New bus lines and stops are being added and timetables are being modified, but the issue is far from being solved. In Szabolcs-Szatmár-Bereg County, two new bus lines were introduced in 2024 to improve access for passengers: the line 4570 Nyíregyháza – Újfehértó – Téglás – Debrecen, BMW plant and 4571 Nyírbátor – Nyíradony – Nyírbogát – Debrecen, BMW plant. At the same time, two bus lines were discontinued: line no. 1428 Nyíregyháza – Hajdúnánás – Eger and 4246 Rakamaz – Ibrány – Kemecse. There was a contraction in standard-gauge railway lines, particularly due to the temporary closure of multi-track sections. Only some sections of the railway line were renovated, most importantly the Szajol–Debrecen section[6]. Electrification presents a mixed picture: a modest decrease in length in Hajdú-Bihar and Jász-Nagykun-Szolnok counties is offset by more positive developments in Szabolcs-Szatmár-Bereg.

At the regional, county level, plans and strategies are formulated as five-year plans, but without budget or real influence over realisation. For example, the central, Hajdú-Bihar county drafted and accepted the Economic Development Strategy for 2030 (Zone 2030) in 2022. Building of roads is implemented by a central agency in charge.

[6] https://hbmo.hu/portal/wp-content/uploads/2022/07/HB_2030-strategia_EKMGFZ.pdf

Other initiatives and plans include:

- transforming the Budapest-Szolnok-Debrecen-Záhony (Ukrainian border) railway into a high-speed track;
- The development and maintenance of suburban and branch railway lines (e.g. electrification) and the development of internal roads to reduce journey times.
- P+R centres
- Development of the intermodal centre in Debrecen and re-establishment of the Debrecen–Oradea (RO) railway line (pp. 15–16). This line closed in October 2025 due to the expansion of Debrecen Airport and the sale of the land on which the railway track was located to the battery production company CATL.

The railway transport system has not been updated to meet the needs of short-distance, intra-regional commuters. While the focus of national railway policy remains on enhancing the fast Budapest–Debrecen line, local and regional passenger rail services continue to experience stagnation and decline, and even temporary or total line closures.

Nevertheless, financialisation plays an important role in infrastructure development. At the national level, the government decides on allocations via grants and state-funded development programmes for regional development. The most important programmes include the Hungarian Village Programme (available to municipalities) and the Territorial and Settlement Development Operational (TOP-Plusz) programme.

In recent years, infrastructure development in the NGP region has centred on Debrecen. As previously mentioned, the Debrecen Economic Development Centre (EDC) was established as a public-private partnership between Debrecen City Municipality, the University of Debrecen, and Cívis Ház Private Ltd (Zrt.). Subsequently, under the EDC, Debrecen Infrastructure Development Ltd. (DIF) was formed to address the engineering and technical challenges posed by medium- and long-term urban development projects. This is particularly pertinent with regard to the technical management of public utilities, urban development and industrial infrastructure in the North-West Economic Zone and the South Industrial Park, both of which are located on the outskirts of the city.

Overall, infrastructure development in the NGP region in recent years has been centred on Debrecen. As previously mentioned, the Debrecen Economic Development Centre (EDC), a public-private partnership between Debrecen City Municipality, the University of Debrecen and Cívis Ház Private Ltd (Zrt.), was established. Subsequently, under the EDC, Debrecen Infrastructure Development Ltd. (DIF) was established to manage the engineering and technical challenges posed by medium- and long-term urban development projects, especially with regard to the technical management of public utilities, urban development, and industrial infrastructure in the North-West Economic Zone and the South Industrial Park, which are both located on the outskirts of the city.

The development and financialisation of infrastructure in the industrial hub of Debrecen was driven by the need to attract and support foreign capital that was either high-value or strategically important, as well as to provide local small and medium-sized enterprises with a platform for development and opportunity. In particular, the large-scale investment by BMW created an unprecedented need for infrastructure adjustment and development. Researchers from the University of Debrecen found that the city had just five years to prepare for and keep up with the expansion of production and employment with infrastructure projects, whereas other towns had about two decades for this process. The infrastructure development was largely centred on Debrecen, creating uneven infrastructural development and needs which spiralled incrementally downwards over time, partly overlapping and partly surpassing regional borders. However even in Debrecen, informants reported that production and employment have increased more quickly than infrastructure development. For example, no bus stops have yet been established near most of the newly built plants and, workers often have to walk 20 minutes from bus stops to their workplace.

Our informants reported that large companies usually hire private bus companies to run separate buses for their workers. The recently established Automotive Cluster Debrecen has become the most vocal advocate for a solution. It called for an increase in the capacity of bus and local rail services. The ACD recognised that reliable and affordable commuting options within a one-hour radius were crucial for securing a stable labour supply. The

ACD therefore planned to influence public transport solutions for commuters, as well as push for developing commuting infrastructure, and moving away from individual employers contracting separate transport companies for their employees only. Planned road and rail upgrades (e.g. the 108 railway line, which will link the city centre and the BMW plant, and the highway and railway extension towards Nagyvárad in Romania) are explicitly justified as enabling a "one-hour commuting region" for workers. Such solutions could rationalise and possibly decarbonise worker transport (e.g. shared bus routes for multiple firms in the Southern Industrial Park), creating new service-sector jobs and upgrading existing ones in the process.

Interviewees also pointed out that large employers typically solve their employees' commuting issues by contracting private transport companies. They also pointed out that this is not an option for small and medium-sized enterprises. Whereas large companies influence public policies at city and municipal levels, there are no such mechanisms at territorial, county or regional levels. A further risk is that, during crisis periods, some employers have cut subsidised transport to the workplace, affecting those who live further away.

During the field research, our interviewees articulated the following concrete issues and solutions:

- In the area of Debrecen at least there is very high traffic and a radical rise in the number of cars in town, causing slower traffic and traffic jams that are unprecedented compared to earlier times. Despite high need and demand, alternative transport infrastructure such as car-sharing, bike-sharing and roller businesses has not been developed.

- Private transport companies expanded their service portfolio and upgraded the quality of their services. The Hungarian company Pannon Guard experienced sustained growth in demand for transporting workers as more plants opened. They invested in vehicles and organisational capacity, but faced constraints in renewing and greening their fleet (e.g. switching to electric buses) due to infrastructure and cost issues.

- At the city level in Debrecen, many plans and communiqués have been issued to interested stakeholders and the general public regarding infrastructure projects, but implementation is lagging behind. Although plans and promises have been made, large-scale delays are being caused by the slow financialisation and implementation process. When it comes to infrastructure, employer federations and trade unions have no regular channels of influence.

- There are insufficient charging stations and car mechanics specialising in EVs. Such infrastructure could provide a local boost; otherwise, customers would turn to the secondary car market.

Housing

Economic development and investments have caused a significant increase in rental and housing costs, especially in Debrecen. Affordable housing has become an increasingly acute problem for those working in the mobility industries, as well as for the local residents.

A housing crisis has developed in Hungary, including in northern Hungary, as can be seen from the number of properties built and sold, both used and new. Few new homes are being built at the national level, so real estate sales have been limited primarily to used homes. The following table shows the data for 2024 and the first half of 2025.

Year, period	Total apartments sold	Subtotal: used apartments sold	Subtotal: new apartments sold	Built new apartments for the market
2024	131,1	124,0	7,1	8,1
2025. first half	42,6	41,4	1,2	3,4

Table no. 4: Number of bought new and used apartments (Értékesitett használt és új lakások Magyarországon.)
Source: KSH (2025)[7]

Although real estate prices rose across the entire NGP region, the most acute situation developed in Debrecen, both in terms of real estate prices and rentals. Debrecen is the most expensive county seat in terms of average housing prices. The average price per square meter of residential property in the second quarter of 2025 was HUF 931,200 (EUR 2,400 at the December 2025 exchange rate), which is 25.7 percent higher than in the same period in 2024. At the end of 2024, Debrecen had the most expensive average rent among county seats: the average rent for an apartment was HUF 230,000 (a year ago, the average price was HUF 200,000), compared to HUF 200,000 in 2023. Within a year, rents rose by 15 percent, which is significantly below the average rate of wage increases. Thus, in 2024, rental prices were 66 percent of the average monthly net income of blue-collar workers in Hajdú-Bihar County, but they also accounted for a significant proportion of the net income of white-collar workers, 39 percent. It is quite likely that a significant number of white collars surpassed the 40 percent threshold of housing poverty[8].

The city administration of Debrecen recently announced a housing construction and rental subsidy program. In the eastern districts, housing construction and infrastructure development will take place, and in the spring of 2024, a rental subsidy program called the Phoenix Housing Program will be launched. In 2025, Hungarian citizens under the age of 35 who are registered and employed locally were eligible to apply for 200 rental apartments, with the municipality providing one-third of the market rent and the tenant and employer covering the remaining two-thirds[9].

The representatives of the trade unions surveyed did not know of any employers (or employees) who had participated in the program. It is limited to renting apartment buildings, primarily for middle managers and temporary employees arriving from abroad. Citing the availability of the advertised favourable Home Start mortgage, the city administration announced the suspension of the Phoenix housing program at the end of 2025[10].

[7] https://www.ksh.hu/s/kiadvanyok/lakaspiaci-arak-lakasarindex-2025-ii-negyedev/index.html

[8] Kilőttek a debreceni albérletárak, alig fér rá a grafikonra a mostani lakbér HAON, January 16 2025 https://www.haon.hu/helyi-gazdasag/2025/01/alberletar-debrecen-dragulas-2025

[9] Kosztin Éva Indul a debreceni bérlakásprogram – íme az első részletek HAON, March 14 2024 https://www.haon.hu/helyi-kozelet/2024/03/lakas-program-debrecen-fonix-munkavallalo-fiatal

[10] Itt van Magyarország új fővárosa: ezrével nőhetnek ki a földből az új lakások, a kezek a start gombon – berobbanthatják a Főnixet, ami

In addition to solving transportation of their employees, OEMs and suppliers also address the housing needs of their employees separately, without coordination or consultation with the authorities. One solution mentioned during an interview was renting apartments in nearby towns, such as Hajdúszoboszló. In view of the growing needs of their employees, there is a tax-free institutional solution at hand, as employers can introduce housing subsidies for their employees, which could be up to a maximum of HUF 150,000 per month in 2024. For employees coming from more distant areas, especially from abroad, daily commuting is not possible. Outside the city, separate low-cost dormitories have been built for workers employed in battery manufacturing, mainly for migrant workers from third countries.

In sum: solving housing for employees remains an acute issue, dependent on both public policies and financialisation, but also employers.

Environmental issues, initiatives

The development of greenhouse gas emissions in Hungary shows a consistent decline across most economic sectors, including manufacturing. Until 2022, manufacturing was the second-largest emitter of greenhouse gases in the country, after which it became the largest. In 2023, the manufacturing sector was responsible for 11.03 million tonnes of CO_2 equivalent, accounting for 15% of the nation's GHG emissions and 22.6% of the national economy's total. In the long term, there has been a steady reduction in GHG emissions in this sector, except during the period from 2015 to 2022. However, an accelerated downward trend in emission reduction was detectable during this phase.

GHG emissions correlate with manufacturing output, and a general decrease in emissions coincided with a decline in production. Conversely, new producers such as BMW are introducing more carbon-neutral technology and incentivising suppliers to produce carbon-neutral products.

The water supply is also a critical issue in the region. Increased industry consumption creates risks. However, a pioneering practice has emerged in the form of a greywater system for industrial use, which treats municipal wastewater and supplies it to industrial parks. This has significantly reduced the consumption of freshwater.

However, an interviewee mentioned that the issue of plastic recycling and production has not yet been resolved in Hungary. While many people want to use recycled materials, these need to be imported from Italy, which is expensive.

mindent megváltoztathat" Világgazdaság online, December 29, 2025 https://www.vg.hu/vilaggazdasag-magyar-gazdasag/2025/12/papp-laszlo-debrecen-otthon-start-lakaspiac

V. Social dialogue

At the regional and sectoral levels, social dialogue is rudimentary and takes place on an ad hoc basis. Sectoral social dialogue has been in a state of permanent crisis for at least the last 15 years, with the occasional organisation of conferences by MAGE where information is shared among trade unions and employers in the automotive sector as a whole. At a regional level, the metalworkers' union has territorial/regional representatives and offices, including in the NGP region. The main general employer federations, MGYOSZ (covering larger companies) and VOSZ (covering SMEs), are also active regionally. However, there are no institutional or organisational prerequisites for regular sectoral or regional social dialogue. MGYOSZ and Vasas regional representatives cooperate on an ad hoc basis and share relevant information at public events.

There is little transparency or knowledge regarding the synchronisation of infrastructure development across the three counties and within the NGP counties. However, there is an increased need for communication and consultation at the level of the city of Debrecen and, even more so, at the levels of the three counties or the NGP region.

The main decisions affecting the region are centred on the regional capital of Debrecen; thus, the municipality is the scale at which coordinated communication occurs, especially between public authorities at the city level and larger companies, without the involvement of trade unions. The general atmosphere at communication and information forums is not entirely open, as problems and criticism are politicised, and there is a high level of sensitivity to critical remarks and demands.

The culture of social dialogue is changing in the Debrecen hub, with more actors, especially large companies with commitments and engagement towards social responsibility and sustainable development, initiated public hearings and/or organised discussion, exchanges with both public authorities, public companies in charge of infrastructure, and other stakeholders, such as civil associations. Whereas there is a requirement towards open exchange, voicing concerns and interests, according to an informant there is also a variety of communication cultures, including more rigid attitudes towards critical voices.

Social dialogue on the level of the city of Debrecen is developing on a premise of involving all actors, and affected parties. Thus public hearings moved from conflictual to more assertive communication of standpoints, relevant information sharing, listening to concerns and possible solutions, especially related to environmental and infrastructural needs and identified problems.

At the company level, trade unions are isolated and have no connections with civil organisations or the city leadership. In terms of regular exchange and established avenues of social dialogue, trade unions and worker representatives are only present at workplace level. Here, issues related to sustainable development and the green transition have not been a major topic of discussion. Nevertheless, some unions are becoming more aware of the concerns and needs of specific social groups, such as younger generations and commuters. Thus, issues such as high and unaffordable housing costs, public transport and traffic pollution due to insufficient road infrastructure or alternative means of transport are increasingly affecting younger generations. These issues tend to emerge in discussions in neighbourhood circles and activist groups beyond the workplace.

Union at the company level: One can discuss welfare-related issues, commuting and infrastructural issues.

Social dialogue has an uneven agenda-setting process, as it is dominated by large employers, city-level public authorities, and trade unions, who are not invited to participate. City-level authorities and BMW, as the lead OEM, are shaping social dialogue in a top-down fashion, also involving other actors sporadically, such as within the automotive cluster and the university. The agenda is green and innovation-driven. According to reports in the local media, BMW has expressed an interest in establishing a new industrial ecosystem driven by electric vehicles,

digitalisation and innovation. With the arrival of new suppliers, local firms are bolstering their engineering teams, initiating training programmes and establishing an innovative network linking the university, the city and industry, collaborating with eight out of the thirteen faculties at the university. BMW has created new training opportunities in electromobility, the automotive sector, artificial intelligence, and digital manufacturing. Through the creation of new laboratories and collaborative research projects, Debrecen is becoming an increasingly prominent knowledge centre in Europe. The city is open to receiving guidance and input from the university on how economic development will affect the city's structure, transport and infrastructure, and what new demands will arise in education, services and the international environment.

Other Important materials and sources

- **Integrated System for Vocational Education and Training (ISZIIR):** https://www.isziir.hu/_frontend/index.php
    - An online platform developed to support the vocational education and training responsibilities of the Hungarian Chamber of Commerce and Industry (MKIK). The system provides a registry of information generated within the chamber-operated VET system, assisting chambers and registered experts in carrying out their professional tasks.
- **Hajdú-Bihar megye 2030-ig terjedő stratégiája (Economic Development Strategy for 2030):** https://hbmo.hu/portal/wp-content/uploads/2022/07/HB_2030-strategia_EKMGFZ.pdf
    - This document outlines the strategic foundations of the North-East Hungary Economic Development Zone, established to strengthen regional economic performance and better exploit existing development potential through coordinated planning and cooperation. It is closely aligned with national sectoral strategies. The strategy is based on a comprehensive situation analysis covering the county's social, economic, environmental, and infrastructural conditions.
- **Territorial Development Programme of Jász-Nagykun-Szolnok County:** https://tfi.jnszvarmegye.hu/megyei-teruletfejlesztesi-program-2021-2027/
    - The strategic framework for regional development in the county, aligned with national legislation, EU cohesion policy, and Hungary's territorial development objectives. The document defines a long-term vision up to 2030, centred on strengthening the county's socio-economic weight, internal cohesion, and competitiveness, while ensuring environmental sustainability and social well-being.
- **Environmental Programme of Szabolcs-Szatmár-Bereg County (2023-2028):** https://szszbvmo.hu/sites/dokumentumok/36-2023._v.30._onk._hat._-_varmegye_kornyezetvedelmi_programja_2023-2028_jovahagyasa.pdf?download=1
    - This strategic document is focusing on the presentation of the a comprehensive, strategic trategic framework for the protection, preservation, and sustainable use of the natural and environmental assets of Szabolcs-Szatmár-Bereg County. Building on national and constitutional principles of environmental protection, the document seeks to assess the county's environmental conditions, identify key challenges and risks, and define a coherent long-term environmental vision. The document aims to promote environmentally responsible governance and to ensure that economic and social development within the county proceeds in harmony with the principles of sustainable development.
- **KSH - Központi Statisztikai Hivatal - Hungarian Central Statistical Office:** https://www.ksh.hu/
    - Professionally independent public administration agency responsible for the official collection, processing and publication of statistical data on Hungary´s economy, society and population and serves as a key actor in supporting evidence-based decision-making by providing reliable data and analysis on monthly as well as annual basis for different stakeholders.

- **Minutes and summaries of county council meetings:**
  https://hbmo.hu/portal/2023/01/jegyzokonyvek/
  https://jnszvarmegye.hu/kozgyules/jegyzokonyvek/
  https://www.szszbvmo.hu/hu/node/256

    - County Councils are responsible for the territorial development and planning and coordination of activities in these areas and from the decision-making perspective are relevant actors. Official documents, like territorial plans, or decisions of the county councils, published in a form of official minutes and summaries from the meetings play a relevant role in understanding the decision-making process and outcomes on a regional level.

- **National Office of Vocational Education and Training and Adult Learning (NOVETAL - NSZFH):** https://www.nive.hu/index.php

    - As a state administrative body, NSZFH is responsible for the licensing, registration, and supervision of accredited vocational training examination centres, as well as for the application of legal consequences and the operation of an expert system related to the licensing and supervision of the activities of accredited vocational training examination centres.

- **Information on supported infrastructural and other projects on municipal and regional levels** *https://www.palyazat.gov.hu/eredmenyek/tamogatott-projektek?program=Sz%C3%A9chenyi+terv+plusz*

    - Projects are financed mostly by EU funds. See especially the *TOP PLUSZ Terület- és Településfejlesztési Operatív Program Plusz* projects for all counties.

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