



FACT NOTE

Corridor Conference Alsdorf 2018

The Fact Note is a series of graphics, based on data, concerning the infrastructural-spatial system in the Rhine Meuse Schelde Region*. Thematically the focus lays on the transport corridors for freight and the adjacent urban conglomerations. The goal of this Fact Note is to provide a first shared picture of important structures and developments in this cross-border region and should serve as a basis for discussion. The graphics are based on a quick scan of data. This short research made clear, for a coherent image of the Rhine Meuse Schelde Region, there is still a lot of room for improvement in synchronizing and filling the gaps in data between the three countries. Therefore, this Fact Note is not an atlas or a statistical pocket book with a superb level of accuracy. Instead, it should be understood as a first working draft of a cross border image of the infrastructural-spatial system and developments in this cross-border region.

* The Rhine Meuse Schelde Region is a generic term covering the areas of the Vlaams Gewest and the Brussels Gewest (Flanders), the provinces of Noord Holland, Zuid Holland, Flevoland, Gelderland, Zeeland, Noord Brabant and Limburg (The Netherlands) and the Rhineland and western part of Westphalia (North Rhine Westphalia).

1. Current System

Top 4 Regions in Europe
Population and GDP (2017)



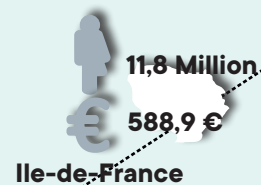
Rhine Meuse Schelde Region



Northern Italy



Bavaria - Baden Württemberg



SOURCES: Population: NL (CBS; 2018.10.02) / Flanders (Statbel; 2018.01.01) / NRW(Landesbetrieb IT.NRW; 2017.12.31) // Gross Domestic Product 2017 (GDP): NL (CBS; 2018.10.02) / Flanders (HERMREG) / NRW (Statista) / Eurostat 2017

Legend

— waterway
- - - overseas

..... rail: mixed use
- - - rail: freight only
..... rail: passenger HSL

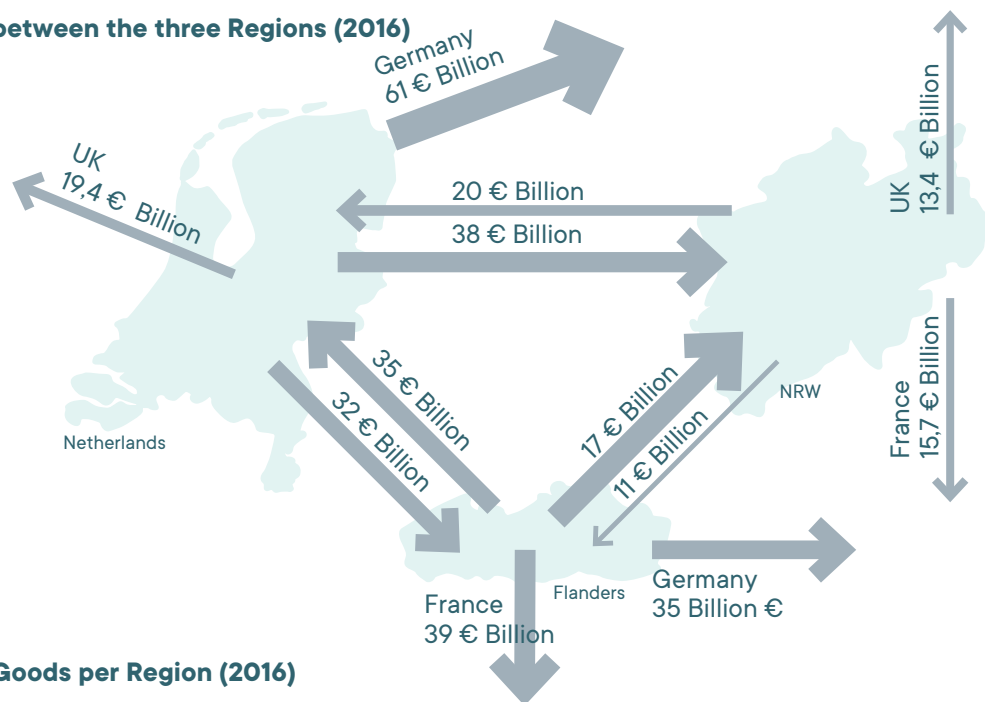
— pipeline
— highway

○ terminal
◻ trimodal hub
● city

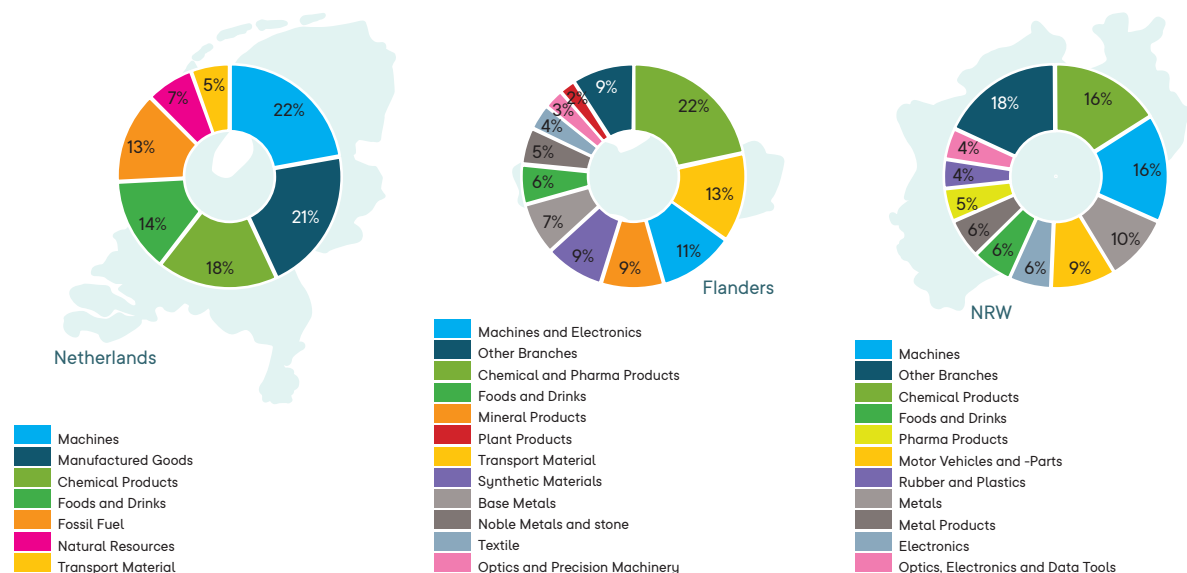
— main freight route
● transshipment
(thousand ton)

1. Current System

Export between the three Regions (2016)



Export Goods per Region (2016)



Together, the urbanized areas in the Rhine Meuse Schelde Region form the largest and strongest region in Europe in terms of population (41 million inhabitants) and economy (€ 1.318,8 billion GDP). The metropolitan conglomerations around Antwerp, Brussels and Gent, the Randstad (Amsterdam, Rotterdam, The Hague, Utrecht), Arnhem-Nijmegen and Brabantstad (Eindhoven, Tilburg, Breda), the Metropolregion Rheinland (Düsseldorf, Cologne, Bonn) and the Metropolregion Ruhr (Duisburg, Essen, Dortmund) form the economic powerhouses of this region. Each metropolitan conglomeration has a rich cultural history, a broad variety of regional landscapes and offers attractive living environments.

The urbanized conglomerations are connected by **mature infrastructure networks** of different modalities: road networks, rail networks, waterways and pipelines. The infrastructure networks are part of three main European Ten-T corridors. They connect this region to the rest of Europe. The ZARA harbours of Zeebrugge, Antwerp, Rotterdam and Amsterdam are important gateways that connect Europe to the world. Duisburg Hafen is the main multi modal inland turntable for the distribution of goods to and from the rest of Europe and Asia.

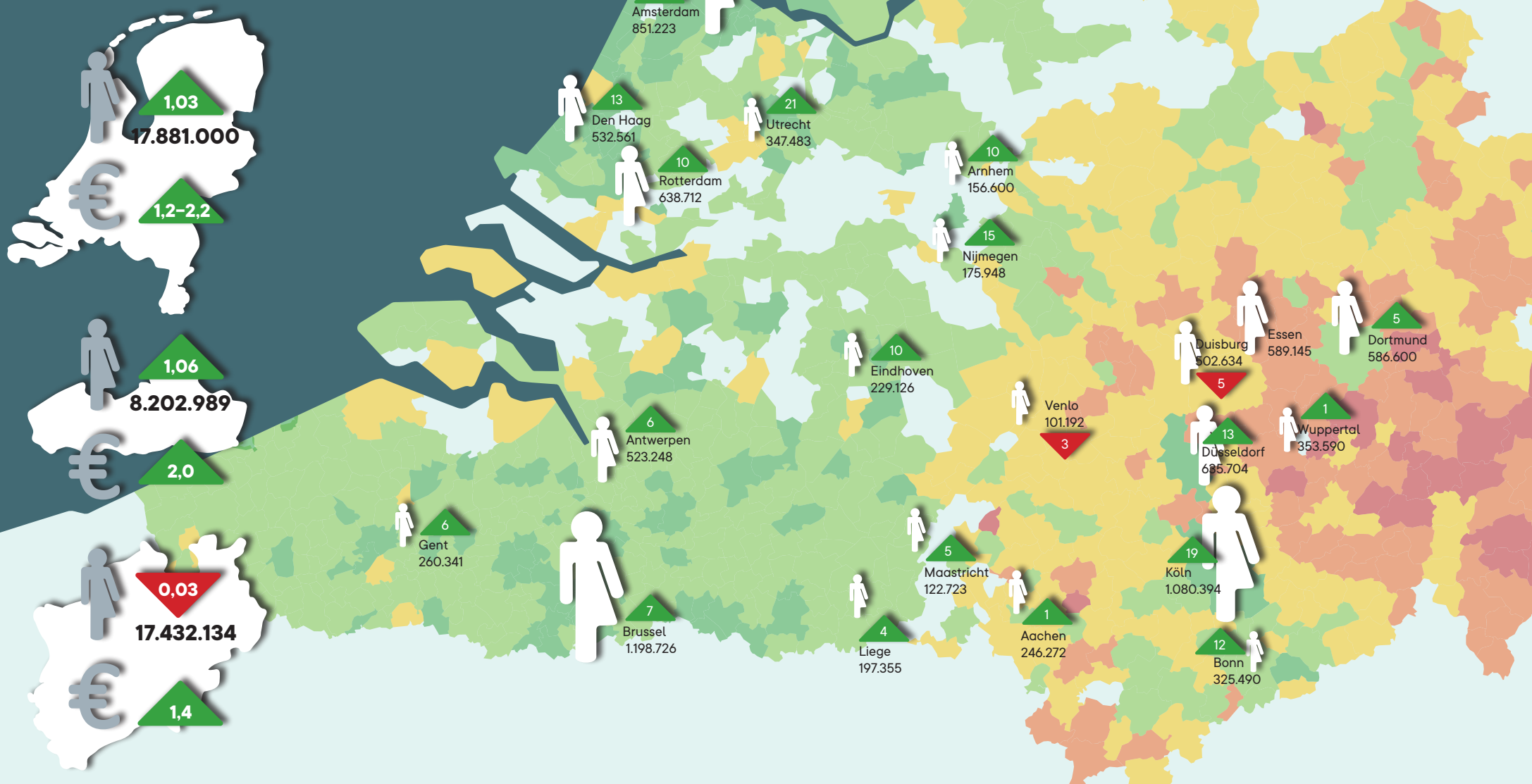
The strong economic interdependence between the urbanized areas within the Rhine Meuse Schelde Region, show the export figures of goods. The export volumes between these areas is often more important than to other regions in Europe. Together, the urbanized areas in the Rhine Meuse Schelde Region form a high-quality innovative region with a broad range of knowledge institutes, highly skilled labour, and high-quality production facilities.

SOURCES:
De Lage Landen 2020-2100. Een toekomstverkenning
Metropolregion Rheinland, Datenatlas, Ausgabe 2016, Bezirksregierung Düsseldorf und Bezirksregierung Köln
Factsheet - Internationale handel - Uitvoer CBS Report Aussenwirtschaft; Daten. Fakten. Trends; IHK NRW - Die Industrie- und Handelskammer in Nordrhein-Westfalen e.V.
RVO Rijksdienst voor ondernemend Nederland

DISCLAIMER: Rijkswaterstaat (Ministerie van Infrastructuur en Waterstaat, The Netherlands) and the Ministerium für Verkehr Nordrhein Westfalen have commissioned MUST to produce a series of infographics for the Corridor Conference 2018. The sources for the data were supplied by both commissioners and the Vlaamse Overheid. The final responsibility for the selection of data and the way they are being represented in the infographics lays with MUST.

2. Population and Economy 2030

Population and GDP (2030)



SOURCES: NL (CBS; PBL; 2018.10.02)
 Flanders (statistiek Vlaanderen; 2018.01.01)
 NRW (Metropolregion Rheinland, Datenatlas, Ausgabe 2016,
 Bezirksregierungen Düsseldorf und Köln / Eurostat)

% increase



% decrease



City Name
Inhabitants (2018)

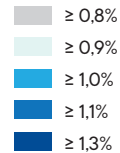
Legend

increase > 10%	decrease -1% - -10%
increase 1% - 10%	decrease -10% - -20%
no change / no info	decrease > -20%

2. Population And Economy 2030

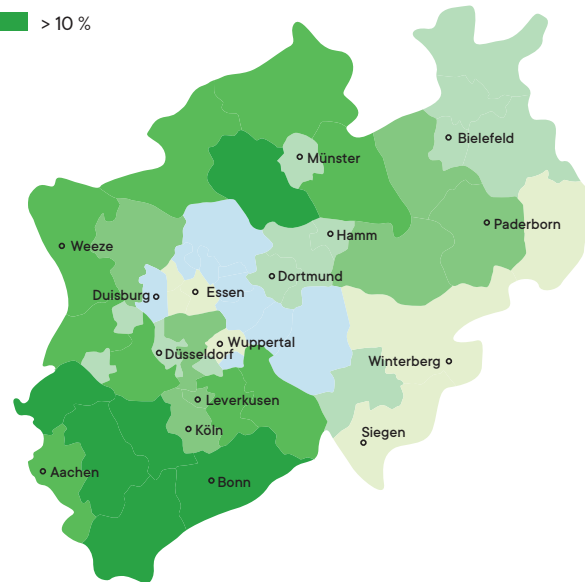
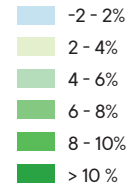
NRW: contribution to the GDP for different regions (2030)

Change in % per year



NRW: development of households (2030)

Change in % per year



Overall, the population and economy in the Rhine Meuse Schelde Region will slightly increase until 2030. However, within the region there are strong differences. Almost all the **metropolitan conglomerations will enforce their position as economic powerhouses**. This will result in a growth of the population and their contribution to the GDP. The consequence will be that the pressure on the land for housing and other spatial needs will increase. An exception is the Ruhr area. Here, a decrease of the population is being expected in most cities. **Within the metropolitan areas**, there are **clear differences** between different cities. See as an example the zoom-in for North Rhine Westphalia.

Striking are as well the differences between Flanders, The Netherlands and North Rhein Westphalia. Flanders appears to grow as a whole. In the Netherlands there are some areas of stagnation in between the metropolitan agglomerations. In North Rhine-Westphalia many big cities and their surrounding areas appear to grow. For the rural areas the picture is not schematic: some will grow, but many seem to shrink.

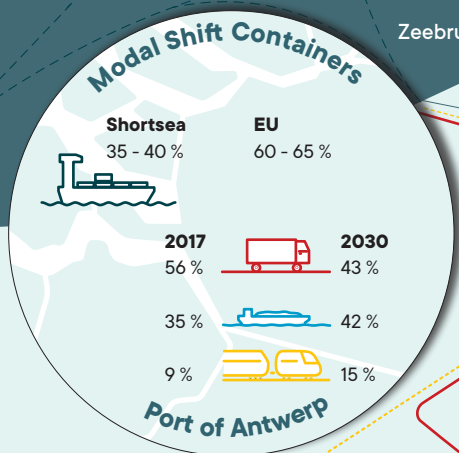
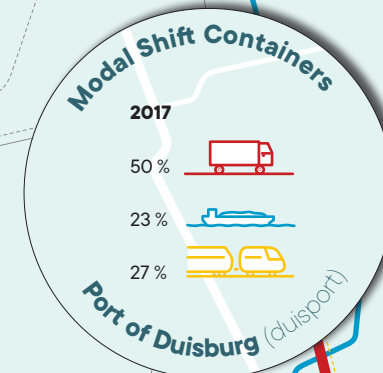
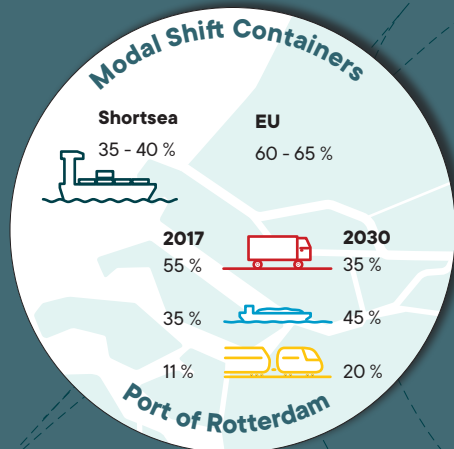
Data observations

For data on economic and population development, different sources are available, for example Eurostat data, national data centres and regional data centres. Depending on the source, the figures can differ strongly. For a realistic comparison of developments in the fields of economy and population Flanders, The Netherlands and North Rhine Westphalia, a harmonization of data is desirable.

SOURCES:
<https://www.cbs.nl/nl-nl/nieuws/2016/37/pbl-cbs-prognose-groei-steden-zet-door> (01.10.2018)
<http://www.statistiekvlaanderen.be/nieuwe-bevolkings-en-huishoudensvooruitzichten-voor-de-vlaamse-steden-en-gemeenten-2018-2035> (01.10.2018)
https://www.bezreg-arnsberg.nrw.de/themen/s/strukturdaten/bev-oelkerungsvorausberechnung/bev_progn_2040.pdf (01.10.2018)
 Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR): PPT „BBSR-Wohnungsmarktprognoze 2030 Ergebnisse für NRW und vorläufige Szenarienberechnungen „Flüchtlinge““
 Metropolregion Rheinland, Datenatlas, Ausgabe 2016, Bezirksregierungen Düsseldorf und Köln

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3. Transport Flows



SOURCES: Goederencorridor MIRT Zuid; Goederencorridor Oost Logistieke Foto - Nederlands deel; Goederencorridor Oost Logistieke Foto Duitsland: deel grens NL - Duisburg; all by Buck Consultants International; 2016 BENELUX- Rapport, Secretariaat-Generaal van de Benelux Unie

Legend

- waterway
- rail: mixed use
- pipeline
- overseas
- rail: freight only
- highway

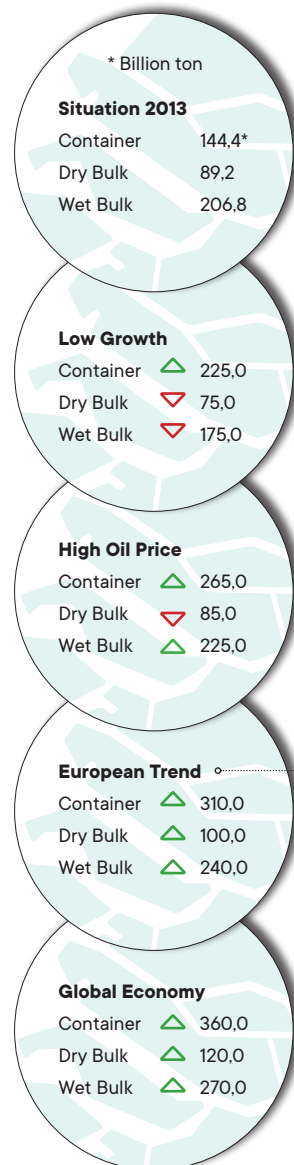
terminal
trimodal hub
city

transshipment
(thousand ton)

The line thickness indicates the tons of freight.

3. Transport Flows

Growth Scenarios Port of Rotterdam 2030



SOURCE: Port of Rotterdam.

The harbours of Rotterdam, Antwerp, Zeebrugge and Amsterdam are important hubs for the transportation of goods through the Rhine Meuse Schelde Region. From the ports, several corridors cross the hinterland. The so-called **East Corridor** is the most important transport route in volume for freight. It is a unique multimodal corridor, where waterways (Waal/Rhine), highways (A15) and rail infrastructure (Betuwelijn) lay parallel to each other. This makes it possible to easily shift from transportation mode. Along this

corridor a series of trimodal hubs is situated. A special feature of this multimodal corridor is the Betuwelijn as this railway infrastructure is exclusively used for freight transport. At the moment, only 50% of its capacity is being used. On the basis of tonnage, the East Corridor has an important function in the area of bulk by water and rail transport. For inland shipping towards Germany, the East Corridor fulfils an important function for the harbors of both Rotterdam and Antwerp.

Growth per Segment	2018	2030	Growth in %
DB IJzererts	34	34	0 %
DB Coal	30	39	▲ 30 %
DB Agribulk	12	7	▼ -42 %
DB Biomass	1	3	▲ 200 %
DB Others	11	14	▲ 27 %
NB Crude Oil	95	96	▲ 1 %
NB Mineral Oil	75	76	▲ 1 %
NB Chemistry	23	34	▲ 48 %
NB Plant Oil	8	13	▲ 63 %
NB LNG	1	23	▲ 2200 %
CT Deepsea	71	164	▲ 131 %
CT Transshipment	35	80	▲ 129 %
CT Shortsea	22	23	▲ 5 %
BB Staal	3	16	▲ 433 %
BB RoRo	20	26	▲ 30 %
BB Others	3	3	0 %
Total in billion ton	444	651	▲ 47 %

The second important transport route between Rotterdam, Antwerp, Zeebrugge and North Rhine Westphalia is the so-called **South Corridor**. Until the German border it consists of four modalities: waterways (mainly the Meuse), highways, railway and several pipelines. In Germany, the waterway system does not continue. The other infrastructures continue to the logistic areas in Duisburg, Düsseldorf and Cologne. This corridor is the most important route for the transport of containers by road and of fuels by pipeline.

A third corridor connects the Flemish harbours with North Rhine Westphalia. Until the Dutch border this multimodal corridor consists of three parallel modalities: a waterway (Albertkanaal, connecting with the Meuse), a railway line and highways (Antwerp, Aachen, Cologne). After the border only the road and rail system continue, thus crossborder transport on this corridor especially is effectuated by road and rail.

A fourth corridor connects the harbours of Antwerp, Rotterdam and Amsterdam. This multimodal corridor in North-South direction, consists between Antwerp and Rotterdam, of four parallel modal-

ities: a waterway (Schelde-Rijnkanaal), a railway line, two parallel highway systems and a pipeline. Between Rotterdam and Amsterdam the waterway and pipeline system do not continue.

Future developments

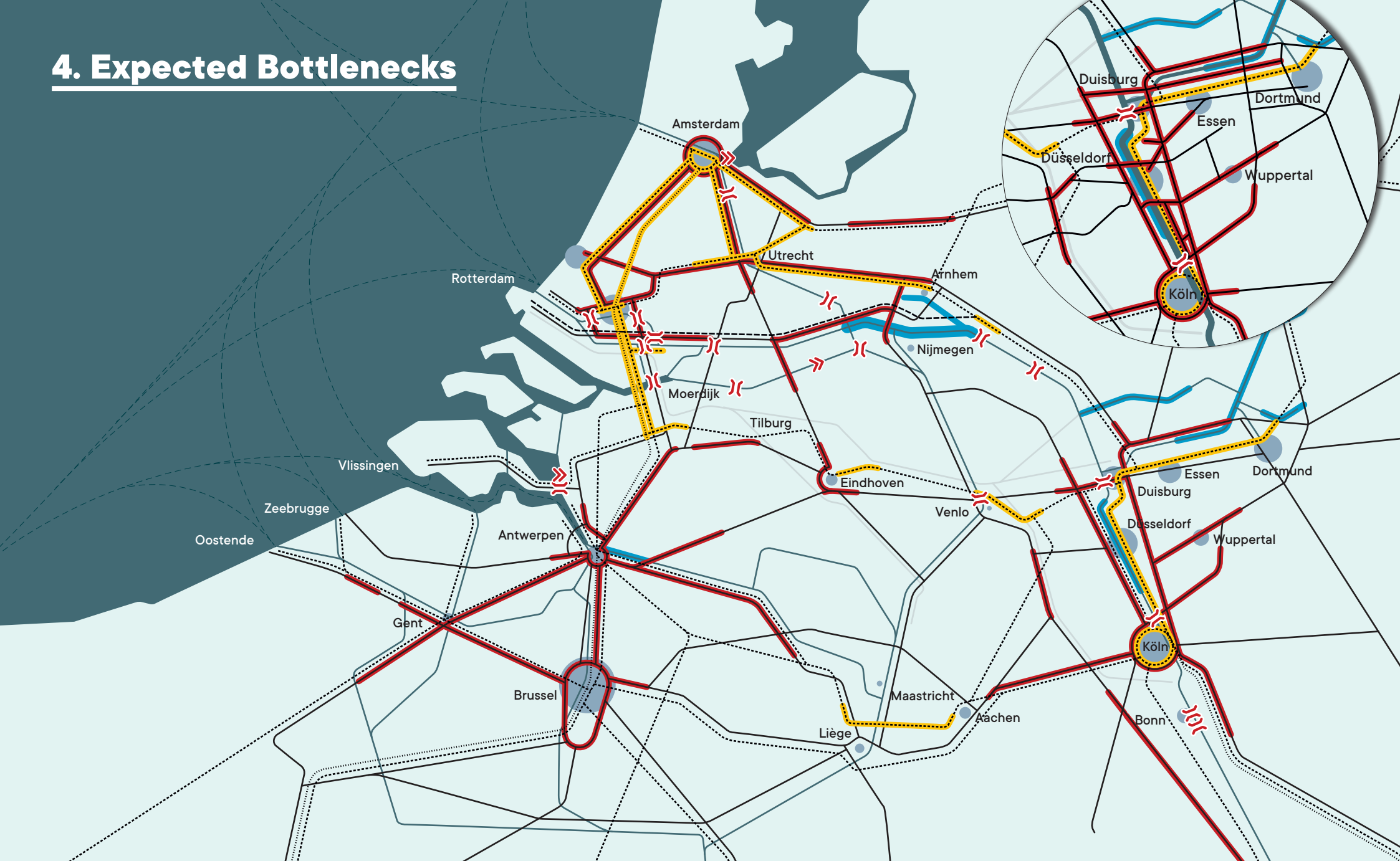
The so-called WLO scenarios are based on different assumptions for worldwide developments in the economy and climate policy. The harbour of Rotterdam for example uses four scenarios for future developments. The scenarios make above all one thing clear: planning strategies for the corridor have to deal with **high levels of uncertainty**. The modal split for freight transport will strongly depend on the growth per segment.

Data observations

The data on the cross-border transport are incomplete, they are not harmonized between Flanders, The Netherlands and North Rhine Westphalia and the sources are difficult to access.

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4. Expected Bottlenecks



SOURCES:
 NMCA (NL)
 Verkehrsstärken NRW, Straßenverkehrszählung 2010
 Verkeersindicatoren snelwegen Vlaanderen 2017

Legend

- waterway / highway
- rail: mixed use
- - - - waterway overseas
- rail: freight only
- rail: passenger HSL

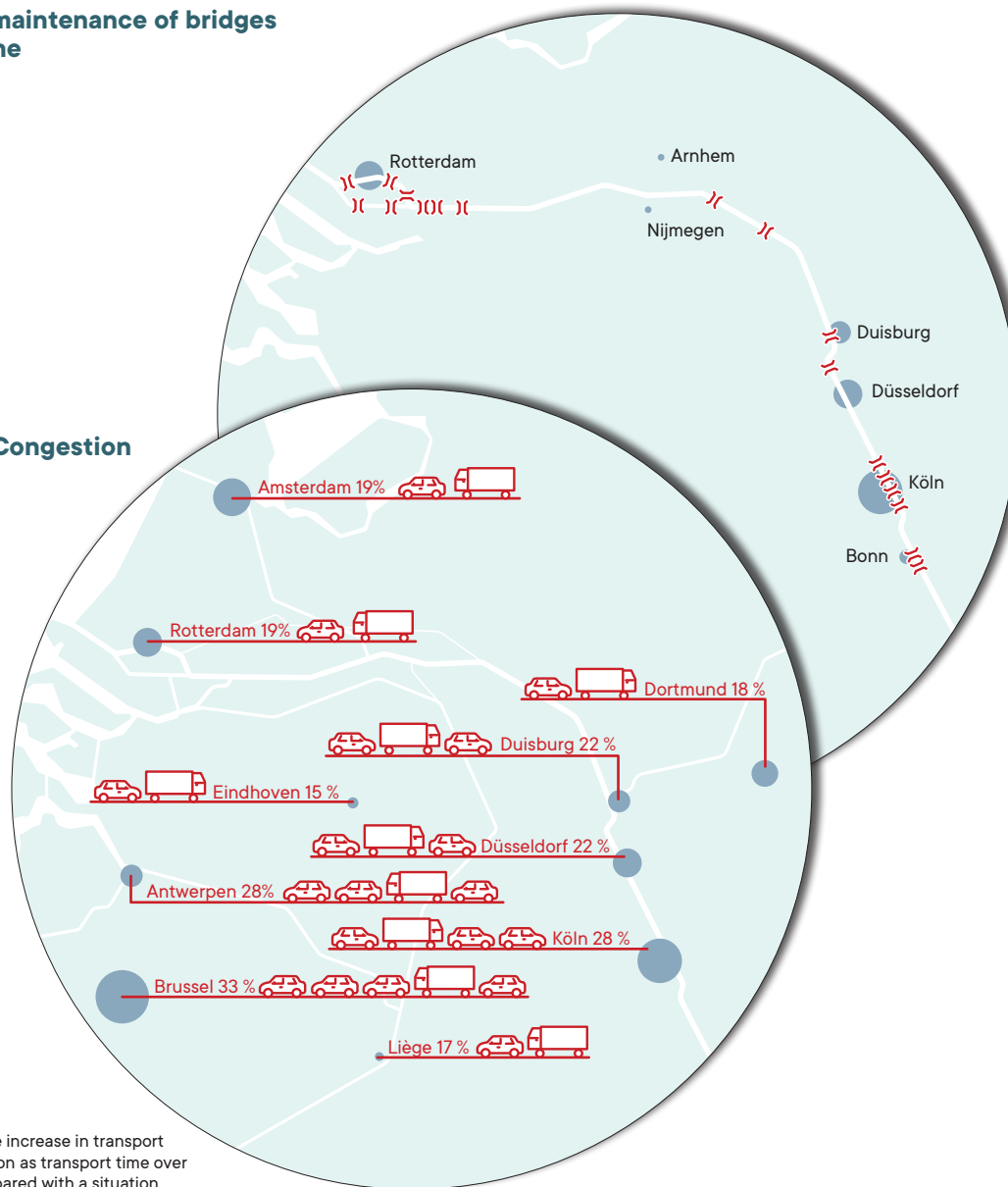
Congestions

- waterway
- rail
- highway
- » lock
- » bridge

4. Expected Bottlenecks

Bottlenecks: maintenance of bridges along the Rhine

Bottlenecks: Congestion around cities



Congestion%: Average increase in transport time in the urban region as transport time over the whole day is compared with a situation without congestion ("free flow").

SOURCE: TomTom 2015

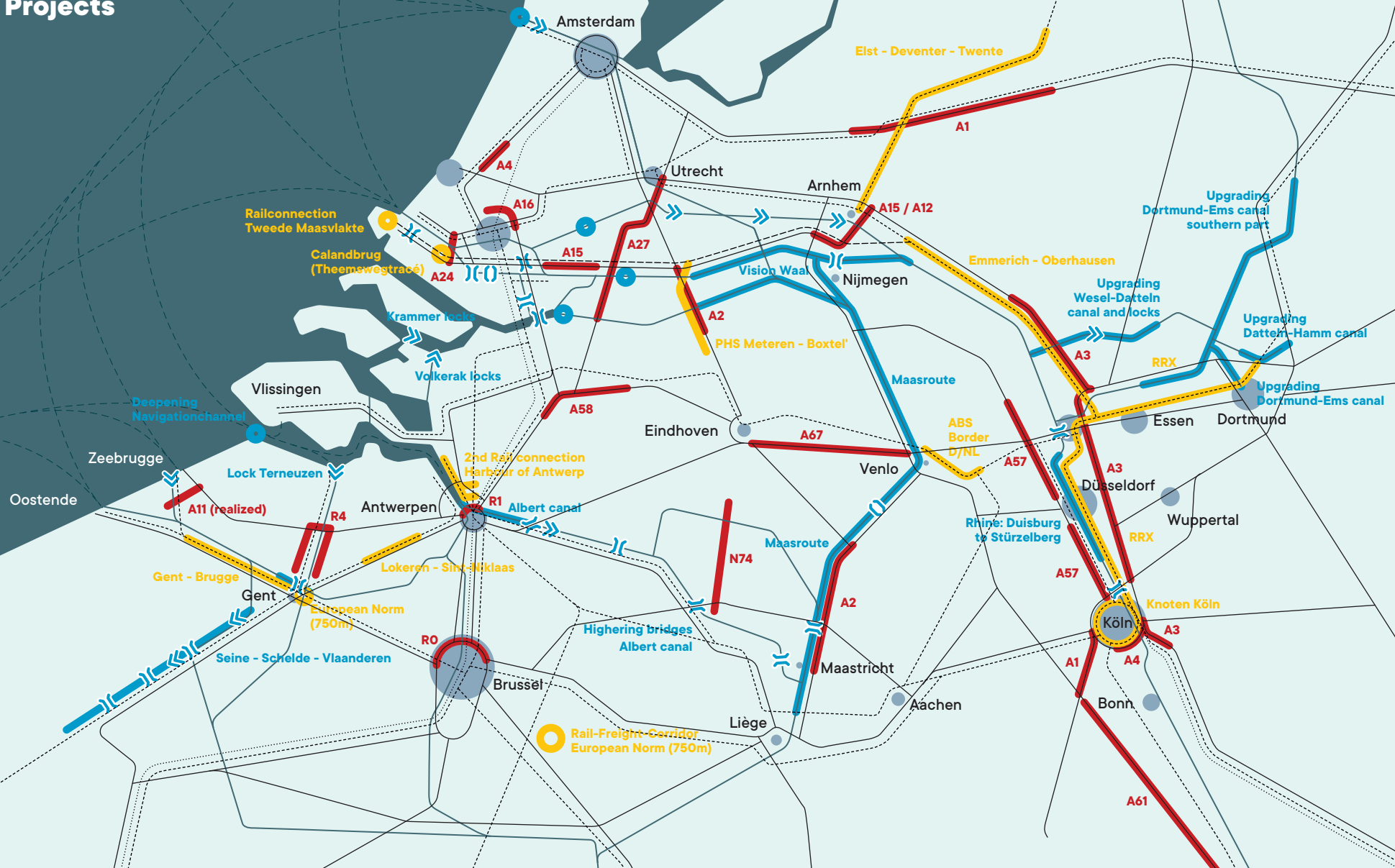
The analyses in Flanders, The Netherlands and North Rhein Westphalia leave no doubt: mayor parts of the infrastructure systems for **road and rail** will be overloaded. The **bottlenecks are located in the densely urbanized areas**. Here person and freight transport on road and rail are competing for the same infrastructure. Furthermore, in these areas the flows of transit traffic and regional traffic meet and clash. This results in congestions not only on the international transport axes but as well on the underlying, regional and local networks. Losses of travel time for both freight and person transport, subsequently economic losses and extra pressure on the living environment (noise and pollution) are the result.

A second issue are the **bridges**: along the Rhine, a whole series of bridges needs to be replaced or restored. These maintenance measures can result in long-time bottlenecks, effecting the functioning of the corridors.

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5. Infrastructure Projects

Decided Projects



SOURCES:
<http://www.bvwp-projekte.de/>
<https://www.mirtoverzicht.nl/mirt-gebieden>

Legend

- waterway
- - - waterway overseas
- highway
- rail: mixed use
- rail: freight only
- rail: passenger HSL

Projects

- waterway
- rail
- highway

lock

bridge, tunnel

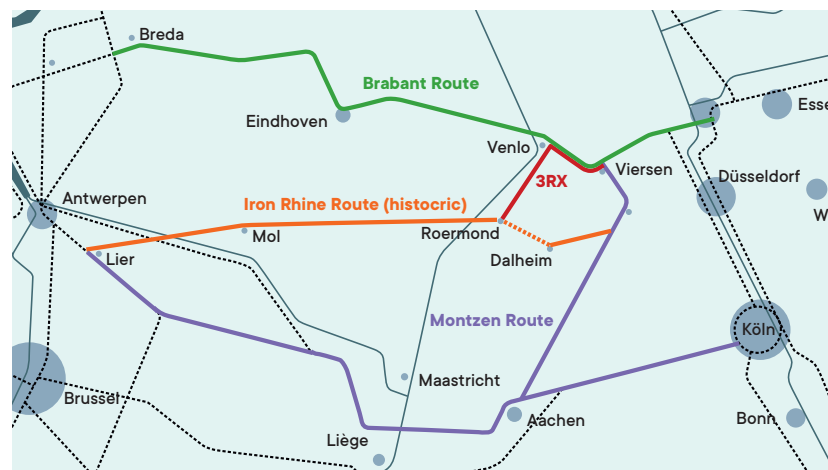
integral project

5. Infrastructure Projects

The **maintenance of infrastructure** is an important issue in all parts of the Rhine Meuse Schelde Region. The overview on the map (sheet 9) shows the decided projects where for example budget is allocated (Netherlands: so called MIRT projects; in NRW projects from the Bundesverkehrswegeplan „im Vordringlichen Bedarf“, Flanders: major projects from Departement Mobiliteit en Openbare Werken and „Meerjaren investeringsplan Infrabel“). The overview makes clear that high investments are needed to keep the corridors up to date.

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3RX Study



Besides the decided infrastructure projects, there is a whole series of **programs and studies which are still under consideration**. An example is the 3RX study for a better rail connection between Antwerp and Northrhine Westphalia.

The **overview of projects and programs** raises the question: **how do they connect?** Is there a bigger picture behind it from a perspective of seamless cross border corridors that is beneficiary for all the metropolitan agglomerations in the Rhine Meuse Schelde Region?

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List of programs (not complete):

Programmaplan goederenvervoerscorridors: optimisation of the Corridor Oost and Corridor South (and linking opportunities for economic developments)

Corridor Antwerpen – Rotterdam: achieving more together and integral, since the competitive position is under pressure due to 4 worldwide trends.

Pipeline Antwerp – Ruhr area: Research into the spatial possibilities for the installation of a pipeline between the seaport of Antwerp and the Ruhr area (Geleen)

Samenwerking in de Eurodelta Metropool: increasing international strength of the Eurodelta

Interreg-project EUREGIO Güterkorridor / EUREGIO Goederencorridor: positioning the Euregio (Ruhr area, Randstad and Hamburg) as a logistics region

3RX Study: missing link Antwerp-Ruhr (fast alternative for Montzen-route), different systems and electrification

Rotterdam Declaration: Cross border passenger railway services

Lage Landen studie: welfare and the decentral urban system in the Eurodelta under pressure due to transitions climate, energy, mobility, agriculture and economy.

3 EUstates2Cross / Eurekarail: cross border traveling and economic advantages

MIRT studie internationale connectiviteit: being (economic) competitive (top 10 regions of Europe) – labour potential

EU; White paper on Transport: prepare transport system for the future AND have a competitive and sustainable transport system

FLUXNET: integral approach for optimizing spatial planning, infrastructure planning and freight transport

European Rail Freight line system (ERFLS): better use of rail capacity, intermodal transport, customized

SmartwayZ.NL: consumer spill in smart mobility system, matching supply and demand of mobility services, optimal accessibility, Smart Mobility Region Zuid-Nederland, deployment of new ITS/

Smart Mobility services and a more attractive region

Structuurvisie buisleidingen: secure current important position in transit of fuels and chemicals AND secure the competitive economic position

Bundesverkehrswegeplan 2030: future proof German infrastructure (most meaningful investments)

Programme Beter Benutten: structural strengthening economics needs infrastructure that offers optimal accessibility to commuters and business

JIVE project: Hydrogen fuel cell buses

CLINSH inland shipping: reducing the exhaust of inland shipping emissions

Vital Nodes: improvement of European interconnection while developing sustainable mobility within the urban nodes on the Trans-European Transport Network (TEN-T).