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Connecting the dots in the V4

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Abstract: *The current paper explores the current network infrastructure between the Visegrad Group countries, and the developments in the recent years, as well as problems and issues of connectivity. The paper analyses the corridors of the TEN-T network, including railways, roads, and other types of connectivity along the core European corridors in the V4 countries.*

Keywords: *infrastructure, Visegrad Group, V4, connectivity, TEN-T, high-speed rail, Baltic-Adriatic Corridor, Orient/East-Med Corridor, Rhine-Danube Corridor, rail freight corridors.*

Infrastructure is key to a region's competitiveness. It's no surprise that the level of infrastructure network is usually one of the major parameters of the various international country development rankings, such as the Global Competitiveness Index (GCI), created by the World Economic Forum. Unfortunately, the north-south connectivity of the Visegrad countries still cannot match Western Europe even despite the developments in the last decades. The completion of the core corridors of the European Union's TEN-T network or the construction of high-speed rail network between Budapest and Warsaw – both planned by 2030 – will help the V4 connectivity, but still, lots have to be done for the region in order to increase the connections between the Visegrad partners and improve the overall competitiveness and attraction of the region.

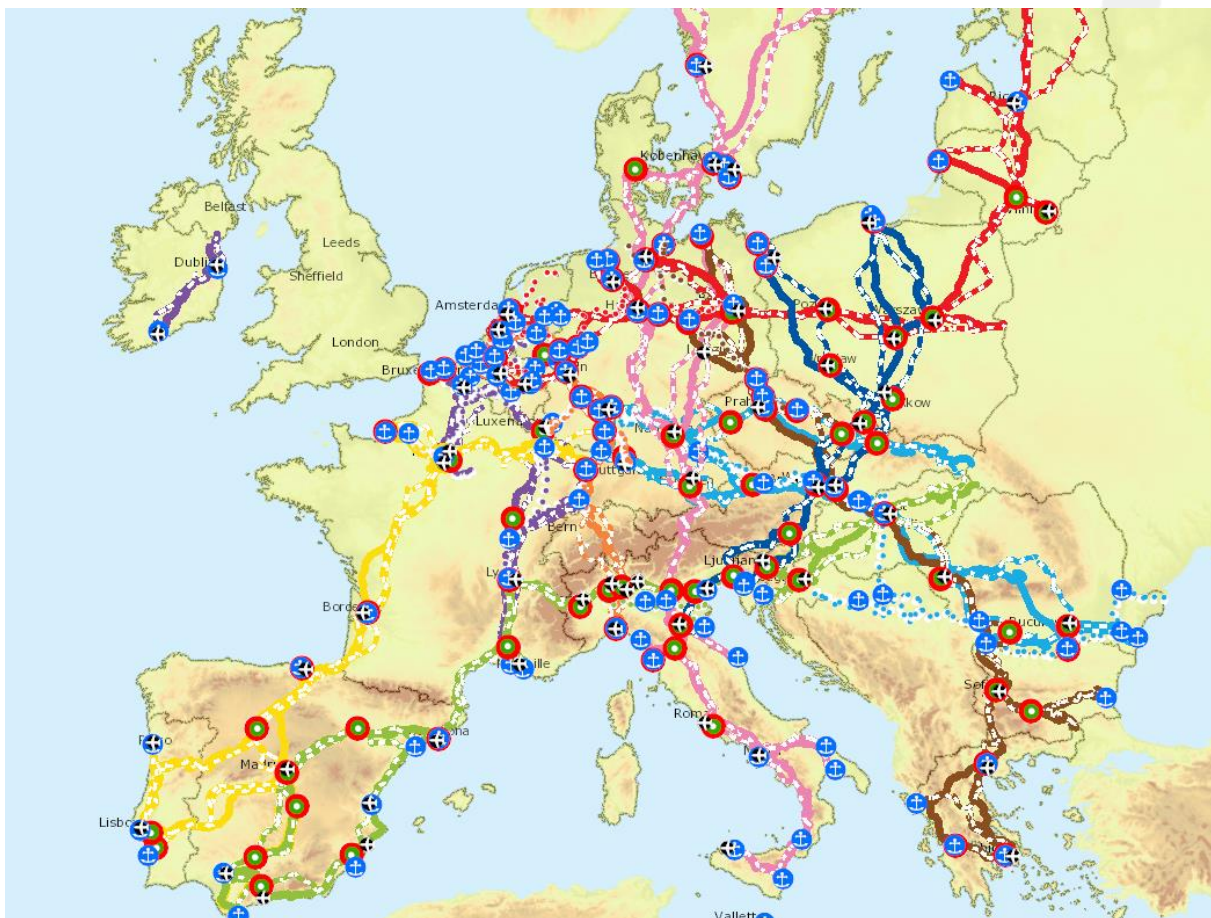
TEN-T

The infrastructure of the Visegrad Group countries is connected into the system of the European Union, the so called **Trans-European Transport Network (TEN-T)**. Initially the idea of the creation of a pan-European network was formulated in the 1992 Treaty

of Maastricht¹, while the TEN-T guidelines were initially adopted on 23 July 1996 with Decision No. 1692/96/EC² of the European Parliament. From 2001 inland ports, seaports and intermodal terminals were also included in the network.

The TEN-T policy addresses the implementation and development of a Europe-wide network of railway lines, roads, inland waterways, maritime shipping routes, ports, airports and railroad terminals. According to the guidelines, “the ultimate objective is to close gaps, remove bottlenecks and technical barriers, as well as to strengthen social, economic and territorial cohesion in the EU.”³

The current TEN-T policy is based on Regulation (EU) No 1315/2013⁴. In 2013 nine core infrastructure network corridors were established across the European Union (and even beyond), with 26 billion EUR allocated financing for the development of the network between 2014 and 2020⁵. The financing is available through the Connecting Europe Facility (CEF).



1. graph. The nine core corridors of the TEN-T network.⁶

TEN-T core in reality is an obligation for all the EU member states – according to the 1315/2013 regulation, **the core network has to be completed by the end of 2030.**

The nine TEN-T corridors are:

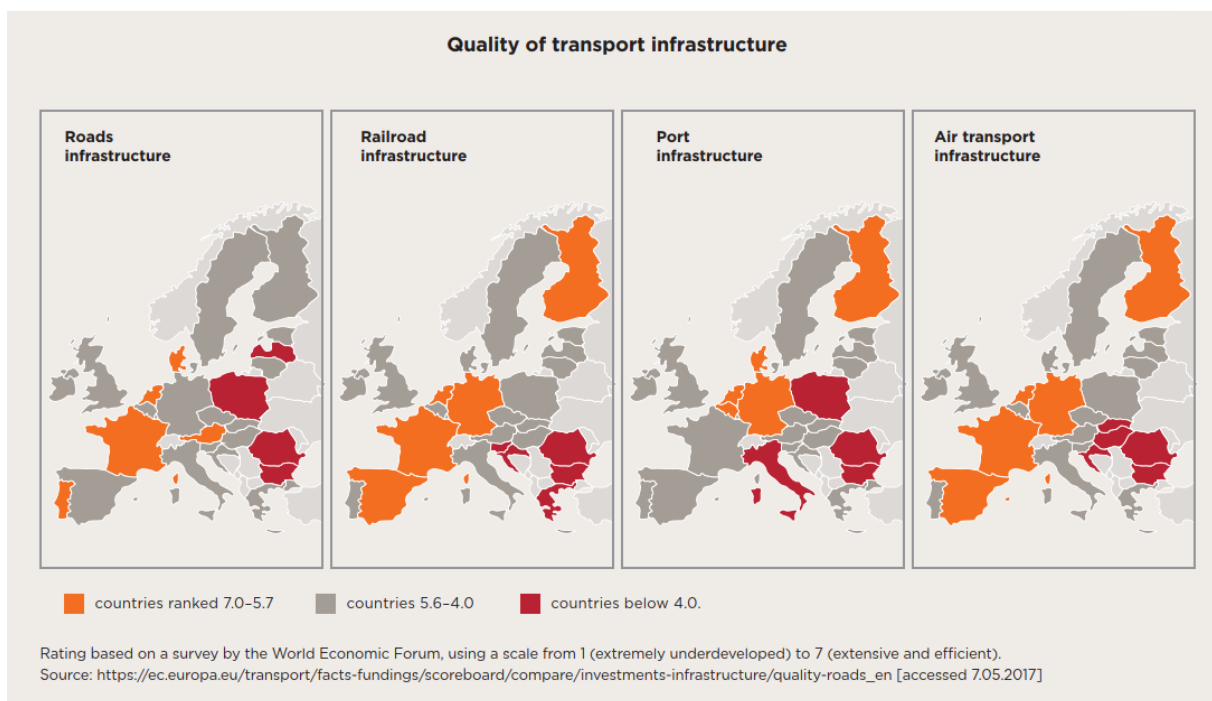
- 1. Baltic-Adriatic Corridor** – connects north of the EU with south, starting near the Baltic Sea from Poland, Czech Republic, Slovakia, Austria, and Slovenia to Italy.
- 2. North Sea-Baltic Corridor** – connects the east part of the EU from Estonia, Latvia, Lithuania, Poland, Germany, Netherlands to Belgium.
- 3. Mediterranean Corridor** – west-east corridor, which connects Hungary, Slovenia, Croatia, Italy, south of France and Spain.
- 4. Orient/East-Med Corridor** – connects EU north with the south-eastern regions (from Germany, Czech Republic, Slovakia, Hungary, Romania, Bulgaria, and Greece).
- 5. Scandinavian-Mediterranean Corridor** – connects north of EU from the border of Russia with south (Finland and Sweden through Denmark, Germany, Austria, and Italy).
- 6. Rhine-Alpine Corridor** – connects Netherlands with Italy through Belgium, Germany and Switzerland.
- 7. Atlantic Corridor** – Western-European connection going through Germany, France, Spain, and Portugal.
- 8. North Sea-Mediterranean Corridor** – connects the island part of the EU and the interland from Ireland, Great Britain (not EU any more), under the Channel through France, Belgium and Netherlands.
- 9. Rhine-Danube Corridor** – west-east corridor, which connects Germany, Czech Republic, Slovakia, Austria, Hungary, Romania, and Bulgaria.

The goal of the TEN-T is to increase connectivity among the member states, close the gaps and to reinforce transport operations for business and passengers. The core network has to be completed by the end of 2030, followed by the comprehensive

network to be completed by 2050. The process of revising TEN-T regulation has been already initiated and will be completed by 2023⁷, ten years after the initial 1315/2013 regulations.

Infrastructure in the V4

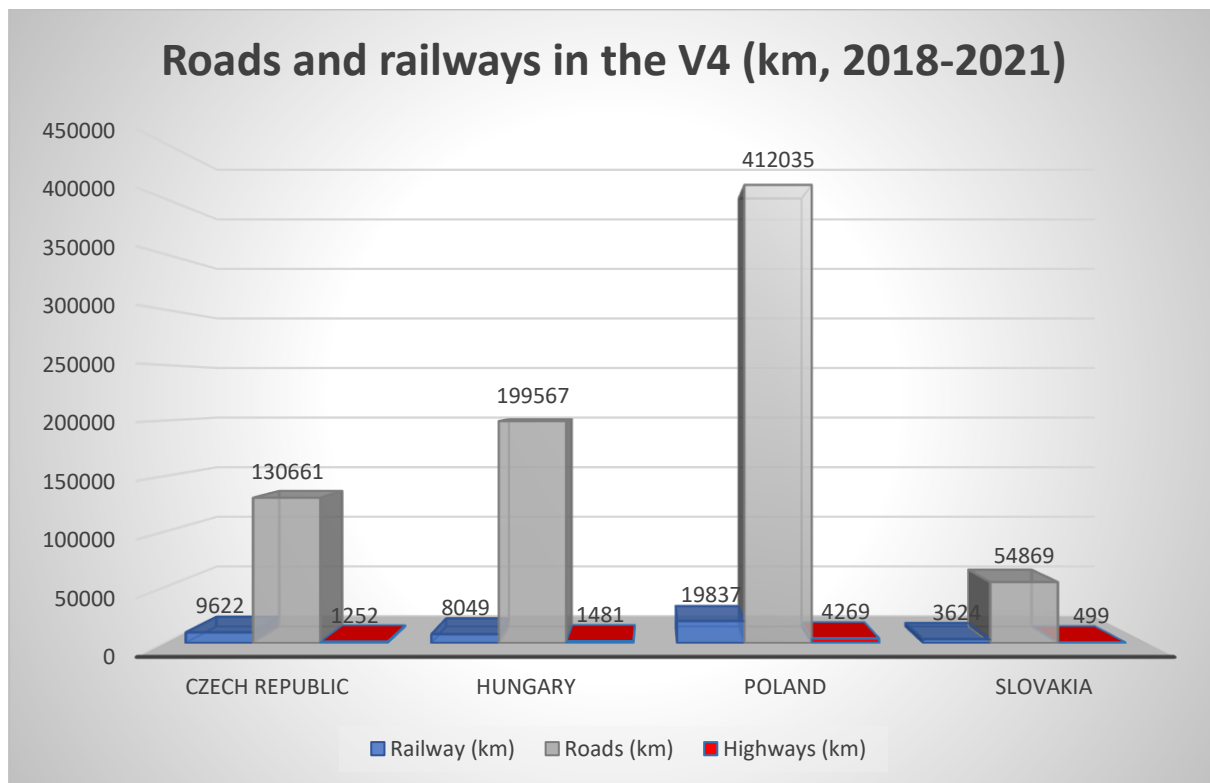
In the last decades lots of developments were made in the infrastructure of the Visegrad countries: in Central and Eastern Europe 5600 kms of motorways were built and 210 billion EUR were spent on infrastructure projects just in the last 20 years.⁸ In Hungary between 1995-2013 the total length of the available motorway increased by 427%, in Poland the increase was 502% in the same period.⁹ However, if we compare the region to the western part of Europe, Central Europe is still far behind.



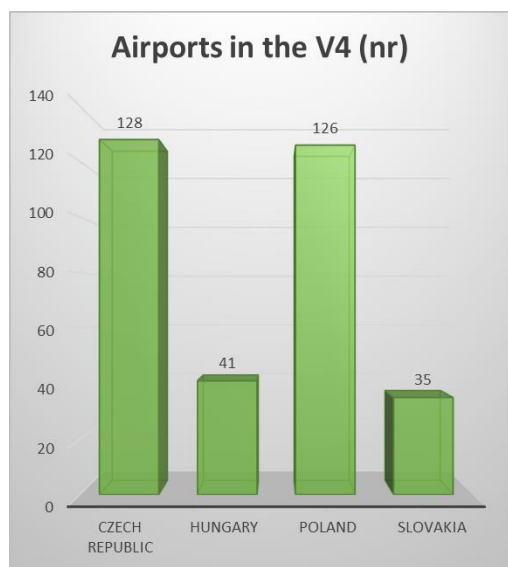
2. graph. Quality of transport infrastructure based on the World Economic Forum's Global Competitiveness Index. Source: PwC.¹⁰

The TENT-T offers a good opportunity and funding for the countries of the region to improve their infrastructure, however, the direct north-south connection of the V4 countries is not sufficient under the current plans. This is also the main idea of the Three Seas Initiative launched in 2015 spanning from the Baltic sea to the Adriatic and Black sea. It was initiated by Poland, but the initiative is also strongly supported by the United States. In the US policy papers regarding the importance of the Three

Seas Initiative, the region is often described as “set of islands” because of the lack of proper north-south infrastructure, especially compared to Western Europe.¹¹ Crucial part of the projects announced under the initiative involve either infrastructure developments, or energy projects.

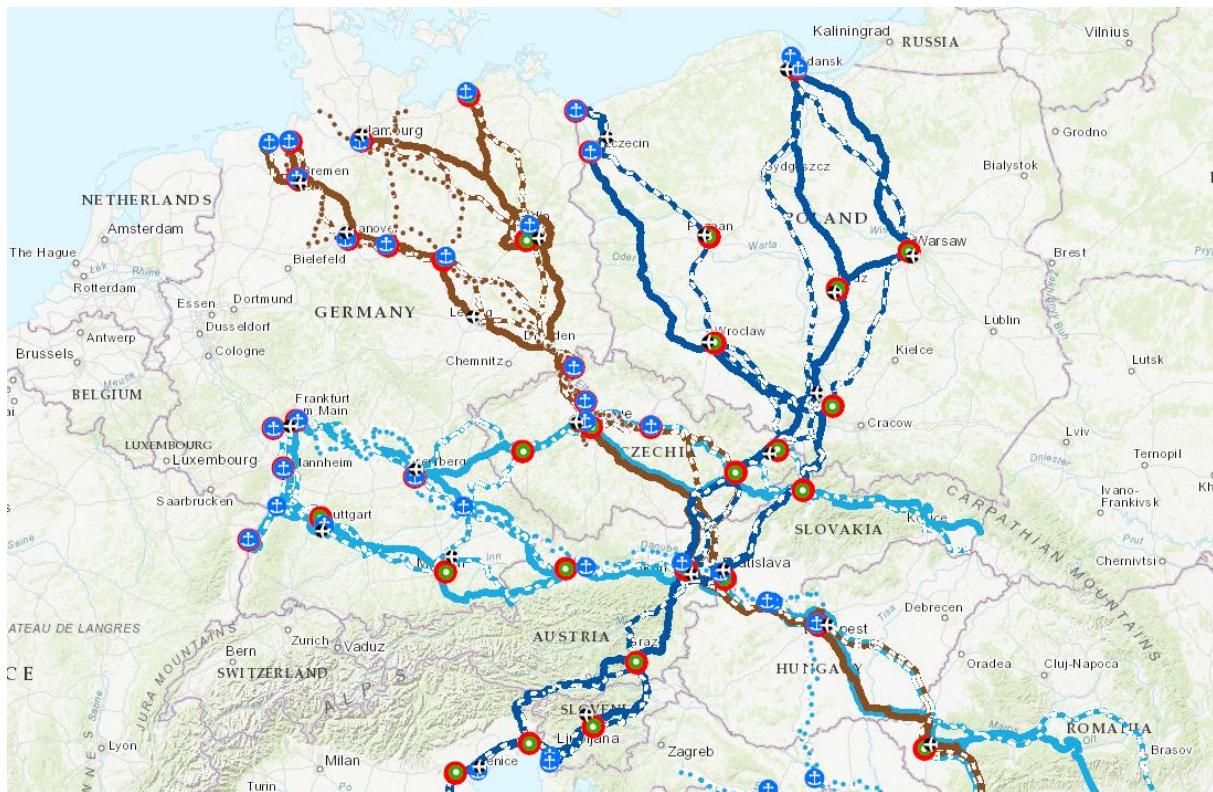


3. graph. Roads and railways in the V4.¹²



4. and 5. graph. Airports in the V4.¹³

Out of the nine core corridors five touch at least one of the Visegrad countries, however, there are only three, which connect at least two of the V4 states. In terms of V4 connectivity the most developed corridor is the Baltic-Adriatic corridor, with at least 26 bottlenecks (ports, airports, railroad terminals)¹⁴, 19 out of which are in Poland. It is followed by the Orient/East-Med corridor (20 bottlenecks)¹⁵, and Rhine-Danube corridor (16).¹⁶

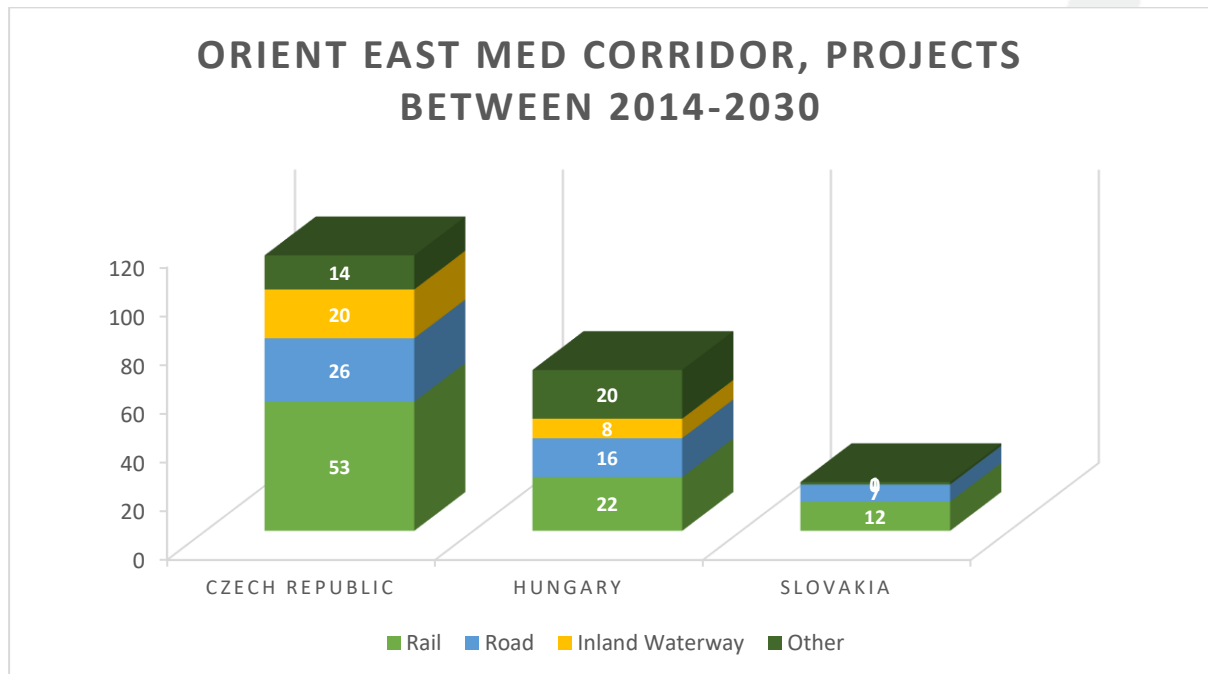


6. graph. Baltic-Adriatic corridor (dark blue), Orient/East-Med corridor (brown) and Rhine-Danube corridor (light blue).¹⁷

None of the core TENT-T corridors involve all of the four Visegrad Group countries. The Baltic-Adriatic corridor involves the Czech Republic, Poland and Slovakia; the Orient/East-Med corridor involves the Czech Republic, Slovakia and Hungary; while the Rhine-Danube corridor reaches the Czech Republic, Slovakia and Hungary. The Czech Republic and Slovakia are involved in all of the three corridors between the Visegrad Group countries. Poland is involved in the North Sea – Baltic corridor, which spans across the Northern part of Europe, west-east direction; while Hungary is also involved in the Mediterranean corridor, spanning across the southern part of Europe, west-east direction.

There were 177 projects completed between 2014-2019 under the **Baltic-Adriatic corridor** with a total budget of 13,6 billion EUR.¹⁸ On the territory of the V4 countries the projects included rail cross-border sections between Poland, Slovakia and the Czech Republic; the modernization of the railway in the Czech Republic, Poland and Slovakia; new railway lines in Poland and ERTMS deployment projects^a in the Czech Republic, Poland and Slovakia.¹⁹ Since 2014 overall 663 projects were identified with a total estimated 85.3 billion EUR in costs. There are 486 ongoing or planned projects to be completed by 2030.²⁰

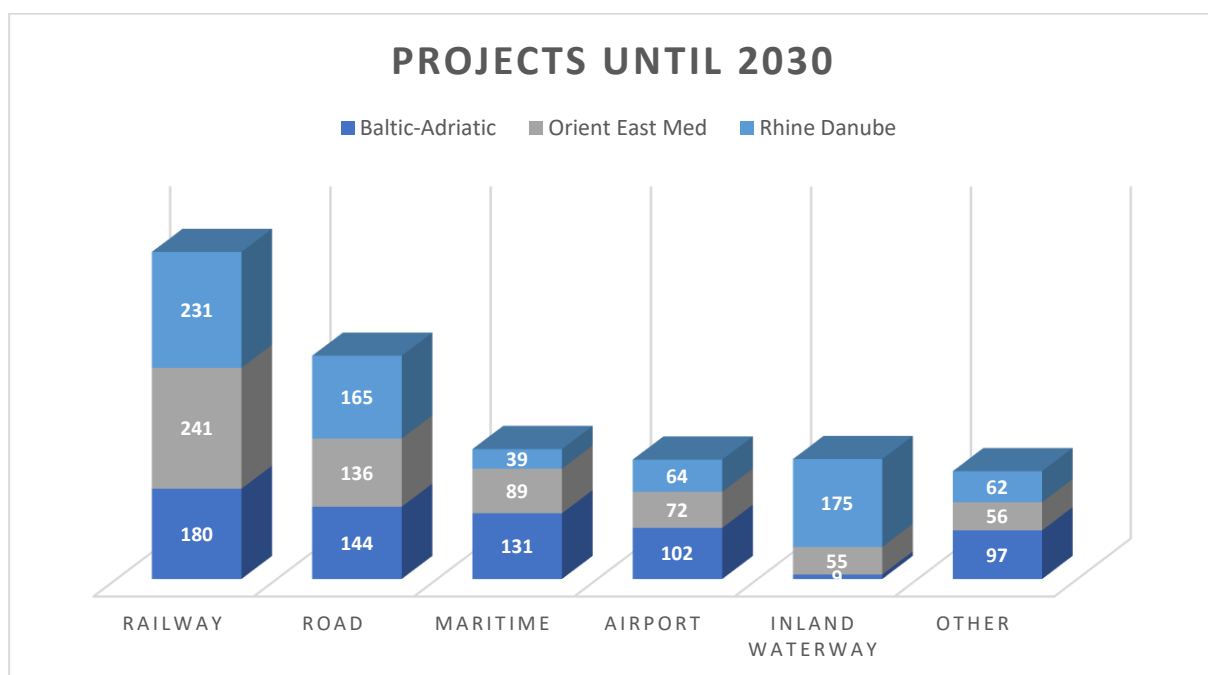
Under the **Orient/East Med corridor** 128 projects were completed between 2014-2019 with a total cost of 17.9 billion EUR.²¹ On the territory of the V4 countries the projects include new railroad terminal at Csepel, Hungary; motorway projects in Hungary and Břeclav-Brno rail ERTMS deployment in Czech Republic.²² Since 2014, 649 projects were identified with a total estimated 52.2 billion EUR in costs. 521 projects are ongoing or planned to be completed by 2030.²³ Among the V4 members Czech Republic is getting the most projects along the corridor, followed by Hungary and Slovakia.



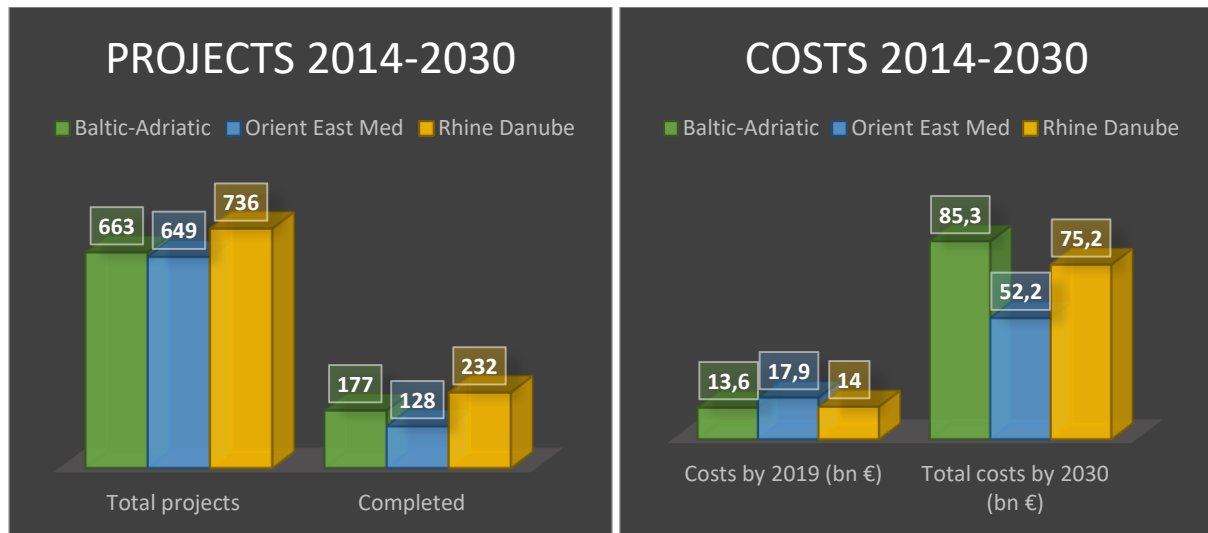
^a ERTMS stands for „European Rail Traffic Management System” – a system of standards for management and interoperation of signalling for railways by the European Union.

7. graph. Total number of projects 2014-2030 under the Orient/East Med corridor by country.²⁴

Between 2014-2019, 232 projects were completed along the **Rhine-Danube corridor**, with overall costs of 14 billion EUR.²⁵ In the V4 countries the projects involved Wien-Bratislava railway upgrade; Hungarian railway lines rehabilitation; optimization of the Czech railway lines and the construction of sections of motorways in Slovakia.²⁶ In total there are 736 projects with 75,2 billion EUR estimated costs under the Rhine-Danube corridor and 504 projects left to be completed by 2030.²⁷



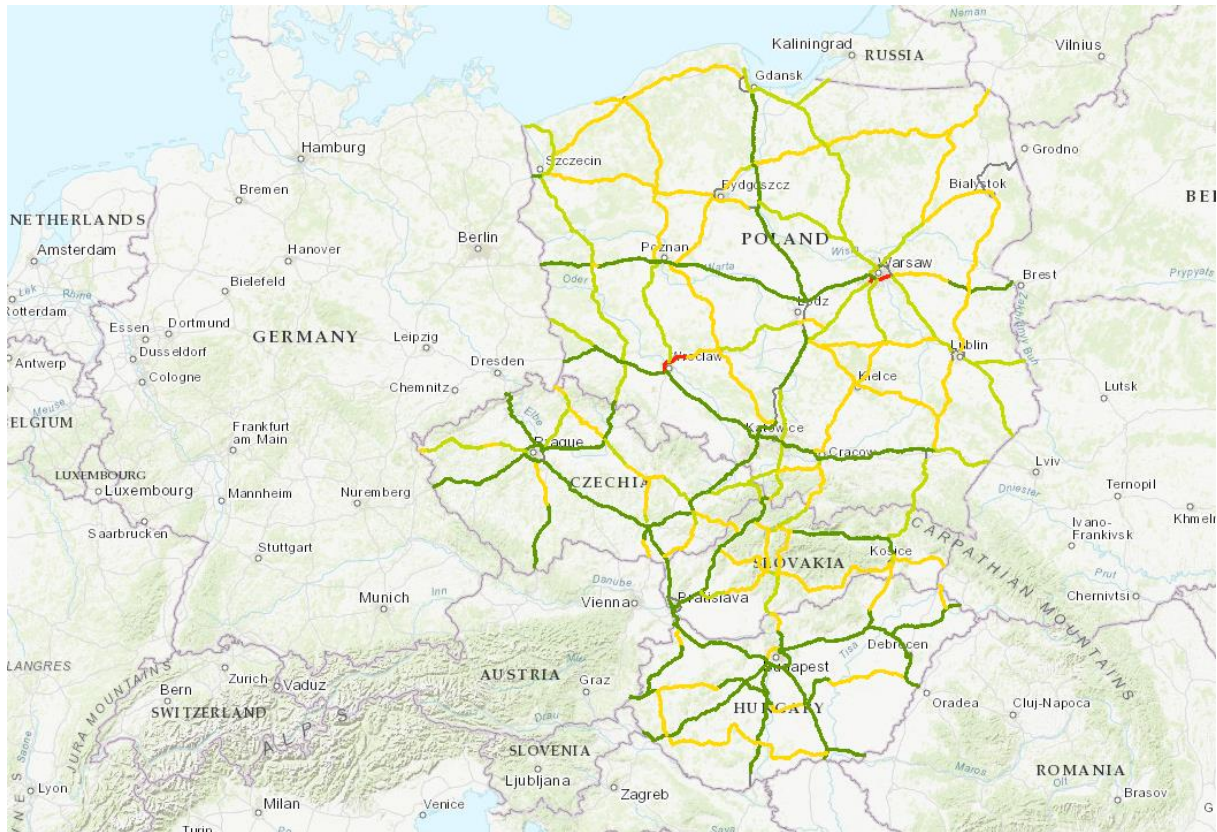
8. graph. Projects on Baltic-Adriatic, Orient/East and Rhine-Danube corridors between 2014-2030, by type.²⁸



9. and 10. graph. Number of projects on Baltic-Adriatic, Orient/East and Rhine-Danube corridors and the costs (so far and planned), between 2014-2030.²⁹

Roads

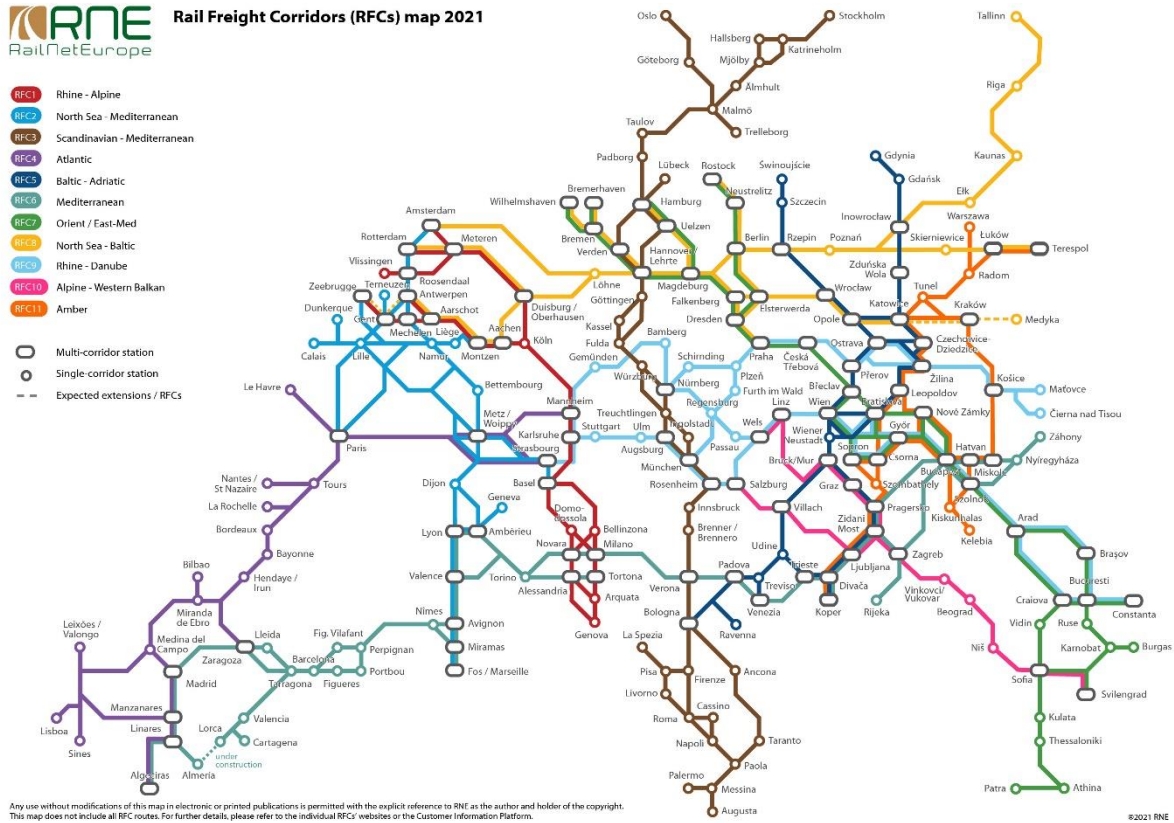
Lots of developments were made in the road network in Central Europe, but important issues remain: there is still no proper highway connection between Budapest and Warsaw, and thus a direct north-south axis is lacking. The region of Vienna, Bratislava, Szombathely and Brno is well-developed, and the main transit connection of the V4 is finished through this part. In Slovakia the express road connection between Zvolen and the Hungarian border was completed in 2020, but proper connections are still lacking in the north of Slovakia, between Slovakia and Poland.



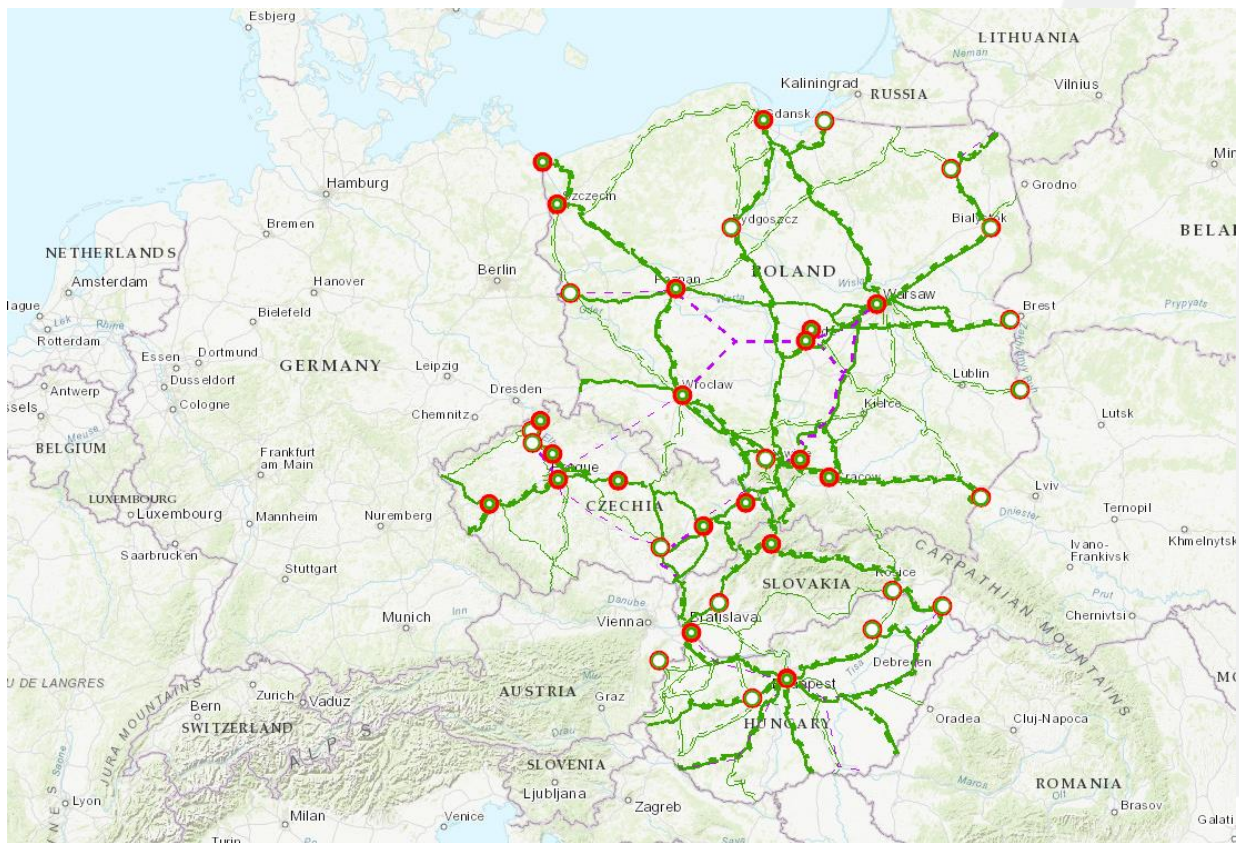
11. graph. Express roads and highways of the V4.³⁰

Railroads

There are nine rail freight corridors according to the TEN-T regulation, and two more, which joined the network, making 11 rail freight corridors in total. Out of 11, four corridors enter the territory of the Visegrad group: RFC5 (Baltic-Adriatic – Poland, Czech Republic, Slovakia); RFC7 (Orient/East Med – Czech Republic, Slovakia, Hungary); RFC9 (Rhine-Danube – Czech Republic, Slovakia, Hungary); and RFC11 (Amber – Poland, Slovakia, Hungary). The concept of rail freight corridors has been created by a European legislative act, Regulation (EU) 913/2010.³¹



12. graph. Rail Freight corridors map.³²



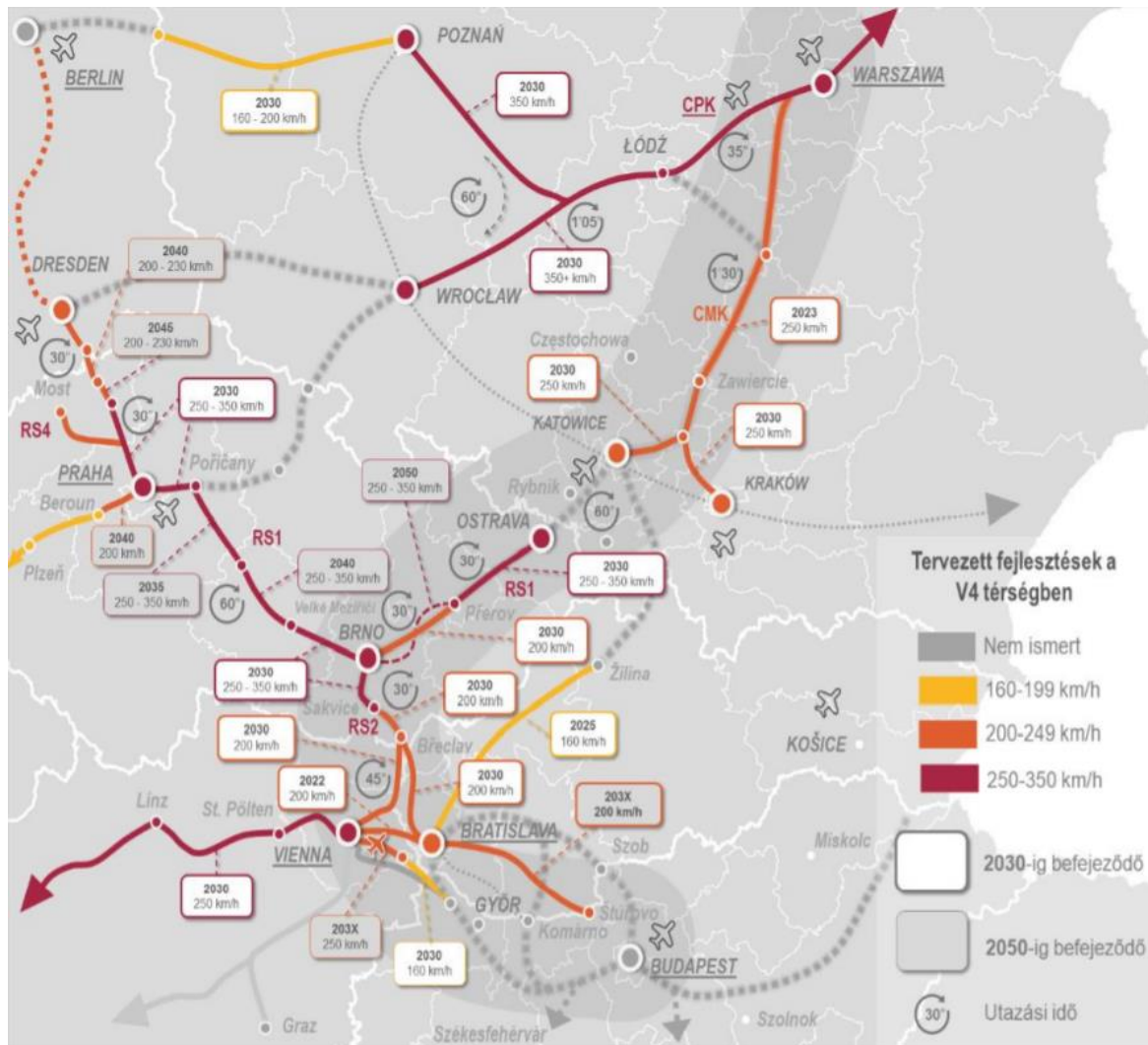
13. graph. Railway network of the V4 countries.³³

High speed rail

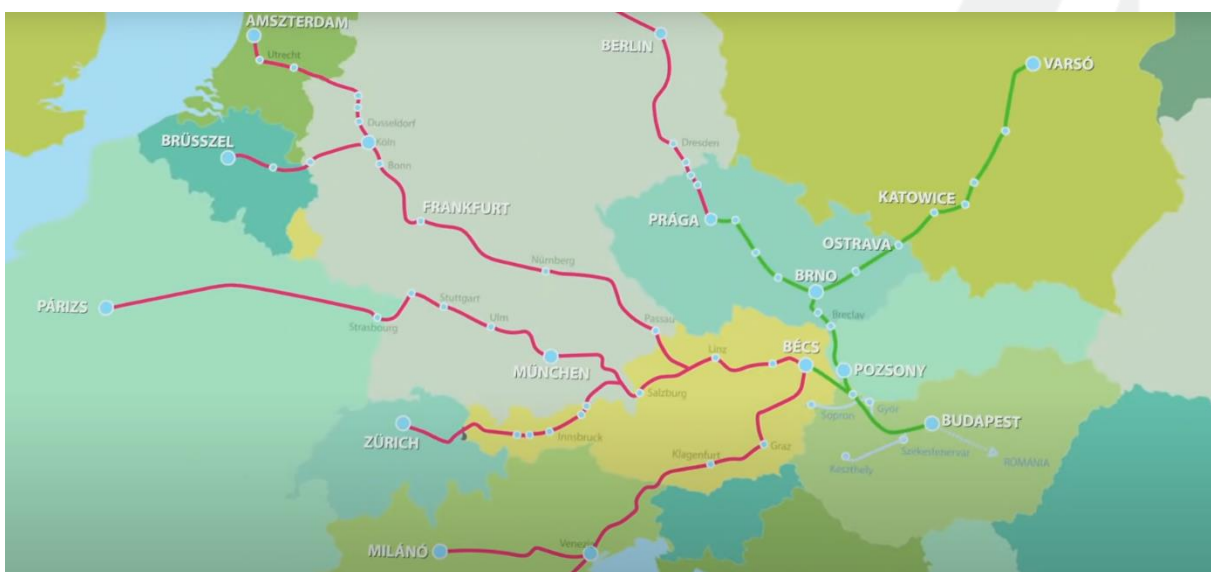
There is also a planned high-speed rail connection between the four Visegrad group members: when constructed, a 700-900 km long railway would connect Budapest, Bratislava, Brno and Warsaw by a new, two-track trail with a maximum possible speed of 250-320 kilometres.³⁴ The project was accepted by the V4 leaders in October 2018, and the Hungarian feasibility study was completed in April 2021.

The high-speed rail project will connect Hungary to the European high-speed network, through an Austrian branching, significantly increasing the passenger traffic between the V4 countries improving tourism and people to people relations. It will also take off the load from the local railway routes.

According to the Hungarian feasibility study, the passenger traffic on the route could reach twenty million people annually. The railway will reduce the traveling time from Budapest to Warsaw to only 5.5 hours, while Prague could be reached in 3.5 hours from the Hungarian capital. The project is planned to be completed by the beginning of 2030 with estimated costs of around 3 billion EUR.³⁵



14. graph. Planned railway developments in the V4 region.³⁶



15. graph. Concept map of the V4 high-speed railway.³⁷

Conclusion

The Central European region went through big transformations in terms of infrastructure in the last two decades. The length of highways increased by over 400-500% in Poland and Hungary during this period. In 1996 the European infrastructure network was launched which identified nine core corridors in 2013, which play a crucial role in increasing the connectivity among the member states. The core network has to be completed by the end of 2030 followed by the comprehensive network to be constructed by 2050 – this is an obligation for all of the EU member states.

Among the nine TEN-T core corridors there are three, which connect together at least two of the Visegrad Group countries and there are none, which would connect all four of them into one network. Under these three corridors - Baltic-Adriatic, Orient/East-Med and Rhine-Danube Corridors there are over 2000 completed or ongoing projects, with more than 212 billion EUR estimated total costs. This offers a good opportunity for Central Europe to catch up with the much more developed infrastructure network of Western Europe.

The biggest issue currently is the lack of direct north-south connection between Budapest and Warsaw and the lack of high-speed rail network in the region. While the first issue is planned to be addressed only partly in the next decade, the construction of a 250-320 km/h high-speed rail might be completed by 2030 connecting Budapest, Bratislava, Brno and Warsaw. It might have an enormous effect on the connectivity of the region boosting economic relations, tourism and people to people relations.

Bibliography

- “Bécs és Székesfehérvár felé is leágazhat majd a Budapest-Varsó gyorsvasút” (The Budapest-Warsaw high-speed railway will also branch towards Vienna and Székesfehérvár). In: Nemzeti Infrastruktúra Fejlesztő Zrt., 2021.04.28., <https://nif.hu/2021/04/becs-es-szekesfehervar-fele-is-leagazhat-majd-a-budapest-varso-gyorsvasut/> (2021.05.18.)
- “Budapest-Varsó gyorsvasút: megvan, kik készíthetik a megvalósíthatósági tanulmányt” (Budapest-Warsaw high-speed train: these are the companies, who will do the feasibility study). In: Napi.hu, 4th May 2019. <https://www.napi.hu/magyar-vallalatok/gyorsvasut-megvalosithatosagi-tanulmany-budapest-varso-tender.683497.html> (2021.05.18.)
- CARAFANO, James Jay: “America Can Unleash Central Europe’s True Potential”. In: The Heritage Foundation, 7th January 2020. <https://www.heritage.org/europe/commentary/america-can-unleash-central-europes-true-potential> (2021.05.18.)
- Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996D1692:EN:HTML> (2021.05.18.)
- GROSCHE, Mathieu: Orient East Med. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. May 2020. https://ec.europa.eu/transport/sites/transport/files/oem_wp_iv.pdf (2021.05.18.)
- JENSEN, Anne Elisabet: Baltic Adriatic. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. June 2020. https://ec.europa.eu/transport/sites/transport/files/4th_bac_workplan.pdf (2021.05.18.)
- KHÚLOVÁ, Lucia; ŠPROCHOVÁ, Lenka: „Importance of TEN-T Corridors in the Development of Infrastructure Example of Visegrad Group Countries”. In: Studia commercialia Bratislavensia, Volume 9; Number 33 (1/2016); pp. 49-57.
- “Magyar cégek tervezik a nagy sebességű Budapest-Varsó vasútvonalat” (The high-speed Budapest-Warsaw railway line is planned by the Hungarian companies). In: Portfolio, 7th May 2019, <https://www.portfolio.hu/unios-forrasok/20190507/magyar-cegek-tervezik-a-nagy-sebessegu-budapest-varso-vasutvonalat-323295> (2021.05.18.)

- NSV Conference, presentation of Tamás Perjés (Trenecon). 8th September 2020, https://nsvkonferencia.hu/dwl/8_Perjes_Tamas.pdf (2021.05.18.)
- PEIJS, Karla: Rhine Danube. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. May 2020. https://ec.europa.eu/transport/sites/transport/files/4th_workplan_rhd.pdf (2021.05.18.)
- Poland Road Agency - <https://www.gddkia.gov.pl/pl/> (2021.05.12.)
- RailNetEurope (RNE), <https://rne.eu/> (2021.05.12.)
- Regulation (EU) 913/2010, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R0913> (2021.05.18.)
- Regulation (EU) No 1315/2013, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R1315> (2021.05.12.)
- RFC Amber Rail Freight Corridor, <https://rfc-amber.eu/> (2021.05.18.)
- RFC 5, Baltic-Adriatic Corridor, <https://www.rfc5.it/> (2021.05.18.)
- RFC 7, Orient / East-Med Corridor, <https://www.rfc7.eu/> (2021.05.18.)
- RFC 9, Rhine-Danube Freight Corridor, <http://rfc-rhine-danube.eu/> (2021.05.18.)
- TEN-T Interactive Map Viewer, <https://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/map/maps.html> (2021.05.17.)
- Trans-European Transport Network (TEN-T), European Commission, Mobility and Transport. https://ec.europa.eu/transport/themes/infrastructure/ten-t_en (2021.05.18.)
- “The Road Ahead. CEE Transport Infrastructure Dynamics”. Joint Atlantic Council – PwC Report, 2017. <https://www.pwc.com/gx/en/industries/assets/the-road-ahead.pdf> (2021.05.17.)

Endnotes

¹ KHÚLOVÁ, Lucia; ŠPROCHOVÁ, Lenka: „Importance of TEN-T Corridors in the Development of Infrastructure Example of Visegrad Group Countries”. In: Studia commercialia Bratislavensia, Volume 9; Number 33 (1/2016); pp. 49-57.

² Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996D1692:EN:HTML> (2021.05.18.)

³ Trans-European Transport Network (TEN-T), European Commission, Mobility and Transport. https://ec.europa.eu/transport/themes/infrastructure/ten-t_en (2021.05.18.)

⁴ Regulation (EU) No 1315/2013, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R1315> (2021.05.12.)

⁵ KHÚLOVÁ, Lucia; ŠPROCHOVÁ, Lenka: „Importance of TEN-T Corridors in the Development of Infrastructure Example of Visegrad Group Countries”. In: *Studia commercialia Bratislavensia*, Volume 9; Number 33 (1/2016); pp. 49-57.

⁶ TEN-T Interactive Map Viewer, <https://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/map/maps.html> (2021.05.17.)

⁷ JENSEN, Anne Elisabet: Baltic Adriatic. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. June 2020.

https://ec.europa.eu/transport/sites/transport/files/4th_bac_workplan.pdf (2021.05.18.)

⁸ “The Road Ahead. CEE Transport Infrastructure Dynamics”. Joint Atlantic Council – PwC Report, 2017. <https://www.pwc.com/gx/en/industries/assets/the-road-ahead.pdf> (2021.05.17.)

⁹ Ibid.

¹⁰ “The Road Ahead. CEE Transport Infrastructure Dynamics”. Joint Atlantic Council – PwC Report, 2017. <https://www.pwc.com/gx/en/industries/assets/the-road-ahead.pdf> (2021.05.17.)

¹¹ CARAFANO, James Jay: “America Can Unleash Central Europe’s True Potential”. In: The Heritage Foundation, 7th January 2020. <https://www.heritage.org/europe/commentary/america-can-unleash-central-europes-true-potential> (2021.05.18.)

¹² Source of the data regarding roads and railways is based on KHÚLOVÁ, Lucia; ŠPROCHOVÁ, Lenka: „Importance of TEN-T Corridors in the Development of Infrastructure Example of Visegrad Group Countries”. In: *Studia commercialia Bratislavensia*, Volume 9; Number 33 (1/2016); pp. 49-57.; while the data regarding highways is collected from the respective countries’ national road agencies.

¹³ Source: data is based on KHÚLOVÁ, Lucia; ŠPROCHOVÁ, Lenka: „Importance of TEN-T Corridors in the Development of Infrastructure Example of Visegrad Group Countries”. In: *Studia commercialia Bratislavensia*, Volume 9; Number 33 (1/2016); pp. 49-57., while the map’s source is TEN-T Interactive Map Viewer, <https://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/map/maps.html> (2021.05.17.)

¹⁴ KHÚLOVÁ, Lucia; ŠPROCHOVÁ, Lenka: „Importance of TEN-T Corridors in the Development of Infrastructure Example of Visegrad Group Countries”. In: *Studia commercialia Bratislavensia*, Volume 9; Number 33 (1/2016); pp. 49-57.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ TEN-T Interactive Map Viewer, <https://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/map/maps.html> (2021.05.17.)

¹⁸ JENSEN, Anne Elisabet: Baltic Adriatic. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. June 2020.

https://ec.europa.eu/transport/sites/transport/files/4th_bac_workplan.pdf (2021.05.18.)

¹⁹ Ibid.

²⁰ Ibid.

²¹ GROSCHE, Mathieu: Orient East Med. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. May 2020.

https://ec.europa.eu/transport/sites/transport/files/oem_wp_iv.pdf (2021.05.18.)

²² Ibid.

²³ Ibid.

²⁴ Data source: GROSCHE, Mathieu: Orient East Med. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. May 2020.

https://ec.europa.eu/transport/sites/transport/files/oem_wp_iv.pdf (2021.05.18.)

²⁵ PEIJS, Karla: Rhine Danube. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. May 2020.

https://ec.europa.eu/transport/sites/transport/files/4th_workplan_rhd.pdf (2021.05.18.)

²⁶ Ibid.

²⁷ Ibid.

²⁸ Based on the data from JENSEN, Anne Elisabet: Baltic Adriatic. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. June 2020.
https://ec.europa.eu/transport/sites/transport/files/4th_bac_workplan.pdf (2021.05.18.); GROSCH, Mathieu: Orient East Med. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. May 2020.

https://ec.europa.eu/transport/sites/transport/files/oem_wp_iv.pdf (2021.05.18.) and PEIJS, Karla: Rhine Danube. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. May 2020.

https://ec.europa.eu/transport/sites/transport/files/4th_workplan_rhd.pdf (2021.05.18.).

²⁹ Based on the data from JENSEN, Anne Elisabet: Baltic Adriatic. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. June 2020.
https://ec.europa.eu/transport/sites/transport/files/4th_bac_workplan.pdf (2021.05.18.); GROSCH, Mathieu: Orient East Med. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. May 2020.

https://ec.europa.eu/transport/sites/transport/files/oem_wp_iv.pdf (2021.05.18.) and PEIJS, Karla: Rhine Danube. Fourth Work Plan of the European Coordinator. In: European Commission, Mobility and Transport. May 2020.

https://ec.europa.eu/transport/sites/transport/files/4th_workplan_rhd.pdf (2021.05.18.).

³⁰ TEN-T Interactive Map Viewer, <https://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/map/maps.html> (2021.05.17.)

³¹ Regulation (EU) 913/2010, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R0913> (2021.05.18.)

³² RailNetEurope (RNE), <https://rne.eu/> (2021.05.12.)

³³ TEN-T Interactive Map Viewer, <https://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/map/maps.html> (2021.05.17.)

³⁴ “Bécs és Székesfehérvár felé is leágazhat majd a Budapest-Varsó gyorsvasút” (The Budapest-Warsaw high-speed railway will also branch towards Vienna and Székesfehérvár). In: Nemzeti Infrastruktúra Fejlesztő Zrt., 2021.04.28., <https://nif.hu/2021/04/becs-es-szekesfehervar-fele-is-leagazhat-majd-a-budapest-varso-gyorsvasut/> (2021.05.18.)

³⁵ “Bécs és Székesfehérvár felé is leágazhat majd a Budapest-Varsó gyorsvasút” (The Budapest-Warsaw high-speed railway will also branch towards Vienna and Székesfehérvár). In: Nemzeti Infrastruktúra Fejlesztő Zrt., 2021.04.28., <https://nif.hu/2021/04/becs-es-szekesfehervar-fele-is-leagazhat-majd-a-budapest-varso-gyorsvasut/> (2021.05.18.)

³⁶ NSV Conference, presentation of Tamás Perjés (Trenecon). 8th September 2020, https://nsvkonferencia.hu/dwl/8_Perjes_Tamas.pdf (2021.05.18.)

³⁷ “Bécs és Székesfehérvár felé is leágazhat majd a Budapest-Varsó gyorsvasút” (The Budapest-Warsaw high-speed railway will also branch towards Vienna and Székesfehérvár). In: Nemzeti Infrastruktúra Fejlesztő Zrt., 2021.04.28., <https://nif.hu/2021/04/becs-es-szekesfehervar-fele-is-leagazhat-majd-a-budapest-varso-gyorsvasut/> (2021.05.18.)