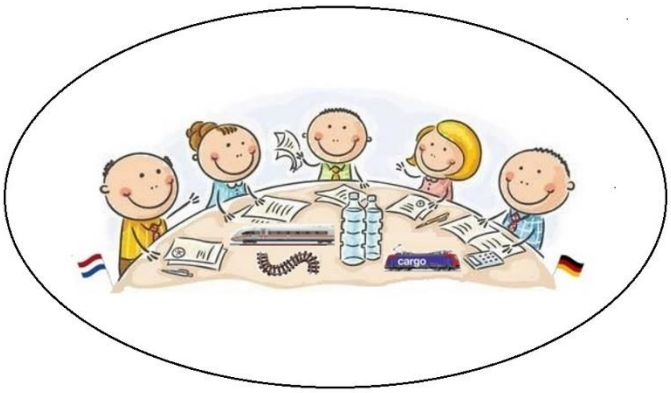
Towards an optimal (passenger + freight) train connection with Germany
Ir. J. de Goeijen Date:2023-Marc Version 1.0



Chapter 1 Passenger + freight train connection from Netherlands to Germany

1.1 Background

In report (1/3) a choice was made for the optimal fast train connections for passenger transport to Germany.

In report (2/3) a choice was made for an optimal train connections for freight transport to Germany.

In this report, both choices will be merged into one solution. A solution that will be realistic so that it can be implemented.

Parts to be discussed:

- There must be **one total plan** for fast passenger transport to Germany. Choices influence each other, are dependent on each other. A choice to run the fast Berlin train to Germany via Hengelo almost automatically means that a direct fast train Amsterdam-Hamburg-Copenhagen will also run via Hengelo.
- On the 3 routes towards Germany (Hengelo/Arnhem/Venlo), **the passenger and freight trains compete** with each other on the limited capacity. More passenger trains on the Zevenaar-Oberhausen route means a drastic reduction in the number of freight trains that can run on this route.
- The plans made by **the Netherlands and Germany must be in line with each other** . It seems that so far everyone is busy for themselves. Germany wants to run the fast Berlin train via Hengelo, while the Netherlands has still not made a choice.
- There must be a **vision of the future** where we want to go. The EU green deal gives us a clear direction of the ambitions for 2050. New rail corridors must be developed for the corridors from the Netherlands to North/East Germany and from the Netherlands to West/South Germany.

Reports:
“Towards an optimal (passenger) train connection with Germany” (1/3)
"Towards an optimal (freight) train connection with Germany" (2/3)
“Combined passenger + freight train connection with Germany” (3/3)

1.2 Problem definition

By 2030:

- The objective: in 2030 high-speed traffic should double.

By 2050:

- freight transport by rail doubles . A fully operational, multimodal trans-European transport network (TEN-T) for sustainable and smart transport with high-speed connectivity. High-speed traffic will triple by 2050.

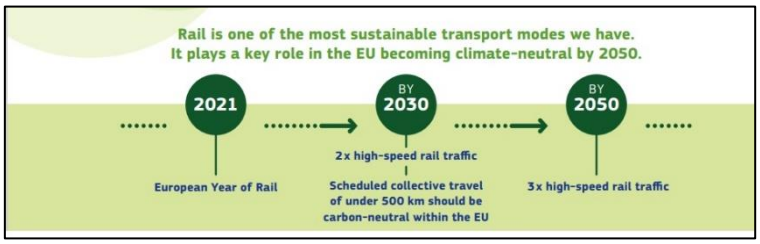


Figure 1: EU ambition for rail transport

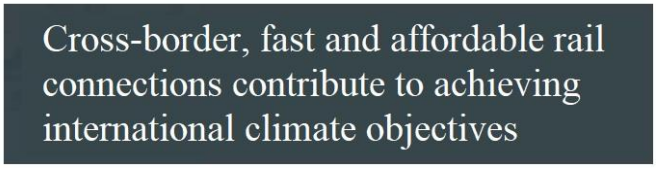


Figure 2: : Climate objective (Railforum.nl)

1.3 Conclusion summary

1.3.1 Passenger versus Freight Transport

Passenger transport competes with the limited capacity at all border crossings with freight transport. It has been decided to transport the majority of the goods from the Netherlands to Germany via the Betuweroute and then via Emmerich to Oberhausen. Extra (fast) passenger trains on this route would considerably reduce the capacity for freight trains on this route. Conclusion: No (fast) passenger trains on the Arnhem/Zevenaar-Oberhausen route.

1.3.2 Hengelo border crossing

Extra track will be constructed between Hengelo and Apeldoorn on which trains with a Vmax=250 km/h can run. At Zutphen there will be a branch towards Arnhem for, among other things, the freight trains that will run via this route.

In the passenger trains category, the following trains will run on this route:

- Amsterdam – Amersfoort - Hengelo - Osnabrück – Hamburg – Berlin
- Amsterdam – Amersfoort - Hengelo - Osnabrück – Hamburg – Copenhagen
- Schiphol – Amersfoort – Apeldoorn - Hengelo – Enschede
- The Hague – Utrecht – Amersfoort – Apeldoorn – Hengelo – Enschede
- *(Arnhem – Hengelo - Enschede) optional*

In the category of freight trains, under normal circumstances, around 40 freight trains per day will cross the Hengelo border crossing. On the (new) Hengelo-Zutphen route, this number can be combined with the number of fast passenger trains from Hengelo to Apeldoorn.

See also “Appendix 2, The Lely Line in an international perspective”
Conclusion: It makes much more sense to invest in a fast Amsterdam-Hengelo connection so that, in addition to the Amsterdam-Copenhagen connection, the Amsterdam-Berlin connection also benefits from this acceleration/investment. Germany also wants the above-mentioned solution for fast train traffic between the Netherlands and North/Central Germany. The connection via Hengelo to Hamburg and beyond is also faster than via Groningen. 7 hours versus 6:30 hours/min.

The Netherlands/Europe needs to expand rail capacity for freight trains to Central and Eastern Europe. There is no need to expand towards Northern Europe. A TEN-T train connection Groningen-Bremen for goods transport is not necessary and would be a pointless investment. This money is urgently needed for other (freight) rail connections.

See also “Appendix 4 The Night Trains”. The Hengelo border crossing will also be an important transition for the night trains in the future.

See also “Appendix 5 Intergovernmental Consultation Germany-Netherlands of 27-03-2023”. The Amsterdam-Berlin connection for a fast ICE train and the North Baltic corridor for rail freight transport are considered important by both governments.

1.3.3 Arnhem-Zevenaar border crossing (Betuweroute)

No additional track will be built on this route. The 3 rd track between Zevenaar and Oberhausen will be ready around 2026.

The following trains will run in the passenger trains category:

- Amsterdam – Utrecht – Arnhem – Duisburg(IC with Vmax= 160 km/h)
- Arnhem – Duisburg (Slow train)

In the freight train category, as many freight trains as possible will run on the Betuweroute – Zevenaar – Oberhausen. That can be up to 160 trains per day for both directions added up.

1.3.4 Venlo border crossing

The following trains will run in the passenger trains category:

- Amsterdam – Eindhoven – Venlo – Cologne
- Rotterdam – Eindhoven – Venlo – Cologne
- Antwerp – Breda - Eindhoven – Düsseldorf
- Eindhoven – Venlo – Hamm (Stoptrein) continues to run via Mönchengladbach.

In the freight train category, under normal circumstances, around 40 freight trains per day will cross the Venlo border crossing. This number can be combined on the Eindhoven-Rotterdam route with the fast passenger trains via the two routes Eindhoven-Brede-Rotterdam and Eindhoven-Meteren-Rotterdam.

See also “Appendix 3 The alternative Amsterdam-Köln route”
The diversion route for the ICE Amsterdam-Cologne is already running via Eindhoven/Venlo. After expansion, the route via Eindhoven/Venlo to Cologne is even shorter/faster than the route via Arnhem

1.3. 5 Vision

To make the substitution of traveling by plane to traveling by train a success by realizing optimal train connections to Germany. This should be presented in the form of a total plan. Loose solutions will not lead to the best solution. Steps now need to be taken to meet the requirements of the European green deal in 2040/2050, for both passenger and freight transport.

1.3.6 Plans Netherlands + Germany (working group)

To date, plans have been made by each country separately to improve both passenger and freight transport between the Netherlands and Germany. For example, Germany is focusing on accelerating the Berlin train via Hengelo and in the Netherlands people still don't know whether we want to invest in a fast Berlin train via Hengelo or via Arnhem, which is not getting along. A working group should be formed in the short term from both countries, which will come up with joint plans to make progress in this dossier. Good joint plans will certainly be able to count on support/subsidy from the EU, which has a spearhead on this part of “Transport” in the context of the EU green deal.

Chapter 2. The parts Persons and Goods combined

2.1 Introduction

Figure 3: Passenger trains to Germany

Figure 4: Freight trains to Germany

In the previous 2 reports, namely 1/3 and 2/3, choices were made for an optimal connection to Germany for resp. passenger and **freight transport , which can be** seen in the figures above.

Passenger transport

- fast connection Amsterdam-Hengelo
- fast connection Amsterdam/Rotterdam – Eindhoven- Venlo

Goods transport:

- Choice most freight trains via Betuweroute and on to Oberhausen
- Limited number of freight trains via Noordtak (Hengelo) and Zuidtak (Venlo)

2.2 Compete passenger and freight transport

Passenger transport is growing and freight transport is growing[1] , but the Dutch rail network remains the same. Over the years, calculations by ProRail have shown that passenger and freight transport on the same rail network are getting in each other's way.

A total plan must be made for the passenger transport component to Germany. Local (sub) solutions will not lead to a good end result. In the Netherlands, there is currently a discussion going on to extend the Lely line to Bremen so that a fast connection from Amsterdam to Copenhagen is created. This international expansion of the Lely line is not the best/fastest/cheapest solution. The route via Hengelo-Osnabrück to Bremen and beyond is a much better solution. By speeding up the Amsterdam-Hengelo route, the Berlin train can also use it. Because the fast Berlin train will not run to Germany via Arnhem, the infrastructure does not need to be expanded on this route. This will make financial resources available to speed up the connection between Eindhoven and Cologne, for example. A total plan must be made for the Freight transport to Germany component.

The choices/plans that are made for the Persons section and the Goods section must also be in line with each other in order to be able to make an affordable/realistic plan. The fast international trains and the freight trains to Germany compete with each other on the scarcely available rail capacity.

Figure 5: Making a choice is difficult

Additional international passenger trains compete on the track sections in Germany connecting to the borders, with the same, scarce, capacity as freight trains. In addition, TEN-T specifications, the quality of the freight paths offered and environmental nuisance are important points of attention for the emergence of bottlenecks. The implemented variants, which were performed as sensitivity, show that solving a (physical) bottleneck on one route leads to (physical) bottleneck on another route. An example of this waterbed effect is the relocation of freight trains from a route through the Randstad to the east of the Netherlands. This leads to new bottlenecks, not only in the east of the Netherlands, but also in parts of Brabant.

Germany wants to give priority to freight trains more often

Susanne Henckel , the German State Secretary for Digital Affairs and Transport, believes that freight and passenger transport should be treated equally[2] when there are conflicting rail timetables. At the moment, regular passenger transport still has priority over freight transport when several parties request the same train path , or want to use the same route at the same time.

The minister said this in an interview with the German trade magazine Eisenbahntechnische Rundschau [3] . 'Freight transport has equal rights. It is not going to happen that passenger transport first gets all its wishes fulfilled and only then freight transport gets the rest of the train paths that are still available,' says the German politician.

2.2.1 Berlin train – North branch

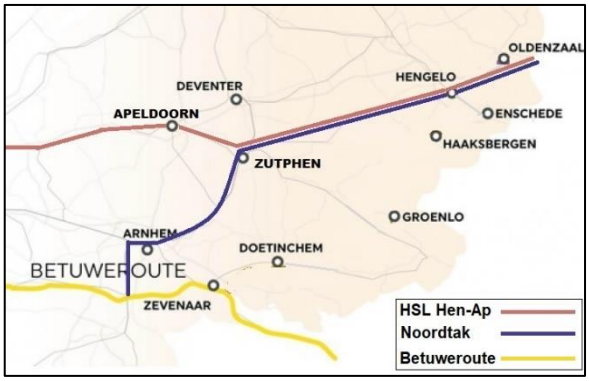


Figure 6: Persons/Cargo route Hengelo-Zutphen

By having fast passenger transport and freight transport run partly on the same track, we achieve synergy effects. The solution becomes affordable and realizable and has now become a real option. On the Hengelo-Apeldoorn route to be built, one or more freight trains per hour/direction will also run on the Hengelo-Zutphen section, which will then be routed from Zutphen via Arnhem to the Betuweroute. At first this choice did not seem logical. In “Appendix 6 Freight trains on a HSL/ Ausbaustrecke ” it is confirmed that in Germany, among others, the combination of a fast ICE and freight trains on an Ausbaustrecke with a Vmax=250 km/h can be combined well.

Arguments for choosing this:

- The number of freight trains on this route will be limited to 1 or 2 freight trains per hour and per direction. This gives 24x2=48 trains per direction per day. For both directions together that will be 98 trains per day. If 3 or 4 freight trains start running in the evening/night, the capacity of this section will even increase to 150 per day.
- Rail capacity needs to be added in this part of the Netherlands in order to achieve the ambitions that are required of us, including the EU green deal. With the construction of this new route, the above requirements can be met.

Yellow in Berlin[4] : NS uses Vectron for a direct train, without a locomotive change in Bad Bentheim, from Amsterdam to Berlin.

Vectron ran as a test train from Amsterdam to Berlin. At the height of the Janowiczbrucke this IC passes in the direction of Berlin Ostbahnhof . Photo: Peter van Rosmalen . On 10-12-2023, this train will cover the distance Amsterdam-Berlin ½ hour faster with the new timetable.

Figure 7: The Yellow NS Vectron in Berlin

2.2.2 ICE Amsterdam to Cologne – Betuweroute

The capacity of the Zevenaar – Emmerich border crossing is limited by the Wesel – Oberhausen section. According to DB Netz , 250 trains can run here per day (sum in both directions). After deducting the current supply of passenger trains and 'local' freight trains in Germany, there is still room for approximately 110 (freight) trains per day. After the construction of the 3rd track between Zevenaar and Oberhausen, the capacity will increase to 300 trains. If the supply of passenger trains and local freight trains remains the same, there will then be room for this approximately 160 (freight) trains.

If the frequency of the Amsterdam – Cologne passenger train service doubles (from every two hours in 2021 to once per hour), the capacity for freight trains will decrease to approximately 140 per day, equal to the number of freight trains in the forecast for 2040. of flexibility and further growth is then not possible.

Figure 8: Types of transport between Emmerich and Oberhausen

The figure above shows the 3 types of transport that run on the Zevenaar-Oberhausen route.
ICE: Every 2 hour the ICE Amsterdam – Cologne runs on this route.
Cargo : In addition to international freight traffic, local (Emmerich/Wesel) freight trains also run on this route.
Regional : From Arnhem there is a slow train to Oberhausen and beyond once an hour. From Wesel, however, there are 3 slow trains per hour, including the Arnhem slow train, to Oberhausen and beyond.

2.2.3 ICE Rotterdam(Amsterdam) to Cologne South branch

2.2.3.1 ICE Rotterdam(Amsterdam)-Cologne

New railway line Venlo-Neuss

Figure 9: A new Venlo-Neuss railway line

By constructing a new railway line Venlo-Neuss, the travel time on this route can be substantially reduced. This new railway line also provides the opportunity to keep space for freight trains on the existing connection. This new line will be 41 km long and will be suitable for trains with a Vmax=250 km/h.

Extension of the Neuss–Cologne/four-track Neuss–Cologne– Longerich line

b) in der Bundesrepublik Deutschland für den Schienengüter- und Schienenpersonenfernverkehr:

- Ausbau der Route Neuss - Köln (viergleisiger Ausbau Neuss - Köln-Longerich).

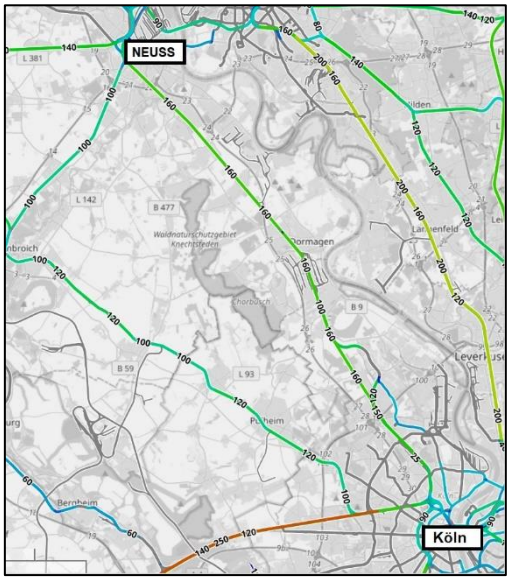


Figure 10: The direct route Neuss-Cologne

Betuwe agreement[5]
Agreement between the Federal Minister of Transport of the Federal Republic of Germany and the Minister of Transport of the Kingdom of the Netherlands on the improvement of rail freight and passenger transport in the Netherlands.

The Neuss-Cologne connection is already today an important connection in Germany. This route is now already suitable for trains with a Vmax=160 km/h. Via Düsseldorf, the Neuss-Köln route is 11 km (30%) longer than the direct route. Also, on the route via Düsseldorf, the Rhine must be crossed twice.

Train connection Hamm-Venlo extended to Eindhoven

Figure 11: The connection Eindhoven - Hamm

The existing train connection between Hamm and Venlo in Germany will be extended. From 2026, Venlo will no longer be the start or end station, but Eindhoven. The current connection, named MaasWupper -Express, runs via Hamm, Hagen, Wuppertal, Düsseldorf, Neuss and Mönchengladbach to Venlo (and vice versa).

2.2.3.2 Cargo trains Venlo border to Germany

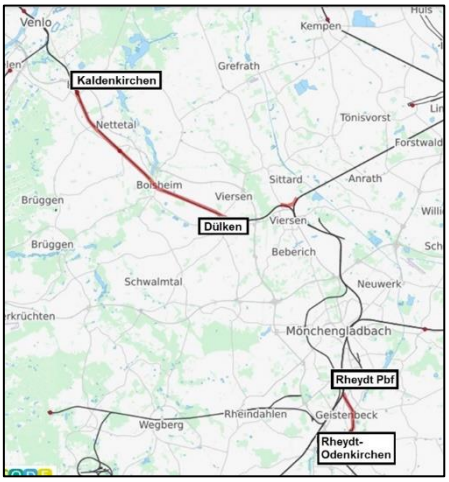


Figure 12: Extension to double track

Justification/necessity of the project[6] . The Viersen - Venlo railway line is only single track between Dülken and Kaldenkirchen . It is a southern ring road to the Betuwelijn and is therefore an access road to the Rhine-Alps freight corridor. The double-track extension is planned to increase capacity and improve passenger traffic between Düsseldorf and the Lower Rhine region and Venlo/Eindhoven. Also the single-track route between Rheydt Pbf and Rheydt-Odenkirchen is duplicated. A new connecting curve in the Viersen area connects the Viersen - Venlo railway line with the Duisburg- Ruhrort - Mönchengladbach railway line. For example, the Ruhr area with the port of Duisburg will be connected to the ARA ports of Antwerp, Rotterdam and Amsterdam.

2.3 ICE Passenger Transport from the Netherlands to Germany

Figure 13: High-Speed network to Germany and beyond

In the adjacent figure we see an overview of the fast train connections from the Netherlands to Germany and beyond. For Northern and Central Europe, a fast Amsterdam-Hengelo connection must be realized in the Netherlands, which will then connect well to the German high-speed network of today and in the future. New construction of the Hengelo-Apeldoorn route is part of this. For rail traffic to the south of Germany and beyond, the Amsterdam-Eindhoven-Cologne connection should be developed as a fast connection. New construction of the Venlo-Neuss route is part of this. A fast connection from Rotterdam also connects from Eindhoven to the aforementioned connection with Cologne. From Cologne to the south, this solution connects well to the (fast) infrastructure of Germany.

2.4 Cargo transport from the Netherlands to Germany

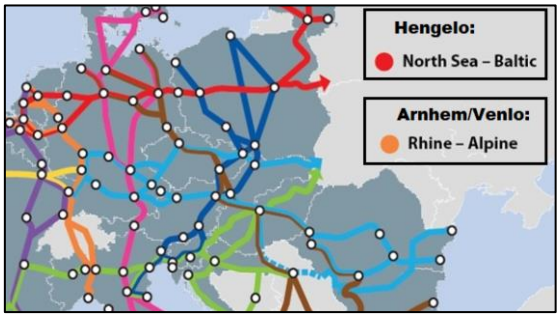


Figure 14: TEN-T corridors

In the adjacent figure we see the overview of the freight connections from the Netherlands to Germany and beyond as part of the tent-t corridors. The North Sea- Baltic corridor runs through the Hengelo border crossing . The Rhine -Alpine corridor runs through the Arnhem/Venlo border crossings . Germany is the central country in Europe through which many ten-t corridors run.

Chapter 3. Vision and Working Group towards realization

3.1 Introduction

Without cooperation with our eastern neighbors (the Germans) and without a clear vision, we will not come to a solution. In this chapter we will briefly discuss the above mentioned elements.

3.2 Vision towards the future

Figure 15: What is the situation in 2050?

The function of the Berlin train and ICE to Frankfurt will change.

Used to be

- Berlin train now stops in Hilversum, Apeldoorn, Deventer, Almelo, Hengelo and many more stations in Germany
- The ICE Frankfurt is fully booked during the Christmas market in Düsseldorf.

Future

- Berlin train only stops in the Netherlands in Amersfoort and Hengelo and will become an ICE connection.
- There will be a fast direct train Amsterdam – Hengelo – Hamburg – Copenhagen.
- The ICE Frankfurt and the ICE train to Hamburg/Berlin ensure that the Substitution from Plane to Train is a success.

Figure 16: Doing nothing is not an option

The Dutch government has been working on the issues discussed in this report for years. This has resulted in dozens of reports. Passenger transport and goods transport are treated separately. There is no indication of when decisions will be made. There is no vision. This report could be a start to take concrete steps in designing a good rail connection to Germany.

3 .3 Making plans together (the Netherlands and Germany Working group)

3.3.1 Introduction

Figure 17: The working group in action

A working group consisting of representatives from both the Netherlands and Germany is needed to make progress in realizing an optimal train connection between the two countries. By designing optimal connections that fit well within the European Green Deal, sufficient subsidy from the EU can be counted on. Now is the right time to take steps for both passenger transport and freight transport.

3.3.2 Passenger Transport

The following rail connections for passenger transport must be developed within this working group:

- Amsterdam – Hamburg – Copenhagen
- Amsterdam – Hanover – Berlin
- Amsterdam – Cologne – Frankfurt – Munich/Basel
- Rotterdam – Eindhoven – Cologne
- Antwerp – Eindhoven – Dusseldorf

For the Antwerp – Eindhoven – Düsseldorf connection, consultation should also take place with representatives of the interested organizations in Belgium.

Figure 18: Logo Belgian railways

3.3.3 Freight Transport

The following rail connections for freight transport must be developed within this working group:

- Hengelo–Bad Bentheim
- Zevenaar-Emmerich
- Venlo- Kaldenkirchen

Many freight trains also run from Belgium to Germany through the Netherlands (transit). It is desirable to also involve representatives of the Belgian organizations in solutions.

iron line

A solution could also be to reactivate the iron rhine. The Antwerp – Breda-Eindhoven – Germany route will then be relieved, which will give more space for fast passenger trains and the Antwerp-Germany freight connection will be shorter/faster.

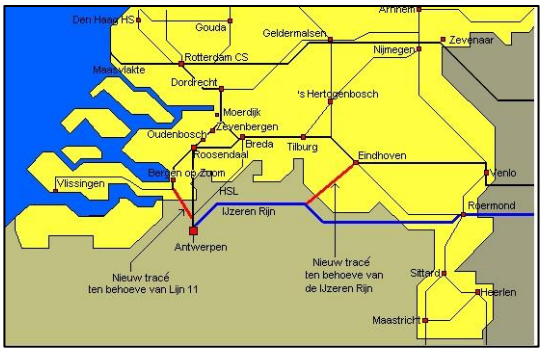


Figure 19: The Iron Rhine connection

Above we see the freight route of “The Iron Rhine”. A short route for freight trains from Antwerp to Germany.

State Secretary opens the door for Limburg participation in talks about the new Iron Rhine[7] (Published on 24-03-2023). State Secretary for Infrastructure and Water Management Vivianne Heijnen will shortly be discussing the participation of the province in talks about a new rail link between the port of Antwerp through the Netherlands and the German Ruhr area with Limburg's deputy Maarten van Gaans . The ministry confirmed this in a response to a letter from the province on Friday. The Netherlands was initially not enthusiastic about the opening of the Iron Rhine. This new/additional freight connection between Belgium and Germany would mean that fewer Belgian freight trains would run on the Dutch Roozendaal-Breda-Venlo and Rozendaal-Hengelo connections, which would give us (the Netherlands) room for passenger trains or other freight trains.

From now on also via Herzogenrath

Figure 20: Border crossing Herzogenrath

Since 5 February 2023, a border crossing to the Netherlands has been available again for freight trains hauled by multi-system electric locomotives. This became possible because the Dutch network operator ProRail modified the train protection system on the Eygelshoven - Herzogenrath route. The German train protection system (PZB/ Indusi) was installed there, so that the electric locomotives of the DB Cargo fleet can now also run on this route. Since the spring of 2022, German and Dutch colleagues from DB Cargo have been working to create the right conditions to enable traffic through the new border crossing for DB Cargo. Guidelines, IT systems and processes had to be adapted before the first regular train could run successfully. The Herzogenrath border crossing now offers a new diversion option (for example during construction work in the Emmerich - Oberhausen area) - an alternative, especially for light trains, due to the rather high gradient. Since February, a regular train has been running every week on the route from Stolberg (near Aachen) to Vlissingen via the new border crossing. More trains to follow! This border crossing can also be used for a number of freight trains to relieve the Eindhoven-Venlo route and beyond.

3.3.4 The Participants Working Group

Figure 21: Netherlands/Germany working group

The working group could consist of the following organisations:

The Netherlands

- Ministry of Infrastructure and Water Management
- Prorail
- NS (international)
- Port of Rotterdam

Germany

- Federal Ministry fur Digitals and Vekehr
- DB Netz
- DB Deutsche Bahn
- DB Cargo

Appendix 1 Urls

[1] https://eenvandaag.avrotros.nl/item/noordtak-betuwelijn-door-achterhoek-in-concept-rapport-laatste-serious-Option/
[2] https://www.nt.nl/railtransport/2023/02/24/duitsland-wil-goederentreinen-vaker-voorrang-geven/
[3] https://www.eurailpress.de/nachrichten/ personen-positionen/detail/news/susanne-henckel-kapazitaet-wird-reguliert.html
[4] https://railcolornews.com/2022/02/21/nl-yellow-am-alexanderplatz-ns-deploys-vectron-amsterdam-berlin-non-stop/
[5] http://www.wedebruch.de/gesetze/inter/betuwevertrag.htm
[6] https://www.bvwp-projekte.de/schiene/2-025-V01/2-025-V01.html
[7] https://www.spoorpro.nl/spoorbouw/2023/03/24/staatsecretaris-zet-deur-op-kier-voor-limburgse-deelname-aan- conversations-over-nieuwe-ijzeren-rijn
[8] https://europadecentraal.nl/onderwerp/transport/transportationnetworks-ten-t/
[9] https://www.lelylijn.nl
[10]https://www.sterknoordnederland.nl/nieuws/deltaplan-noordelijk-nederland-grootschalige-woningbouw-door-investeren-in-lelylijn
[11]https://pvmagazine.nl/noordelijke-provincies-verleggen-accent-lelylijn-lobby-en- pointing-op-forse-reis winst-in-internationale-verbindings/
[12]https://www.rtvdrenthe.nl/nieuws/13798271/knauw-voor-lelylijn-duitsland-ziet-verbinding-directional-hamburg-niet-zit]
[13]https://www.portofrotterdam.com/en/logistics/connections/intermodal-transportation/rail-transport
[14]https://www.railcargo.nl/publish/706/Magazine%20Rail%20Cargo%202022
[15]https://railmagazine.nl/winkel/rail-magazine-403/
[16] https://www.nsinternational.com/en/questions-and-answers/improvements-on-the-track-in-germany
[17]https://greencitytrip.nl/nl/products
[18]https://www.europeansleeper.eu/
[19]https://www.bundesregierung.de/resource/blob/997532/2173420/253c404a50f3aa2cac7f47e875fc6ff6/2023-03-27-gem-erkl-dt-ndl-regkonsul-data.pdf?
[20] https://www.youtube.com/watch?v=vPO8vKIL5pc
[21]https://bauprojekte.deutschebahn.com/p/hannover-berlin
[22]https://www.ihk.de/hamburg/produktmarken/interessenvertretung/verkehr/schiene/bahnstrecke-hamburg-bremen-muenster-dortmund-5680234

Appendix 2 The Lely line in an international perspective

Networks (TEN-T) [8]
The TEN-T network is divided into a core network, an extended one core network and an extended network. Projects in this context are financed by CEF.
The free movement of goods and people in Europe leads to many transport movements across the Union. To make this cross-border traffic possible, transport connections in Europe must meet certain requirements and be harmonised. This is pursued by the Trans-European Transport Networks, or TEN-T.
TEN-T= Freight trains and Passenger trains

PASSENGER TRAINS
Plan A : The Lelylijn[9] a new rail connection between the North and the Randstad, which connects Lelystad and Groningen and Leeuwarden respectively via at least the stations Emmeloord, Heerenveen and Drachten.

Plan B: Delta Plan for the North [10]
Delta Plan Northern Netherlands: Large-scale housing by investing in Lelylijn.
This is stated in Building Blocks for the Delta Plan, a joint plan of the provinces of Drenthe, Flevoland, Fryslân and Groningen and the municipalities of Assen, Emmen, Groningen and Leeuwarden. The plan is addressed to the House of Representatives and the new government to be formed. In December 2020, the House of Representatives unanimously asked for a “Delta Plan for and of the North”, a Delta Plan that contributes to the future growth capacity of the Netherlands.

The joint vision for housing, economic development and associated accessibility is not possible without a cohesive package of three investments in the rail network: the Lely Line as a fast Randstad-North connection (with a travel time gain of 40 minutes), improvement of existing rail (Amsterdam-Almere-Zwolle- Groningen/Leeuwarden and Emmen-Zwolle), as well as the Lower Saxony line. The plan also emphasizes the importance of space on the track between Lelystad and Amsterdam to guarantee the accessibility of Almere and Lelystad and thus of the whole of the Northern Netherlands, for example through the construction of the IJmeer line .

Investing in infrastructure improves the business climate and thus the economic position. Investments in infrastructure are estimated at a one-off 9.5 billion euros. The benefits outweigh that. If the economic potential of the Northern Netherlands can be fully exploited, the value of the regional production of goods and services will grow by approximately €24 billion per year. Not only the Northern Netherlands benefits from this economic growth, but also the Netherlands as a whole.

Plan C: International connection via lelylijn[11]
Northern provinces are shifting the emphasis of the Lelylijn lobby and point to substantial travel gains in international connections. The northern provinces, which are still displeased that the Lely line from Lelystad to Groningen that they so fervently desire has not been included on the cabinet's international priority list, have shifted the lobby's emphasis to the substantial travel gains that can be made on international connections. reaches. All this in the hunt for European billions that can bring the construction of the line closer. This while not everyone in the North is convinced of the need for the construction of the line. In the quick scan , the North calculates that when the fast train connection is built, the train journey between Amsterdam and Copenhagen can be shortened from 11.5 to 7 hours.

A setback for the proponents of the Lely line: Germany[12] is not in favor of extending the rail connection to Hamburg and Scandinavia. According to the German State Secretary for Transport, the line is not profitable.

Without modifications to the track in the Netherlands, the Amsterdam-Copenhagen route via Hengelo can be covered in just over 7 hours in a few years' time. If the travel time is shortened in the Netherlands between Amsterdam and Hengelo, the above-mentioned route can be covered in 6:30 hours/min. The Berlin train also benefits from this aforementioned reduction in travel time.

Within TEE (Trans Europa Express) 2.0, this connection (TEE 49/50) Amsterdam-Hengelo-Hamburg-Copenhagen is already on the European agenda/map.

Conclusion: It makes much more sense to invest in a fast Amsterdam-Hengelo connection so that, in addition to the Amsterdam-Copenhagen connection, the Amsterdam-Berlin connection also benefits from this acceleration/investment. Germany also wants the above-mentioned solution for fast train traffic between the Netherlands and North/Central Germany. The connection via Hengelo to Hamburg and beyond is also faster than via Groningen. 7 hours versus 6:30 hours/min.

FREIGHT TRAINS

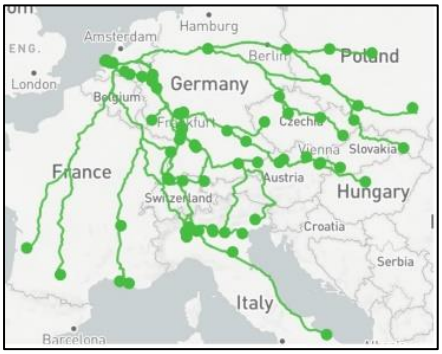


Figure 22: Container trains Rotterdam

Figure 23: Shortsea Rotterdam-Norway

Container trains Rotterdam

Every week, many international container train services run to and from the port of Rotterdam[13] . To achieve the European sustainability goals, we want to transport 50% more goods by Dutch rail within 10 years. That means a growth from 40 to 61 million tons within 10 years. Figure 22 shows an overview of all container services by rail from Rotterdam. What is striking is that no container trains go to Northern Europe from Rotterdam. This will be partly due to the good shortsea connections that Rotterdam has with the Scandinavian countries. Figure 23 shows which Norwegian ports are served from Rotterdam with a shortsea connection. The population of Norway with 5 million inhabitants and Danemark with 6 million inhabitants will certainly not contribute to the busy freight rail connection with both countries from the Netherlands.

Shift to Eastern Europe

More and more production is shifting to Eastern European countries [14] and with it the location of European Distribution Centers (EDC). Want the Dutch

If ports maintain their competitive position in the future, good rail connections to and from **Central-Eastern Europe are essential** . In any case, the distances to and from these countries are very suitable for rail freight transport.

Intermodal Trains

Figure 24: Railmagazine 403

Rail magazine 403[15]
Intermodal trains in the Netherlands . If you camp along the Betuweroute for a while, you will see a lot of container trains passing by. The correct collective term "Intermodal trains" is broader and, in addition to containers, also includes the transport of swap bodies and semi-trailers. What they have in common is that the loading units just mentioned can travel by train, truck or ship, so also by other modalities. A list of intermodal shuttles abroad is included on page 48. This involves a total of 299 trains per week. What is striking is that almost no (2 trains) trains go to Northern Europe.
We encounter a connection Coevorden-Malmö with 3 strokes per week. This train runs from Coevorden via Bad Bentheim to Osnabrück and beyond. If there is a freight connection Groningen-Bremen, the above train will not run via Groningen.

This list also includes a connection Waalhaven – Hamburg/ Swarzędz - Poznań(PL) with 2 trains per week. This connection via Hamburg would be the only connection that could run via a Groningen-Bremen connection. This is 2 turns per week out of a total of 299 intermodal trains per week departing from the Netherlands.

Conclusion: less than 1% of the aforementioned intermodal freight trains go from the Netherlands to Northern Europe, more than 99% of these freight trains go to Eastern or Southern Europe.

The Netherlands/Europe needs to expand rail capacity for freight trains to Central and Eastern Europe. There is no need to expand towards Northern Europe.
A TEN-T train connection Groningen-Bremen for goods transport is not necessary and would be a pointless investment. This money is urgently needed for other (freight) rail connections.

Appendix 3 The alternative Amsterdam-Cologne route

Figure 25: The alternative route via Venlo

Railway maintenance

An additional track at Emmerich [16] .
'Next year we will be working hard on the tracks in Germany, on various routes,' says Erik. 'For starters: Emmerich. They have been building an extra track there for some time, just across the border in Germany. That is on the route where the ICE and the night train pass. The new track will provide a better connection of the Betuweroute to the line towards Oberhausen'. Hasn't that been going on for a while? 'Yes, that's right', Erik replies, 'but things are moving fast now. It has been on the back burner for a while due to a land expropriation issue. But now they are really loose. They are also removing dozens of level crossings on the stretch between Emmerich and Oberhausen. The job with the extra track will take a few more years!'

To Duisburg or Düsseldorf, how?
I have to go to Düsseldorf about eight times a year. What do I notice about that work?
'A lot of. There are regular periods when ICE detours via Venlo. Then the ICE will not stop in Arnhem, Oberhausen, Duisburg and Düsseldorf. Well in Den Bosch and Mönchengladbach. In Mönchengladbach you can then change to the train to Düsseldorf. It will cost you a little more time and an extra transfer. And what's more, fewer ICE trains run on a day if the route goes via Venlo'.

The night train also detours
Erik adds that the diversion route also applies to the night trains to Austria and Switzerland. Both trains will not stop in Mönchengladbach. The train to Austria does stop in Den Bosch, unfortunately the night train to Switzerland does not. In combination with domestic trains, there is no room for this on the Bossche platform.

Appendix 4 The Night Trains

Night trains are currently in the spotlight again. It is expected that the supply of night trains will increase sharply in the coming years. For each border crossing, we will provide an overview of which night trains (will) cross this border crossing.

Hengelo border crossing

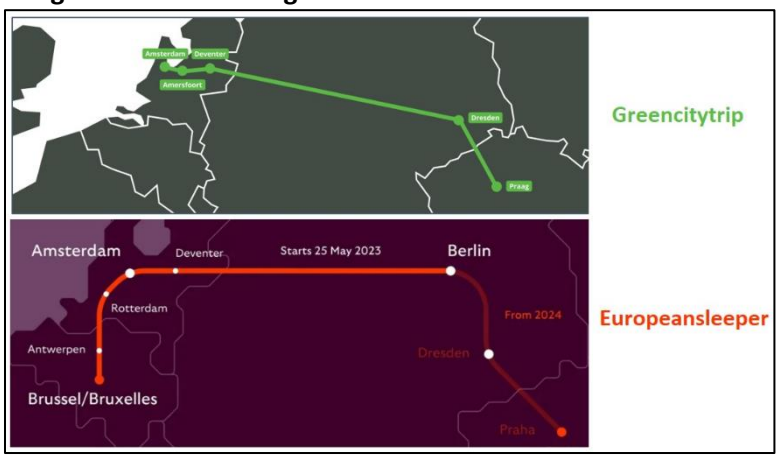


Figure 26: In 2023 there are 2 night trains running via the Hengelo border crossing

At the moment there are already 2 night trains running via the Hengelo border crossing:

- Brussels – Amsterdam – Berlin (Greencity trip [17])
- Amsterdam–Dresden–Prague (Europeansleeper [18])

In a few years' time, the following night trains will run through the Hengelo border crossing:

- Amsterdam – Hamburg – Copenhagen – Stockholm/Oslo
- Amsterdam – Warsaw

Border crossing Arnhem/Venlo

The night trains to southern Germany and beyond are operated by Nighjet , part of the Austrian railways OBB.

Figure 27: In 2023 there are 2 night trains running via the Arnhem border crossing

Appendix 5 Intergovernmental consultations Germany - Netherlands 27-03-2023

Today the 4th German-Dutch #Regierungskonsultationen will take place in Rotterdam. The emphasis is on security and defense cooperation – and for a strengthened Europe. Click here for the joint statement[19].

Germany and the Netherlands share a long border and would like to further improve the cross-border infrastructure and, where necessary, expand it.

Figure 28: Workshop NE-BE-DU

In the context of the so-called intermodal dialogue, workshops will be held together with Belgium on transport planning methods and possible projects that have cross-border effects on rail networks and waterways.

This may include infrastructure capacity improvements, which are important for strategic mobility. As far as the further procedure is concerned, the need for further studies on potential projects is being examined. With regard to rail transport, an exchange of information on a number of important rail connections such as Groningen-Bremen (see Lely line extension), Amsterdam-Berlin, Eindhoven-Venlo-Düsseldorf, the Rhine-Ruhr rail link (3RX) and the North Baltic **corridor** for freight transport by rail are considered.

Figure 29: North Sea-Baltic Corridor

The North Baltic Corridor has a length of about 3200 km, it is located exclusively in Northern Europe and connects the Baltic Sea area of Helsinki via the Baltic States with the North Sea area of Belgium / Netherlands via Poland and Germany. With Rotterdam, Antwerp, Hamburg, Bremen/Bremerhaven and Amsterdam, it comprises the five largest ports in Europe. The traffic density in the western part differs strongly from the volume in the northeast.

Most important projects of the EU Commission on the corridor :
- Improvement of the hinterland connections of the seaports
- Extension of the railway lines Amsterdam/Rotterdam - Hanover - Berlin - Poland/border

Appendix 6 Freight trains on a HSL/ Ausbaustrecke

Is it realistic to also allow freight trains to run on an ausbaustrecke (Vmax>200 km/h) where fast passenger trains also run? At first glance, this doesn't seem like a good combination. But maybe it is possible in practice. We discuss 2 routes in Germany

Ausbaustrecke Wolfsburg Berlin

Overhaul

Figure 30: Overtaking a freight train

Flying Overhaul with 250 km/h Wolfsburg Berlin (After 1:47)[20] . In this video clip, we see an ICE overtaking a freight train on the Wolfsburg-Berlin ausbaustrecke . On this route it is customary to run both types of trains, ICE and freight trains, on the same route.

Additional overtaking track

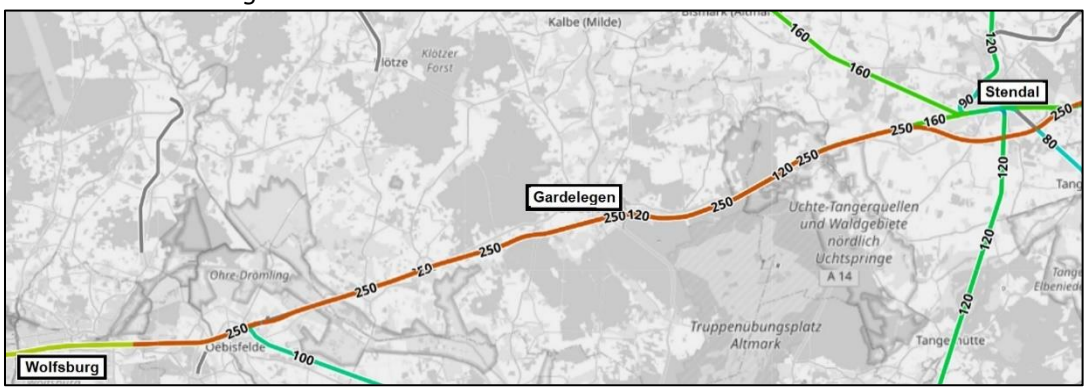


Figure 31: passing track for freight trains in Gardelegen

The 140-kilometre "Lehrter Stammbahn" line stretches from Vorsfelde near Wolfsburg via Stendal in Saxony-Anhalt to Wustermark in Brandenburg. From 2025, the East-West Corridor will be modernized and expanded[21] in two successive construction phases. In addition, we are building a 740 meter long passing track for freight trains in Gardelegen as an overtaking option. The Wolfsburg-Stendal ausbaustrecke is therefore also invested for goods transport.

Dortmund–Hamburg route

Optimization of the railway line Hamburg - Bremen - Münster - Dortmund

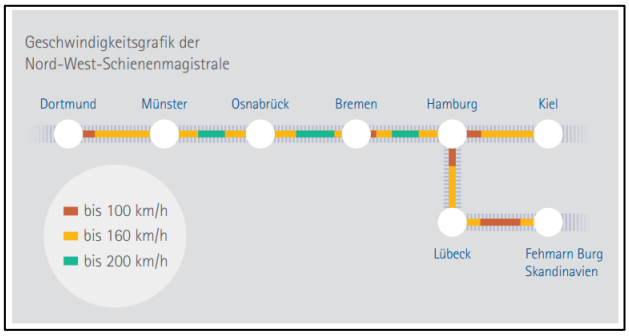


Figure 32: Speeds on the Dortmund-Hamburg route

The Northwest German Chamber of Commerce (IHKs) advocates further additional infrastructure measures[22] on the northwestern rail section, such as the extension of (further) sections to 200 – 230 km/h and the construction of additional passing tracks .

Conclusion: On an ausbaustrecke with a Vmax=250 km/h it is possible/usual to allow fast ICE trains and freight trains to run together.

Appendix 7 All reports

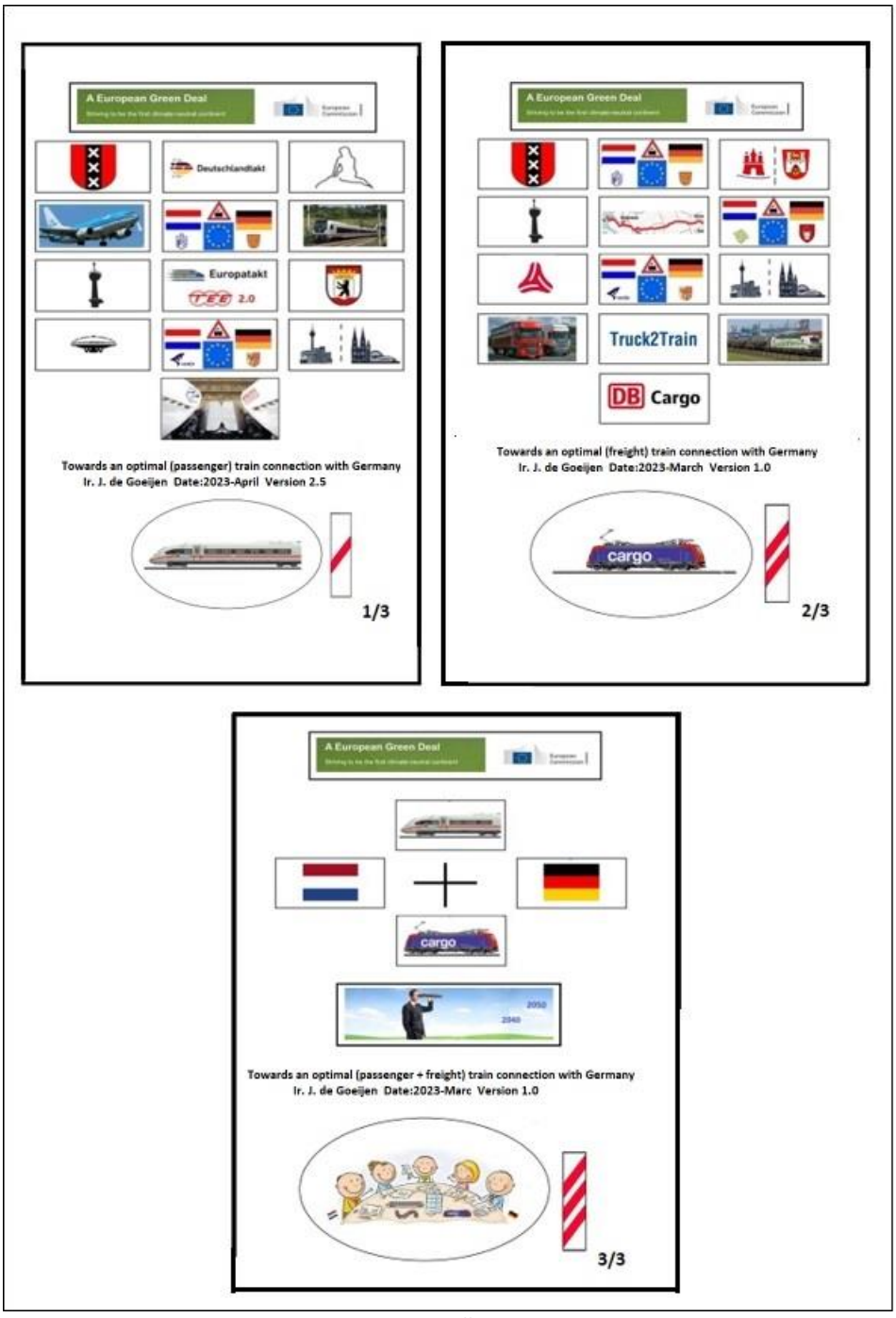


Figure 33 All reports