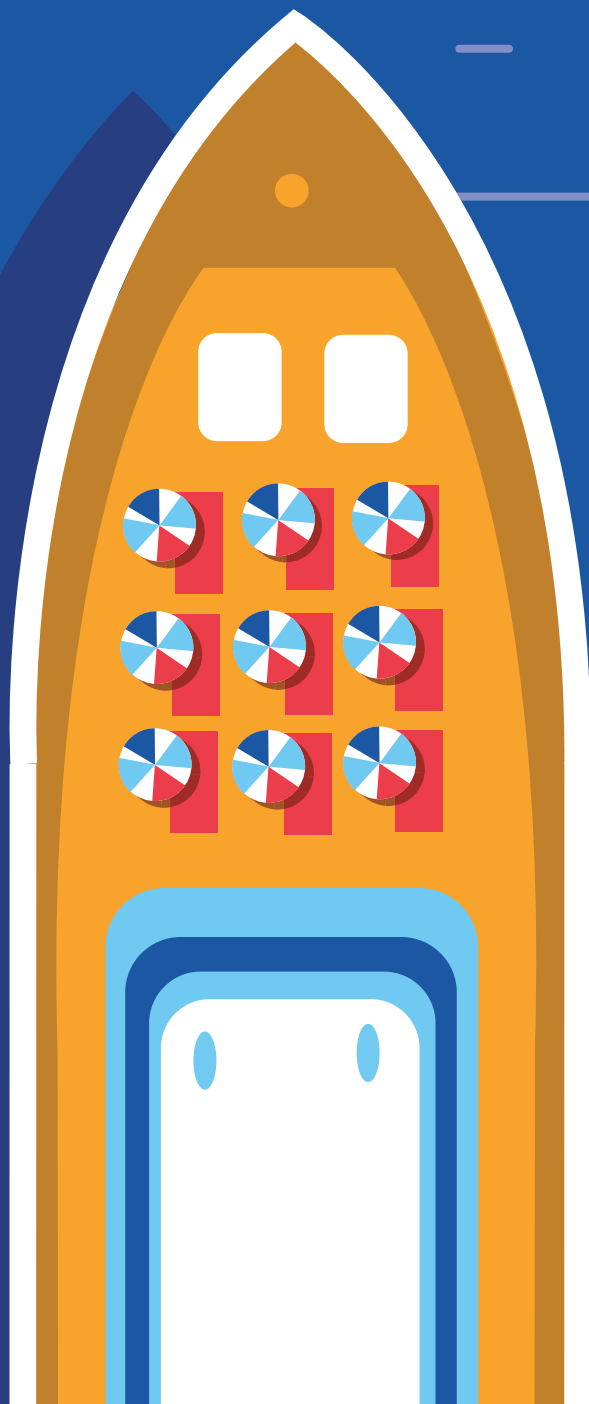


# ANNUAL REPORT 2019

INLAND  
NAVIGATION  
IN EUROPE

MARKET  
OBSERVATION



**CCNR**

CENTRAL COMMISSION  
FOR THE NAVIGATION OF THE RHINE



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September 2019

# FOREWORD



**Bruno Georges**  
*CCNR Secretary  
General*

The Central Commission for the Navigation of the Rhine (CCNR) is delighted to present its 2019 European Inland Navigation Market Observation report, which, as every year, is the result of a very successful and steadily improved collaboration with the European Commission. As before, this exercise goes far beyond the mere writing of a report. Indeed, market observation purports to be a key instrument for the European inland waterway transport sector to enable strategic decisions by both public and private entities. Most importantly, it represents a collaborative effort, which was once again this year an opportunity both to establish new ties with inland navigation players in Europe and to strengthen existing ones.

European inland navigation in 2018 was definitely impacted by the prolonged period of low water experienced in the second half of the year, which must be seen as an important factor affecting several economic parameters. This is reflected in the 2019 report, which analyses the consequences of this extended low water period on inland waterway transport. How to support inland navigation transport in coping with these phenomena will certainly be a question to be addressed in the future.

The new Market Observation report highlights the key results for the year 2018 in relation to various aspects of European inland navigation such as freight and passenger traffic on inland waterways, inland waterway traffic in ports, fleet evolution, transport companies and river cruises, including small river cruise vessels. The age structure of persons active in inland navigation in some European countries is also reviewed in the report. In particular, this 2019 edition of the report includes a chapter dedicated to day trip vessels on European rivers, canals and lakes.

This year, I would also like to underline the analysis of freight rates and transport volumes for liquid cargo transport in the FARAG region (Vlissingen-Antwerp-Rotterdam-Amsterdam-Ghent), following a proposal and with the active support of the inland tanker barge corporation CITBO. Such a study was included, for the first time, in the report, thereby expanding further its statistical sources for specific geographical areas. I wish that this fruitful cooperation can continue in the future.

Like every year, the CCNR Secretariat would like to thank warmly all contributors to the report, the European Commission, Eurostat and all National Statistical Offices, as well as the Mosel, Danube and Sava River Commissions, and all stakeholders and actors who have been involved in the elaboration of the report. I would also like to highlight the essential role played by sector representatives EBU/European Barge Union and ESO/European Skippers Organisation providing support and expertise, always to the benefit of better quality reports.

I look very much forward to continuing such a collaboration also outside the remit of this report, notably with the newly established European Inland Waterway Transport Platform, to meet the future challenges facing the inland navigation sector and to take advantage of all opportunities likely to encourage the sustainable, ecological, social and economic development of inland navigation.

I wish you a very pleasant reading of our 2019 edition of the Market Observation report, which I hope will provide you with many valuable insights.

From the perspective of European inland waterway transport, this Market Observation Report, published by the Central Commission for the Navigation on the Rhine (CCNR) in cooperation with the European Commission, is immensely important for the inland waterway transport sector.

Facts and figures are needed to take policy decisions. They are equally important to identify trends that influence decisions at all levels of operators in the entire logistic chain. Over the past years the Market Observation system developed and succeeded in providing relevant information regarding all segments of our sector.

Last year was characterised by a number of significant trends and developments. The extremely low water level on the major rivers in Europe led to a substantial decrease in volumes transported on European waterways. Although this has had a positive influence on the freight rates, this development has led to a shift of cargo to other modes which will not be won back easily. In addition, it has a negative impact on our sector's image. More investigations will be needed in order to define whether the sector was faced with an extraordinary situation or a trend influenced by climate change. However, it is evident that the lack of maintenance of the waterways must be addressed to avoid a further deterioration of this situation. This requires adequate follow-up by European and national infrastructure decision makers.

The performance of inland waterway transport in Europe is influenced by the above and by other developments over the past years. It shows both substantial increases and decreases in European countries with navigable waterways that allow an analysis to be made of the future measures needed.

This Market Observation report is a perfect tool to show the positive trends in our sector. These are most obvious in the fields of container transport and passenger transport. The developments in these segments of our industry were also highlighted in last year's annual Market Observation report and show the tremendous increase in the transport of container volumes and passengers. And they should encourage all players in the chain to realise a further necessary modal shift from road to inland waterway transport.

Due to the close cooperation between the CCNR and the Danube Commission, as well as other river commissions, over the past years this instrument succeeded in enlarging its scope and providing relevant information on the entire system of navigable waterways in Europe.

On behalf of the inland waterway transport sector we would like to express our appreciation and thanks for this market observation tool, and we look forward to our continued contribution to this joint effort for the benefit of our industry.



**Paul Goris**

*President  
European Inland  
Waterway  
Transport Platform*





Szczecin

Berlin

Dresden

Prag

Regensburg

Linz

Vienna

Bratislava

Budapest

Venice

Belgrade

Ruse

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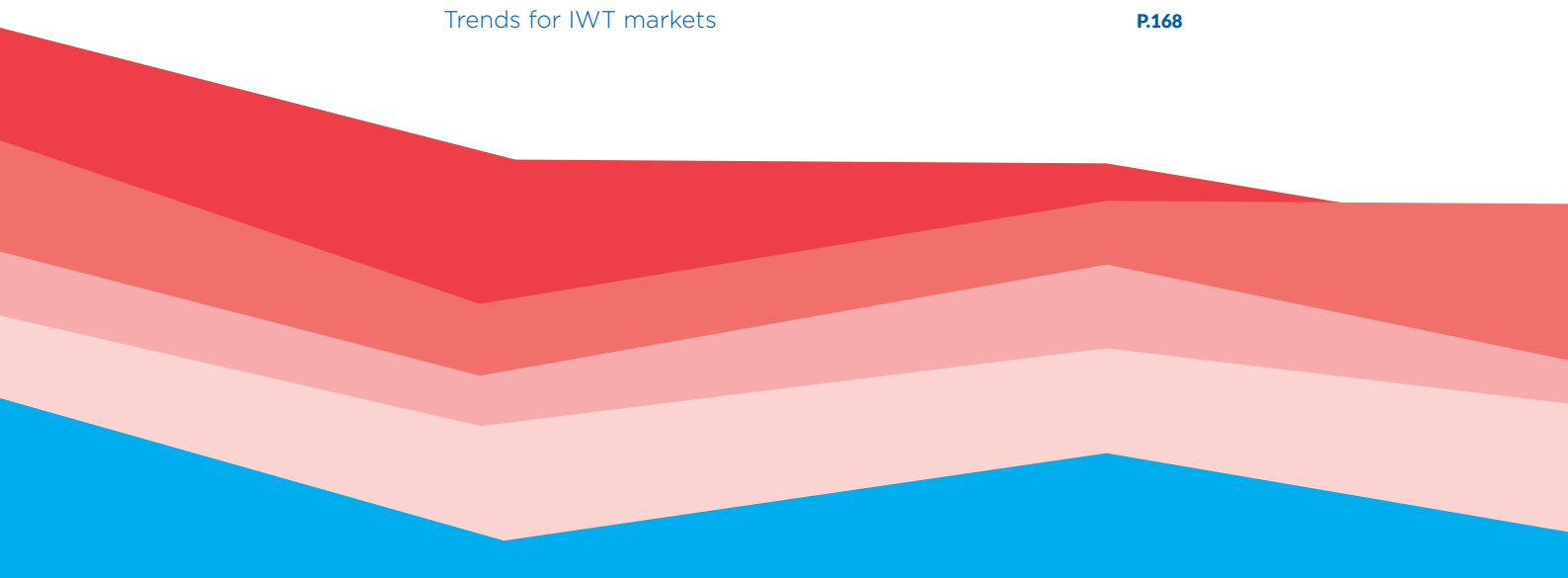
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# SUMMARY

European inland navigation in 2018 was certainly impacted by the protracted low water period experienced in the second half of the year, which must be seen as an important factor influencing several economic parameters. From a regional perspective, the influence of the extreme drought on transport activity was particularly pronounced on the Rhine, on its tributaries, on the Upper and Middle Danube, and on the Upper and Middle Elbe.

Transport activities on many canals in the Netherlands, Belgium, France and in northern Germany were significantly less affected. Shipping on the Lower Danube in Romania and Bulgaria also held up well owing to its river-sea nature in the vicinity of the Danube estuary.

Container traffic, which continues to be concentrated almost exclusively on the Rhine countries, maintained, and in some instances even increased, transport volumes in 2018, as large swathes of its operational area are located on canals or waterways enjoying considerable resilience in the face of low water levels (in Belgium, France, the Netherlands and northern Germany). It expanded in France in the Bassin Nord-Pas-de-Calais, whereas it maintained its previous level unchanged in the Seine and Rhône-Saône basins.

The Rhine, on the other hand, posted a 10% decline in container traffic (in terms of TEU) following growth in the five previous years. Shipping on the Middle and Upper Rhine (these two stretches of the Rhine account for 49% of container transport output on the Rhine) was severely curtailed in the late autumn of 2018.

The interruption in the logistics chains, not only for container transport, but also for chemicals, petroleum products, iron ores and other industrial raw materials, caused economic losses on a considerable scale. Statistical calculations indicate a loss of almost 5 billion euros for German industrial output in the second half of 2018 as a result of the decline in Rhine traffic.

A further consequence was the sharp hike in transport prices, especially on the Rhine. In October and November 2018, freight rates for liquid cargoes were more than four times higher than hitherto (for ARA-Rhine trade).

For transport movements in the FARAG region (Flushing, Amsterdam, Rotterdam, Antwerp, Ghent) a statistical analysis based on freight rates for liquid cargoes reveals that prices in the second half of the year have risen in this region as well. Even if water level conditions in this part of Western Europe have been significantly less affected, the increase in freight rates can be explained in terms of market responses: Belgian and Dutch operators, especially those with small vessels, switched their area of operation to the Rhine in the autumn of 2018 to take advantage of the high freight rate level.

Consequently, this withdrawal of capacity within the FARAG region caused a general upward pressure on freight rates there as well.

Examination of historical data on low water levels in the past (1820-2018) reveals that years with a high frequency of low-water days were also a very common occurrence at the beginning of the 20th century, in the 1940s and in the 1970s. These historical data demonstrate that marked fluctuations in navigational conditions occurred even without climate change and are highly likely to recur in future. They also point to the necessity of a partial rethink of current logistical concepts (for instance, concerning vessel size and design).

It should be mentioned in this regard that the Rhine countries' freighter fleet is characterised by an increasing average cargo capacity and a decline in the number of small vessels, a development which continued in 2018, especially for the French fleet. New construction rates in 2018 were on the low side, but vessels entering the market were of all size classes and included a number of smaller vessels with a tonnage less than 1,000 metric tons.

The inland navigation company sector for Western Europe presents a very fragmented picture: 87.5% of all inland waterway freight transport companies in Europe are located in Rhine countries, the Netherlands alone accounting for 58% of all European freight transport companies. Admittedly, 41% of all Dutch dry freight companies and 51% of all Dutch liquid freight companies are one-man operations. The size structure of French freight transport companies is very similar to that in the Netherlands.

Employment changes in the freight transport sector in recent years in most European countries have been characterised by a downward trend, based on available data for the period from 2012 to 2016. Exceptions to this rule were Germany, Switzerland, Poland, Italy and Latvia, where the workforce was larger in 2016 than in 2012. The biggest absolute decline was posted by the Netherlands, where there were 522 fewer employees in 2016 than in 2012 (in France: -279, in Germany: +281).

In the passenger transport sector on the other hand, both the number of companies and the number of employees increased between 2012 and 2016. The biggest increase in the workforce in Europe was posted by Germany (+1,745), France (+551), Italy (+470) and the Netherlands (+306).

Eurostat data on inland waterway company profitability reveals that freight transport companies in Belgium and the Netherlands are significantly more profitable than companies in France, Germany, Slovakia and Hungary. In this context, profitability is measured in terms of gross operating surplus relative to turnover.

In the passenger transport sector, this profitability indicator has increased in Germany in recent years, which is consistent with the positive increase in employment in this sector in Germany. France again exhibits relatively low profitability in this segment. According to Eurostat data, its position within the profitability spectrum can be explained by very high French inland navigation personnel costs.

In contrast to the difficulties in the freight transport sector in 2018, river cruise passenger numbers increased to new record levels. With a year-on-year growth rate of 14.6%, river cruise vessels in Europe carried 1.64 million tourists. Almost 38% of these tourists nowadays are from the US and Canada. A tremendous growth rate of 41% (but from a much lower base) was observed for tourists from Asia, Russia and Scandinavia. The number of British and Irish travellers also experienced incredibly strong growth of 31%.

As the river cruise operating areas are distributed throughout Europe, the sector was very resilient to low water. Although the Rhine saw a modest 7% decline in cruise vessel traffic, there was an increase in cruise vessels operating on the Danube (+6%) and on the Moselle (+12%). Expansion of the fleet slowed somewhat in 2018, but the order books indicate that new build numbers in 2019 are regaining momentum.

Another chapter analyses day-trip vessels (passenger vessels without cabins, which are engaged in excursions of a day). In parallel with the distribution of turnover in European passenger traffic, the greatest number of day-trip vessels is to be observed in Germany, France, the Netherlands, Switzerland and Italy. This analysis includes both day-trip vessels on rivers and canals, as well as on lakes. The available capacity in terms of vessels and passenger accommodation has remained relatively stable over time, but a growth trend is to be observed for major cities (e.g. Amsterdam, Berlin, Hamburg, Paris). Passenger numbers as well are following a slight upward trend, but the data also shows this segment is not fully immune to economic conditions. For example, the 2011/2012 economic crisis severely depressed demand in important countries (Italy, France).

The chapter in the report on the economic outlook deals with the sand, gravel, stone, and building materials goods segment. This segment represents 37% of all inland navigation goods transport movements in France, 25% in Belgium, 20% in the Netherlands, 14% in Germany and 21% in Romania. Building activity in Europe has been expanding since 2014, which is attributable to positive signals in terms of demography, public infrastructure investment and economic recovery in the wake of the 2009 real estate crisis. The carriage of related goods on inland waterways (above all gravel, sand, building materials) followed this expansion to a certain degree, which is evident from a correlation between monthly and quarterly building activity on the one hand and transport movements of the aforementioned materials by waterway on the other hand. The outlook for the next three years however points to a slower rate of expansion in the construction sector. Transport demand should mirror this cooling-off process while continuing however to grow, the construction sector being an important one with positive growth prospects for the future, which is evident from long-term forecasts. The inland navigation sector should do its utmost to participate in this growth.

<https://www.inland-navigation-market.org/>









An aerial photograph of a port area, showing a large ship docked at a pier with a crane, and stacks of shipping containers in the foreground.

# 01

## ECONOMIC CONTEXT

---

- In 2018, economic activity reduced both in the EU and on a global scale, with growth slowing down significantly.
- This decline is supposedly due to a slower global trade growth, high uncertainty regarding trade policies, the upcoming Brexit and an overall weak industrial production in the Euro area.
- With regard to the labour market, there has been an employment increase of 1.6%. Labour costs increased as well but prices remained at the same level.
- All sectors were affected by the declining global trade, except for the booming construction sector - an important segment for inland shipping - which remained resilient.

# GENERAL ECONOMIC CONDITIONS

## AND OUTLOOK IN EUROPE

In 2018 the economic activity diminished both in the EU and on a global scale after a period of sustained potential growth in many major economies. Following the four quarters of 0.7% (q-o-q) GDP growth in 2017 in the Euro area, the growth slowed down significantly, with a GDP growth of only 0.4% in the first two quarters and further losses in the last two quarters with a GDP growth of only 0.2%. For the year 2018 in general, the GDP grown by 2.1% in the EU-27 and by 1.9% in the Euro area. The main drivers for economic growth in 2018 were domestic consumption and investments. The only European country that defied the economic slowdown in 2018 was Hungary, reaching a GDP growth rate of almost 5%.<sup>1</sup>

The main reasons for the decline are supposedly a slower global trade growth, high uncertainty regarding trade policies, the upcoming Brexit and an overall weak industrial production in the Euro area. Services on the other hand seemed to be more resilient to the economic slowdown. The trade tensions between China and the US were the main cause of high uncertainty, leading to high volatility and also to corrections of global financial market prices. These developments are being counteracted by new trade agreements, such as between the EU and Japan, or the CPTPP (Comprehensive and Progressive agreement for Trans-Pacific Partnership) which should support global trade.<sup>2</sup>

With regard to the labour market, there has been an employment increase of 1.6%. The most notable increase was in the construction sector, while employment growth in manufacturing has come to a standstill. However, the robust labour market was the driver for domestic consumption. In 2018, labour costs grew by 2.4%, but the labour cost pressures were not reflected in higher prices. The pass-through from wages to prices was not as high since companies squeezed their profit margins. This can be mainly explained by two factors: in times of low inflation, price diversion is narrower due to the fact that companies that raise prices attract the attention of the consumer, thereby risking the loss of market shares. The other factor is that costs are often passed on to prices when the demand is high, but with the recent negative demand shock, companies were reluctant to do so.<sup>3</sup>

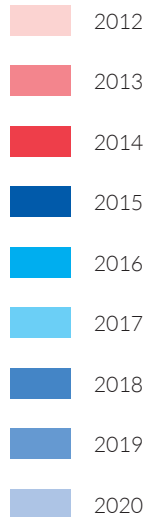
Nevertheless, the worsening corporate earnings reports and trade tensions between the US and China, led to significant corrections of global stock market prices in the second half of 2018. Industrial production was falling further across countries and sectors except for the construction sector (for the construction sector, see also the outlook in chapter 9). In the first months of 2019, stock market prices recovered.

<sup>1</sup> European Commission, *Spring European economic forecast, Spring 2019*

<sup>2</sup> European Commission, *Spring European economic forecast, Spring 2019*

<sup>3</sup> European Central Bank, Mario Draghi speech, March 2019

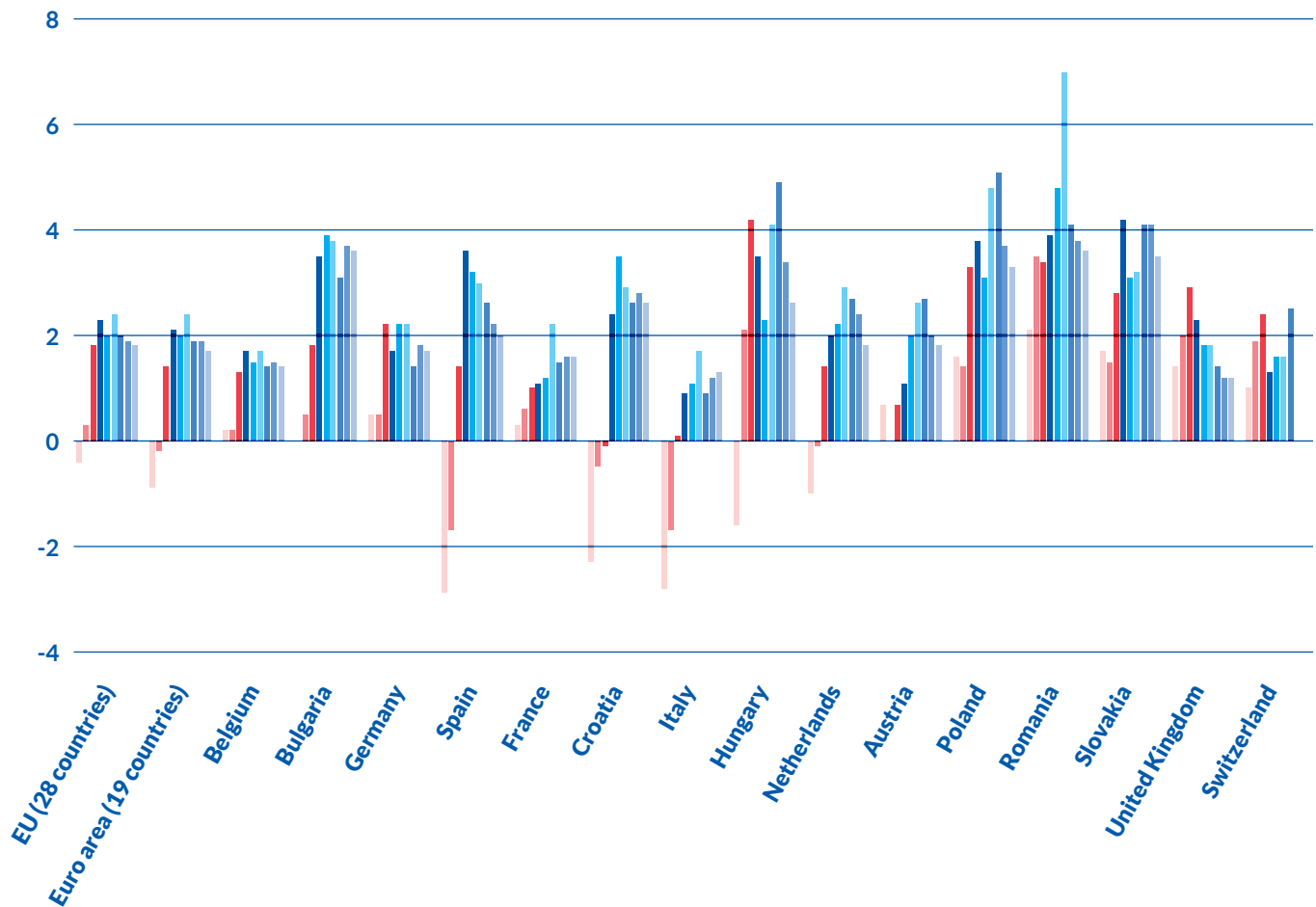




ECB's monetary policy has remained highly accommodative. While the ECB decided to end its net asset purchases in December 2018, ECB interest rates will remain at the current level at least through the summer of 2019, due to monetary policy stimulus, such as forward guidance on ECB policy rate and the reinvestments of the sizeable stock of acquired assets. During 2018 the Euro weakened by 1% in nominal effective terms against the Japanese yen and the pound sterling but remained strong against the US dollar.

Regarding global trade, Euro area export volumes weakened throughout 2018, resulting in a growth rate of only 0.1% in 2018-Q3. Services exports on the other hand remain strong. Imports to the Euro area also slowed, but more gently than exports.<sup>4</sup>

#### GDP GROWTH RATES IN THE EU-28, IN THE EURO AREA AND PER COUNTRY (IN %) INCLUDING FORECAST FOR 2019 AND 2020



Source: Eurostat [tec00115] and European Commission (European Economic forecast, February and Spring 2019) for the years 2019 and 2020

<sup>4</sup> European Commission, European economic forecast, February 2019









# 02

## FREIGHT TRAFFIC ON INLAND WATERWAYS

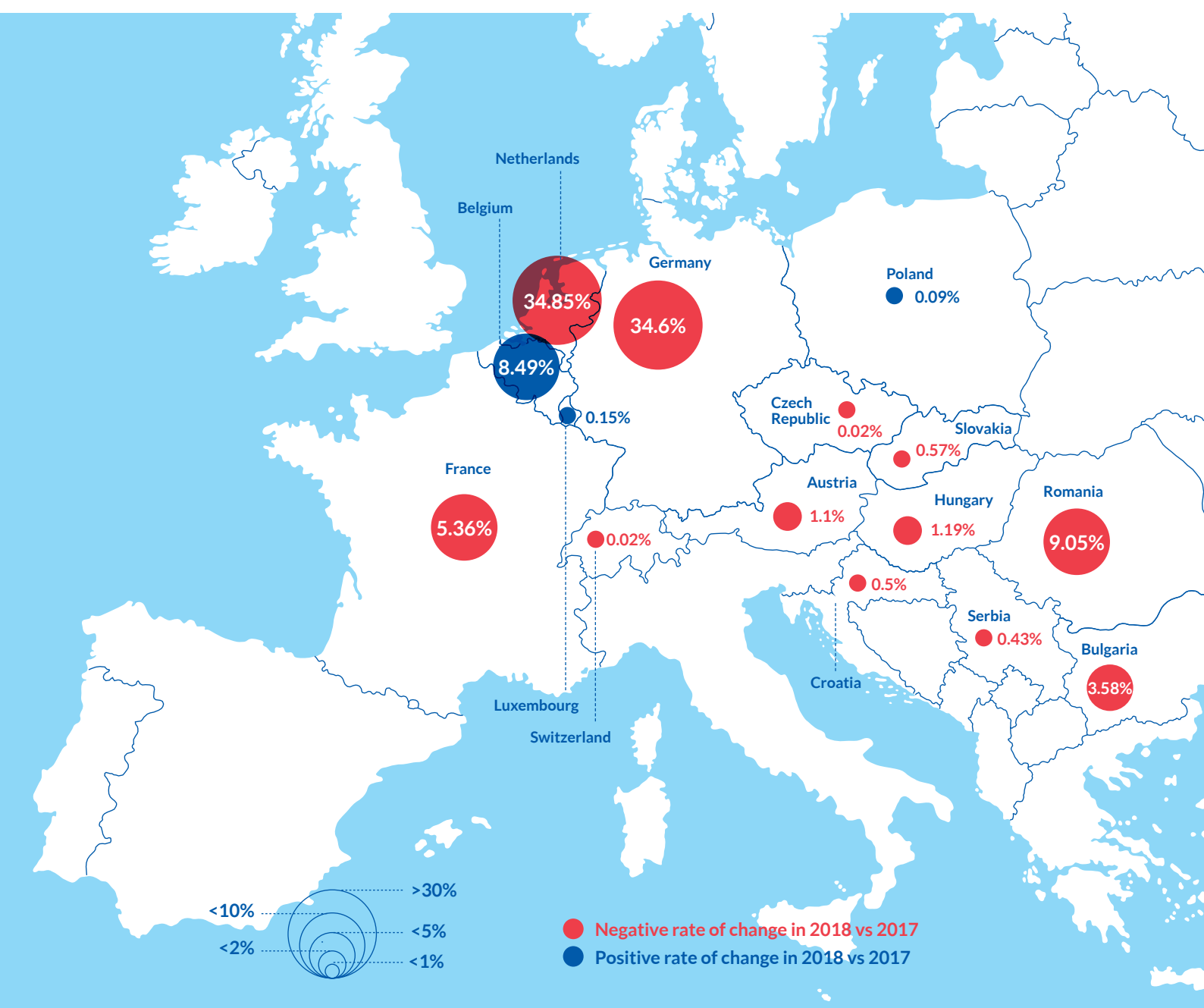
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- Cross-border traffic makes up for 53% of all IWT transport in the EU. This type of transport also represents 57% of all IWT traffic in the Rhine basin and 35% in the Danube basin.
- Cross border traffic is particularly important between the Netherlands and Germany, especially due to large volumes of commodities being transported from the Dutch seaports to Germany.
- The EU transport performance on European inland waterways is mainly driven by the performance in Rhine countries, which accounts for 84% of the total IWT performance in the EU plus Switzerland.
- The volume of goods transported on the traditional Rhine decreased by 11% compared to 2017, resulting mainly from the low water period and the cooling down of the business cycle in the second half of 2018.
- Goods transport on the Lower Danube, which accounts for 75% of total transport performance on the Danube, showed resilience to low waters and increased volumes in 2018, while the Upper and Middle Danube were negatively impacted.
- Container transport continued its upward movement in Belgium, France and the Netherlands, while it fell by 10% on the Rhine, as a result of low water levels in autumn 2018.

# INLAND NAVIGATION

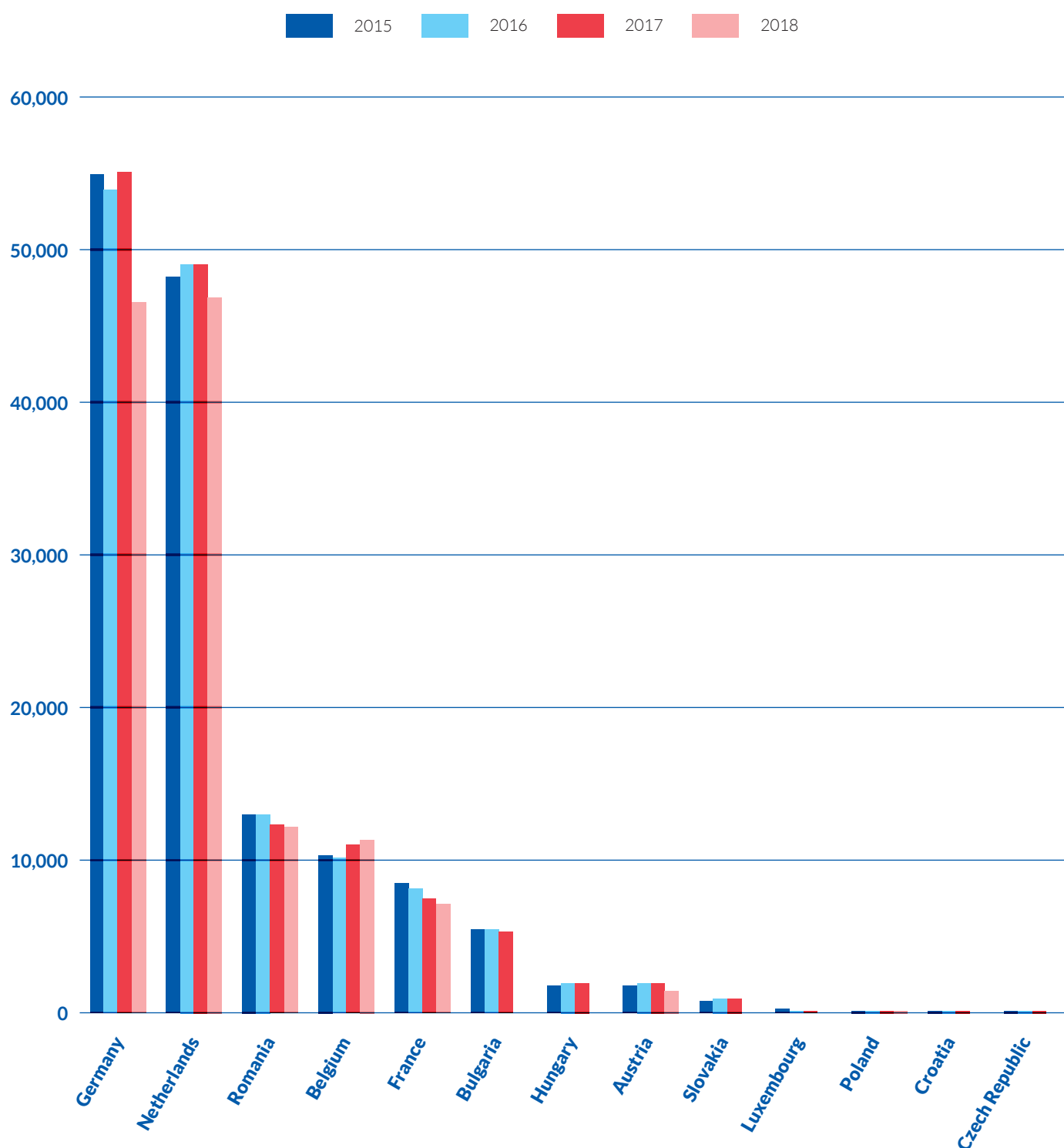
## GOODS TRANSPORT IN EUROPE

SHARE OF THE COUNTRIES' TONNES-KM (TKM) IN TOTAL TRANSPORT PERFORMANCE  
IN EUROPE (SHARE IN %)



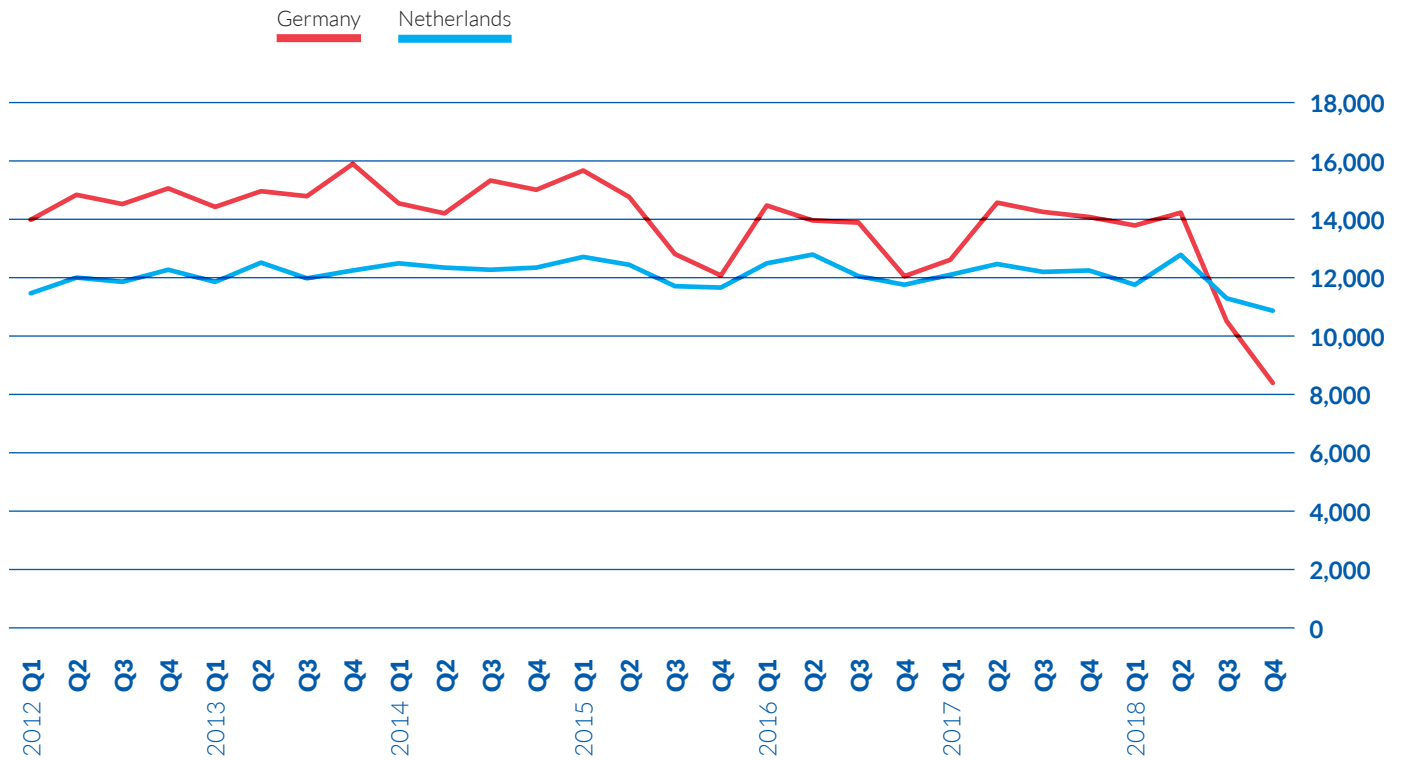
Source: Eurostat, OECD (Switzerland, Serbia)

### IWT TRANSPORT PERFORMANCE IN 2015, 2016, 2017 AND 2018 IN MAIN EU IWT COUNTRIES (TRANSPORT PERFORMANCE IN MILLION TKM)

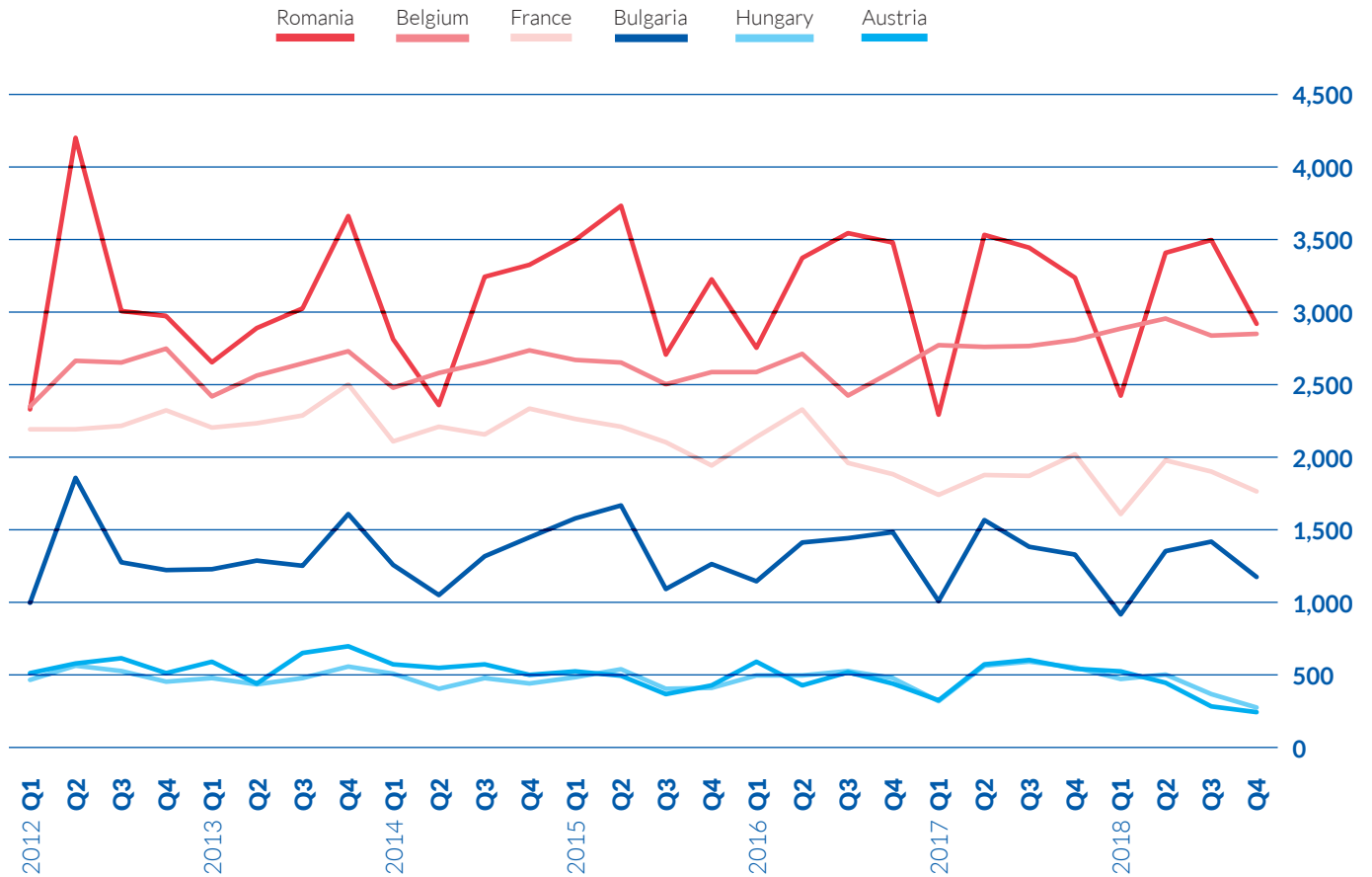


Source: Eurostat [iww\_go\_atygo]

### QUARTERLY TRANSPORT PERFORMANCE EVOLUTION IN MAIN IWT EU COUNTRIES (TRANSPORT PERFORMANCE IN MILLION TKM)



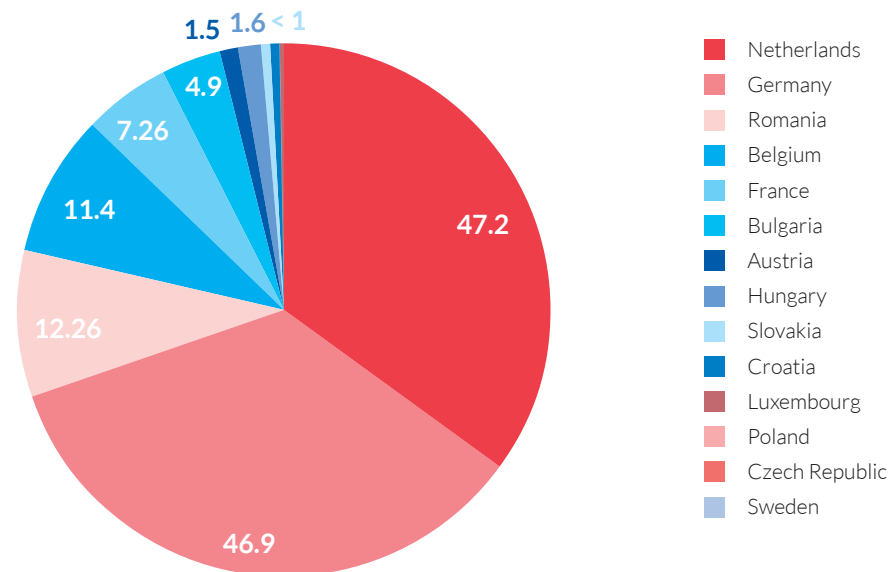
Source: Eurostat [iww\_go\_qnave]



Source: Eurostat [iww\_go\_qnave]

Rhine countries (Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland) account for 84% of total inland waterway transport performance in the EU plus Switzerland. Danube countries have a share of 16%, and all other countries taken together have a share of almost zero percent.

#### YEARLY INLAND WATERWAY TRANSPORT PERFORMANCE IN EU COUNTRIES (IN BILLION TKM IN 2018)\*



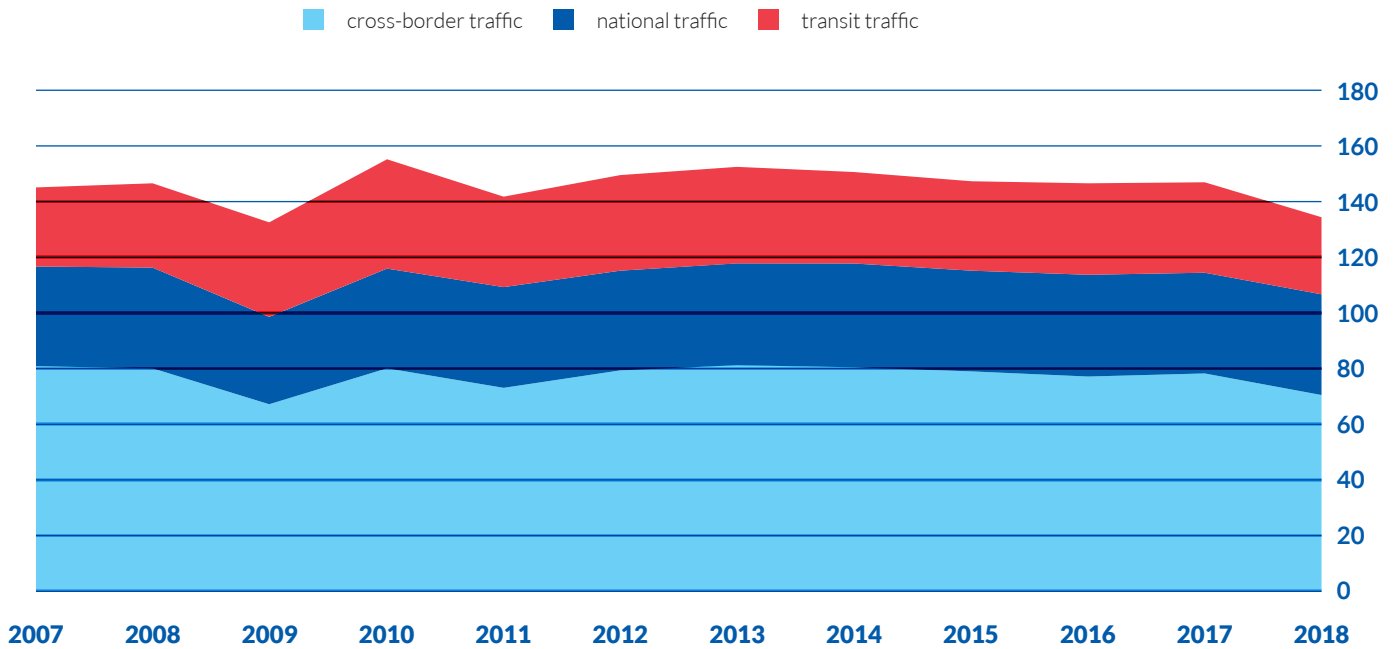
Source: Eurostat [iww\_go\_atygo]  
\*Data for UK and Italy not yet available for 2018

According to Eurostat figures<sup>5</sup>, ores, sands, stones and building materials account for 26% of total IWW transport performance in the EU plus Switzerland. The energy sector (petroleum products and coal) represents 25%. Agricultural products and food products account for 15%. Goods in containers represent 11%, as is the case for chemicals. The share of metals is 6%, and wastes and secondary raw materials (including scrap steel) account for 3%.

<sup>5</sup> [iww\_go\_atygo]

## Evolution of total IWT and of cross-border traffic in the EU

## YEARLY INLAND WATERWAY TRANSPORT PERFORMANCE IN THE EU (IN BILLION TKM)



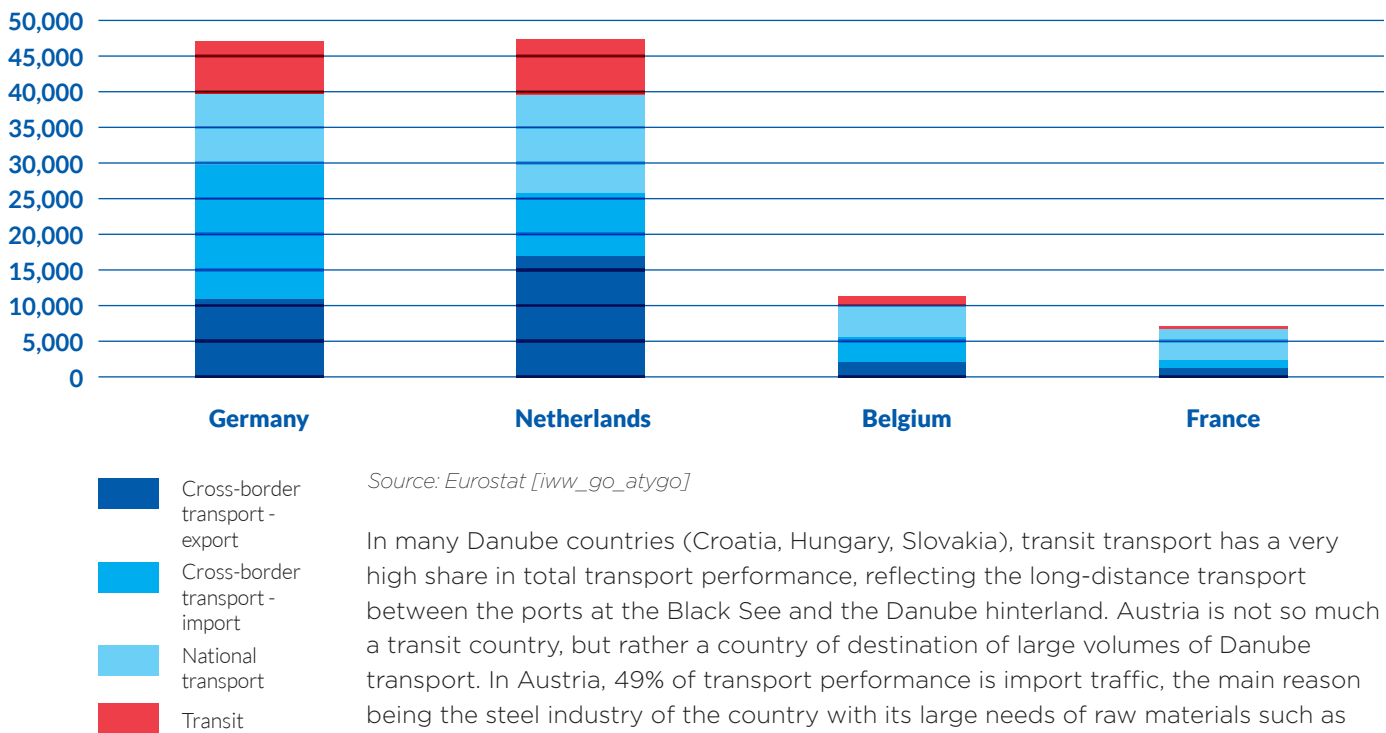
Source: Eurostat [iww\_go\_atygo]

Cross-border transport performance had a share of 52% of all IWW transport performance in the EU in 2018, and this figure has been quite stable since 2007. National traffic represented 27%, and transit traffic 21%.

In Rhine countries, the different types of transport vary between the countries. In Germany 40% of all transport performance is made up of imports (cross-border-transport – import), due to the large volumes of commodities, notably for the steel industry (iron ore, coal), that are imported from seaports in the Netherlands. The Netherlands have a high share of exports (cross-border transport – exports), which mirrors the high imports of Germany.



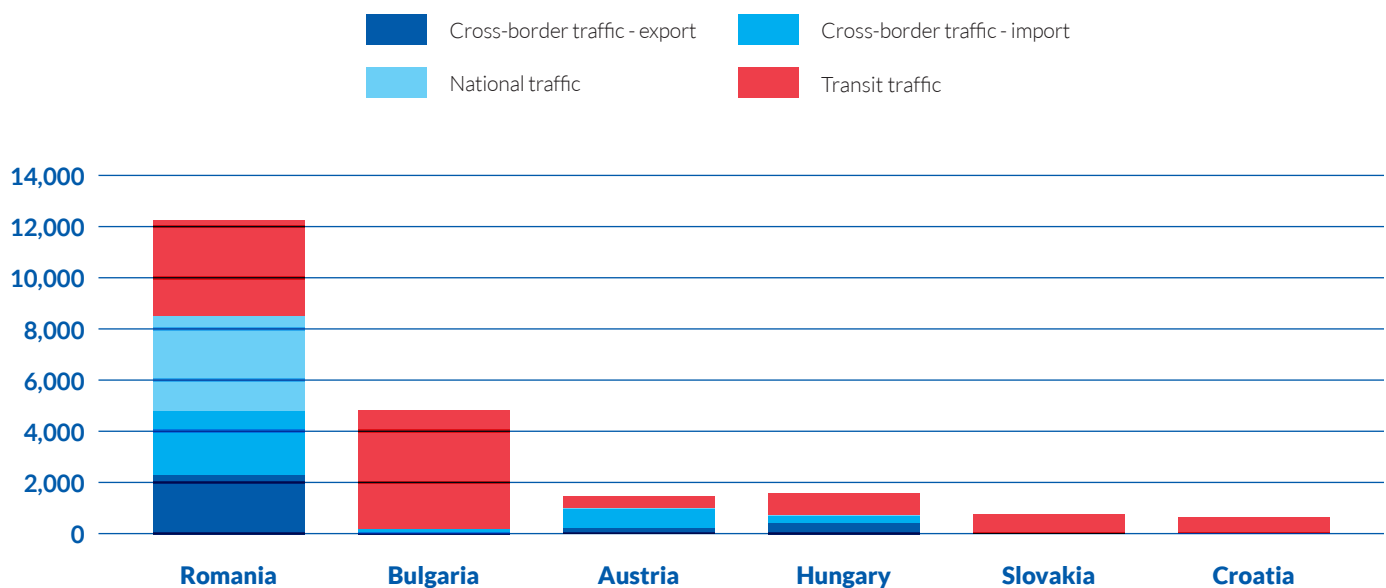
### INLAND WATERWAY TRANSPORT PERFORMANCE IN RHINE COUNTRIES ACCORDING TO TYPE OF TRANSPORT IN 2018 (IN MILLION TKM)



Source: Eurostat [iww\_go\_atygo]

In many Danube countries (Croatia, Hungary, Slovakia), transit transport has a very high share in total transport performance, reflecting the long-distance transport between the ports at the Black Sea and the Danube hinterland. Austria is not so much a transit country, but rather a country of destination of large volumes of Danube transport. In Austria, 49% of transport performance is import traffic, the main reason being the steel industry of the country with its large needs of raw materials such as iron ore and coal, which are transshipped at the Black Sea ports and transported upstream on the Danube.

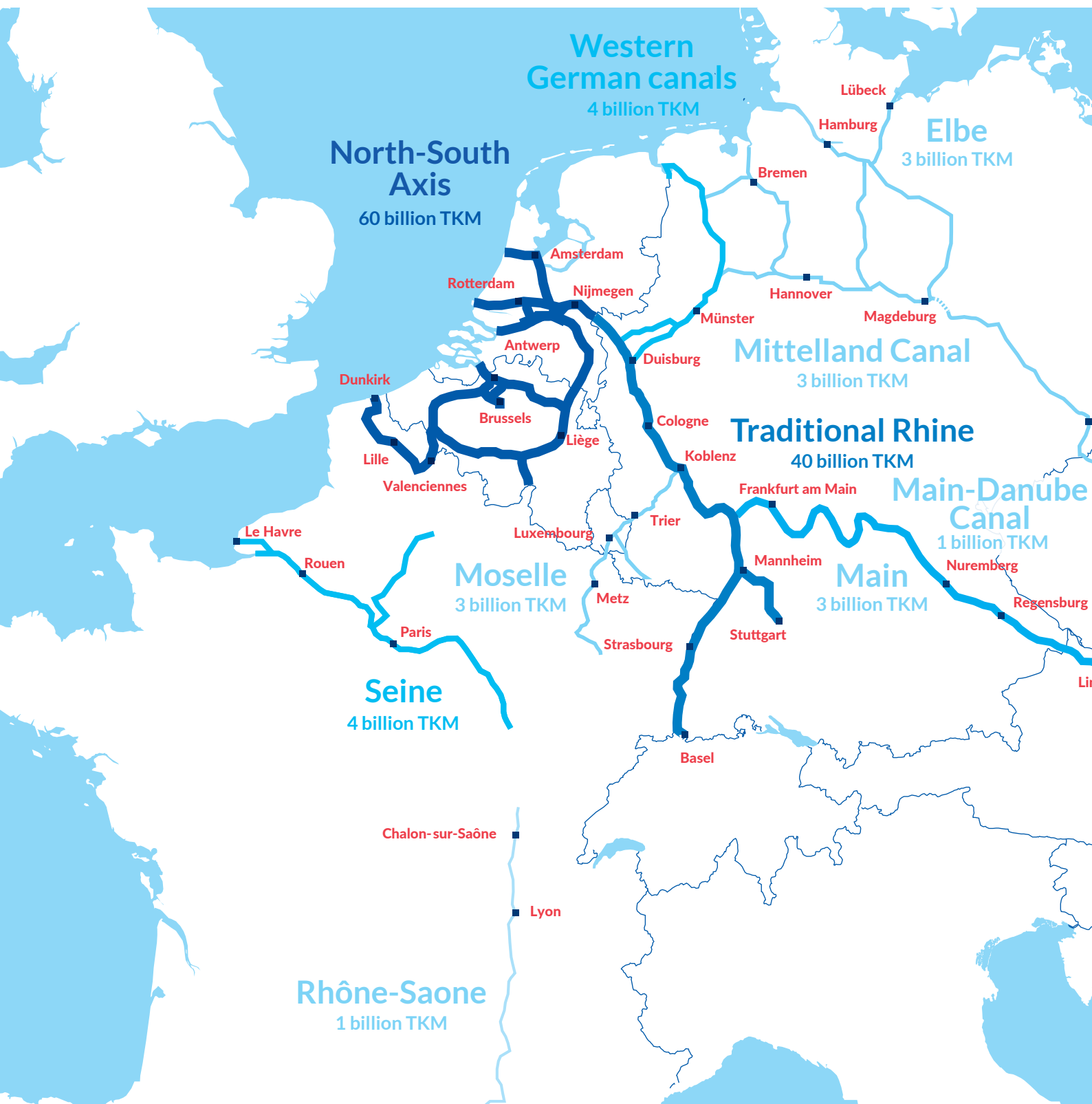
### INLAND WATERWAY TRANSPORT VOLUME IN DANUBE COUNTRIES ACCORDING TO TYPE OF TRANSPORT IN 2018 (IN MILLION TKM)



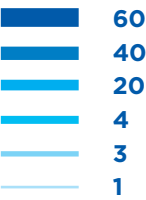
Source: Eurostat [iww\_go\_atygo]

# INLAND NAVIGATION

## GOODS TRANSPORT IN MAIN EUROPEAN RIVER BASINS



TRANSPORT PERFORMANCE IN MAIN EUROPEAN RIVER BASINS (IN BILLION TKM)



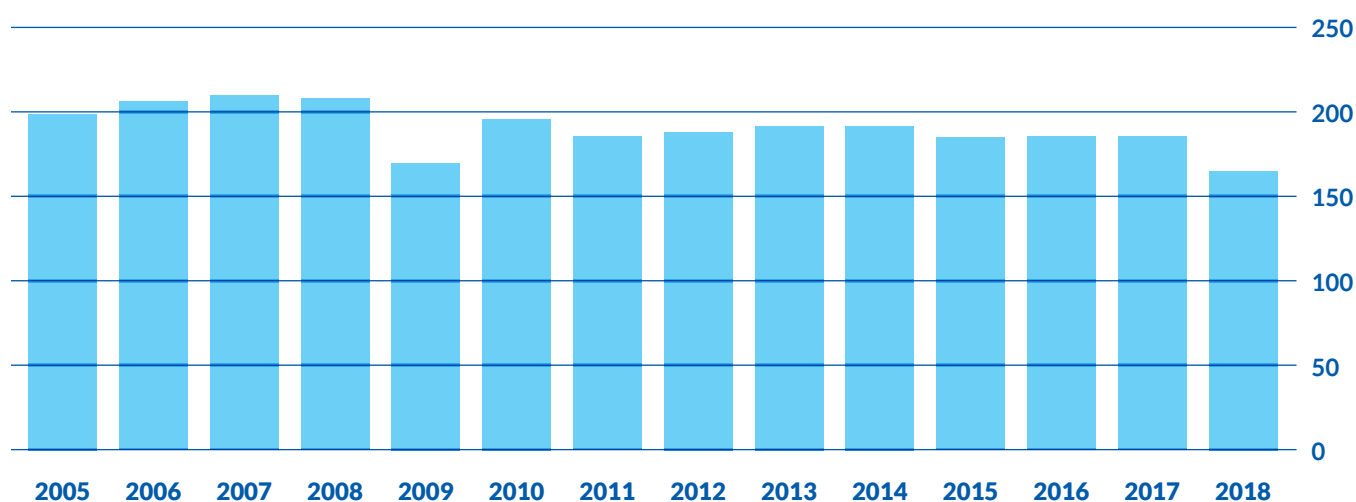
In the following sub-chapter, goods transport on inland waterways with a yearly transport volume of at least 1 million tonnes are presented. The majority of the data was provided by national waterway administrations (for Germany, Belgium and France).<sup>6</sup> In these cases, transport data are recorded by the waterway administrations at locks. The locks which served as a basis for the statistical findings were selected in order to provide the most representative picture for IWW goods transport in each basin.

Data on Danube and Rhine navigation are presented separately. For the Danube, the data come from the market observation of the Danube Commission, which collects them from waterway administrations of Danube countries. The source for the Rhine data is the German Statistical Office (Destatis). For the Netherlands, raw data from Rijkswaterstaat were received via Panteia.

Apart from the total goods transport volumes per waterway, volumes for major goods segments are also presented. Only the major goods segments per waterway are hereby taken into account in order to focus on the main characteristics of goods transport on each waterway.

## IWW TRANSPORT PER TYPE OF GOODS IN THE RHINE BASIN AND IN WESTERN EUROPE

### TRADITIONAL RHINE (IN MILLION TONNES)



Source: Destatis, CCNR

Traditional Rhine transport (from Basel to the German-Dutch border) amounted to 165 million tonnes in 2018, 11% less than in 2017. The main reason was the low water levels, while the cooling down of the business cycle in the second half of 2018 played another, although much smaller role. Even for goods segments with an increasing long run trend, such as containers and chemicals, the hydrological conditions in the second half of 2018 were far too difficult, with the result that all goods segments witnessed a decrease compared to 2017.

<sup>6</sup> For Belgium: De Vlaamse Waterweg for Flanders, and Direction générale opérationnelle de la Mobilité et des Voies hydrauliques for Wallonia; for France: Voies Navigables de France; for Germany: Generaldirektion Wasserstraßen und Schifffahrt; for the Netherlands: Rijkswaterstaat / Panteia



Netherlands

Germany

Rotterdam

LOWER RHINE

Duisburg

Cologne

Bonn

Belgium

Luxembourg

Moselle

Koblenz

MIDDLE RHINE

Kaub

Mayence

Main

Mannheim

Neckar

UPPER RHINE

Strasbourg

Main-Danube  
Canal

France

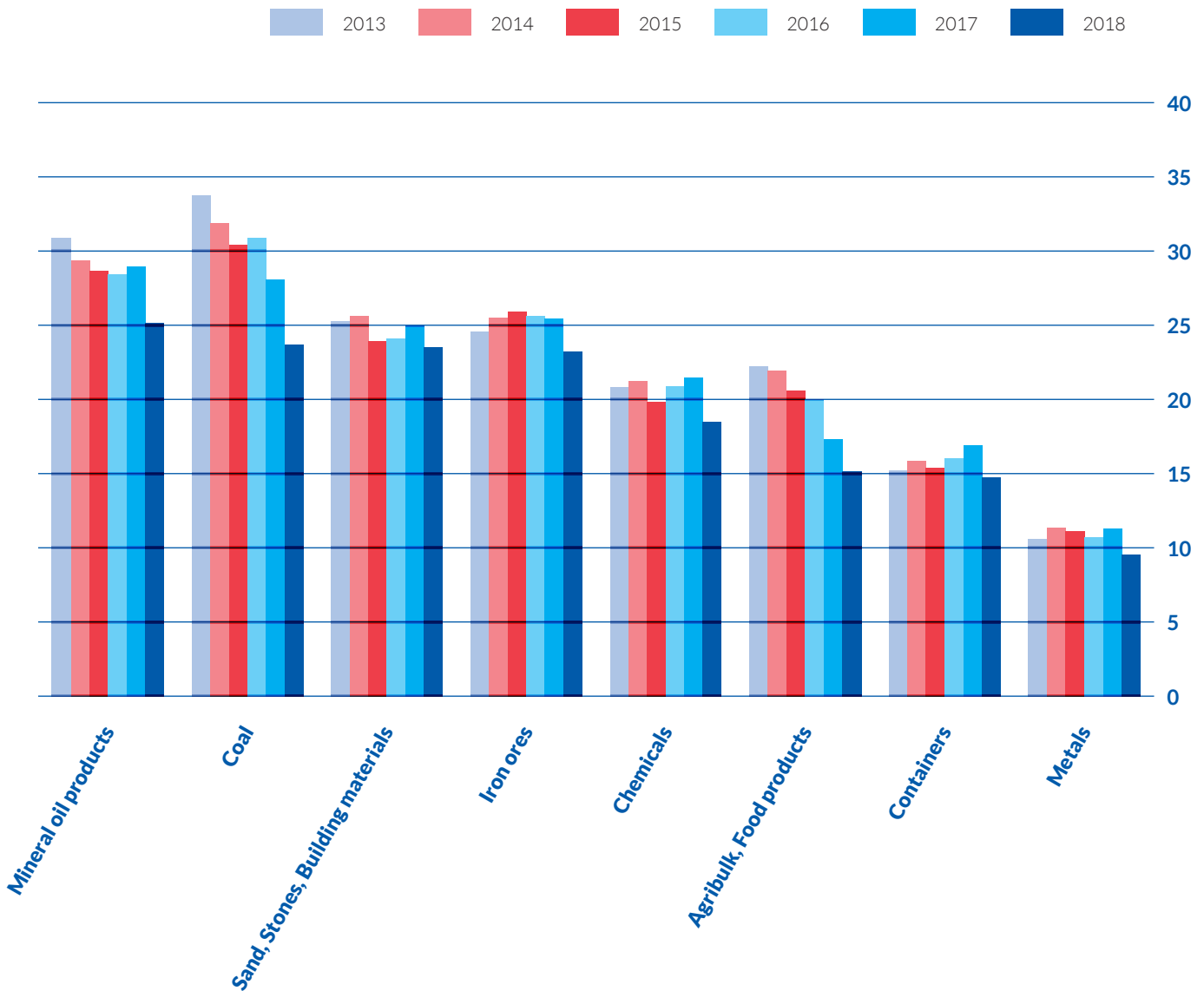
Basel

Switzerland

The dry cargo segment with the lowest rate of decrease was sand, stones and building materials (-5%). Liquid cargo registered falling volumes as well (chemicals: -13%, mineral oil products: -14%). Container transport decreased by 13% (net weight in containers), compared to -10% for the TEU.

Container transport on the middle and upper Rhine (those two Rhine stretches account for 49% of all transport performance of container transport on the traditional Rhine), was severely limited in late autumn 2018. Seen from this perspective, the drop of 10% for the year 2018 can even be regarded as a relatively limited impact.

#### GOODS TRANSPORTED ON THE TRADITIONAL RHINE BY TYPE OF GOODS (IN MILLION TONNES) \*



Source: CCNR analysis based on Destatis.  
\*for containers: net-weight

### Inland waterways in the Netherlands



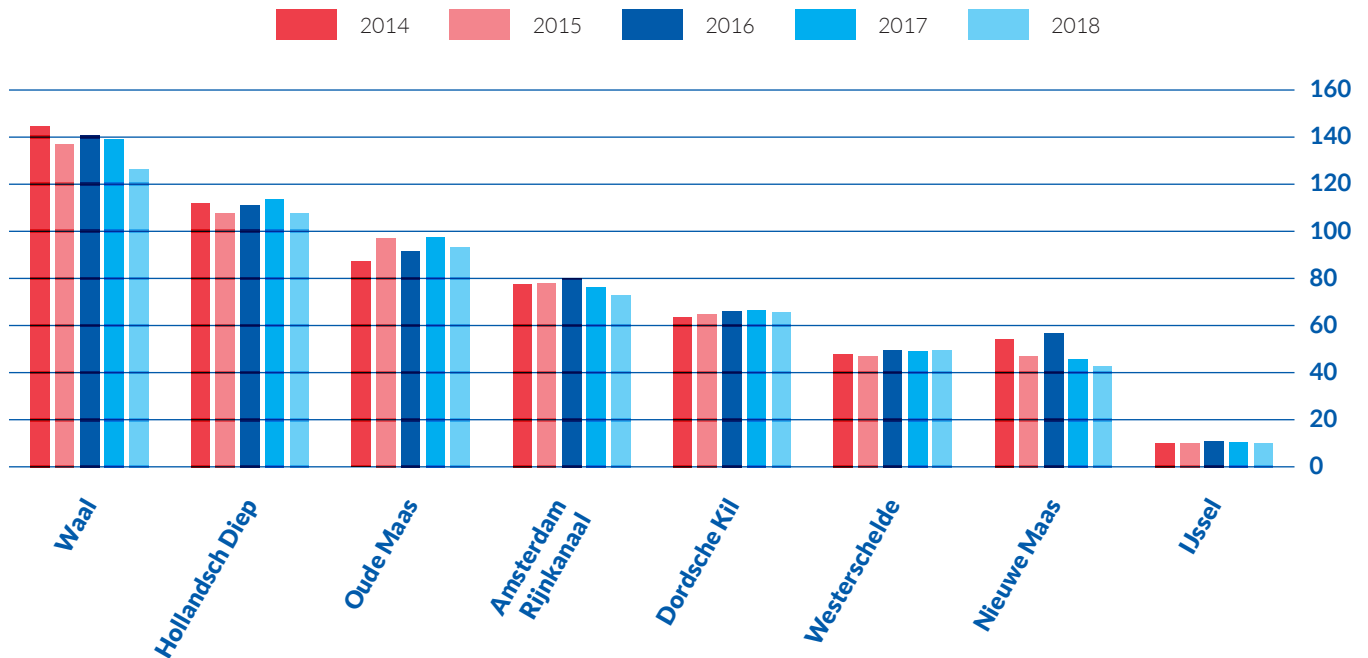
For the country with the highest inland waterway goods transport in Europe, a distinction was made between waterways with locks and those without locks. The Amsterdam Rijnkanaal appears within both waterway categories, as one part of it has locks and another part has no locks. This canal is an essential linkage of the seaport of Amsterdam with the Rhine and its hinterland.

The following figure includes waterways without locks. The Waal is an estuary branch of the Rhine in the Netherlands (part of the southern branch) while the Lek is part of the northern branch. The Hollandsch Diep is a broad estuary branch of the Rhine-Maas delta near the North Sea with a closure dam at the seaside. It is the continuation of the Nieuwe Merwede, itself a continuation of the Waal.

The Oude Maas is another distributary of the Rhine. The IJssel is the only free flowing branch of the Rhine flowing into the IJsselmeer.

### THE NETHERLANDS – TRANSPORT VOLUME ON WATERWAYS WITHOUT LOCKS

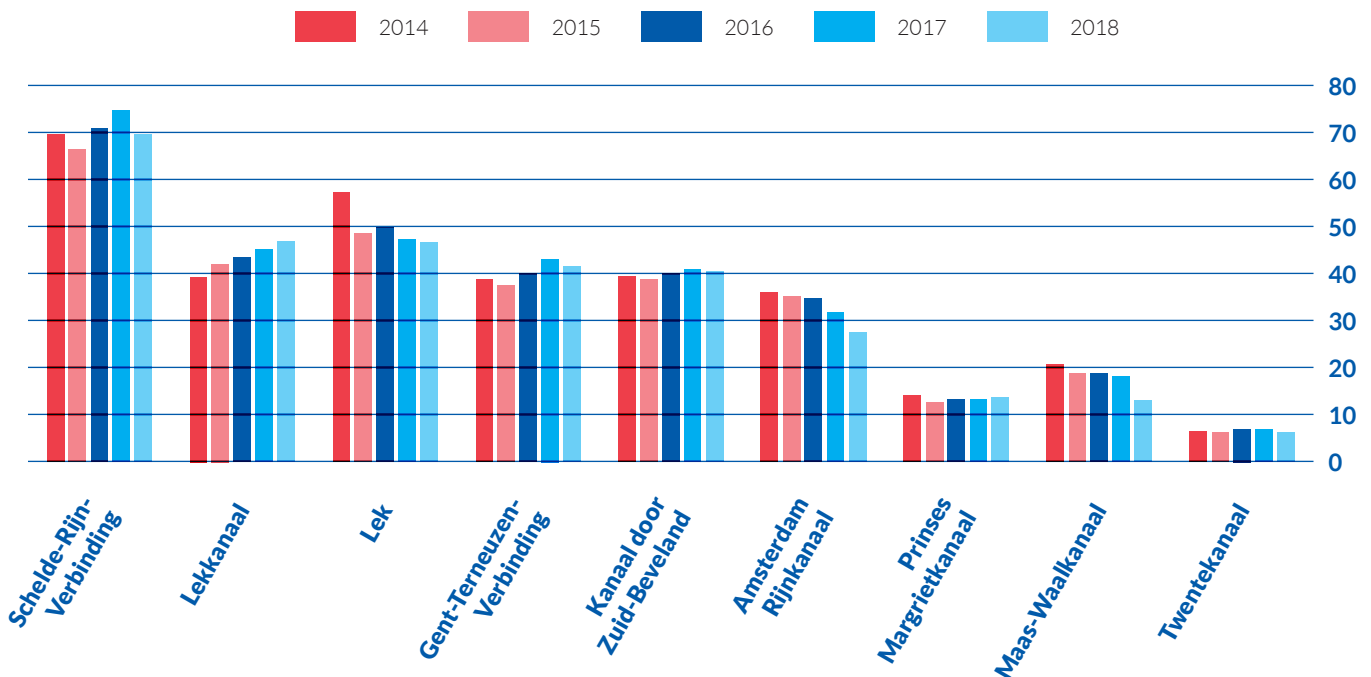
(MILLION TONNES)



Source: Rijkswaterstaat and analysis Panteia

Within the waterways that are equipped with locks, the Schelde-Rijn-Verbinding is an important linkage between Antwerp and the Rhine and Rotterdam. The Gent-Terneuzen-Verbinding is linking the port of Ghent with the Schelde river (with its estuary part near the North Sea).

### THE NETHERLANDS – TRANSPORT VOLUME ON WATERWAYS WITH LOCKS (MILLION T)



Source: Rijkswaterstaat and analysis Panteia



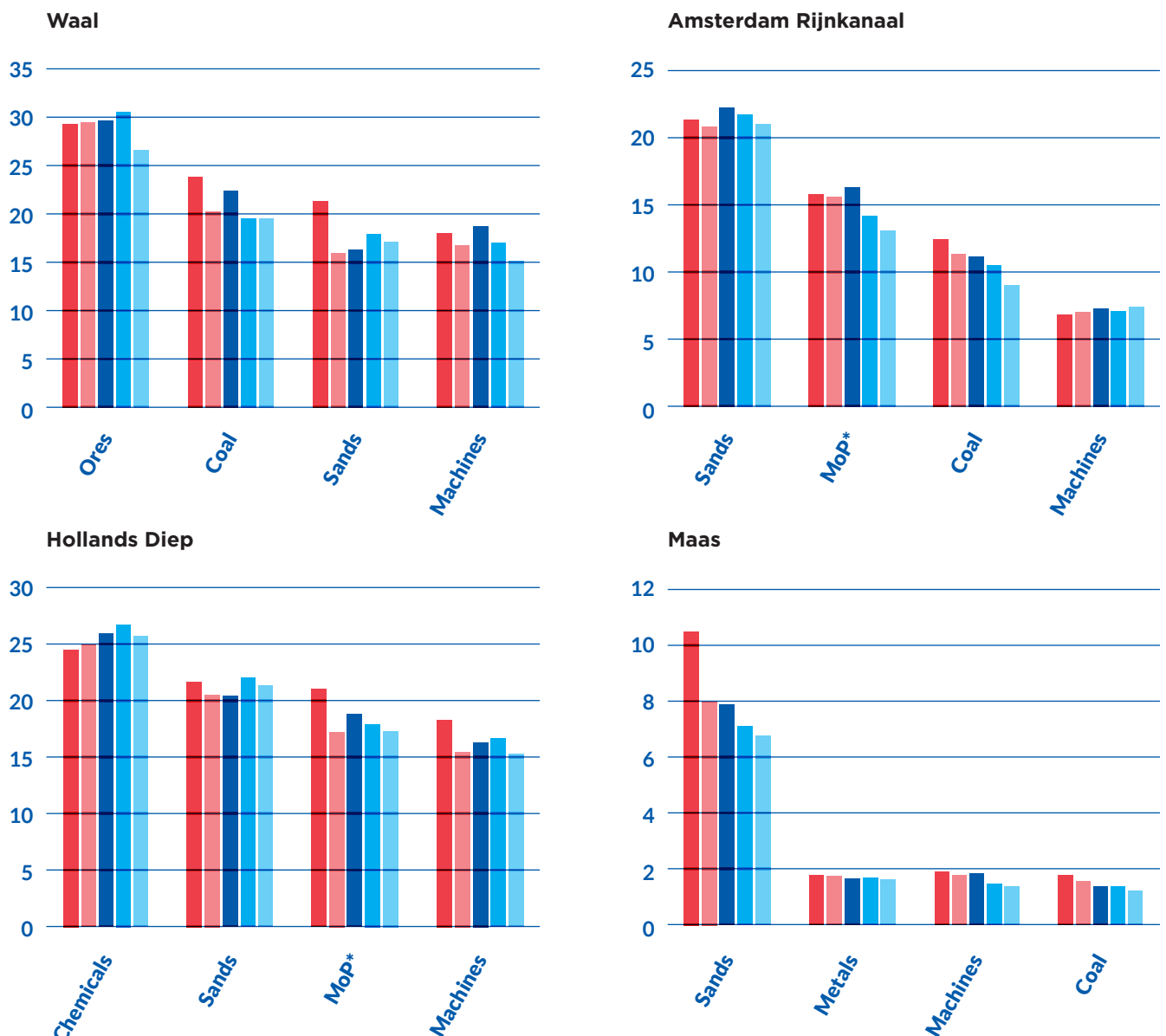
The following figures contain detailed goods transport statistics for four selected Dutch waterways. In this case, only the four major goods segments are depicted in order to concentrate on the main features of a waterway.

The river Waal has a high share of commodities related to the steel industry. This is due to the fact that it represents one part of the southern Rhine estuary branch, on which iron ores and coal are delivered from Rotterdam to the Ruhr area in Germany.

On the Amsterdam Rijnkanaal, sands and mineral oil products play an important role. It may be noted here that Amsterdam is the world's largest gasoline port, and that the traffic of gasoline and components is very high in the region. (See also the analysis of freight rates and transport volumes for the tanker barge corporation CITBO in chapter 3.)

#### INLAND WATERWAY TRANSPORT ON SELECTED DUTCH WATERWAYS PER GOODS SEGMENT (MILLION TONNES) \*

2014 2015 2016 2017 2018



Source: Rijkswaterstaat and analysis Panteia.

\* Mop = Mineral oil products

### Inland waterways in Germany

The German inland waterways were subdivided into four main geographical regions: West, North, South and East. Even without the Rhine, the West has the highest number of inland waterways with a significant transport volume of more than 1 million tonnes per year.

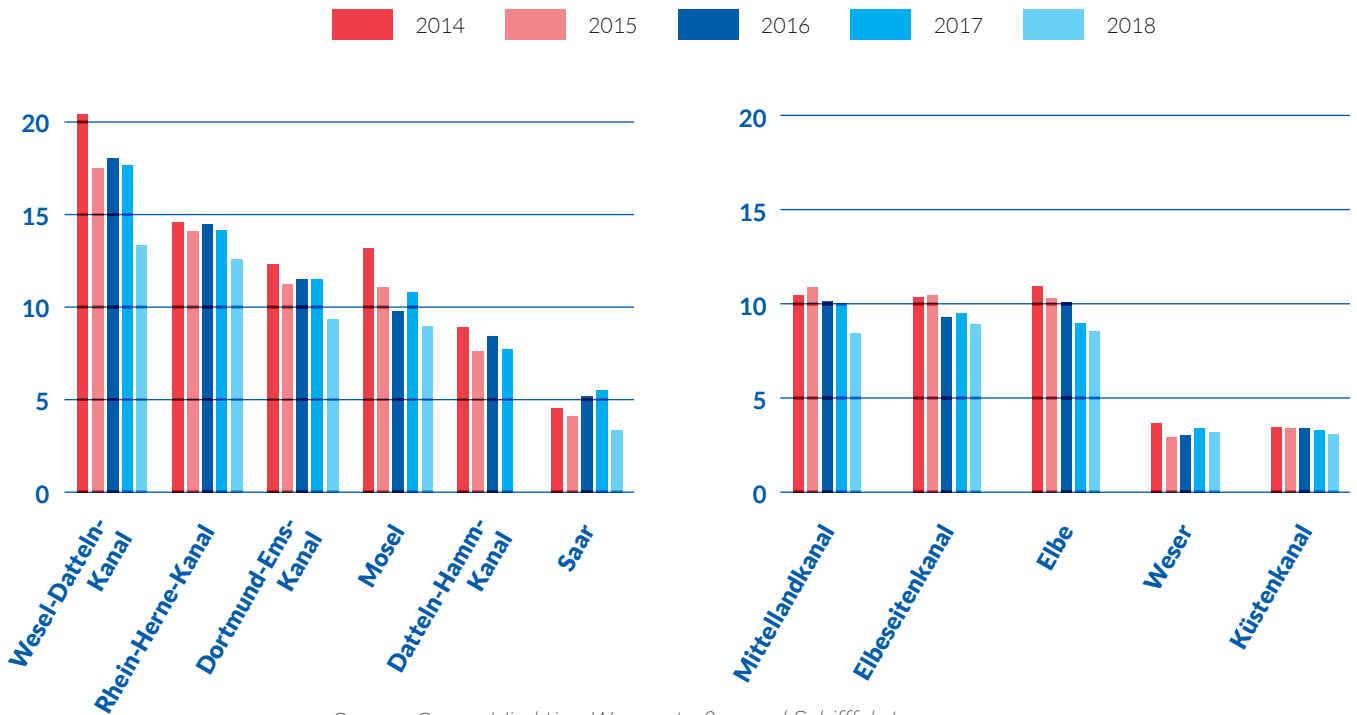
A network of four major canals (west German canals) serve as transport routes for distributing final products from refineries, chemicals, and for delivering raw materials to coal fired power plants. One of these canals is the Rhine-Herne-Canal, on which 5 million tonnes of mineral oil products are transported each year. More than 2 million are found on the Dortmund-Ems-Canal. On both canals, this segment registered an increase in recent years. On the Wesel-Datteln-Canal, around 3 million tonnes of mineral oil products are transported each year, and more than 1 million tonnes on the Datteln-Hamm Canal. The Moselle and the Saar are two Rhine affluents in the West where iron ore and coal have the highest share in goods transport, due to the steel industry in the Saar region.

The northern waterways (Elbe, Elbe-Seiten-Canal, Mittelland Canal, Weser) come in second place in Germany in terms of transported volumes. They are located in the hinterland of the largest German seaport (Hamburg), with mineral oil products being the main cargo segment on the Elbe and the Elbe-Seiten-Canal, and agricultural products on the Mittelland Canal.

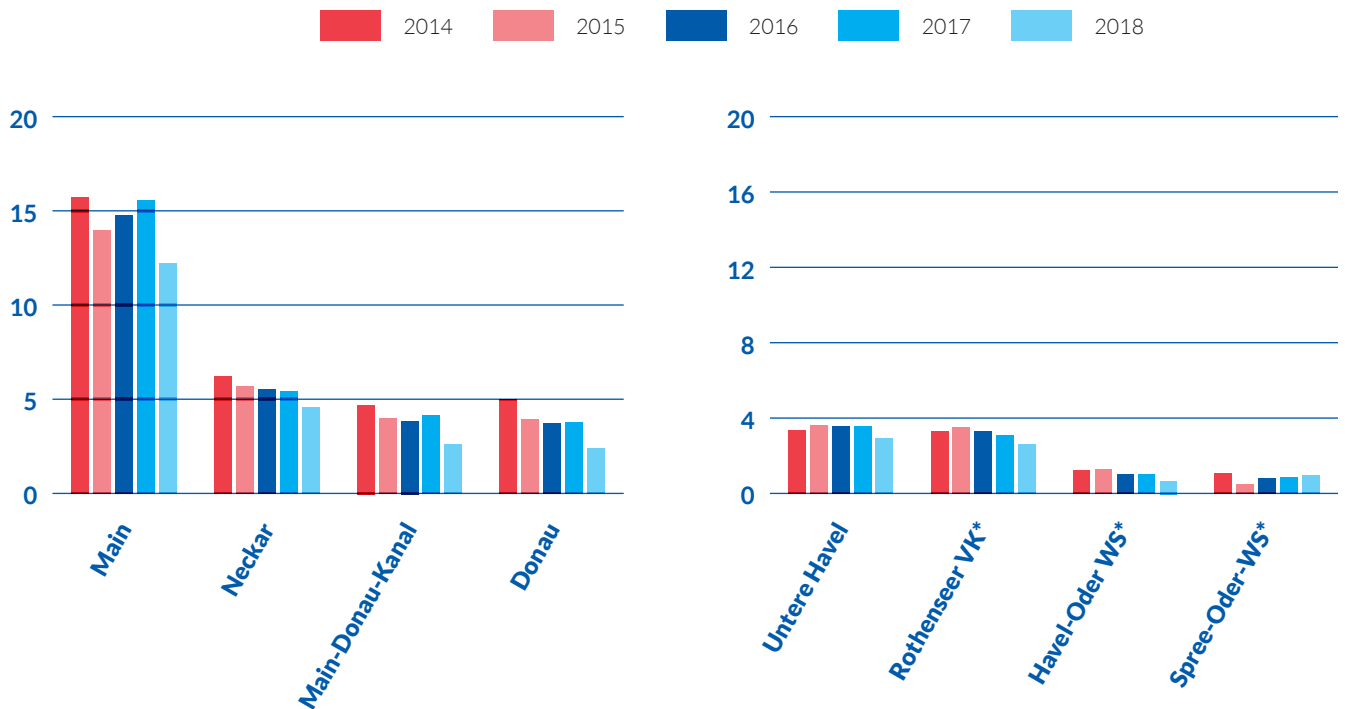
Four waterways are found in the southern part of Germany: the two Rhine affluents Main and Neckar, the Main-Danube Canal and the Danube. The largest goods segment on the Main and Neckar are sand, stones and building materials, which are transported mainly towards the Rhine. On the Main-Danube Canal and the Danube, goods transport is dominated by Agribulk, animal fodder and food products.

On inland waterways in eastern Germany, sand, stones and building materials play an important role (Lower Havel near Berlin, Spree-Oder-Wasserstraße), and even follow an increasing trend.

### GERMANY - WATERWAYS IN THE WESTERN AND NORTHERN PARTS OF THE COUNTRY (MILLION T)



### GERMANY - WATERWAYS IN THE SOUTHERN AND EASTERN PARTS OF THE COUNTRY (MILLION T)



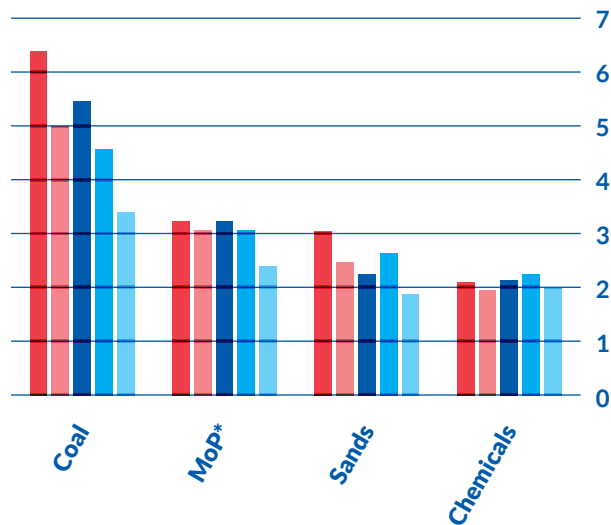
### IWT in Germany per waterway and goods segment

In order to give an overview of the main product categories per waterway, only the four largest segments are shown in the following figures.

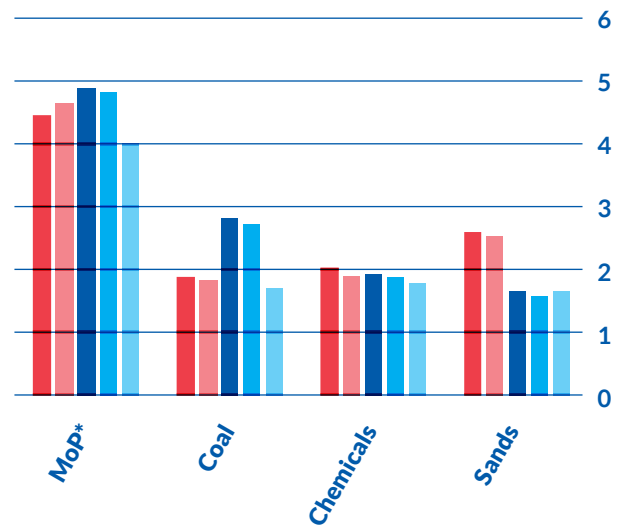
#### GERMANY – WEST (IN MIO. T)

2014 2015 2016 2017 2018

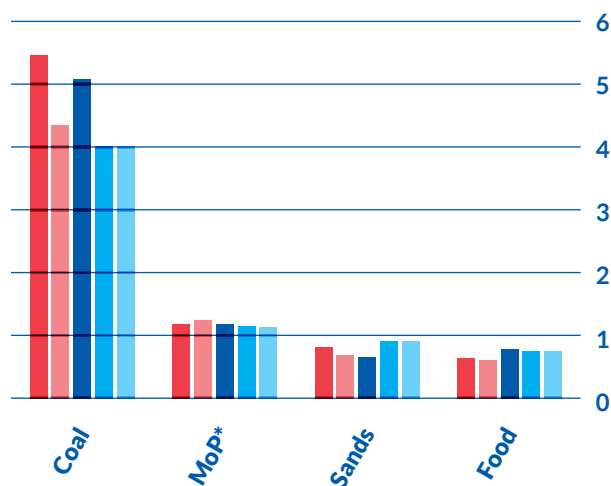
Wesel-Datteln-Kanal



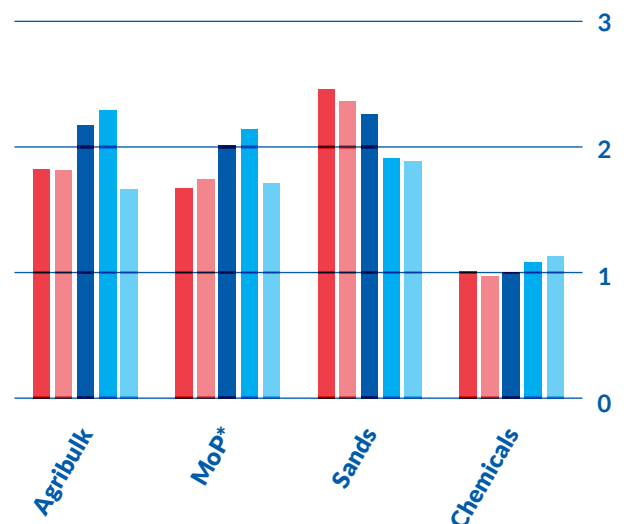
Rhein-Herne-Kanal



Datteln-Hamm-Kanal



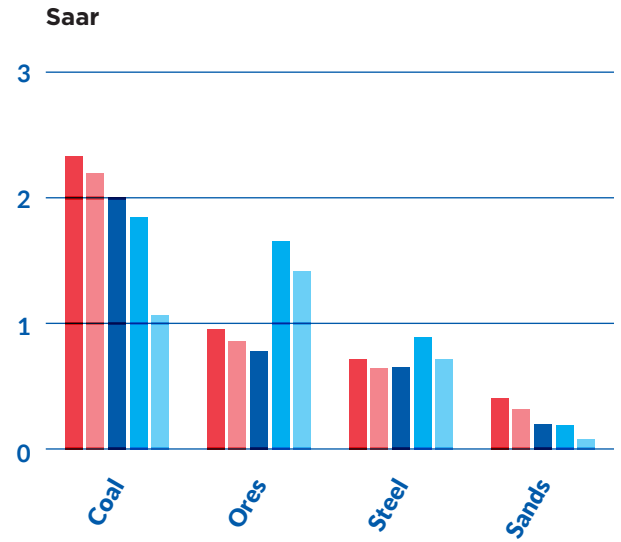
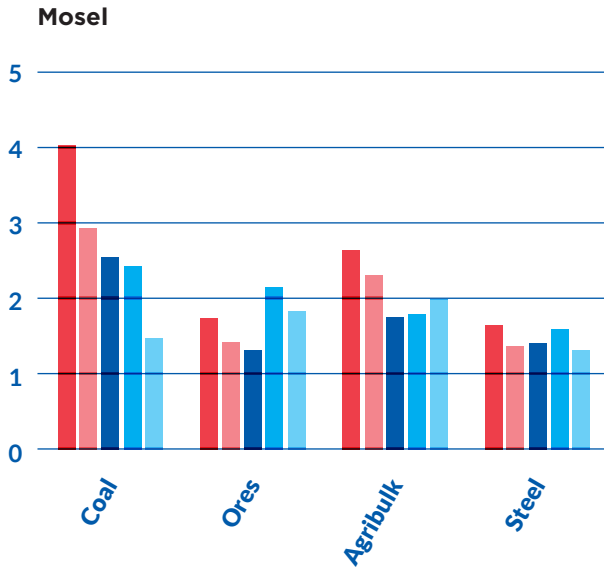
Dortmund-Ems-Kanal



Source: Generaldirektion Wasserstraßen und Schifffahrt.

\* Mop: mineral oil products

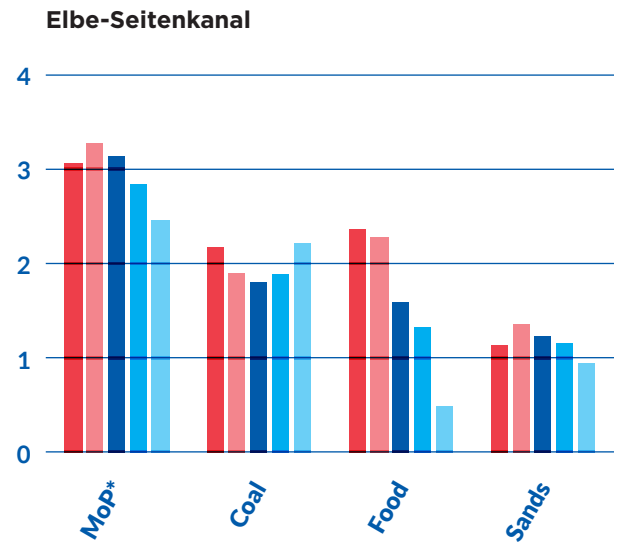
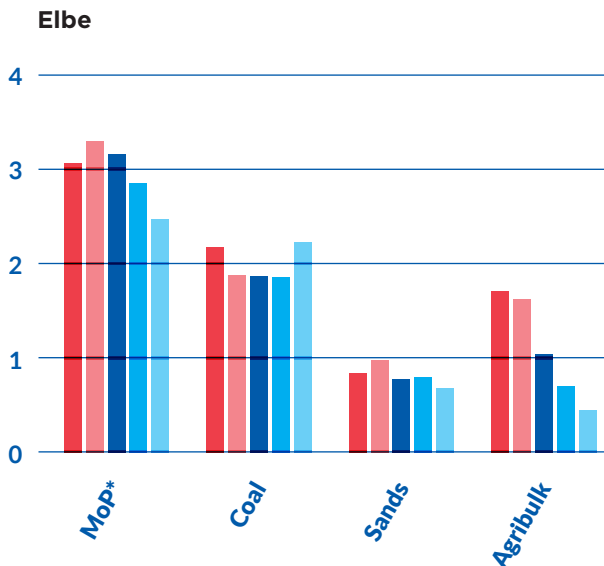
2014 2015 2016 2017 2018



Source: Generaldirektion Wasserstraßen und Schifffahrt.

#### GERMANY - NORTH (IN MIO. T)

2014 2015 2016 2017 2018



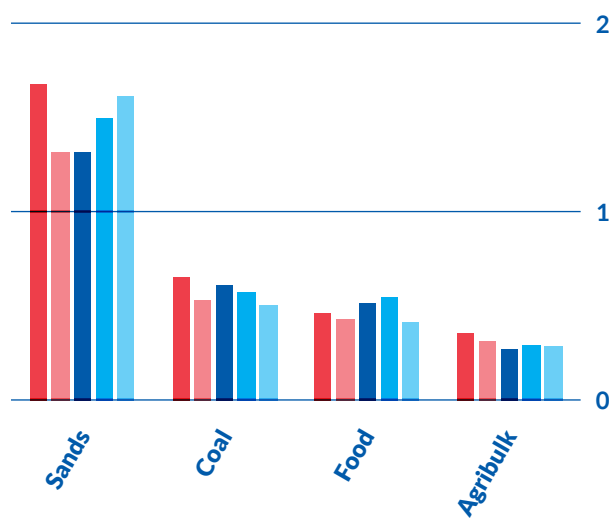
Source: Generaldirektion Wasserstraßen und Schifffahrt.

\* MoP: mineral oil products

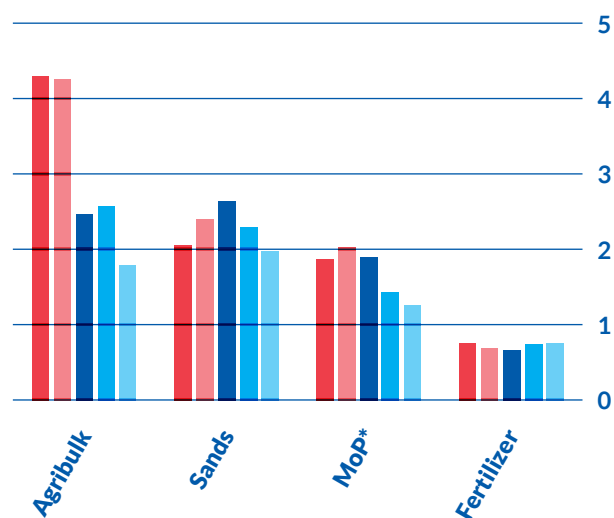
## Freight traffic on inland waterways

2014 2015 2016 2017 2018

## Weser



## Mittellandkanal



Source: Generaldirektion Wasserstraßen und Schifffahrt.

\* MoP: mineral oil products

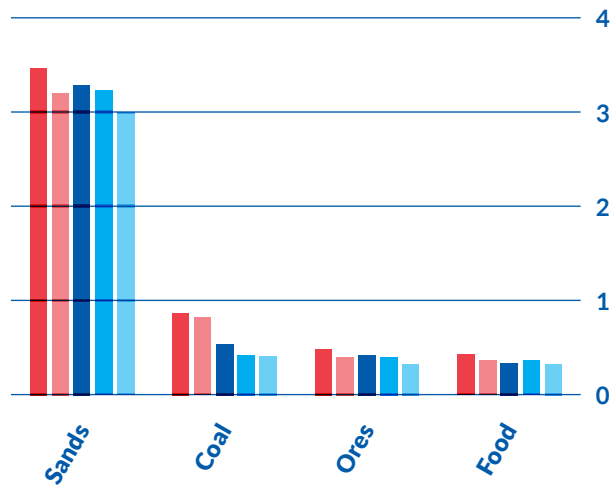




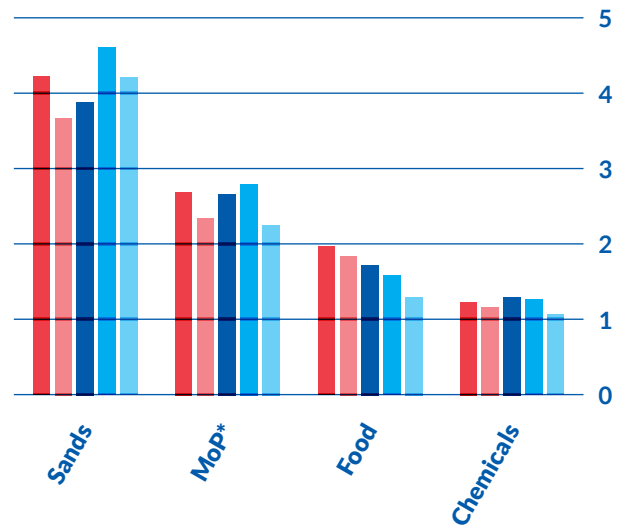
## GERMANY – SOUTH (IN MIO. T)

2014 2015 2016 2017 2018

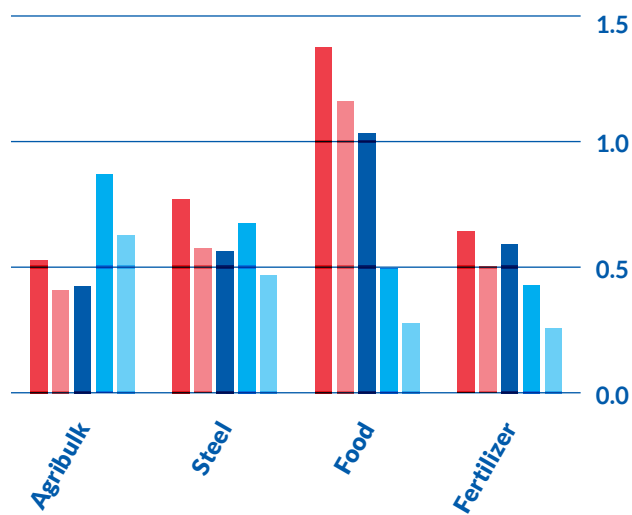
## Neckar



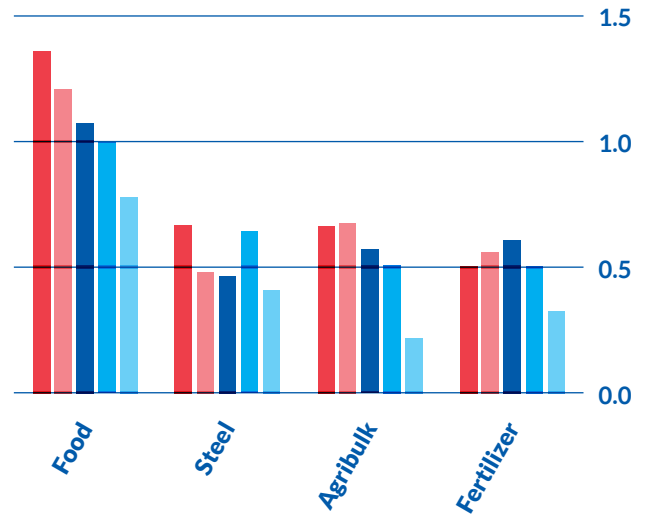
## Main



## Donau



## Main-Donau-Kanal



Source: Generaldirektion Wasserstraßen und Schifffahrt.

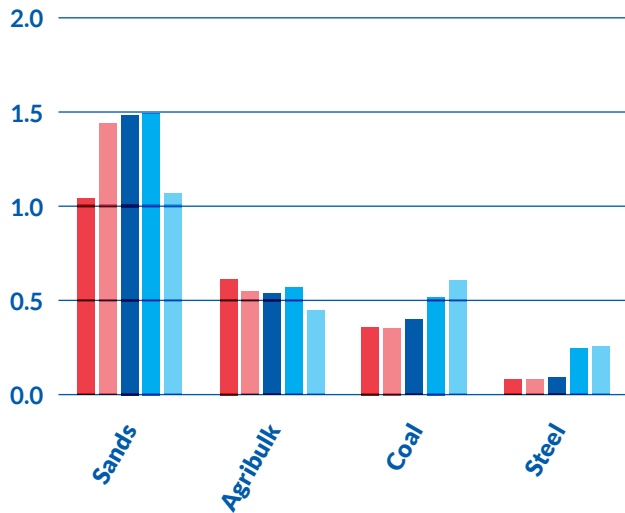
\* MoP: mineral oil products



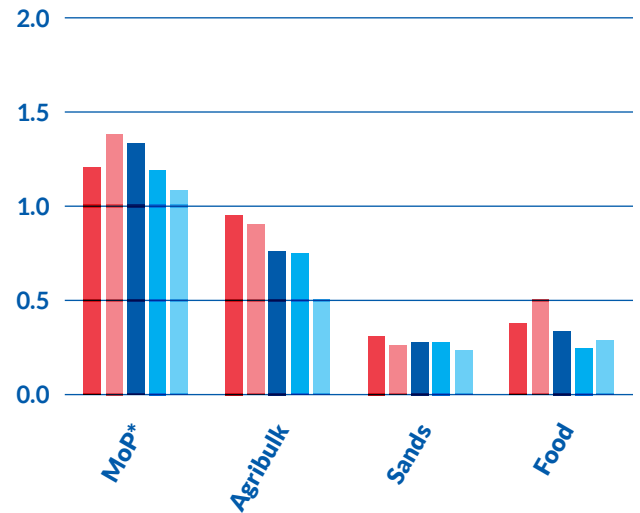
## GERMANY - EAST (IN MIO. T)

2014 2015 2016 2017 2018

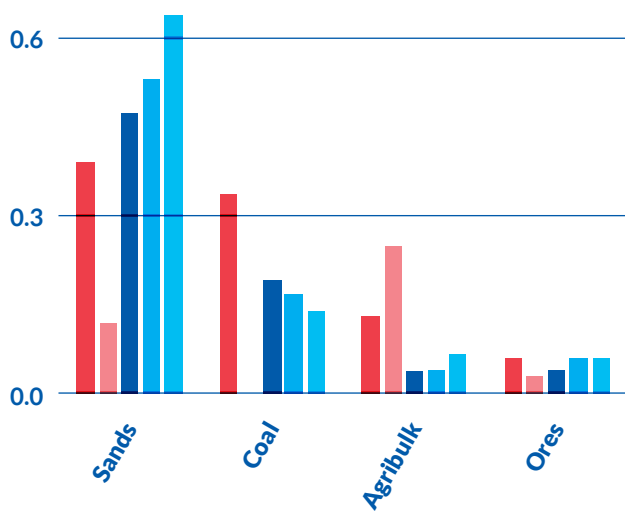
Untere Havel



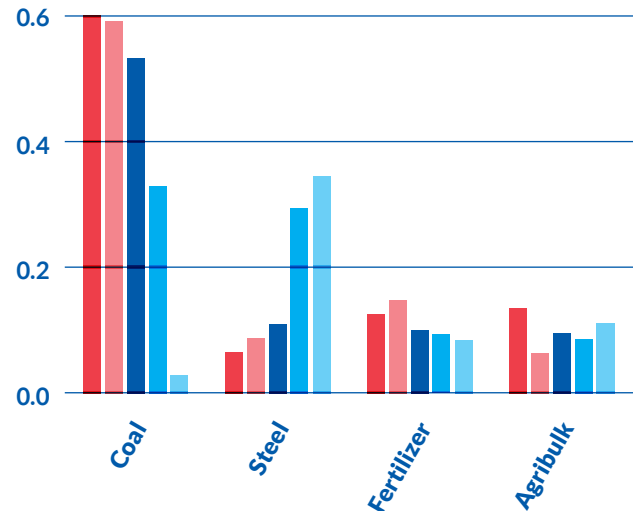
Rothenseer-Verbindungskanal



Spree-Oder-Wasserstrasse



Havel-Oder-Wasserstrasse



Source: Generaldirektion Wasserstraßen und Schifffahrt.

\* MoP: mineral oil products

## Inland waterways in Belgium

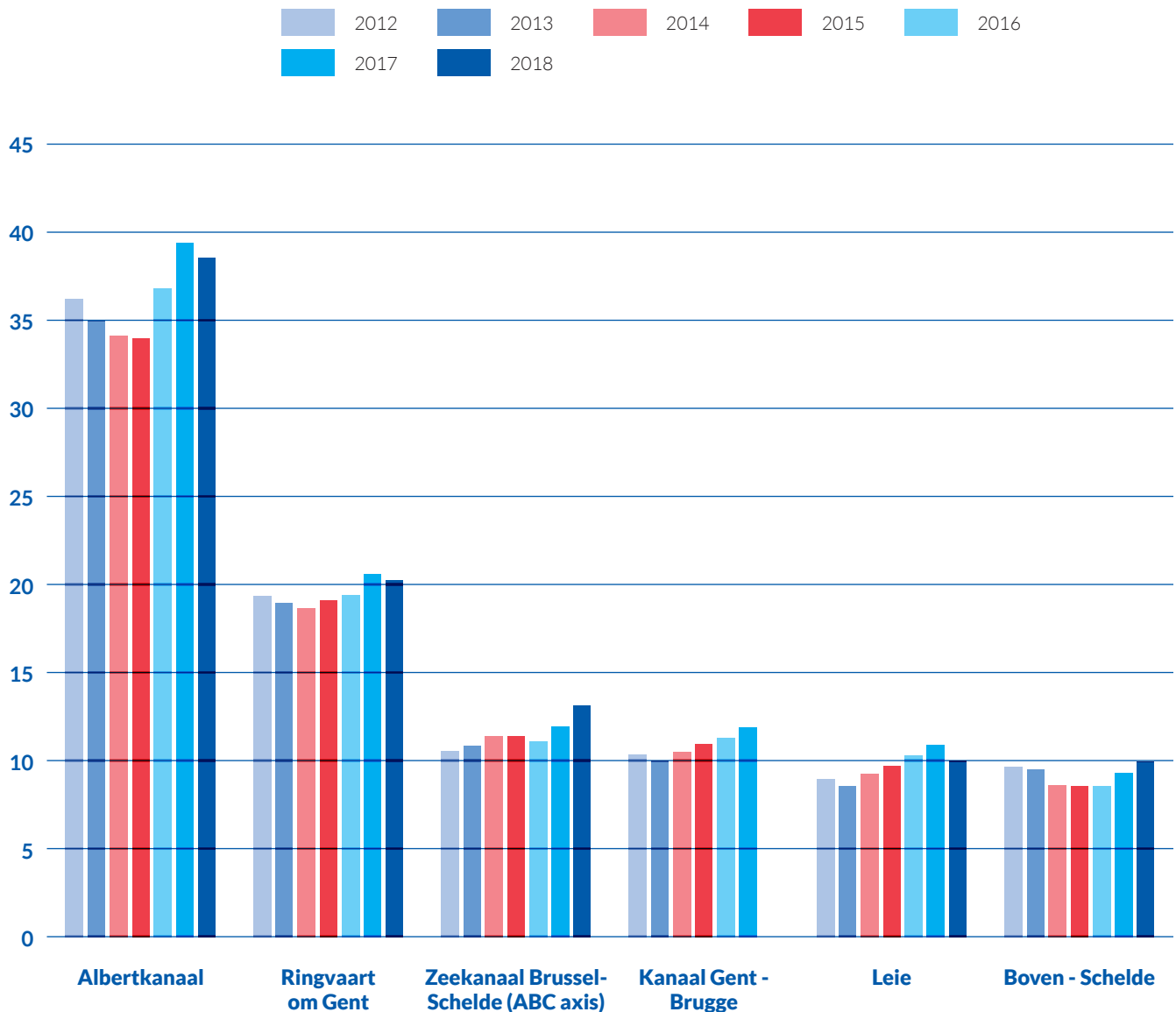


All Belgian inland waterways with at least one million tonnes of goods traffic were taken into account and subdivided into two major regions: Flanders and Wallonia.

A typical feature of IWW goods transport in Belgium is the high share of sand, stones and building materials. On the river Meuse (Maas), for example, more than 6 million tonnes of these raw materials are transported each year. On the Haut Escaut (Upper Schelde), which runs from South to North (and is called Boven Schelde in Flanders), the volume of sand, stones and building materials transported each year is around 3 million tonnes.

In the northern part of Belgium (Flanders), the Albertkanaal is the most important inland waterway with an annual volume of almost 40 million tonnes of cargo. The Zeekanaal Brussel-Schelde is also rather important, as it represents the northern segment of a central north-south waterway axis, the so-called ABC axis, linking Antwerp to Brussels and Charleroi. The southern segment of this axis appears as the Canal Charleroi-Bruxelles within the data for Wallonia.

#### FLANDERS - TOTAL IWW GOODS TRANSPORT PER RIVER AND CANAL (IN MIO. T)

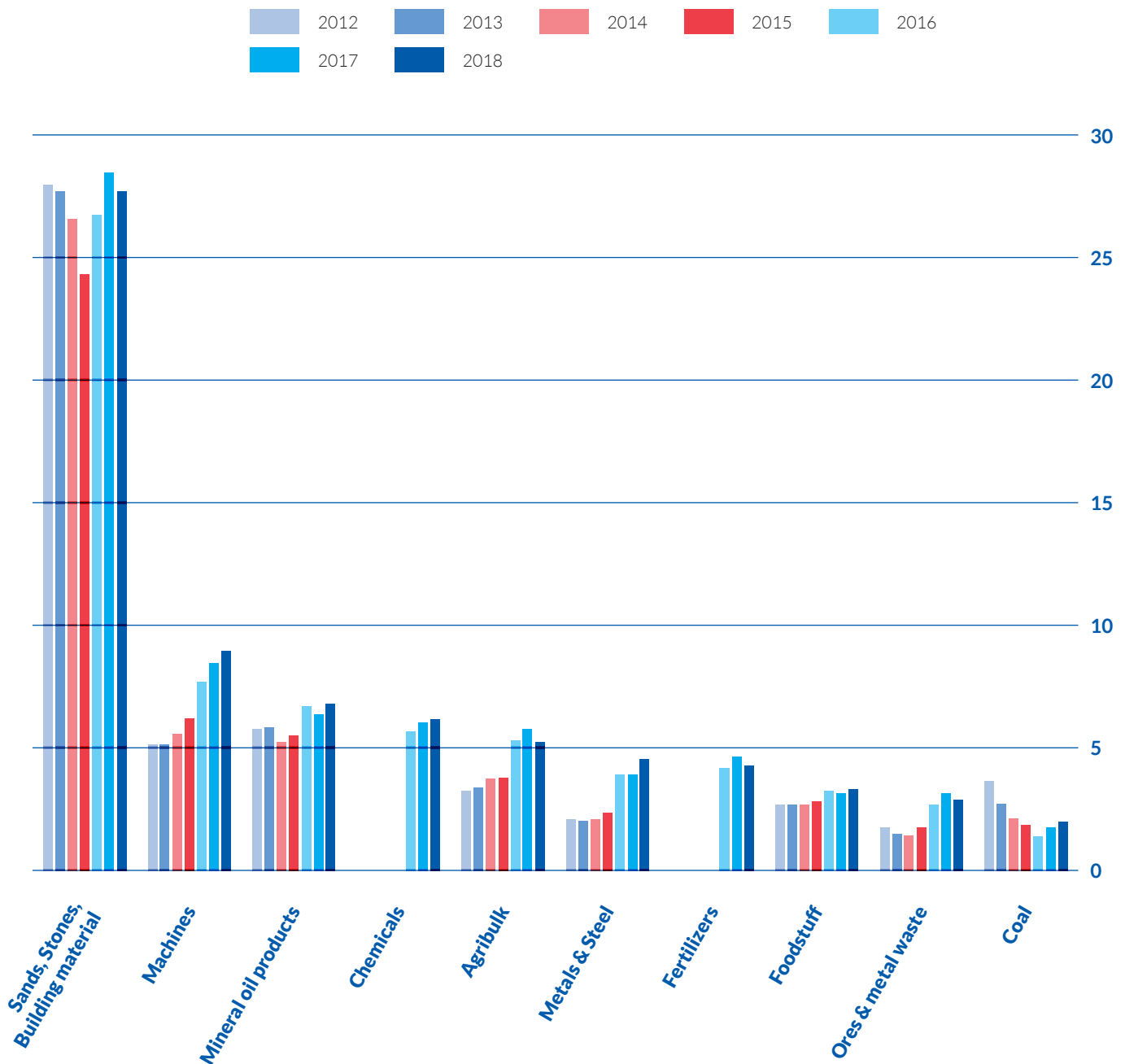


Source: De Vlaamse Waterweg

The following figure shows that sands, stones and building materials represent by far the largest goods segment in Flanders. Most goods segments witnessed a positive trend in the years 2016-2018, with the product group “all other products” showing the strongest increase.

For the Flemish waterways, transport statistics by type of goods are only available for the entire network of Flemish waterways, while the corresponding data for Wallonia are available for each particular waterway.

#### FLANDERS - INLAND WATERWAY GOODS TRANSPORT PER GOODS SEGMENT \*

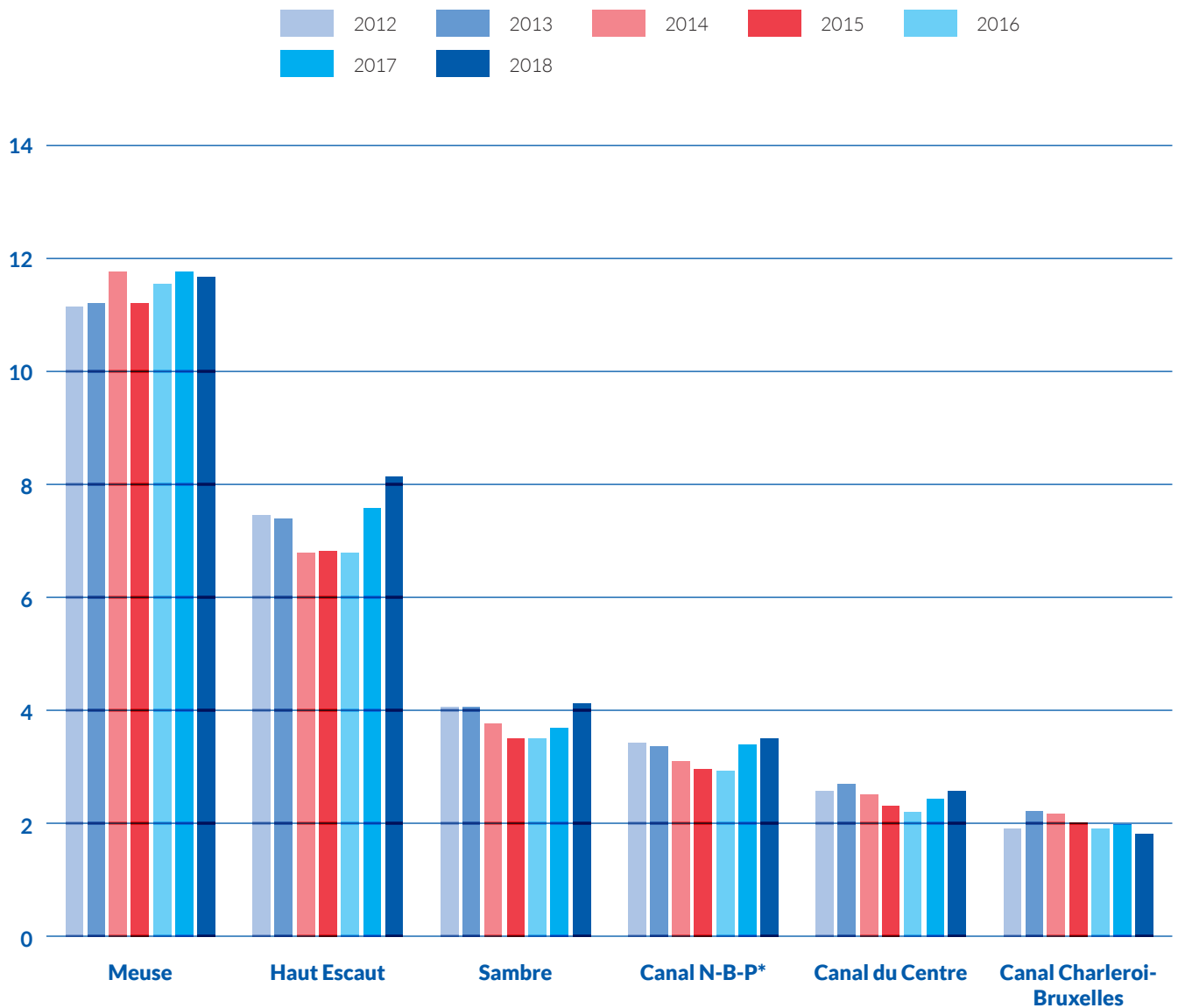


Source: De Vlaamse Waterweg

\*Data for chemicals and fertilizers were not available according to the same definition for the years before 2016

In Wallonia, the river Meuse (Maas) had a cargo volume of almost 12 million tonnes in 2018. The Haut Escaut (Upper Schelde) has slightly less cargo traffic (8.1 million tonnes) when it is flowing in Wallonia than when it is flowing in Flanders (where it is known as Boven Schelde and has 10 million tonnes of traffic). The overall evolution is however quite similar for both stretches of this river.

#### WALLONIA - GOODS TRANSPORT PER RIVER AND CANAL (IN MIO. T)\*



Source: Direction générale opérationnelle de la Mobilité et des Voies hydrauliques.  
 \* Canal N-B-P = Canal Nimy-Blaton-Peronnes

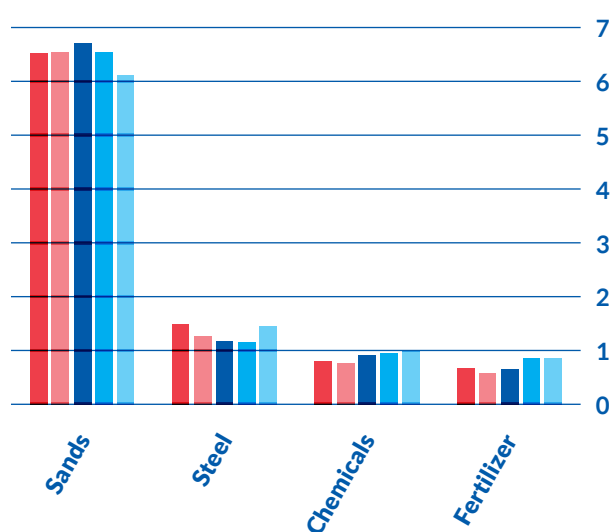
In the next figures, only the four largest goods segments are chosen for each inland waterway.

### INLAND WATERWAYS IN SOUTHERN BELGIUM (WALLONIA) PER GOODS SEGMENT

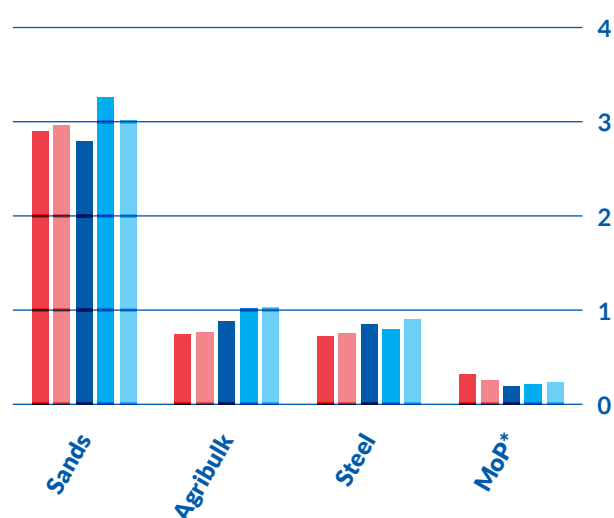
(IN MIO. T)

2014 2015 2016 2017 2018

#### Meuse

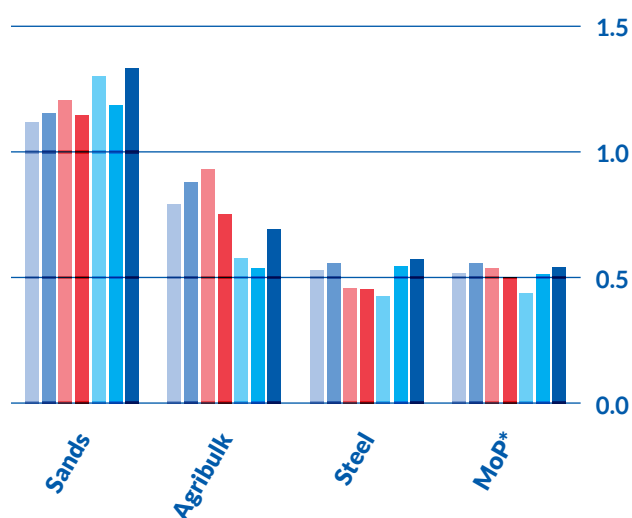


#### Haut Escaut

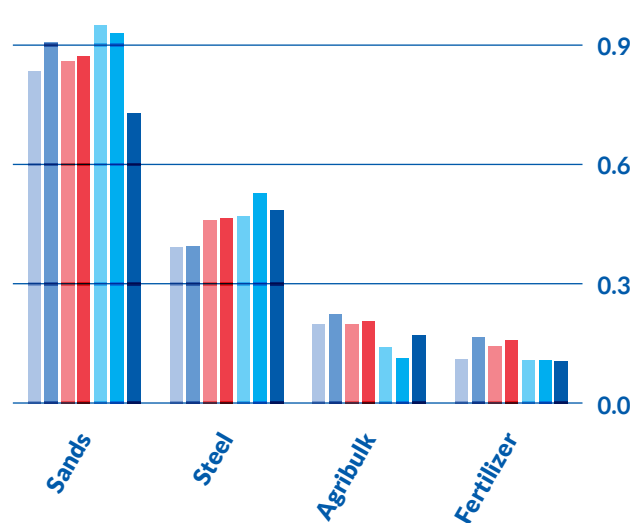


2012 2013 2014 2015 2016 2017 2018

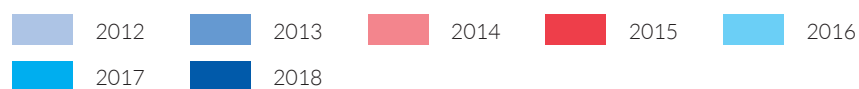
#### Sambre



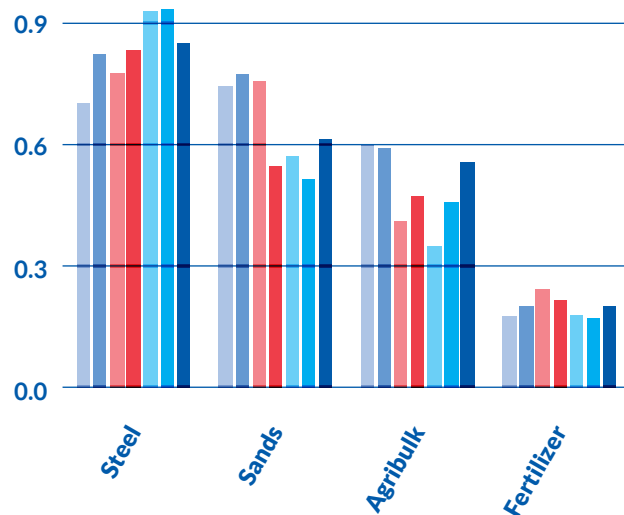
#### Canal Bruxelles-Charleroi



Source: Direction générale opérationnelle de la Mobilité et des Voies hydrauliques.  
\*MoP = Mineral oil Products



### Canal du Centre a grand gabarit



Source: Direction générale opérationnelle de la Mobilité et des Voies hydrauliques.



## Inland waterways in France





The French inland waterway network has four main regions: The Nord-Pas-de-Calais basin, the Seine basin, the Eastern basin (Moselle & canals of the Eastern basin), the Rhine basin and the Rhône-Saône basin. The Rhine figures were analysed in a separate section.

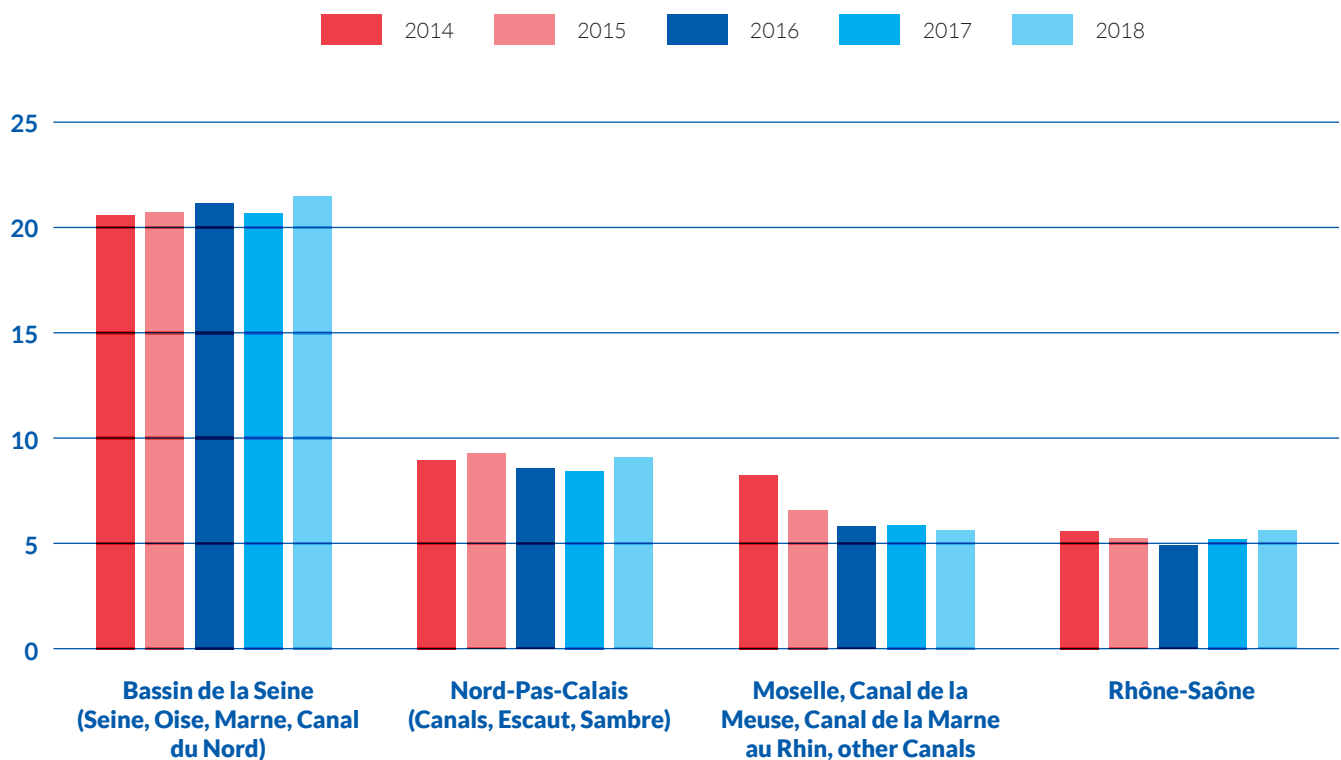
With around 20 million tonnes of cargo traffic per year, the Seine basin is in first position when it comes to goods transport. Its main waterways are the rivers Seine, Oise, Marne and canals, such as the Canal du Nord which will be upgraded within the project of Canal Seine-Nord-Europe. The main product segment is sand, stones and building materials. The data show an increase in these materials since 2015.

The Nord-Pas-de-Calais basin also contains many canals and those that link the seaports of Calais and Dunkerque with the hinterland are of significant importance. Data regarding the canalised rivers Escaut and Sambre, which flow towards Belgium, are found both in the sections on France and Belgium (Wallonia).

The Eastern basin contains the French part of the Moselle as well as small canals (eastern Freycinet network): Canal de la Meuse, Canal de la Marne au Rhin, Canal entre Champagne et Bourgogne, Canal des Vosges. On the French part of the Moselle river, agricultural products come in first place of all goods segments, and they are mainly transported downstream towards the Rhine.

The Rhône-Saône basin contains the rivers Rhône and Saône and the canal linking the Rhône with the Rhine. This canal in its actual size is mainly used for touristic purposes and not for goods transport.

#### GOODS TRANSPORTED ON INLAND WATERWAYS IN FRANCE (IN MIO. T)



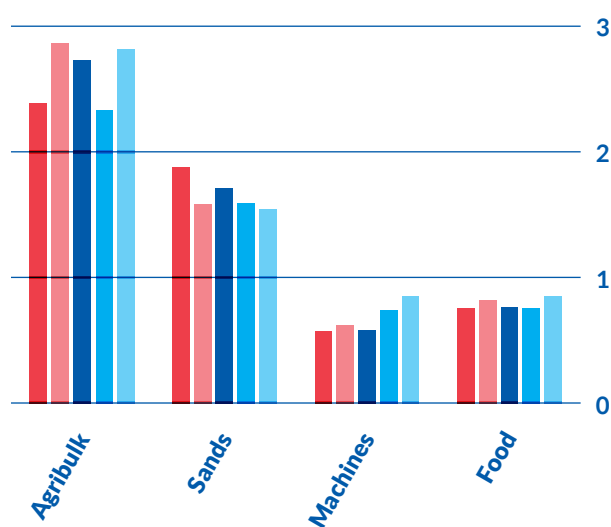
Source: VNF

The four largest goods segments for each French river basin are presented in the following figures.

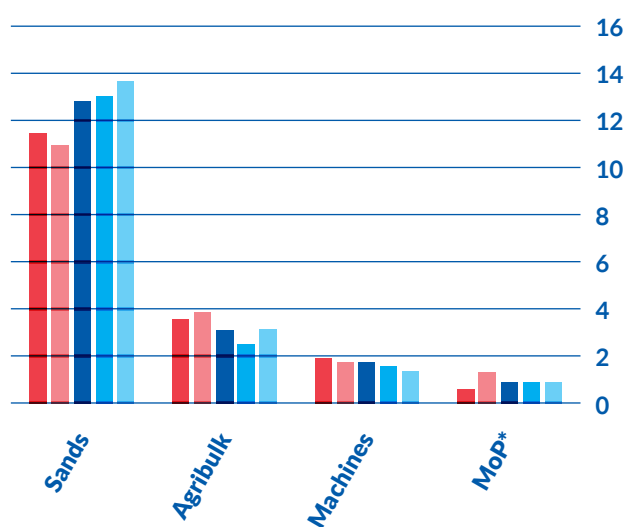
In 2018, there was an increase in the transport of agricultural products in all four major French waterway regions which can be explained by better harvest results compared to 2017. The transport of sands, stones, gravel and building materials increased in the Seine basin and in the Rhône-Saône, while it was quite stable in the Nord-Pas-de-Calais basin and decreased somewhat in the North-East basin (Moselle & Canals in the East).

2014 2015 2016 2017 2018

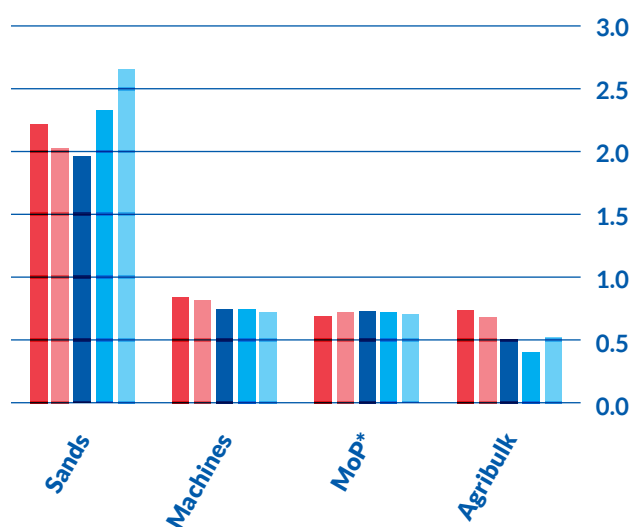
**Nord-Pas-de-Calais**



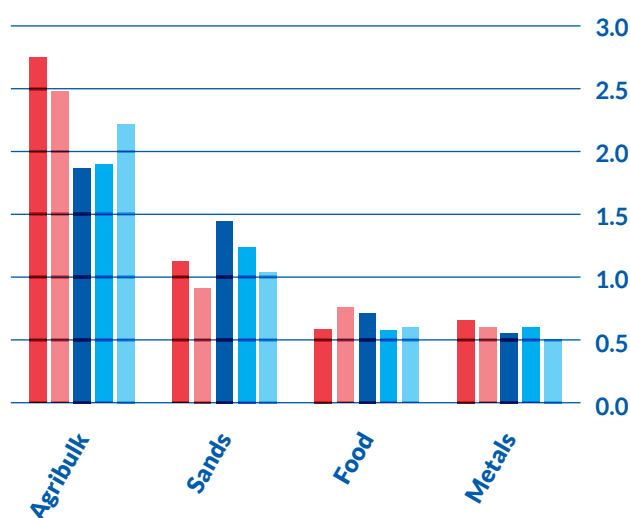
**Seine**



**Rhône-Saône**



**Moselle & Canals of the East**



Source: VNF.

\*Mop: mineral oil products

## IWW TRANSPORT PER TYPE OF GOODS ON THE DANUBE

Around 75% of total transport performance on the Danube takes place on the lower Danube and only one-quarter on the Middle and Upper Danube. While cargo transport on the lower Danube benefited from a resilience towards low water levels in this region, and increased volumes in 2018, the Upper and Middle Danube were impacted quite negatively by low water periods in 2018.

In the wake of positive economic fundamentals in Danube countries in 2018 (see chapter 1), the industries that are relevant for the Danube shipping market (steel industry, mineral oil industry, agricultural sector) increased their activity in 2018, with positive results for transport demand in the first half of 2018.<sup>7</sup> Meteorological constraints in the 2<sup>nd</sup> half year were the main reason why this economic upward trend could not materialise in terms of a higher annual result on the Danube.

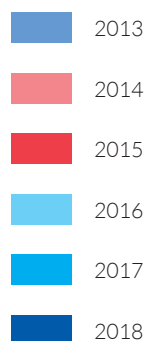
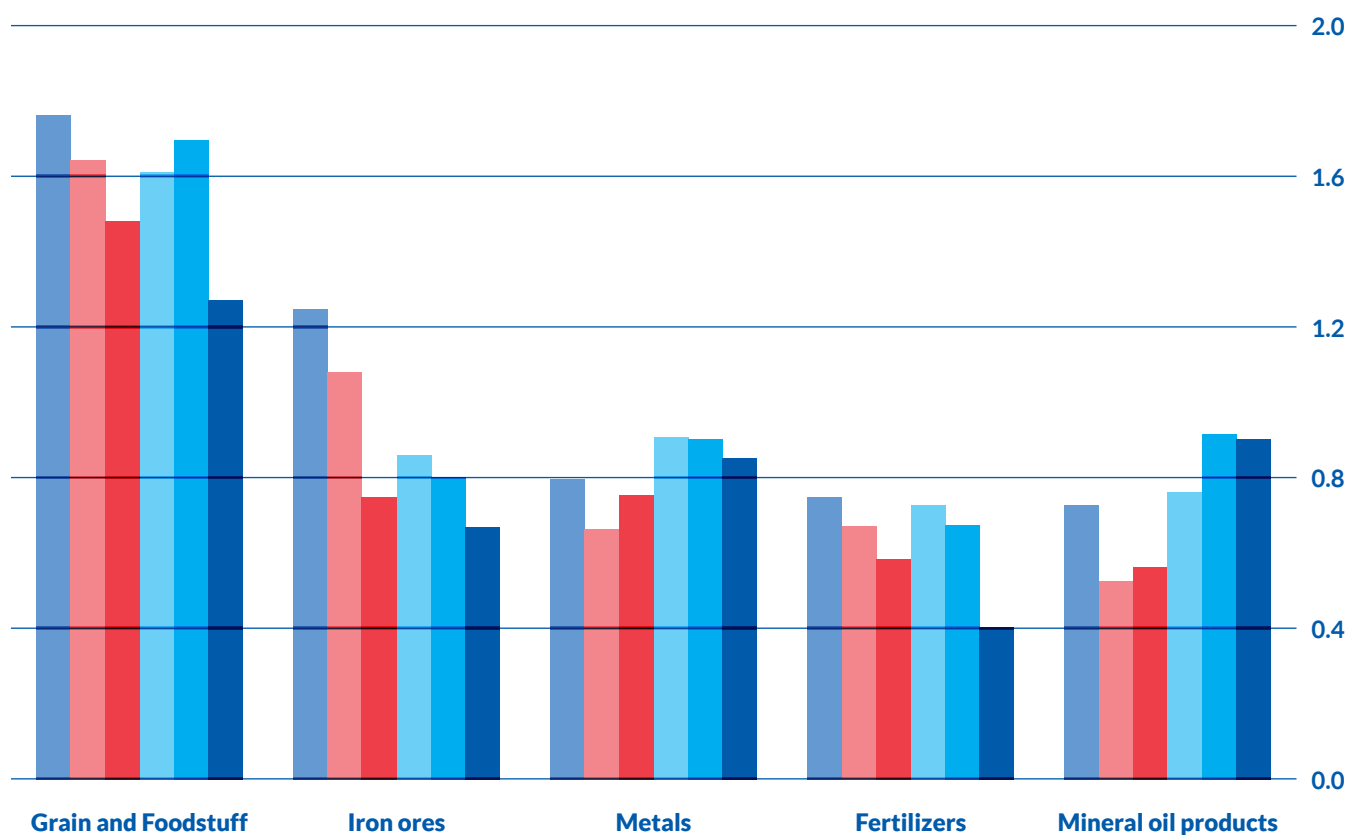
Goods transport on the Upper Danube is presented on the basis of data at the lock of Gabčíkovo. At this border point, the total transport volume amounted to 4.5 million tonnes in 2018 (-18.4% compared to 2017). 58% of the volumes were moved by pushed convoys, and 42% by self-propelled cargo vessels. Around 66% of all volumes that passed Gabčíkovo were upstream transit traffic, with destinations mainly in Austria.

<sup>7</sup> Source of most data and information about Danube navigation in this sub-chapter: Market observation of the Danube Commission, April 2019. Regarding the agricultural sector, Eurostat data show an increase of harvest results in Danube countries in 2018.



### GOODS TRANSPORTED ON THE UPPER DANUBE AT GABČÍKOVO BY TYPE OF GOODS \*

(IN MIO. T)



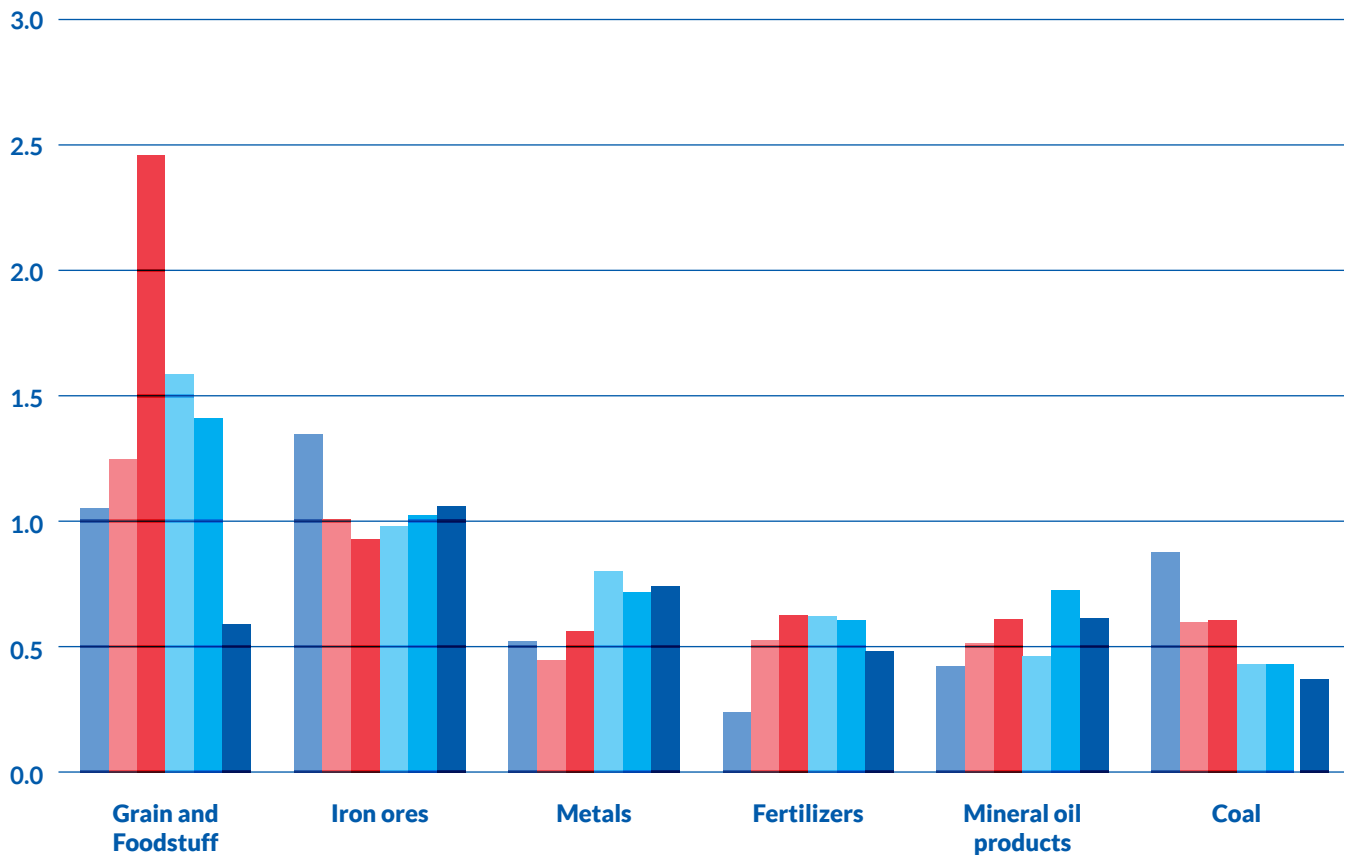
Source: Danube Commission market observation.  
\*at Gabčíkovo (border between Slovakia and Hungary)

Goods transport on the Middle Danube is presented on the basis of data at the lock of Mohács in southern Hungary, near the border to Croatia and Serbia. Total cargo traffic was 4.5 million tonnes in 2018, a decrease of around 20% compared to 2017. 79% of these volumes were moved by pushed convoys, and 21% by self-propelled cargo vessels. Transit traffic going upstream represented 57.4% of all transported volumes.

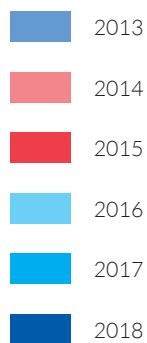
The agricultural and food segments (transport of grain, food products and animal fodder) suffered on the Middle Danube. The reason was not so much a bad harvest result, but more due to economic factors: grain exports from Middle Danube countries (Croatia, Hungary, Serbia) lost market shares to grain exports from countries around the Black Sea (Turkey, Ukraine). The result was a strong reduction of grain transport on the Middle Danube in the direction of the seaport of Constanța, from where this grain is exported mostly to Northern African and the Near East.

### GOODS TRANSPORTED ON THE MIDDLE DANUBE AT MOHÁCS BY TYPE OF GOODS \*

(IN MIO. T)



Source: Danube Commission market observation  
 \*At Mohács (southern Hungary), in the border area with Croatia and Serbia



In 2018, the lower Danube was barely impacted by low water levels. This is visible by looking at the results for the Romanian ports in 2018. Total waterside ports traffic increased by 3.8% in Romania in 2018 and reached 24.7 million tonnes. Hereby, the only type of transport that was lower in 2018 than in 2017 was the import traffic. This reflects the lower imports of grain coming from the Middle Danube region. All other types of transport (export, national transport) increased.

Iron ores represented 44% of all cargo traffic in Romanian ports in 2018, of which the large majority (88%) is national traffic and has its use in the Romanian steel industry, which is located in the Danube estuary region around Galati and can be accessed by seagoing vessels. Agricultural products followed with a share of 32%, metals with 4%, and oil products and coal accounted for the remaining volumes.

There were also increasing figures observed for the traffic on the Danube-Black Sea Canal, which runs from Cernavodă, on the Danube river, to Constanța (southern arm), and to Năvodari (northern arm), on the Black Sea.<sup>8</sup>

<sup>8</sup> The main branch of the canal, with a length of 64.4 km connecting the Port of Cernavodă with the Port of Constanța, was built between 1976 and 1984.

## GOODS TRANSPORT ON THE DANUBE-BLACK SEA CANAL

Year	2013	2014	2015	2016	2017	2018
Cargo traffic (million t)	13.96	14.43	14.02	14.55	13.77	14.12

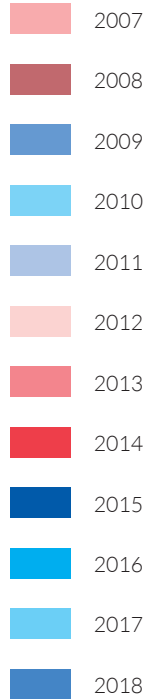
Source: Danube Commission market observation

The Danube Commission expects a relatively stable economic demand for raw materials in Danube countries (iron ores) for 2019, and better meteorological conditions for the agricultural segment. The main bottlenecks for Danube navigation are not the economic prospects (which are very positive for Danube countries, see chapter 1), but the factors related to the river infrastructure in parts of the Danube. This concerns mainly the Upper and Middle Danube, while the Lower Danube has much more favourable hydrological conditions.





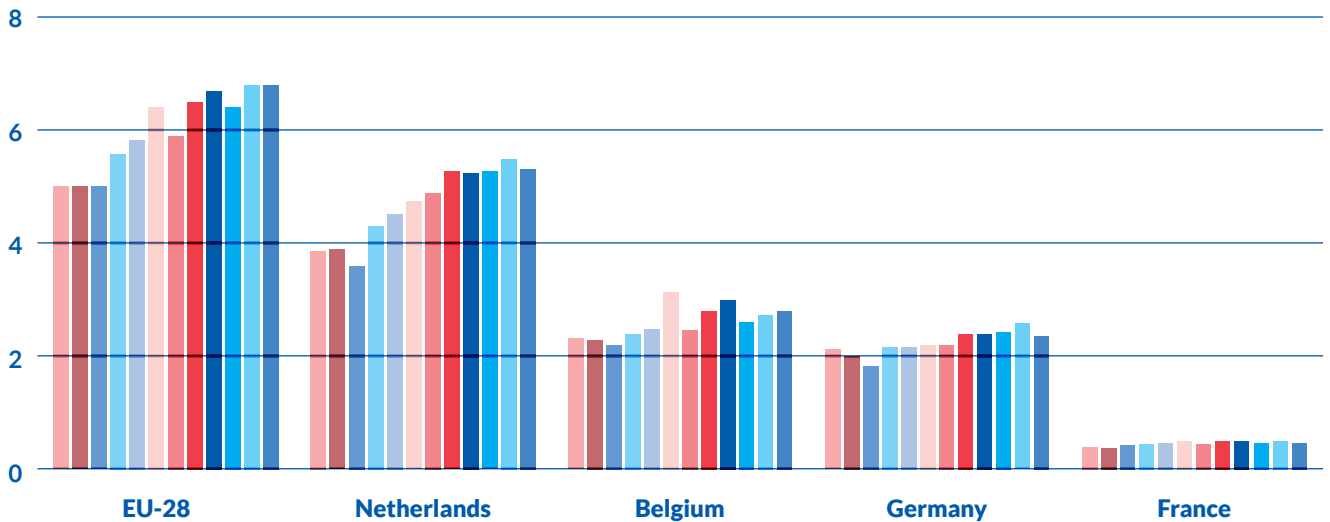
## IWW CONTAINER TRANSPORT IN EUROPE



Nearly 100 % of all container transport performance (tkm) on European inland waterways takes place in only four countries: the Netherlands, Belgium, Germany and France.

Container transport decreased in 2018 in most Rhine countries, due to low water levels on the Rhine in the second half of the year. The following percentage figures are based on TEU: Germany had the strongest decrease with -8 %, as the traditional Rhine in Germany was much more affected by low waters than the Rhine delta in the Netherlands. In the Netherlands, the decrease was quite modest (-3%). France also witnessed a decrease (-5 %), which was entirely due to the French part of the Rhine, as container transport in other French basins was either stagnant or increasing (see figures per basin further below). Belgium was the only Rhine country with a positive rate of change in 2018 (+3 %), as its container traffic is only partly Rhine-related. Other trading routes in Belgium play a great role too (see container transport per river basin further below).

CONTAINER TRANSPORT ON INLAND WATERWAYS IN EUROPE (IN MILLION TEU) \*

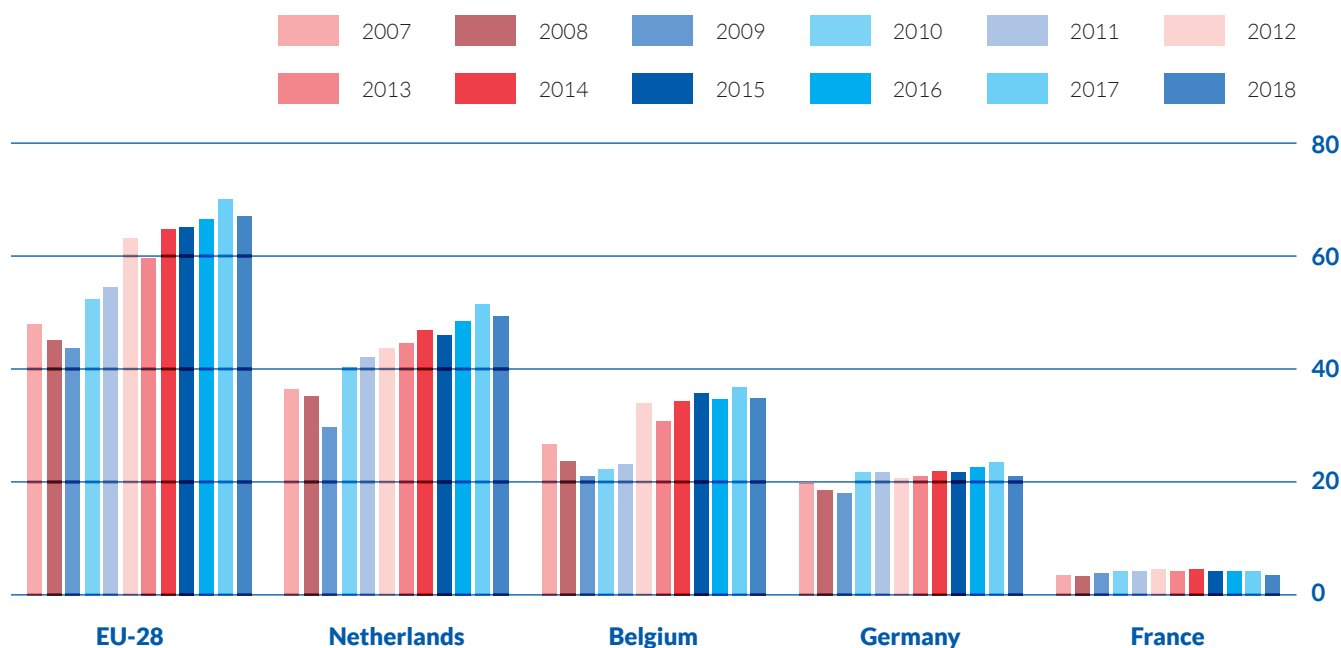


Source: Eurostat [iww\_go\_actygo]

\*The figures for the countries cannot be added together because this would incur double counting. (The total value for EU-28 takes into account cross-border container traffic.)

Almost 50 million tonnes were transported in containers in the Netherlands in 2018, 4% less than in 2017. In Germany, 21.1 million tonnes represented a decrease by 10%. In France, the result was 3.7 million tonnes (-13%).

## CONTAINER TRANSPORT ON INLAND WATERWAYS IN EUROPE (IN MILLION TONNES) \*



Source: Eurostat [iww\_go\_actygo]

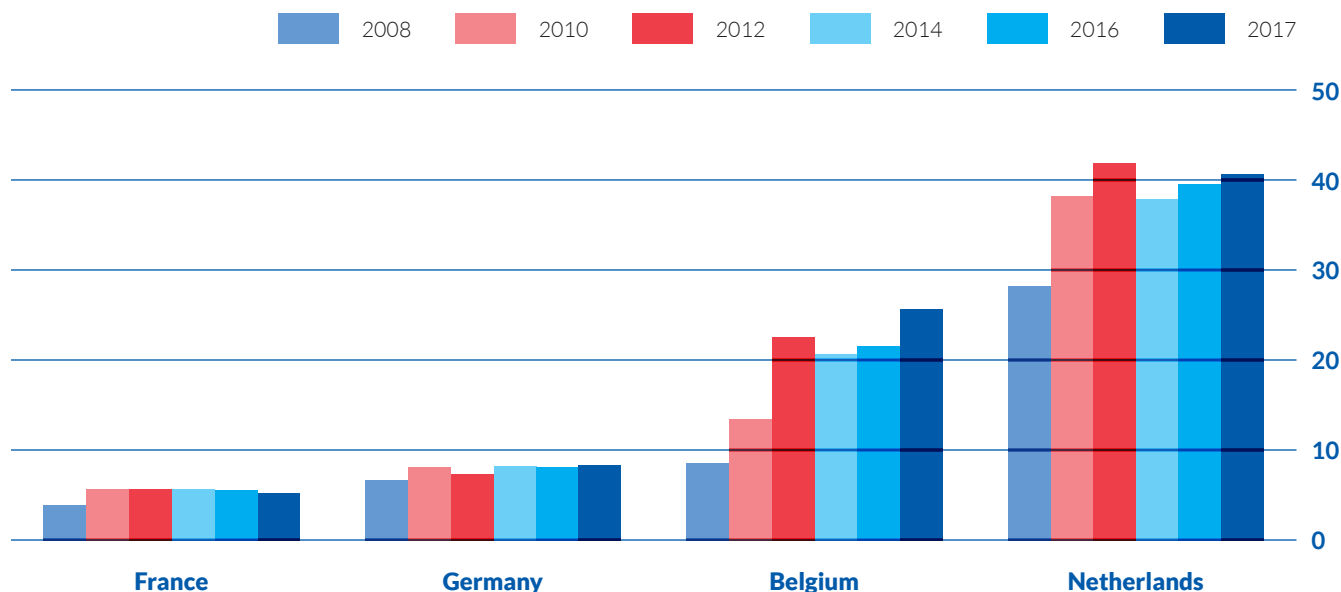
\*The figures for the countries cannot be added together because this would incur double counting. (The total value for EU-28 takes into account cross-border container traffic.)

## Modal split of IWW in container transport

The reasons for a high IWT modal share in Belgium and in the Netherlands are manifold: a dense and growing network of intermodal container terminals with an increasing number of services, a long network of rivers and canals, and heavily populated urban areas with a high market potential.

## IWT MODAL SPLIT SHARE EVOLUTION FOR CONTAINER TRANSPORT

(%, BASED ON TRANSPORT PERFORMANCE)

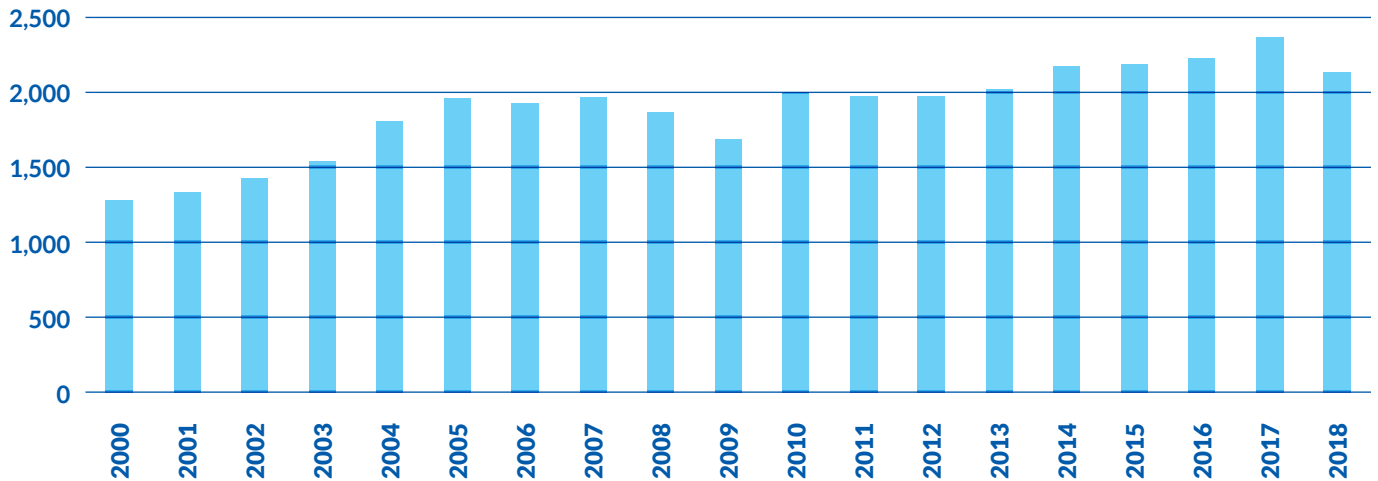


Source: Eurostat [iww\_go\_actygo], [road\_go\_ta\_tcrq], [rail\_go\_contwgt], CCNR analysis

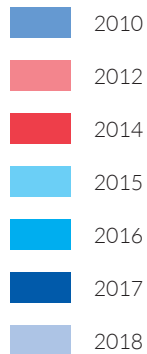
### Container transport per river basin

TEU volumes on the Rhine had been increasing for five years in a row, but in 2018 they fell by 10% compared to 2017, the main reason being the low water period in the second half of the year. The result in 2018 (2.13 million TEU) was still higher than in 2013.

#### CONTAINER TRANSPORT ON THE TRADITIONAL RHINE (IN 1,000 TEU) IN THE PERIOD 2000-2018



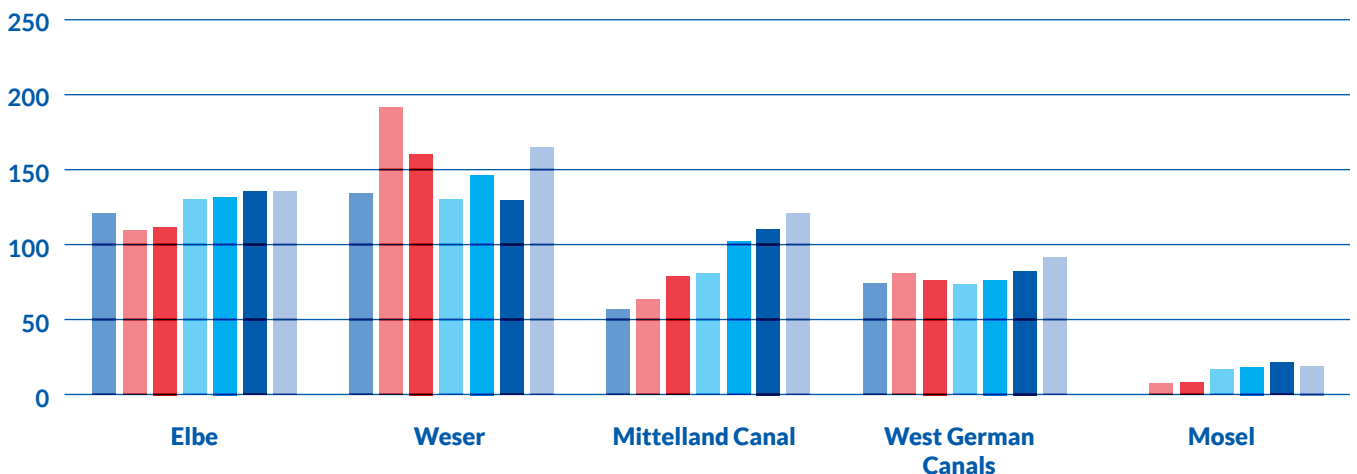
Source: Destatis



Most of the container transport on other German waterways takes place in the northern and north-western parts of Germany. These regions were rather resilient towards low water levels, and registered higher TEU results than in 2017.

The Mosel is a newcomer river for container transport, and TEU figures started to rise in 2015, in the wake of the introduction of a regular container line on this river, linking container terminals and ports on the Mosel with the Rhine.

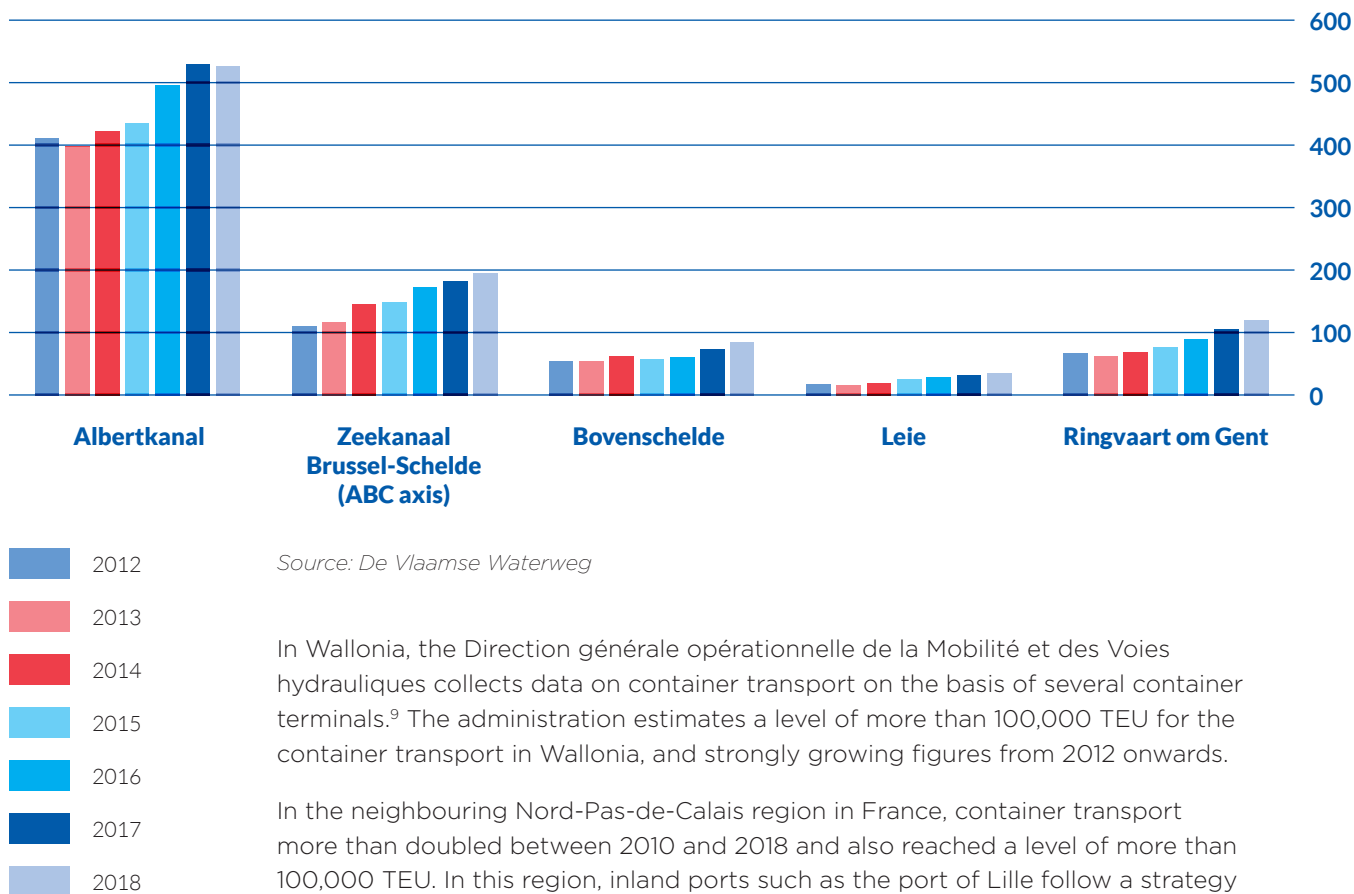
#### CONTAINER TRANSPORT PER WATERWAY IN GERMANY (IN 1000 TEU)



Source: Destatis and Mosel Commission

Waterways in Flanders also continued their upward trend in container transport. The main reasons for this appear to be resilience towards low waters (due to natural factors) and the positive trend of container transport in the hinterland of seaports such as Antwerp (which aims to increase the modal share of IWT for container transport in its hinterland).

#### CONTAINER TRANSPORT PER WATERWAY IN FLANDERS (IN 1,000 TEU)



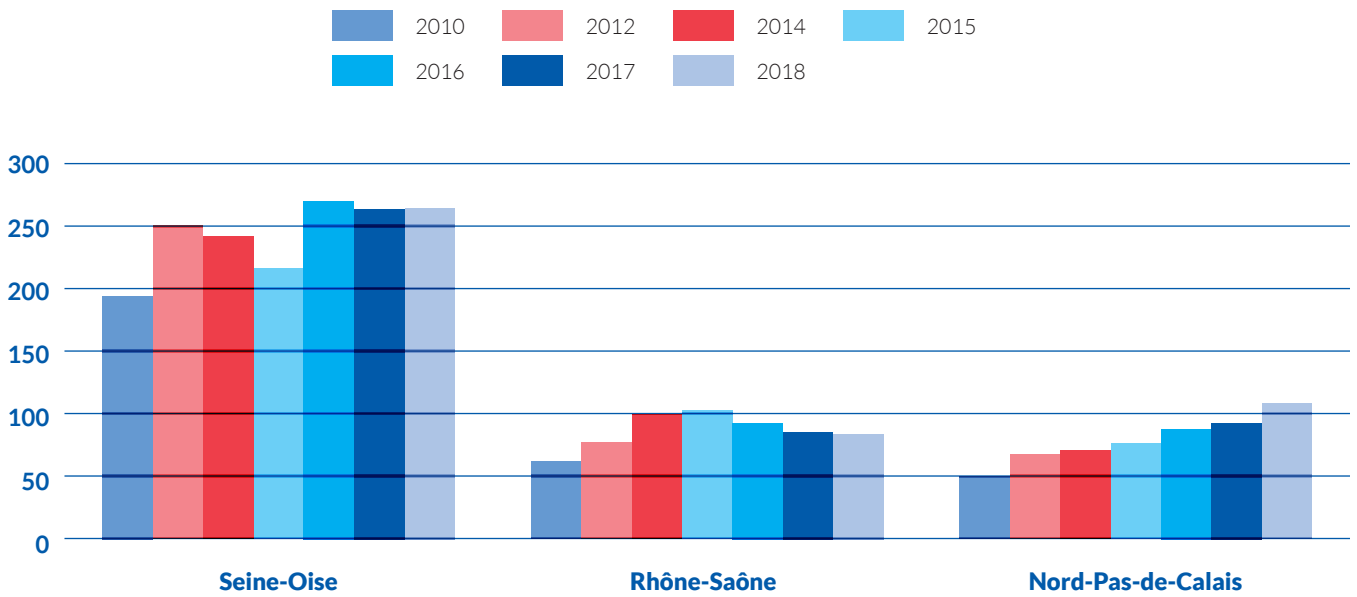
Source: De Vlaamse Waterweg

In Wallonia, the Direction générale opérationnelle de la Mobilité et des Voies hydrauliques collects data on container transport on the basis of several container terminals.<sup>9</sup> The administration estimates a level of more than 100,000 TEU for the container transport in Wallonia, and strongly growing figures from 2012 onwards.

In the neighbouring Nord-Pas-de-Calais region in France, container transport more than doubled between 2010 and 2018 and also reached a level of more than 100,000 TEU. In this region, inland ports such as the port of Lille follow a strategy of becoming hinterland hubs for large seaports. For inland navigation and for inland ports, this results in more container traffic, and for the seaports, it means a reduction of the bottleneck problems in container handling.

<sup>9</sup> Liège Trilogiport, Liège Container Terminal, Euroports Inland Terminals at Monsin, Terminaux de Ghlien et de Garocentre - La Louvière

## CONTAINER TRANSPORT PER BASIN IN FRANCE (IN 1,000 TEU)\*



Source: VNF.

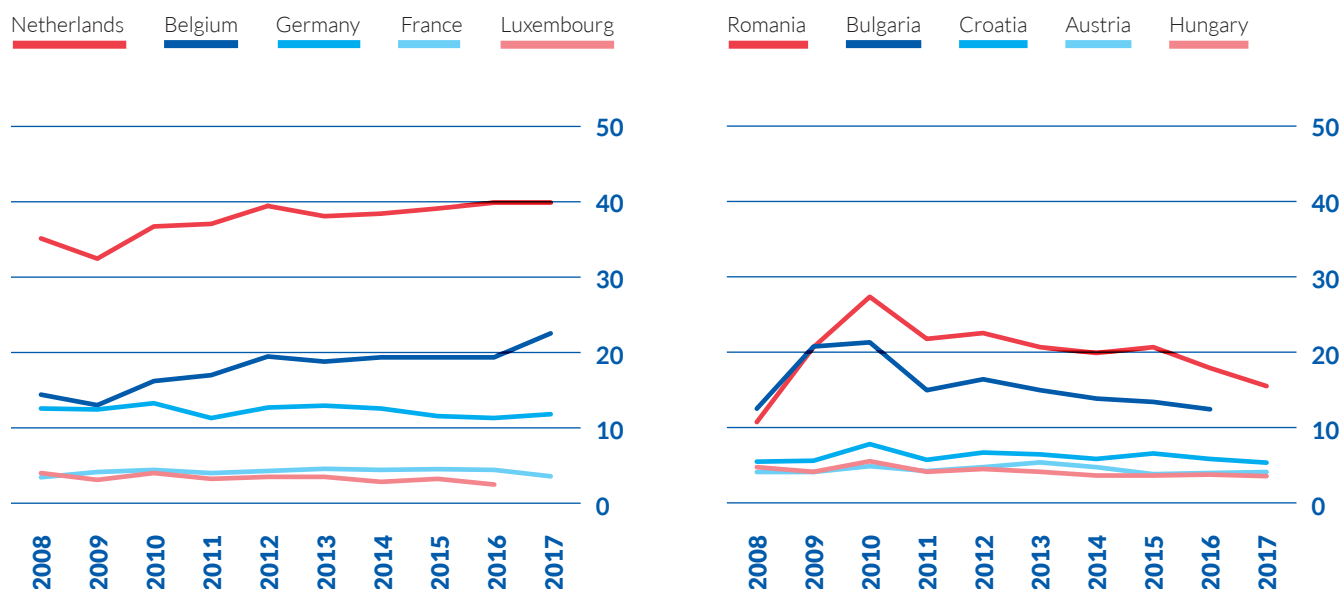
\*The Rhine is excluded as it is shown separately.



# INLAND NAVIGATION

## AND OTHER MODES OF TRANSPORT<sup>10</sup>

IWW MODAL SPLIT SHARE EVOLUTION IN RHINE AND DANUBE COUNTRIES  
(%, BASED ON TONNE-KILOMETRES)\*



Source: Eurostat [iww\_go\_atygo], [road\_go\_ta\_tg], [rail\_go\_grpgood].

\*Share of inland waterway transport performance in total (IWT + Road + Rail) transport performance. Modal split for Belgium in 2017 based on estimations. Rail data for Luxembourg and road data for Bulgaria not yet available for 2017.

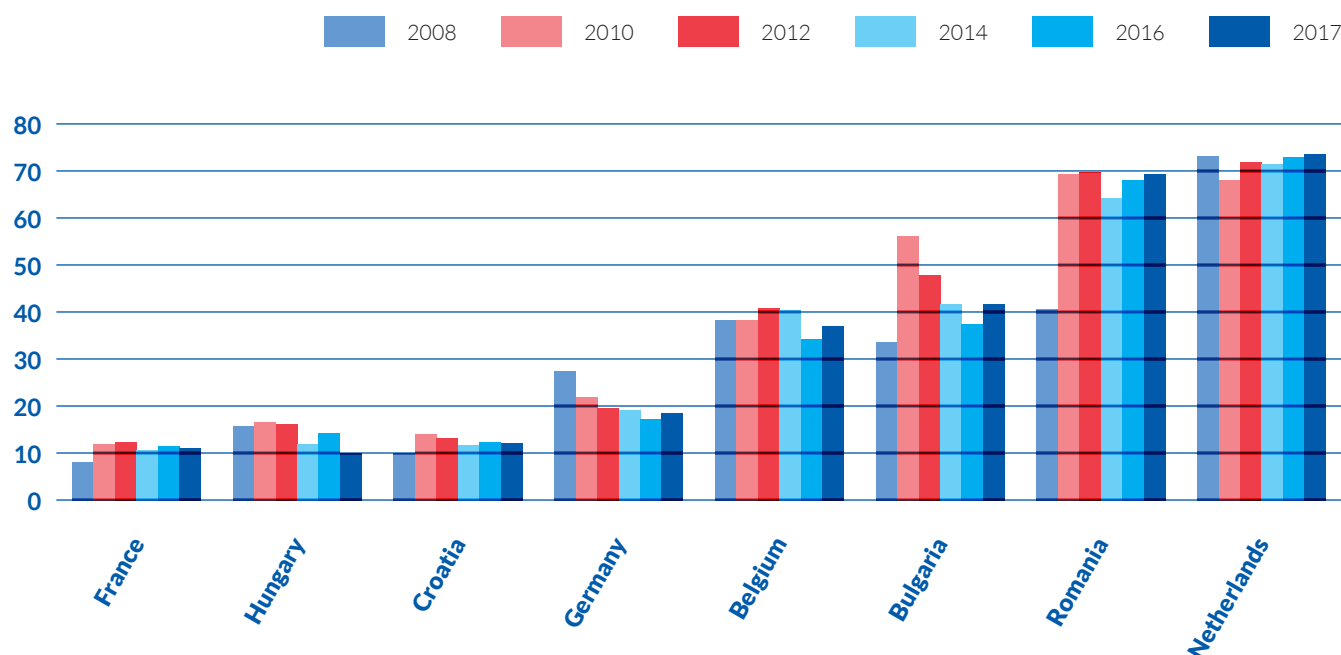
The following figures present the results of modal split calculations for eight European countries per goods segment. These eight countries have a share of about 99% of the total transport performance on European inland waterways.

**Ores, sands, stones, gravel and building materials:** It can be regarded as a “hybrid” product segment, as it is related to steel production on the one hand and the construction activity (related to sands, stones, gravel) on the other hand. These are two quite separate markets, and a split of the data is not possible within the NST 2007 goods classification. In Hungary, the decrease in IWT market shares for this market segment can be explained by the strong increase of rail performance, which almost doubled in 2017 compared to 2016.

<sup>10</sup> Road data registered in the Eurostat database are based on transport by country of registration, not on transport on national territory. This could have some effects on the modal split shares presented in this part of the report.



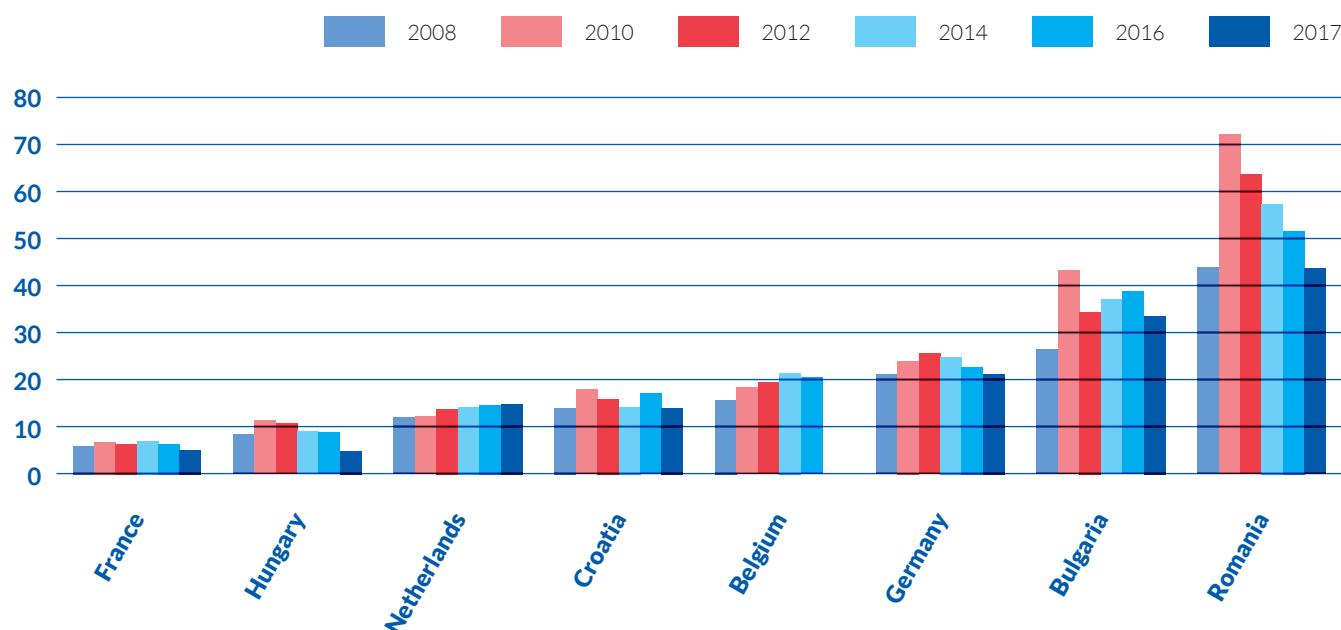
### MODAL SPLIT SHARE EVOLUTION FOR ORES, SANDS, STONES, GRAVEL (%, BASED ON TRANSPORT PERFORMANCE)



Source: Eurostat [iww\_go\_atygo], [road\_go\_ta\_tg], [rail\_go\_grpgood], CCNR analysis

**Agricultural products:** The multimodal data for the large Danube country of Romania reveal that IWT has increased its transport performance for agricultural products over the years but has nevertheless lost market shares against road and rail. Most of the other countries show a relatively constant modal split share of inland navigation for this product segment.

### MODAL SPLIT SHARE EVOLUTION FOR AGRICULTURAL PRODUCTS (%, BASED ON TRANSPORT PERFORMANCE)\*



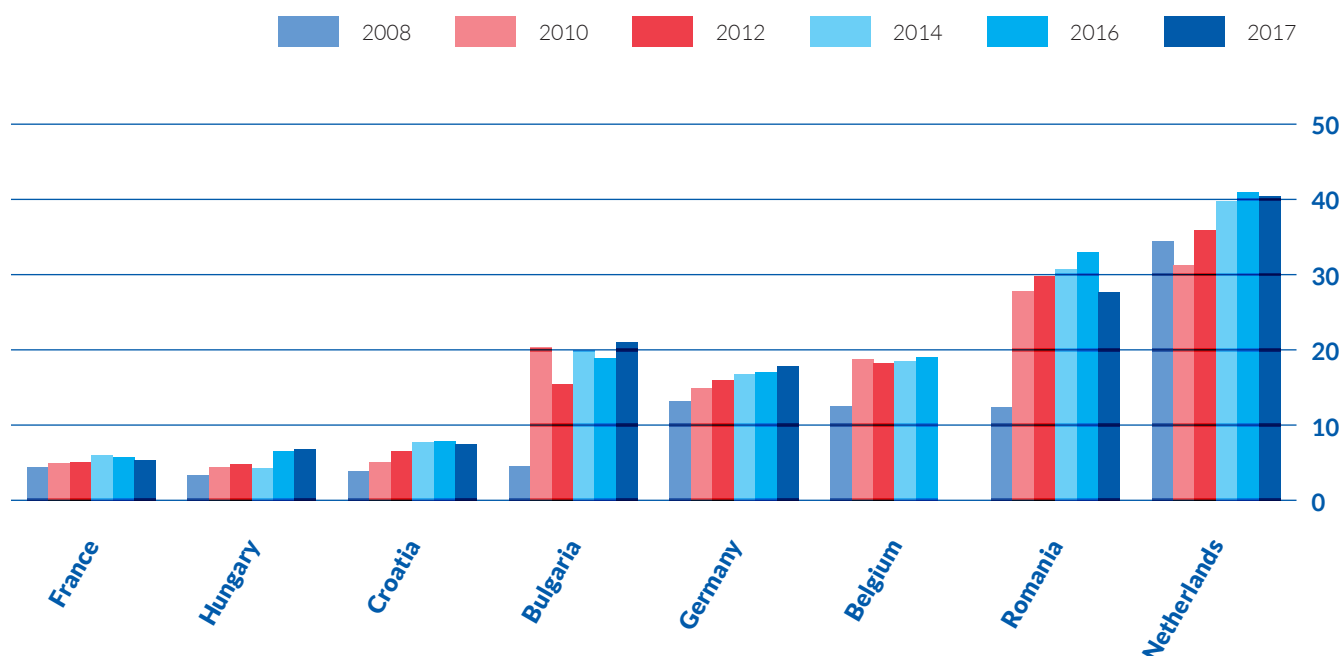
Source: Eurostat [iww\_go\_atygo], [road\_go\_ta\_tg], [rail\_go\_grpgood], CCNR analysis

\*Rail data for Belgium not yet available for 2017

**Chemical products:** The multimodal data show that IWT has gained market shares since 2008 in most European IWT countries.

#### MODAL SPLIT SHARE EVOLUTION FOR CHEMICAL PRODUCTS

(%, BASED ON TRANSPORT PERFORMANCE)\*



Source: Eurostat [iww\_go\_atygo], [road\_go\_ta\_tg], [rail\_go\_grpgood], CCNR analysis

\*Rail data for Belgium not yet available for 2017

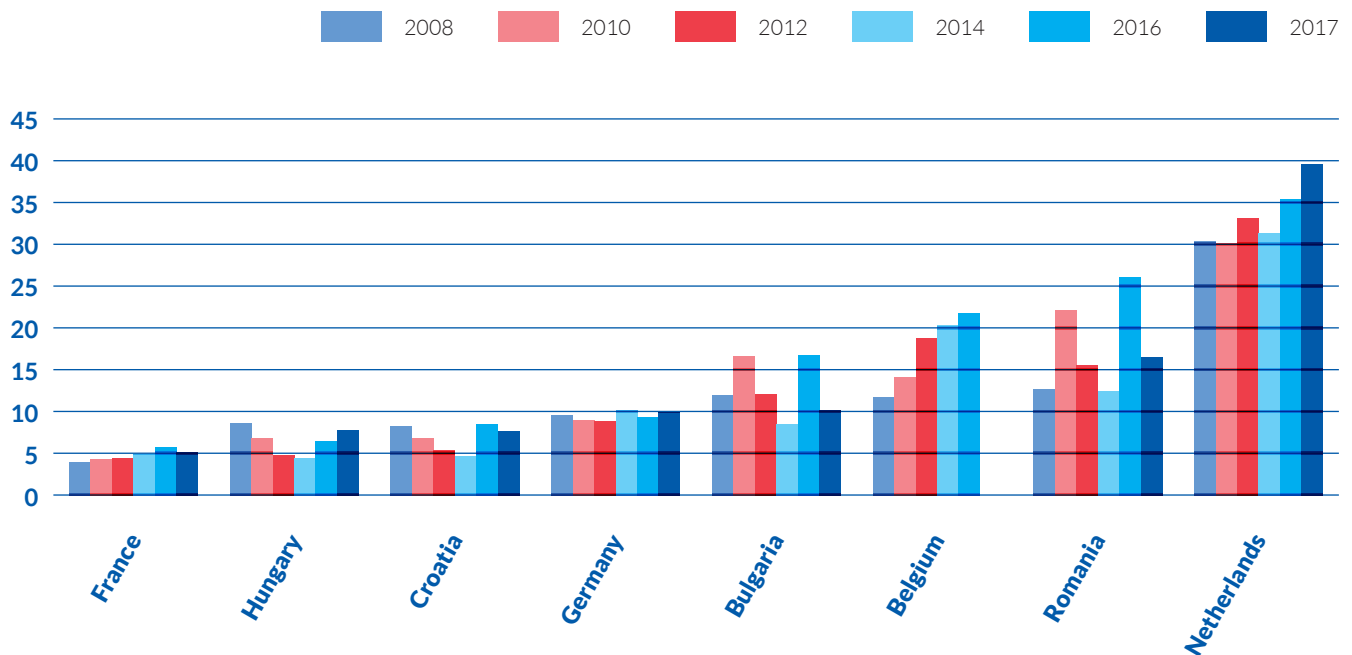
Detailed analysis reveals that such an increase can be explained by various reasons. In Rhine countries, road transport for chemicals has been decreasing for several years with quite a robust trend. For example, in the Netherlands, the share of road transport for chemicals fell from 65% in 2008 to 55% in 2017. However, the IWT's share for chemicals increased from 31% to more than 40% during the same period. In Rhine countries, falling figures for road and partly for rail transport can be explained by safety issues. Indeed, higher safety standards apply today to tanker shipping, which is an advantage compared to other transport modes in this segment.

The Danube countries show different patterns. Here, road transport of chemicals follows an increasing trend. Nevertheless, IWT gained market shares for chemicals in Danube countries because the performance of IWT increased, and because rail transport of chemicals fell strongly.

**Metals and metal products:** Metals transport is important both in the Rhine and in the Danube region due to the steel industries in both these parts of Europe. However, the modal split of IWT evolved more positively in the Rhine basin than in the Danube basin.

## MODAL SPLIT SHARE EVOLUTION FOR METALS AND METAL PRODUCTS

(% , BASED ON TRANSPORT PERFORMANCE)\*

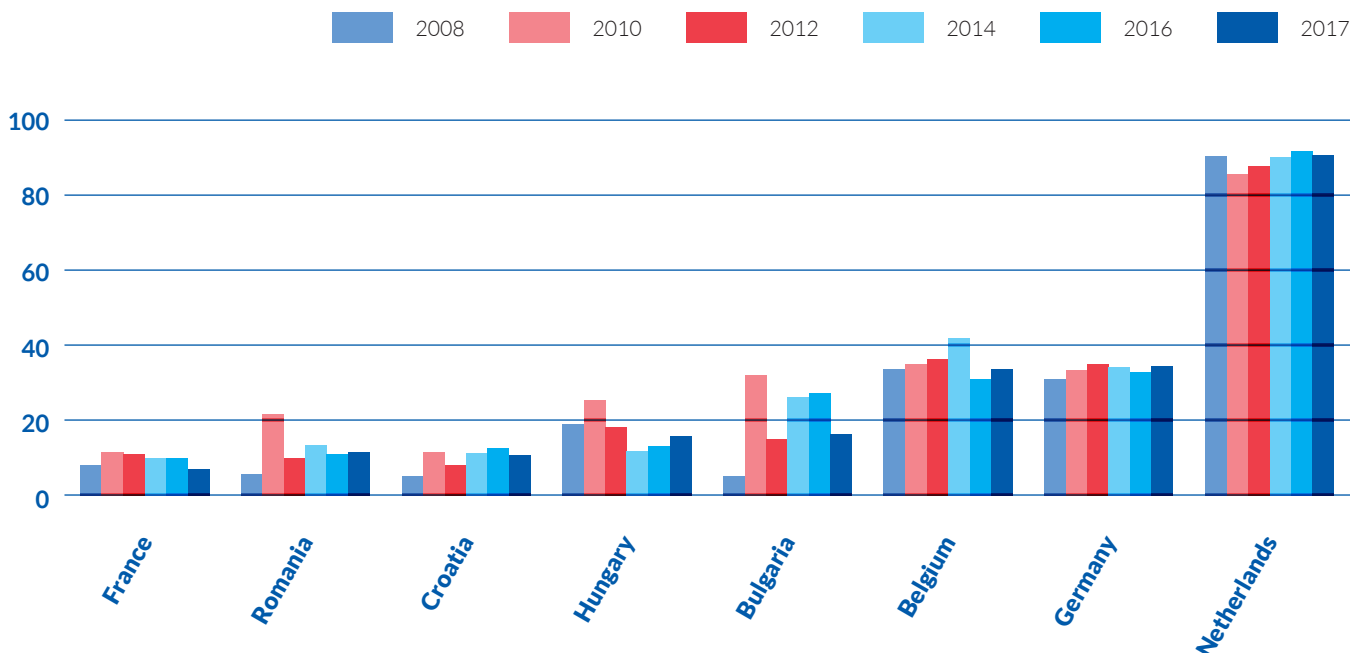


Source: Eurostat [iww\_go\_atygo], [road\_go\_ta\_tg], [rail\_go\_grpgood], CCNR analysis  
 \*Rail data for Belgium not yet available for 2017

**Petroleum products:** Europe's largest refineries can be found in the Netherlands, Belgium and Germany. At the same time, the size of the tanker fleet in the Rhine basin is seven times higher than the size of the Danube tanker fleet. This can explain the high modal share of IWT in the Netherlands, Germany and in Belgium.

## MODAL SPLIT SHARE EVOLUTION FOR PETROLEUM PRODUCTS

(% , BASED ON TRANSPORT PERFORMANCE)



Source: Eurostat [iww\_go\_atygo], [road\_go\_ta\_tg], [rail\_go\_grpgood], CCNR analysis









# 03

## WATER LEVELS AND THEIR IMPACT

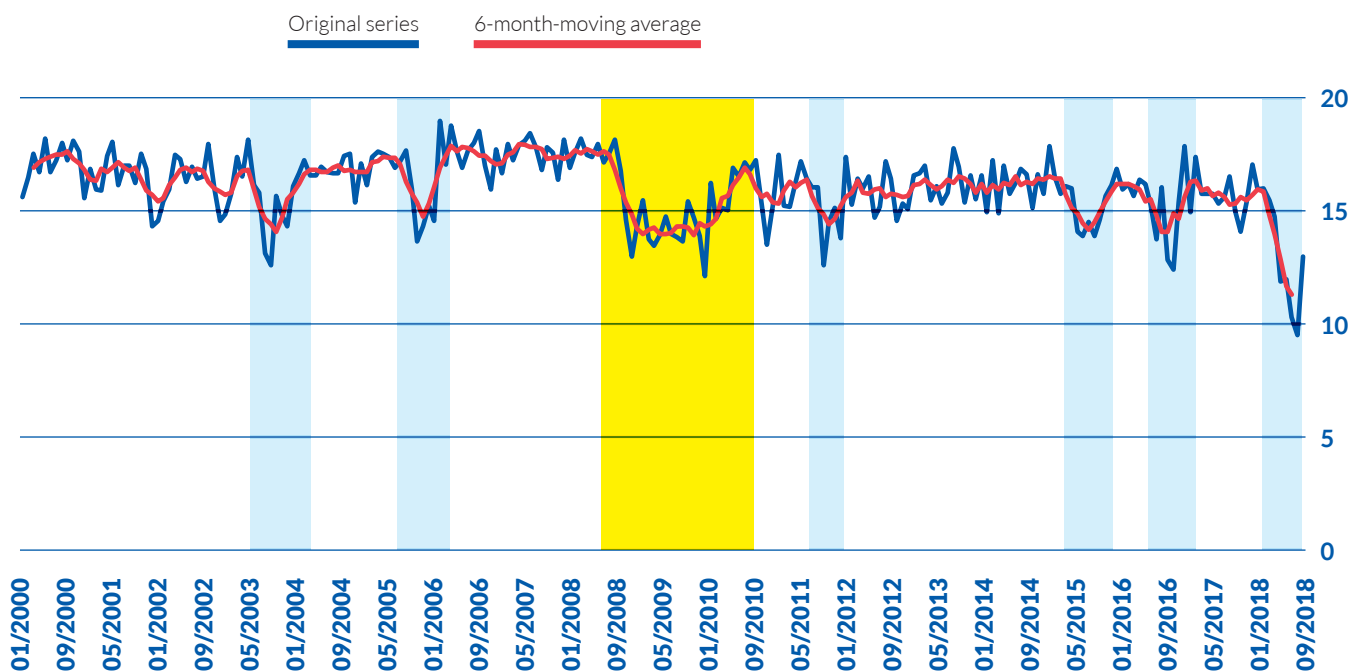
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- European inland navigation in 2018 was strongly impacted by the extreme and extended low water period in the second half of the year 2018.
- The influence of the extreme drought on transport activity varied according to the regions. The impact of low water was particularly pronounced on the Rhine, on its tributaries, on the Upper and Middle Danube, and on the Upper and Middle Elbe.
- The interruption in the logistics chains caused considerable economic losses. For Germany this materialised in a decrease of its industrial production by 5 billion Euros.
- There have been low water periods over the last 200 years and this will continue to occur in the future. How to strengthen the resilience of inland navigation transport in view of this phenomenon will certainly be an important question to be addressed.

# IMPACT ON FREIGHT TRAFFIC

The following figure shows the monthly goods transport on the Rhine between January 2000 and December 2018 together with a 6-month moving average. Low-water periods are shaded in blue and are recognisable as V-shaped reductions of cargo traffic. The major part of the financial crisis (in 2008, 2009 and 2010) is shaded in yellow.

**MONTHLY GOODS TRANSPORT ON THE TRADITIONAL RHINE (IN MILLION TONNES, 01/2000 – 12/2018), FINANCIAL CRISIS AND LOW-WATER PERIODS**



Source: CCNR analysis based on Destatis

The low water period in the second half of 2018 had a stronger effect on goods transport than the previous years. For October and November 2018, the impact of the low-water period on goods transport was even stronger than the impact of the financial crisis. Although the major part of the decrease in the second half of 2018 is due to low water levels, there was also a negative influence from the economic contraction that set in in the second half of the year.



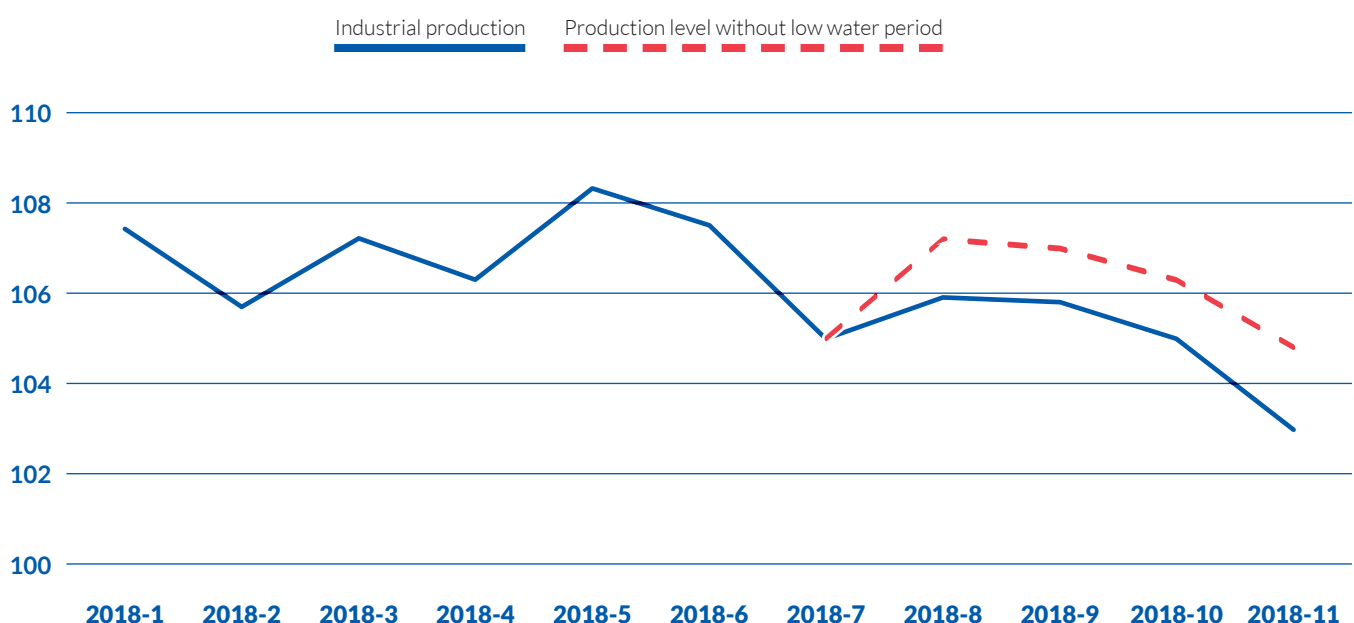
# IMPACT ON INDUSTRIAL PRODUCTION

For the second half of 2018, the reduction of cargo traffic had consequences for the entire German economy. Logistical chains, notably for the delivery of raw materials (iron ore, coal) and for the delivery of final products of the chemical and petrochemical industry, were heavily disturbed.

According to the *Kiel Institute for the World Economy*,<sup>11</sup> the disturbances in logistical chains curbed the growth rate of industrial production in Germany in Q3 2018 and in Q4 2018 significantly. For Q3 2018, the *Kiel Institute* estimates a decrease of the German industrial production by 1.9 billion Euro due to low-water levels on the Rhine.

In Q4 2018, the industrial production was impacted by low water periods also with a time lag. This "lag effect" can be explained by the fact that raw materials, such as coal, iron ore, but also petrochemical commodities, are input factors in the entire production process of an economy. The loss of industrial production due to this lag effect amounted to 1 billion Euro in Q4 2018, while the loss due to the low-water levels in the fourth quarter of 2018 itself amounted to another 1.9 billion Euro (= 2.9 billion Euro in total for Q4 2018).

## IMPACT OF THE LOW WATER PERIOD ON THE RHINE IN 2018 ON THE GERMAN INDUSTRIAL PRODUCTION (INDEX 2015 = 100)



Source: *Kiel Institute for the World Economy*

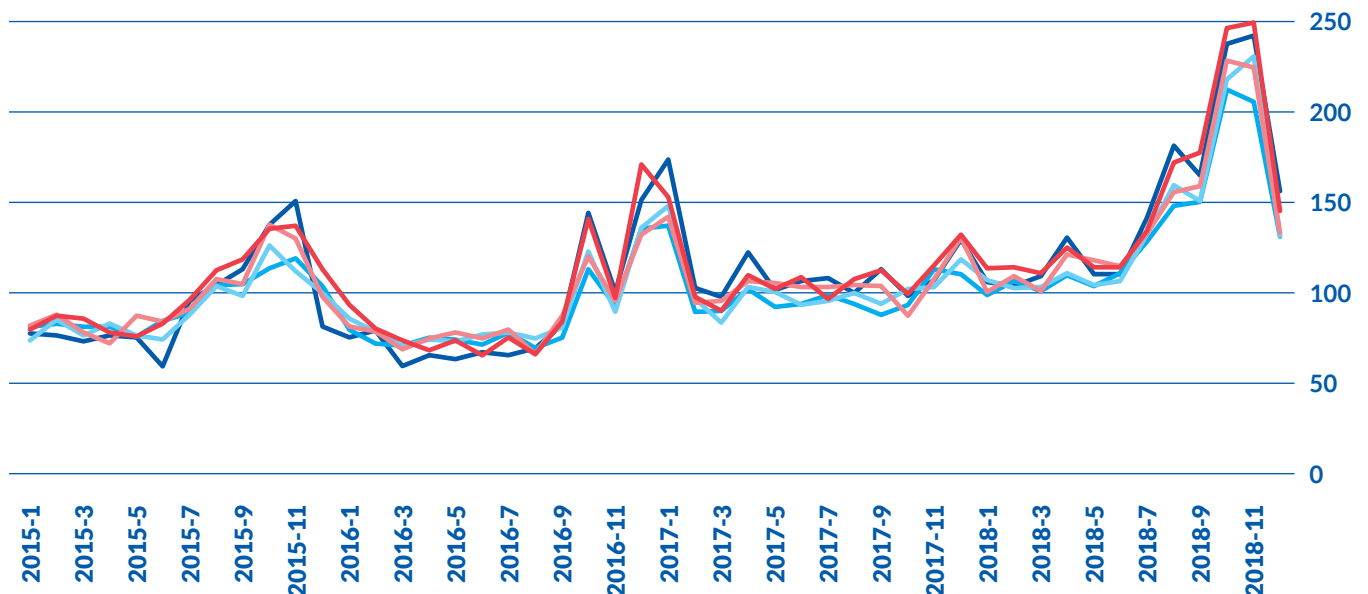
<sup>11</sup> See: Ademmer, M.; Jannsen, N.; Kooths, S.; Möse, S. (2019). *Niedrigwasser bremst Produktion (Low water slows production level)*, in: *Wirtschaftsdienst* 99 (1), 79-80

# IMPACT ON FREIGHT RATES

## Rhine basin

In the Rhine basin, freight rates for the transport of different dry cargo segments increased in October and November 2018 to levels that were around 2.5 times higher than normal. The freight rates for coal, iron ore and containers increased more strongly during the low-water period than for sand, stones, gravel and building materials, as well as Agribulk. The following figure shows this freight rate evolution as an index (2015=100), and the underlying transport relations in the Rhine basin (the Netherlands, Belgium, traditional Rhine).

**PANTEIA FREIGHT RATE INDEX FOR DRY CARGO, METALS AND CONTAINER TRANSPORT**  
(INDEX 2015 = 100)



Coal and Iron  
ores

Agribulk

Sands, Stones,  
Gravel & Building  
material

Metals

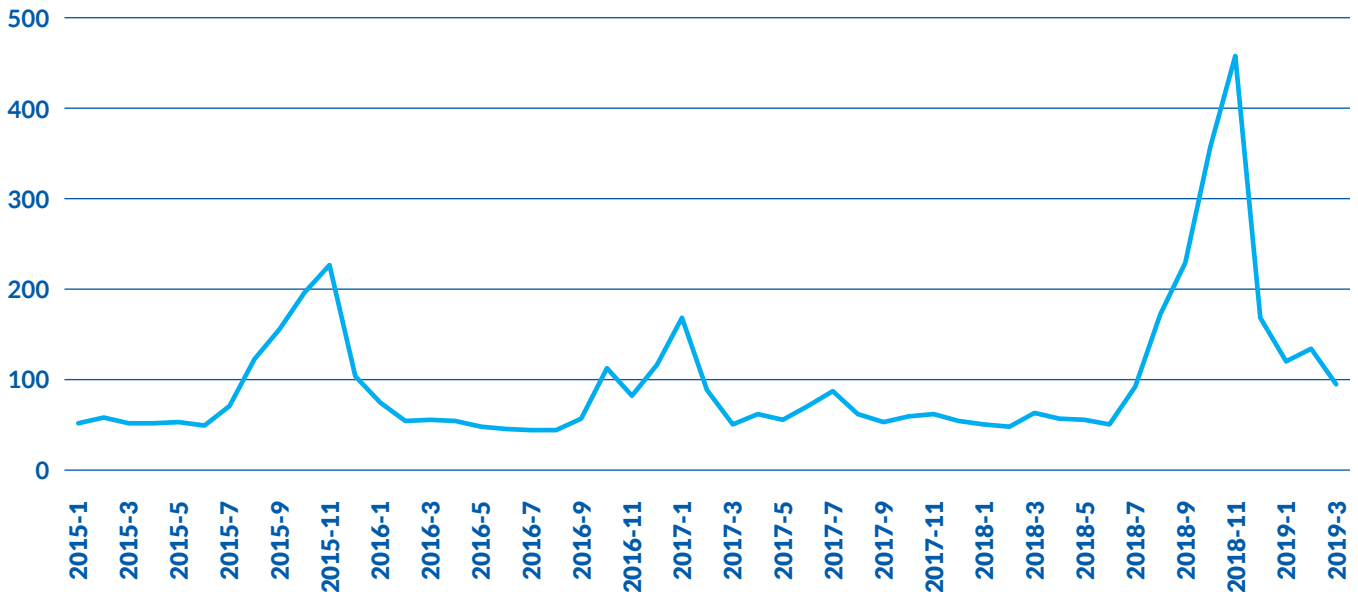
Container

Source: Panteia

Spot market prices for the transport of liquid cargo (gasoil) from the ARA region to destinations along the Rhine in France, Germany and Switzerland are analysed via regular surveys amongst tanker barge operators by the Dutch company PJK International. The following figure shows the index evolution for these transport prices, together with the loading degree of vessels at Maxau/Rhine.

It was noted that freight rates in October and November 2018 were around 4.5 times higher than normal. This price increase was stronger than the increase in the Panteia Index. It can be explained by the fact that the Panteia index is related to different sailing areas (intra-ARA-trade, ARA-Rhine), while PJK Index covers only ARA-Rhine trade where the low-water phenomenon was much stronger than for intra-ARA-trade.

### PJK FREIGHT RATE INDEX FOR GASOIL FROM THE ARA REGION TO DESTINATIONS ALONG THE RHINE (INDEX 2015=100)\*



Source: Calculation CCNR based on PJK International  
\*Gasoil freight rates including pilotage, harbour and canal dues.

For the liquid cargo transport within the extended ARA region (between Antwerp, Rotterdam, Amsterdam, Ghent, Flushing (Vlissingen), Terneuzen and other ports in the region), a dataset provided by the tanker barge corporation CITBO was analysed. The corporation CITBO was created in 2013 and aims to strengthen the market position of tanker barge operators. The members of CITBO transport all kinds of liquid cargo, and these volumes amounted to around 3 million tonnes in 2018. Within total cargo transport by members, Gasoil and components have a share of 48%, Gasoline and components 33%, Biodiesel 11%, Chemicals 7%, heavy and other products 5%. Before showing the freight rate evolution, the regional scope of operation of the corporation shall be described shortly.<sup>12</sup>

**Gasoline & components:** Calculations showed that 92% of all gasoline & components volumes were loaded in Antwerp, Amsterdam, Rotterdam or Flushing. 63% were unloaded in the port of Amsterdam (the rest in Antwerp and Rotterdam). This illustrates the important role of Amsterdam as the world's largest gasoline port, where blending activities are carried out by trading companies and traders of major oil companies.

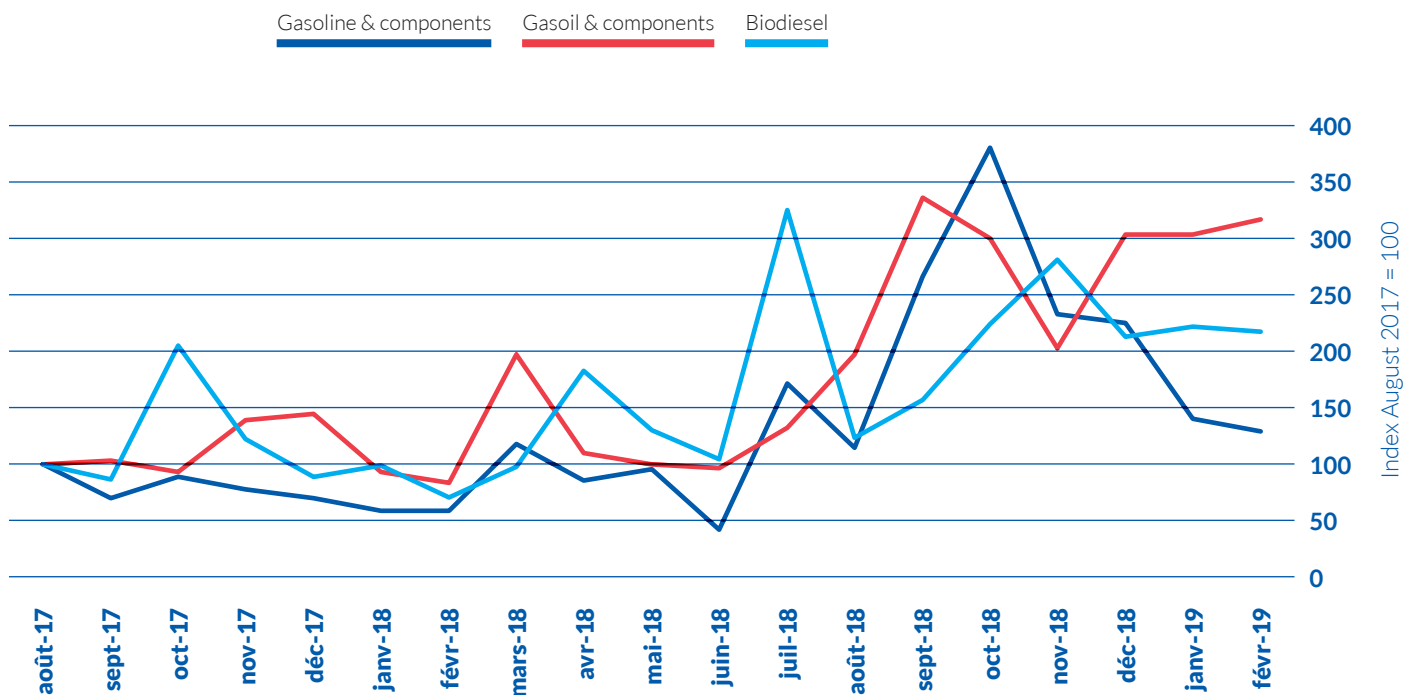
**Gasoil & components:** 94% of these volumes were loaded either in Antwerp, Rotterdam, Flushing or Amsterdam, but the ports of unloading were regionally more diversified. They were sometimes quite far away from the ARA region (but mostly still in Belgium and the Netherlands, sometimes also in Germany).

**Biodiesel:** The ports of loading were regionally diversified for this segment. But the point of unloading was mainly Antwerp and Rotterdam (each had a share of 35% of all cargo unloaded). Ghent had a relatively high share as well, with more than 12%.

<sup>12</sup> These results are based on statistical calculations that were performed by the CCNR on data provided by CITBO (data covering the period from August 2017 until February 2019).

A freight rate index was calculated, per product segment.<sup>13</sup> The raw data were freight rates in Euro per tonne, which were realised by CITBO member companies for liquid cargo transports between August 2017 and February 2019.<sup>14</sup>

#### CITBO FREIGHT RATE INDEX FOR LIQUID CARGO TRANSPORTS IN THE FARAG REGION (FLUSHING-ANTWERP-ROTTERDAM-AMSTERDAM-GHENT) \*



Source: calculation CCNR based on data provided by CITBO.

\*And other ports in the region

During the period when there were low water levels on the Rhine, a general rise of freight rates was observed also in the FARAG region (see figure above). This can be explained by a kind of economic 'absorption effect': strongly rising freight rates on the Rhine signified an incentive for operators from the Netherlands and Belgium (especially those with small vessels, which were able to sail under low water conditions) who shifted their region of operation (temporarily and/or partly) to the Rhine.

In consequence, a supply side contraction in the FARAG area set in where, therefore, the freight rate level also increased. This can be clearly seen from the statistical analysis and from the figure shown above.

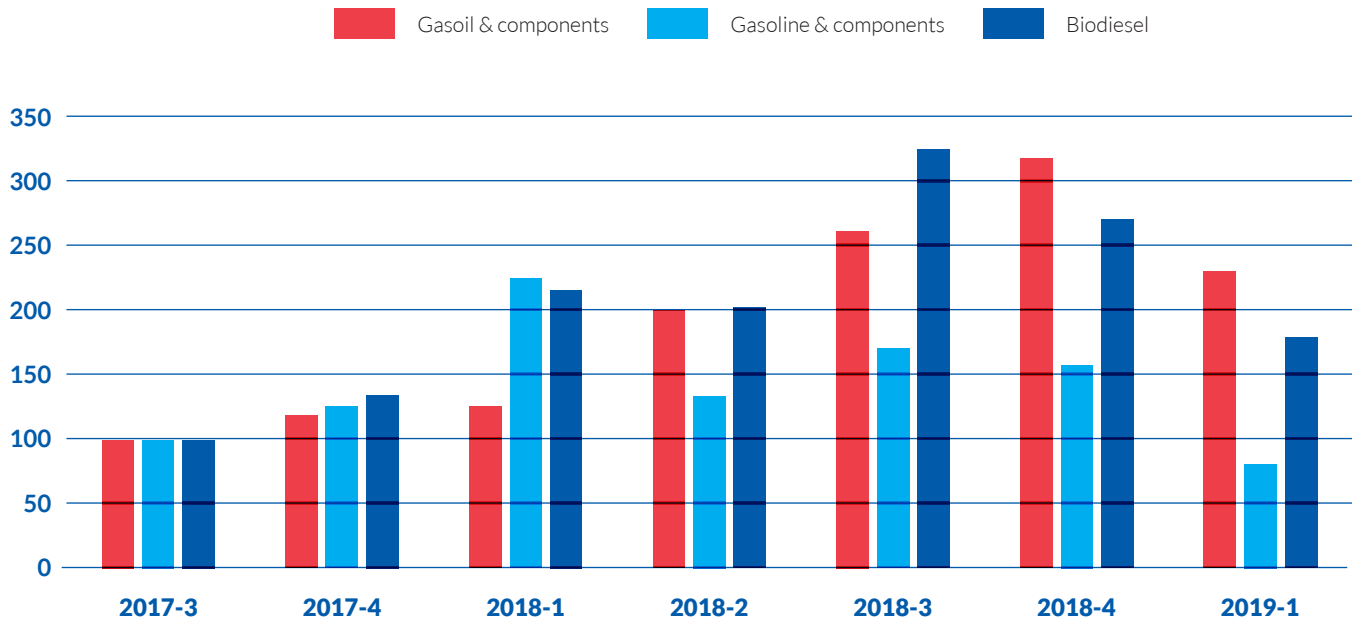
In absolute values, freight rates for Biodiesel transports were the highest during the whole period under study (August 2017 until February 2019), followed by freight rates for chemicals, gasoil and components, and gasoline and components. During the low water period, freight rates for all kinds of liquid cargo went up, but for gasoline and components and gasoil and components the increase was relatively stronger than for chemicals and biodiesel.

<sup>13</sup> The graph below contains the freight rate index for the types of liquid cargo, for which a sufficiently high number of data were available.

<sup>14</sup> The data collection of CITBO started in July 2017.

Regarding the transported volumes by CITBO member companies, the data show no reduction in the second half of 2018 but a strong increase, for all product segments. The regional focus of operation continued to be in the FARAG area. This increase of liquid cargo transport by CITBO member companies in the FARAG region is reflected by figures from the Dutch national statistical office (CBS) for the same period of time.<sup>15</sup>

#### TRANSPORT VOLUME EVOLUTION (INDEX) PER PRODUCT SEGMENT OF THE CITBO MEMBER COMPANIES PER QUARTER (Q3 2017 = 100)



Source: CCNR calculation based on data provided by CITBO

The overall results (both for freight rates and for transport volumes) of the CITBO analysis show that the presence of low water periods in certain regions (Rhine, Danube) tends to increase also the freight rate level in other regions where water levels remained normal, in a kind of 'communicating pipes effect'. This effect is explained by economic incentives for barge operators to shift their regional area of operation to regions with a high freight rates level. This reduces the supply side capacity in the region with normal water levels and therefore the price or freight rate level also increases.

#### Danube basin

In the Danube basin, low waters had quite a severe impact on vessels' loading degrees. However, the strength of this impact differed according to different parts of the Danube. The German stretch of the Danube, which is free-flowing in large parts, witnessed a stronger limitation than the Austrian and Hungarian stretches of the Danube. For the lower Danube, hydraulicity data were not made available, but the transport demand figures point to a very limited impact of water levels on transport demand in 2018.

According to the Danube Commission, freight rates in the Danube region were pushed upwards by rising bunker costs and by the low water levels in parts of the Danube. Freight rates for upstream transport on the Danube (where iron ore and coal transport are transported) were higher than freight rates for downstream traffic.

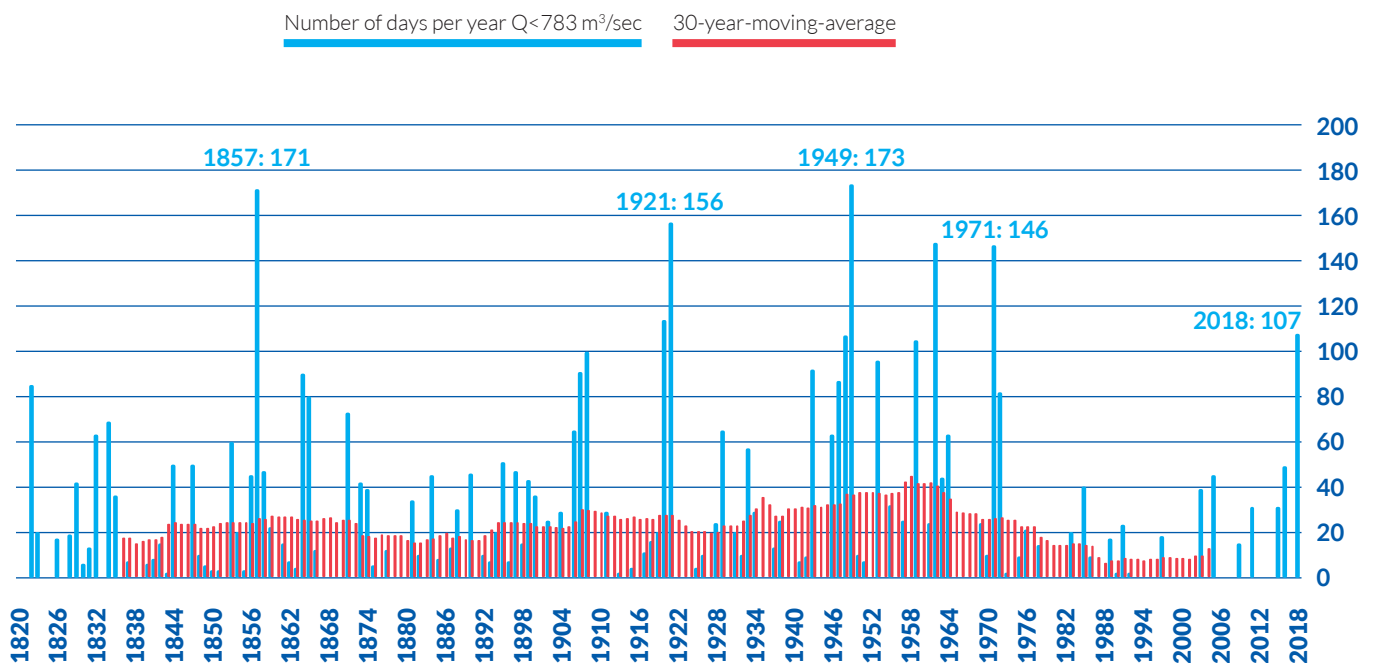
<sup>15</sup> According to the CBS, while international cargo transport in the Netherlands decreased in Q3 and Q4 2018, national cargo transport went up. Liquid cargo grew by 2 % in Q3 2018 compared to Q3 2017, and by 19 % in Q4 2018 compared to Q4 2017.

### Low water levels from a historical perspective

Looking back over the last 200 years helps to put the low water period of 2018 into perspective. At Kaub, Middle Rhine, data on the number of days with a discharge of less than  $783 \text{ m}^3$  per second (which corresponds to the equivalent low water level of 78 cm at Kaub) are available for the last 200 years. They show that years of severe low water periods also occurred in the past. At the beginning of the 20<sup>th</sup> century, and again in the 1940s, a large number of days over many years saw low water levels on the Rhine. The impact on transport volume was certainly not as strong at that time, due to smaller vessels with a lower draught.

These historical patterns show that, even without climate change, strong fluctuations of navigation conditions occurred and will occur in the future. They therefore point to the necessity of partly rethinking the logistical concepts (including the size and the design of the vessels), which are in place today, and which tend to make inland navigation very vulnerable towards climate change.

### NUMBER OF DAYS PER YEAR WITH A DISCHARGE $Q < 783 \text{ M}^3/\text{S}$ AT KAUB, MIDDLE RHINE INCLUDING 30-YEARS-MOVING-AVERAGE\*



Source: Federal German Office of Hydrology.

\*Corresponds to a water level of 78 cm (equivalent water level).











# 04

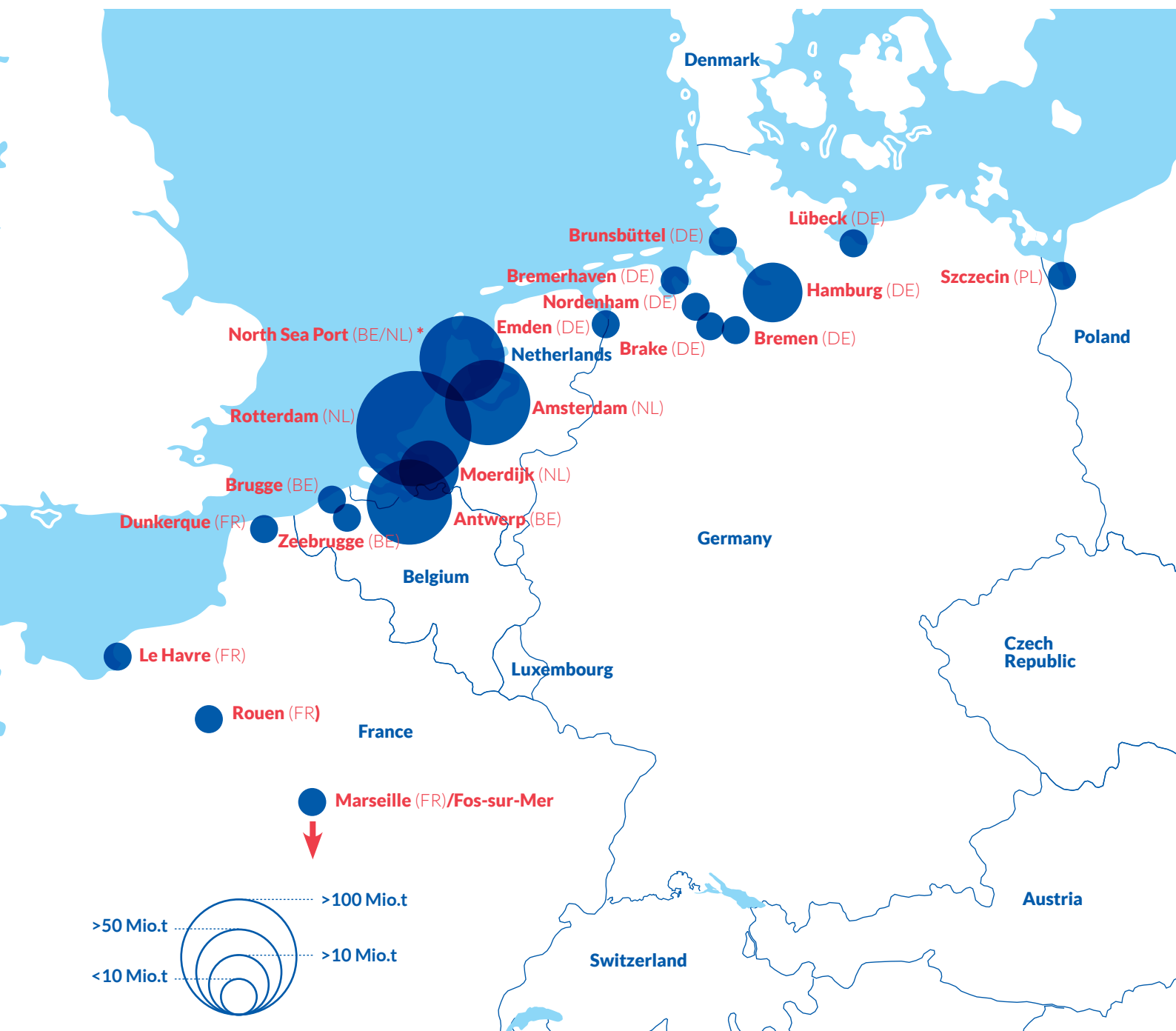
## GOODS TRANSSHIPMENT IN PORTS

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- Inland waterway traffic declined in the seaports of Hamburg and Antwerp in 2018 but rose at the port of Constanta.
- Most Rhine ports suffered from the low water period in 2018, which resulted in a decrease of 10.3% on average for the waterside traffic of major Rhine ports. But for some Rhine ports, such as the port of Kehl and Ludwigshafen, more waterside traffic was registered in 2018 than in 2017.
- As rivers and canals in France and Belgium were far less impacted by low water levels than the Rhine, the average results for the major French and Belgian inland ports was less negative than for Rhine ports.

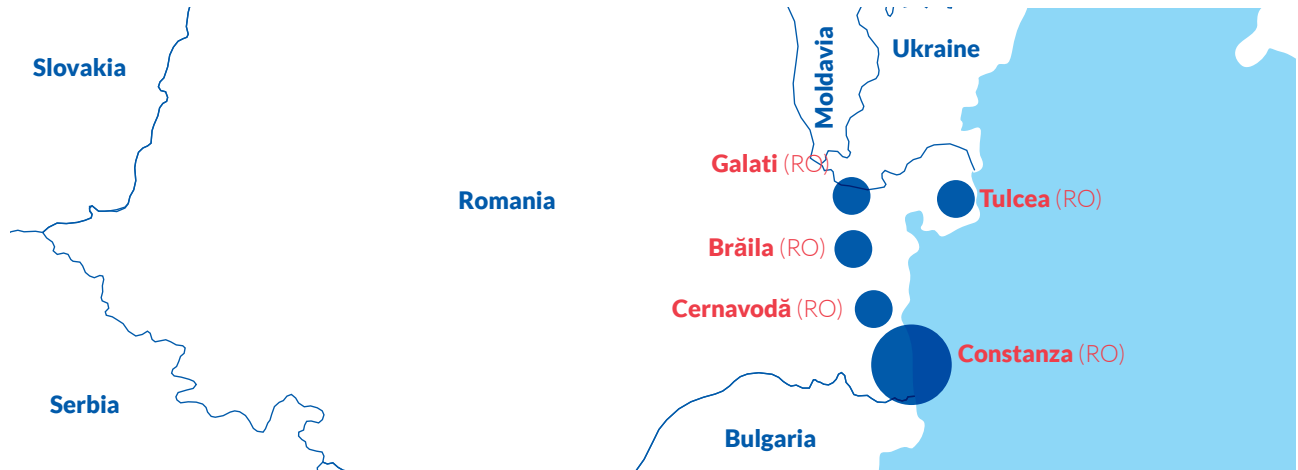
# INLAND WATERWAY TRAFFIC

## IN MAIN EUROPEAN SEAPORTS

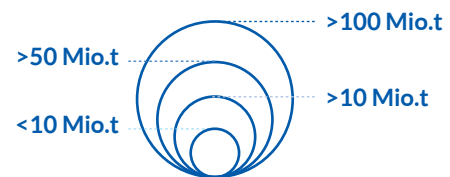


Source: Port Statistics, Eurostat [iww\_go-apor], Panteia, CBS.

\*North Sea Port is the name of the port formed by the cross-border merger between Zeeland Seaports (Flushing, Borsele and Terneuzen) in the Netherlands and Ghent Port Company in Belgium, signed on 8 December 2017. The cross-border merger port started to operate on 1<sup>st</sup> January 2018.



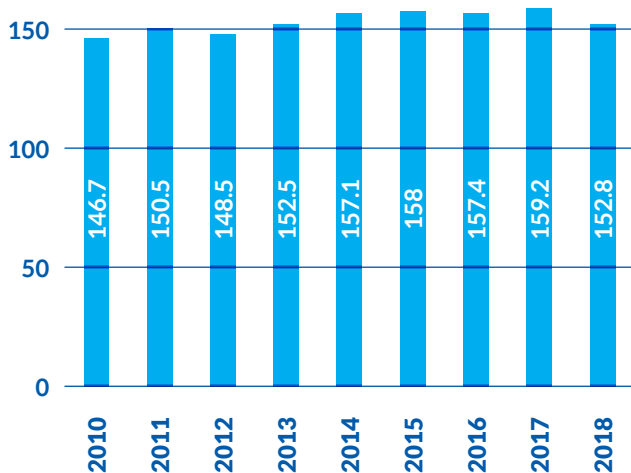
Source: Romanian national Institute of Statistics



In **Rotterdam**, the largest European seaport, 123,859 inland vessels were loaded or unloaded in 2018. Rotterdam is a market leader in the Hamburg-Le Havre range by total throughput, as it holds 36.7% of market shares, followed by Antwerp (18.6%), and Hamburg (10.6%)<sup>16</sup>.

The volume of loaded or unloaded cargo at the port of Rotterdam was 152.8 million tonnes in 2018 (-4% compared to 2017). This decrease could be a consequence of the low water period in the second half of 2018, which has affected the IWW transport of goods from the port of Rotterdam to the hinterland.

#### INLAND WATERWAY TRAFFIC IN THE SEAPORT OF ROTTERDAM (MILLION TONNES)

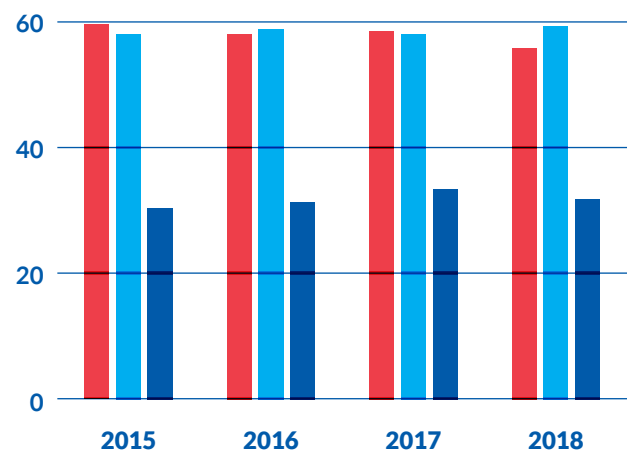


Source: Port of Rotterdam

<sup>16</sup> Port of Rotterdam annual report 2018

#### INLAND WATERWAY TRAFFIC IN THE SEAPORT OF ROTTERDAM PER GOOD SEGMENTS (MILLION TONNES)

■ Dry bulk ■ Liquid bulk ■ Container

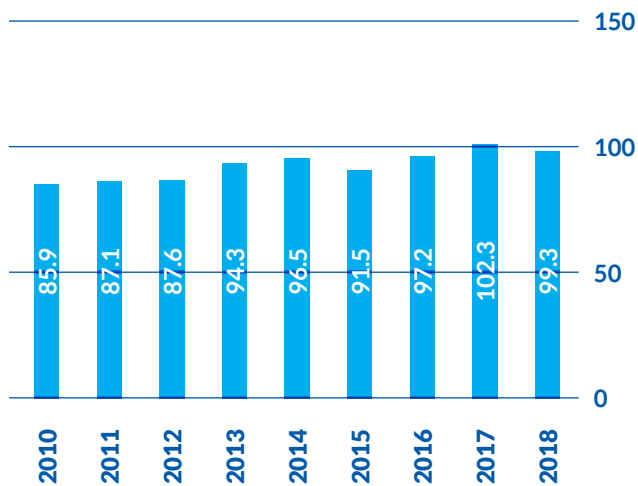


In **Antwerp**, 59,724 inland vessels frequented the port in 2018 (compared to 59,268 vessels in 2017). The IWT goods traffic at the port of Antwerp fell slightly by 3% in 2018, from 102.3 in 2017 to 99.3 million tonnes in 2018.

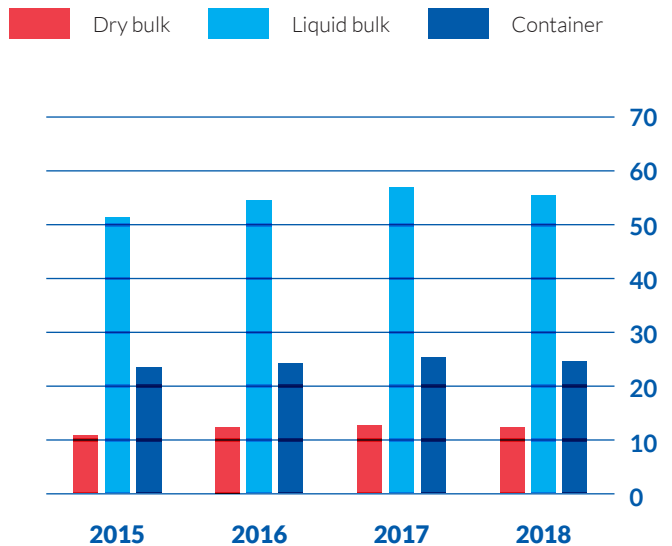
Chemicals and petroleum products are the most important market segments for the port of Antwerp, each making up more than 27% of total river traffic at the port. Containers come close behind with a share of 24.5% of total river traffic.

The slight decrease in total IWT traffic at the port of Antwerp in 2018 can be explained by a decline of ores and metal waste from 22.1 million tonnes in 2017 to 17.9 million tonnes in 2018 (-19%), as well as for petroleum products from 29.9 million tonnes to 27.4 million tonnes (-8.6%). Volumes of animal fodder and food products increased by 10% and chemicals by 3.4%.

#### INLAND WATERWAY TRAFFIC IN THE SEAPORT OF ANTWERP (MILLION TONNES)



#### INLAND WATERWAY TRAFFIC IN THE SEAPORT OF ANTWERP PER GOOD SEGMENTS (MILLION TONNES) \*

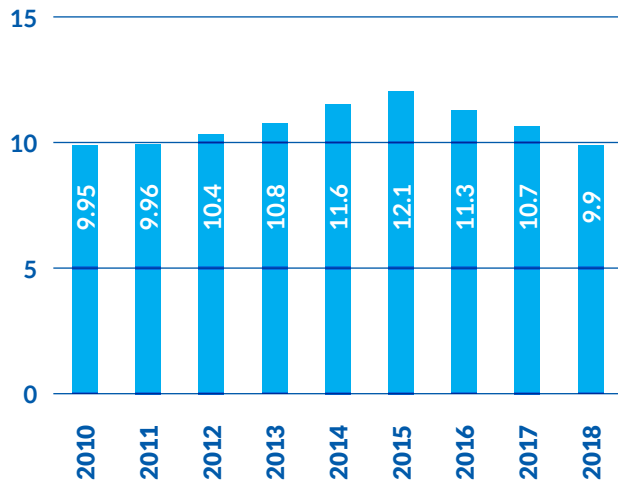
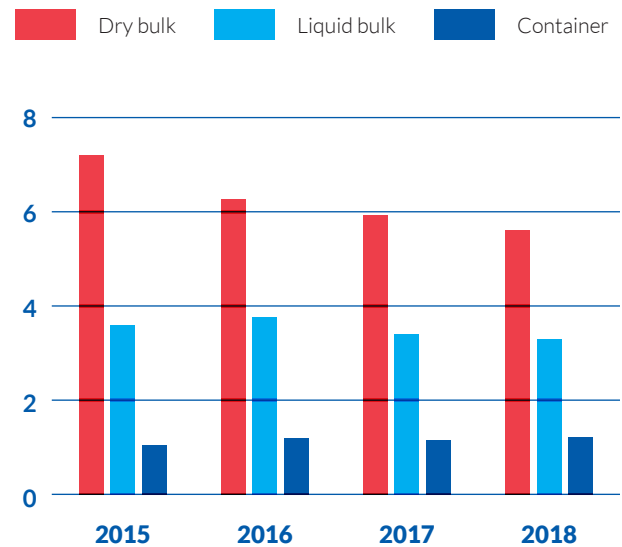


Source: Port of Antwerp

\* Ro/ro, general and not assigned goods are not taken into account in these calculations (in 2018, the volume transported for these three cargo types amounted to 6.7 million tonnes, mostly attributed to conventional goods)

Volumes transported by IWT decreased by 7.5% between 2017 and 2018 in the Port of **Hamburg**. The modal split at the Port of Hamburg is dominated by rail transport, with a share of 47.1%, closely followed by road (45.7%). IWT comes last with a share of 10.2%. Incoming river traffic has a share of 44% in Hamburg, and 56% is outgoing traffic.



INLAND WATERWAY TRAFFIC IN THE SEAPORT  
OF HAMBURG (MILLION TONNES)INLAND WATERWAY TRAFFIC IN THE SEAPORT OF  
HAMBURG PER GOOD SEGMENTS (MILLION TONNES) \*

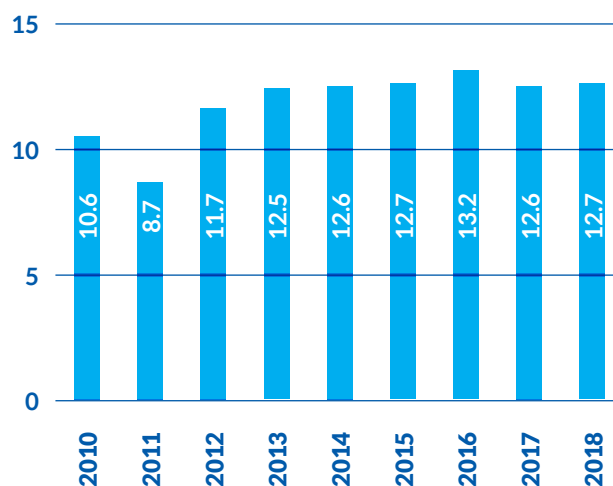
Source: Statistical Office of Hamburg

\* General cargo is not taken into account in these calculations

In **Constanța**, 9,487 inland vessels called at the port in 2018, of which 5,966 were barges (63%) and 1,328 were push boats (14%). River traffic was stable in 2018 compared to 2017, with 12.7 million tonnes. The port of Constanța is the main seaport on the Black Sea, playing a very important role for the transport of cereals (share of 38%), especially as a transit node for this good segment. Fertilizers, non-ferrous and iron ores (share of 29%) are also important goods segments for the port.

Container traffic in the port of Constanța has always been relatively low. In 2018, it amounted to 1,266 TEUs, a decrease compared to 2017 when 4,849 TEU were transported.

## INLAND WATERWAY TRAFFIC IN THE SEAPORT OF CONSTANTA (MILLION TONNES)



Source: Port of Constanța/Romanian Statistical Office

# INLAND WATERWAY TRAFFIC

## IN MAIN EUROPEAN INLAND PORTS

### RHINE PORTS

WATERSIDE TRAFFIC IN MAJOR RHINE PORTS (MILLION TONNES)

	2016	2017	2018	2018/2017
<b>Duisburg</b>	55.6	52.2	48.1	-7.7%
<b>Köln</b>	11.0	10.7	8.9	-17.6%
<b>Neuss</b>	7.7	8.0	7.6	-4.3%
<b>Mannheim</b>	8.7	9.7	7.5	-22.1%
<b>Karlsruhe</b>	6.2	7.2	6.4	-11.3%
<b>Ludwigshafen*</b>	6.9	5.6	6.1	+9.0%
<b>Strasbourg</b>	7.5	8.0	5.9	-26.4%
<b>Basel</b>	5.9	5.8	4.7	-18.9%
<b>Mulhouse</b>	4.9	4.8	4.4	-9.7%
<b>Kehl</b>	3.5	3.5	3.9	+11.3%
<b>Krefeld</b>	3.2	3.4	3.3	-1.1%
<b>Düsseldorf</b>	1.8	1.7	1.6	-6.3%
<b>Total</b>	122.9	120.6	108.4	-10.3%

Source: Destatis, Port de Strasbourg, Swiss Rhine ports, Port de Mulhouse .

\*The result in Ludwigshafen is due to special effects. An accident occurred in 2017 which greatly reduced cargo traffic that year (traffic had been shifted to Mannheim temporarily).

#### Port of Strasbourg

The activities of the Port of Strasbourg (PAS) were impacted by the long period of low water (mid-July to late December 2018): vessels had to limit their loads and container ships had to stop sailing for two months. As a consequence, large amounts of cargo were shifted towards rail transport. Containerized railway traffic increased by 19%. But despite the difficult year, the port looks to the future and has plans for an extension of its container terminals.<sup>17</sup>

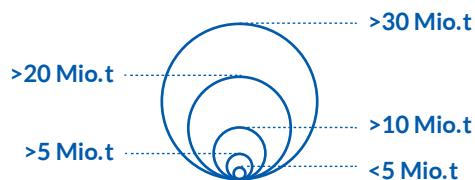
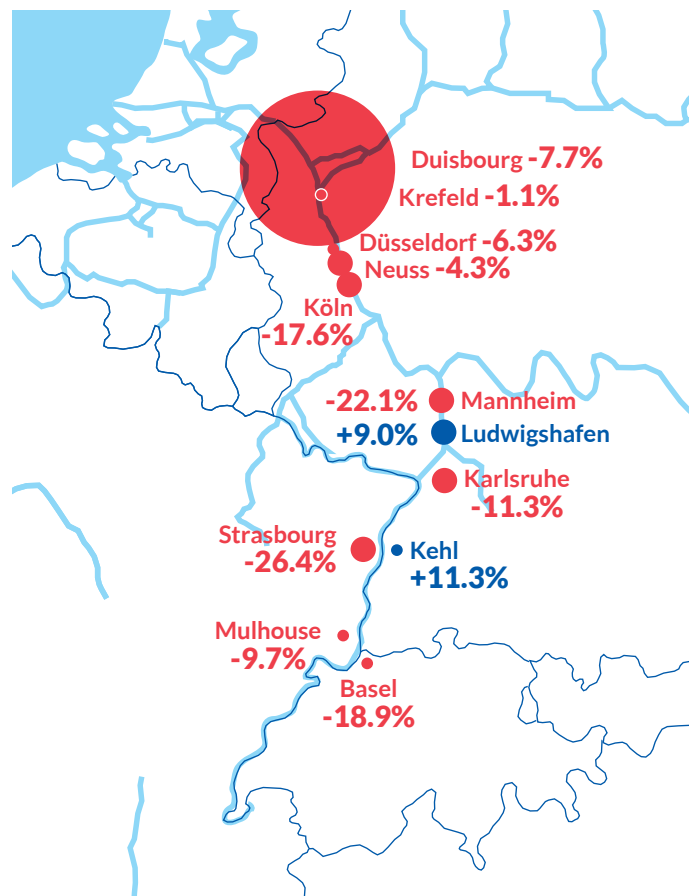
<sup>17</sup> Source: Dernières Nouvelles d'Alsace, article "Le port de Strasbourg pénalisé par les basses eaux du Rhin", (16<sup>th</sup> January 2019).



### Port of Kehl

The neighbouring port of Strasbourg, just on the other side of the Rhine, is the port of Kehl, where a large electric steel mill is located in the port area, among other important companies. The steel mill uses scrap metals for steel production, and the transport of iron and steel has by far the largest share in total waterway traffic in Kehl (69% in 2018). An amount of 2.75 million tonnes of iron and steel related goods were registered by the port in 2018, which represented an increase by 4.3% compared to 2017.<sup>18</sup>

### TOTAL YEARLY WATERSIDE TRAFFIC (MILLION TONNES)



● Negative rate of change in 2018 vs 2017

● Positive rate of change in 2018 vs 2017

<sup>18</sup> Source: Kehler Hafenbericht 2018.

## FRENCH AND BELGIAN INLAND PORTS

### WATERSIDE TRAFFIC IN MAJOR FRENCH AND BELGIAN INLAND PORTS (MILLION TONNES)

	2016	2017	2018	2018/2017
<b>Paris</b>	20.3	21.2	22.1	+4.5%
<b>Liège</b>	15.5	15.9	16.0	+0.1%
<b>Strasbourg</b>	7.5	8.0	5.9	-26.4%
<b>Brussels</b>	4.3	4.8	5.2	+7.7%
<b>Namur</b>	5.2	5.3	5.1	-4.1%
<b>Mulhouse</b>	4.9	4.8	4.4	-9.7%
<b>Metz</b>	1.5	1.6	1.9	+18.3%
<b>Lille</b>	1.7	1.8	1.8	-0.6%
<b>Villefranche-sur-Saône</b>	0.7	1.8	1.7	-3.4%
<b>Lyon</b>	1.4	1.5	1.4	-5.9%
<b>Chalon-sur-Saône and Mâcon *</b>	1.0	1.1	0.8	-25.0%
<b>Total</b>	64.0	67.8	66.3	-2.2%

Source: Ports de Paris, Port de Liège, Port de Strasbourg, Port de Mulhouse, Port de Bruxelles, Port de Namur, Nouveau port de Metz, Port de Lille, VNF.

\*Aproport

#### Port of Liège

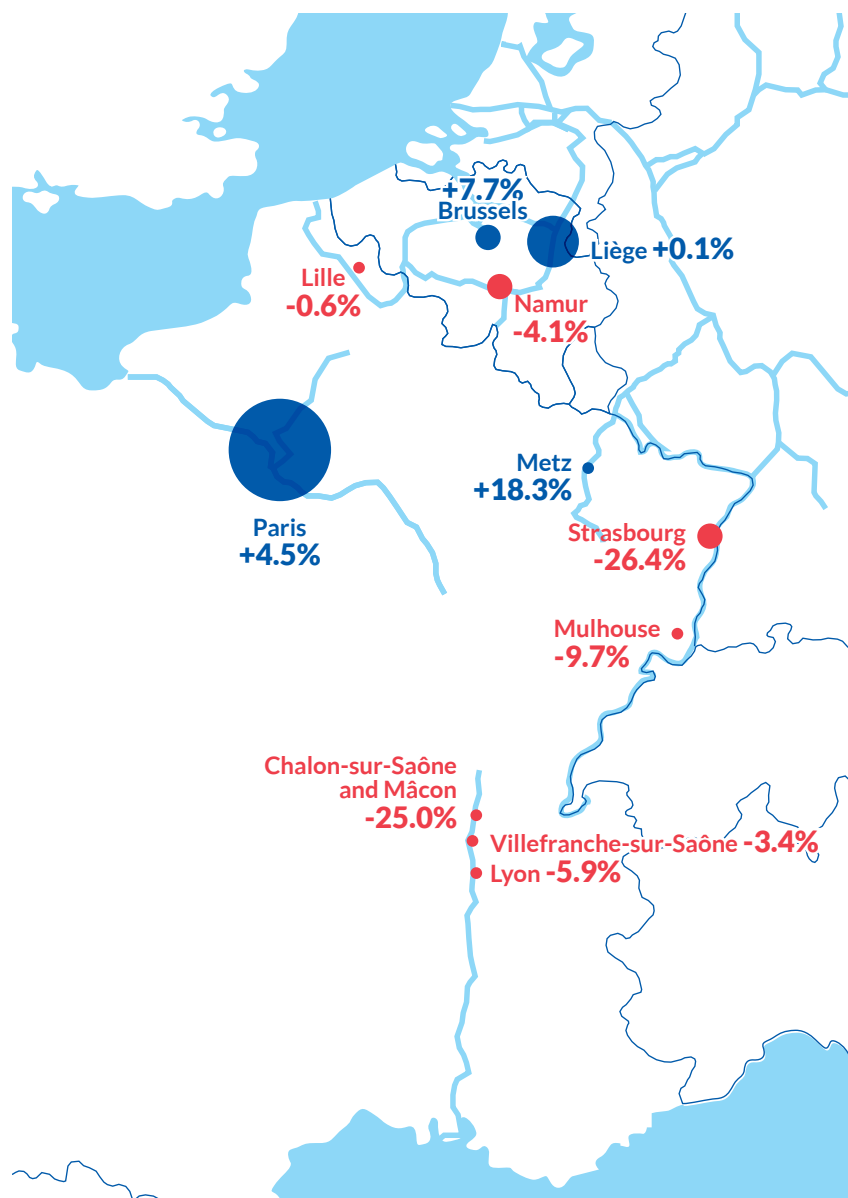
In the third largest European inland port, waterway cargo traffic benefited from an increase of container traffic (measured in tonnes, by 20%). Containers and diverse goods reached a volume of almost 0.9 million tonnes. In terms of TEU, the result represented more than 85,000 TEU (+15%). Another positive development was the growing metals traffic, due to the recovery of the local steel production.<sup>19</sup>

#### Port of Metz

The port of Metz in Lorraine on the river Moselle is the largest inland port in France for grain. According to detailed ports statistics, 1.7 million tonnes of grain and other agricultural products were exported by inland waterway traffic in 2018; this was significantly more than in 2017, when very bad harvest results had lowered the grain export to a level of 1.4 million tonnes.

<sup>19</sup> Source : Port autonome de Liège, Press communication, 20<sup>th</sup> February 2019.

## TOTAL YEARLY WATERSIDE TRAFFIC (MILLION TONNES)



- Negative rate of change in 2018 vs 2017
- Positive rate of change in 2018 vs 2017

## DANUBE PORTS

### WATERSIDE TRAFFIC IN LARGE DANUBE PORTS (MILLION TONNES)

	2016	2017	2018	2018/2017
<b>Constanta</b>	12.7	12.1	12.1	-0.6%
<b>Galati</b>	6.6	6.3	6.4	+0.9%
<b>Ismail</b>	5.7	5.1	4.7	-8.1%
<b>Smederovo</b>	2.5	3.2	3.6	+12.6%
<b>Linz</b>	4.0	4.2	3.2	-25.4%
<b>Tulcea</b>	1.5	1.3	1.7	+31.3%
<b>Pancevo</b>	1.0	1.1	1.4	+30.0%
<b>Bratislava</b>	1.9	2.1	1.5	-26.8%
<b>Regensburg</b>	1.3	1.5	1.1	-22.0%
<b>Vienna</b>	1.1	1.1	1.0	-7.7%
<b>Drobeta Turnu Severin</b>	1.0	1.2	1.1	-5.4%
<b>Prahovo</b>	0.7	0.9	1.0	+13.3%
<b>Novi Sad</b>	1.3	1.2	1.0	-11.3%
<b>Budapest</b>	1.0	1.1	0.9	-18.2%
<b>Total</b>	42.3	42.4	40.6	-4.2%

Source: Danube Commission Market observation report, Romanian Statistical Institute, Hungarian Statistical Office, Destatis

#### Port of Linz

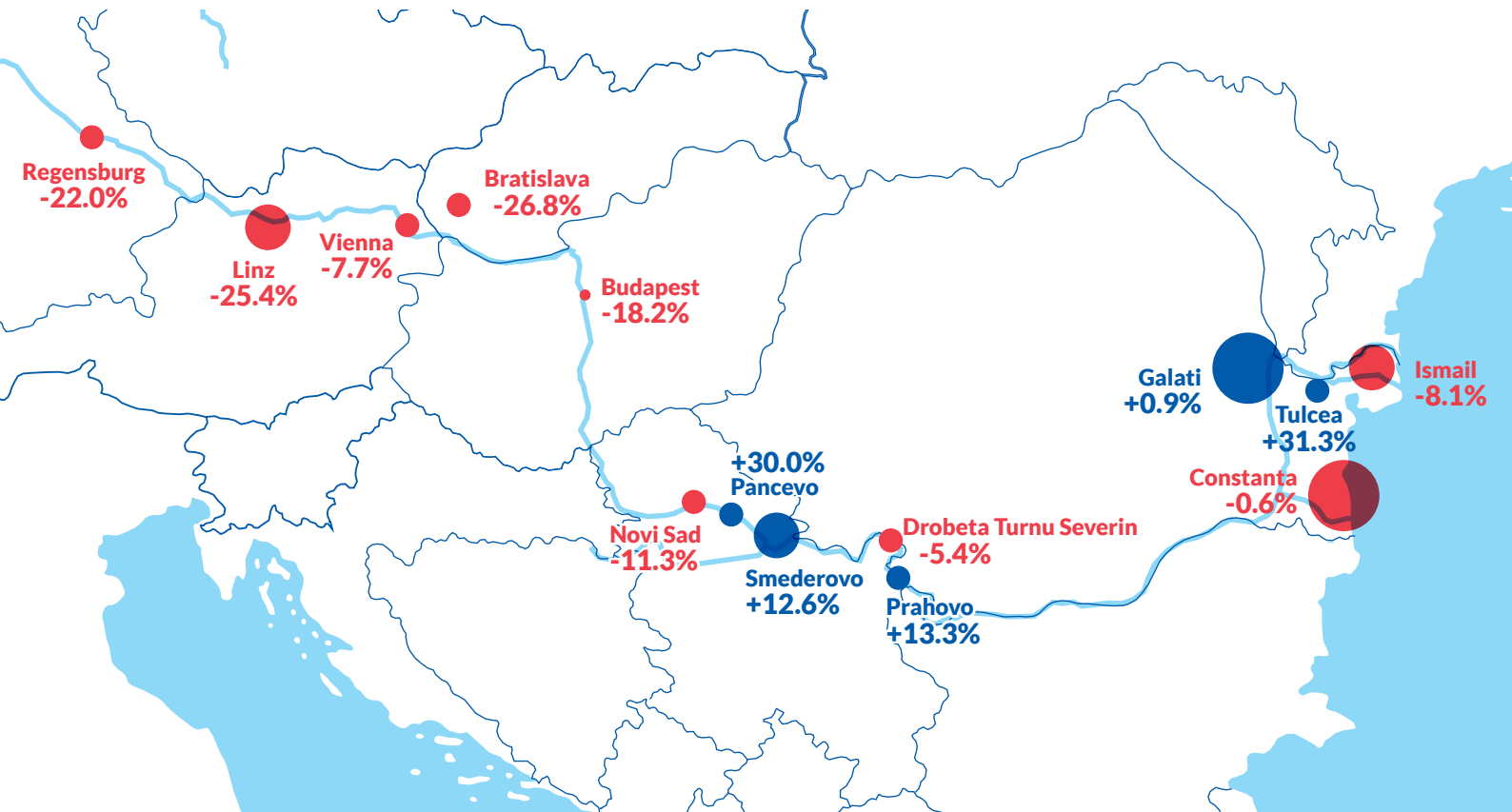
Taken together, around 2.1 million tonnes of iron ores were imported through all Austrian inland ports in 2018, which represented 52% of all unloaded cargo in Austrian ports. 89.2% of these iron ore imports were unloaded in the port of Linz, which is the centre of the Austrian steel industry.<sup>20</sup>

#### Port of Bratislava

According to the market observation report 2019 of the Danube Commission, the development plan for the port of Bratislava foresees the modernisation of its structure as an intermodal port and the establishment of a terminal for the production and distribution of liquefied natural gas (LNG).

<sup>20</sup> Source: market observation report of the Danube Commission, April 2019.

## TOTAL YEARLY WATERSIDE TRAFFIC (MILLION TONNES)



- Negative rate of change in 2018 vs 2017
- Positive rate of change in 2018 vs 2017





# 05

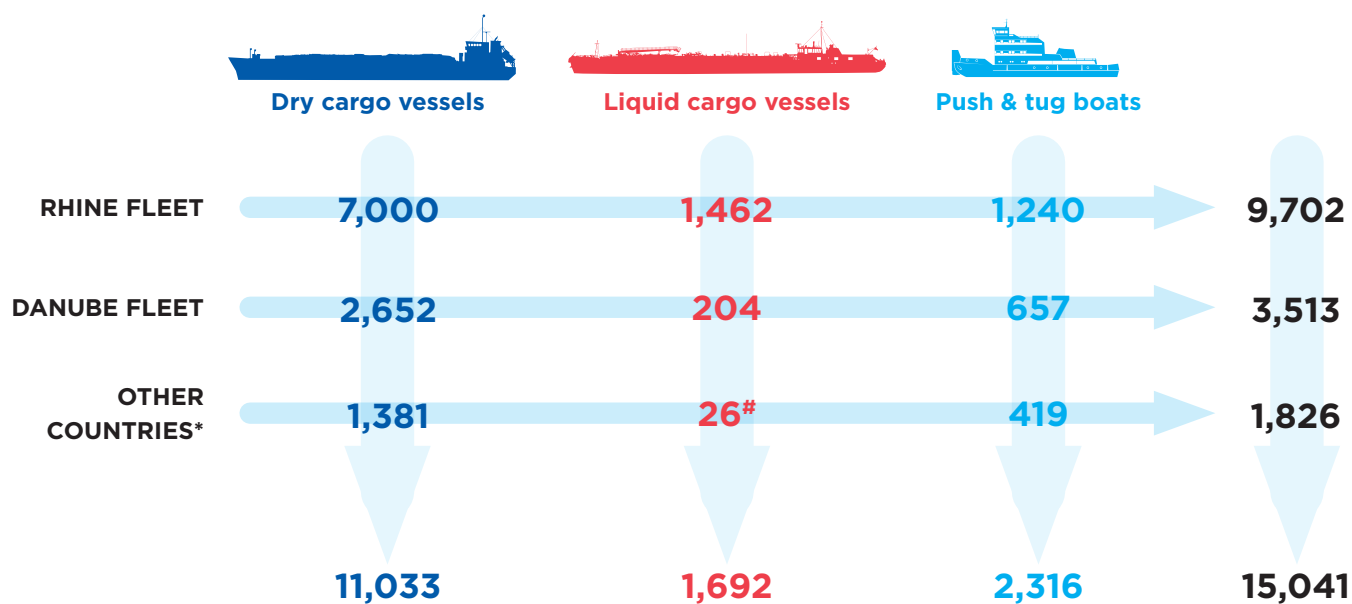
## CARGO FLEET

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- In 2018, more than 15,000 cargo vessels were registered in Europe; 65% of the fleet were found in Rhine countries, 23% in Danube countries, and the remaining 12% in other European countries with inland waterways (Poland, Czech Republic, Italy, UK, Lithuania).
- Over the last 10 years the share of small vessels ( $0 < 1,000$  t) has been falling consistently. This is especially the case for dry cargo vessels, the number of which is traditionally very high in this size segment. This loss of small vessels represents a problem and a challenge for the sector, which should be addressed in the near future.
- The fleet of Rhine countries was reinforced by 17 dry cargo vessels, 28 liquid cargo vessels and 3 push and tugboats. The newbuilding rates are still relatively low, compared to the years before the financial crisis.



## SIZE OF FLEETS PER MACRO-REGION (NUMBER OF INLAND VESSELS) IN EUROPE



Sources: 1) Rhine countries: VNF (France), CBS (Netherlands), Belgian Ministry of Transport, Waterway and Shipping Administration of Germany, Luxembourg and Switzerland. 2) Danube countries: Danube Commission. 3) Other countries: Eurostat [iww\_eq\_loadcap], [iww\_eq\_age], Italian and Czech Ministries of Transport, Statistical office of Poland

\*Other countries = Poland, Czech Republic, Italy, United Kingdom, Lithuania. # comprises 9 tanker vessels in Poland, 1 in the Czech Republic and 16 in Lithuania. No data for the UK and Italy.



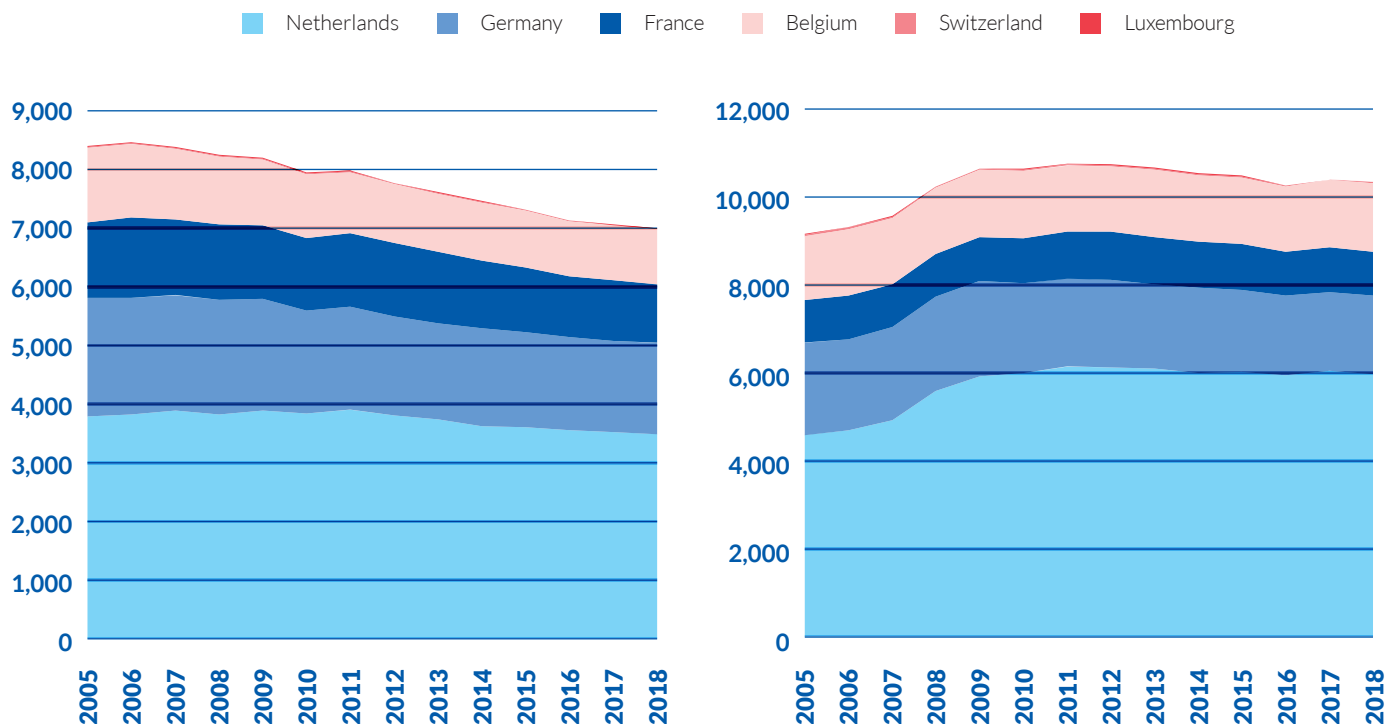
# RHINE FLEET

## ■ DRY CARGO VESSELS

The following figure shows the evolution of dry cargo vessels (self-propelled vessels and barges, but without push & tug boats) in Rhine countries. In this instance only the active fleet is counted (ships active in dry cargo transport). While the number of vessels has decreased since 2005, the tonnage increased due to larger vessels joining the fleet and smaller ones leaving it.

NUMBER OF DRY CARGO VESSELS IN RHINE COUNTRIES

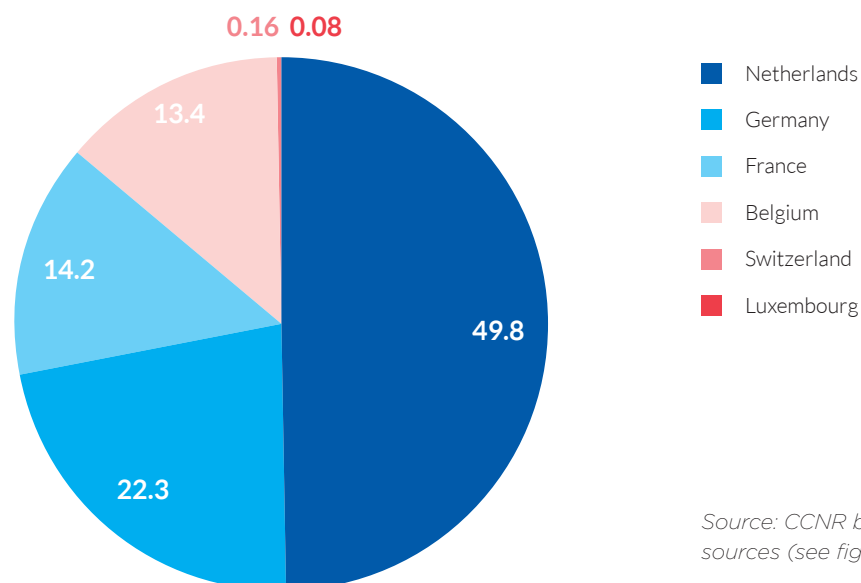
LOADING CAPACITY OF DRY CARGO VESSELS IN RHINE COUNTRIES (IN 1,000 T)\*



Source: CCNR based on Centraal Bureau voor de Statistiek, Waterway administration of Germany, Luxembourg and Switzerland, Belgian Ministry of transport.  
\* = self-propelled vessels and barges, without push and tug boats

The Dutch dry cargo fleet is the largest in the Rhine area with a share of almost 50%.

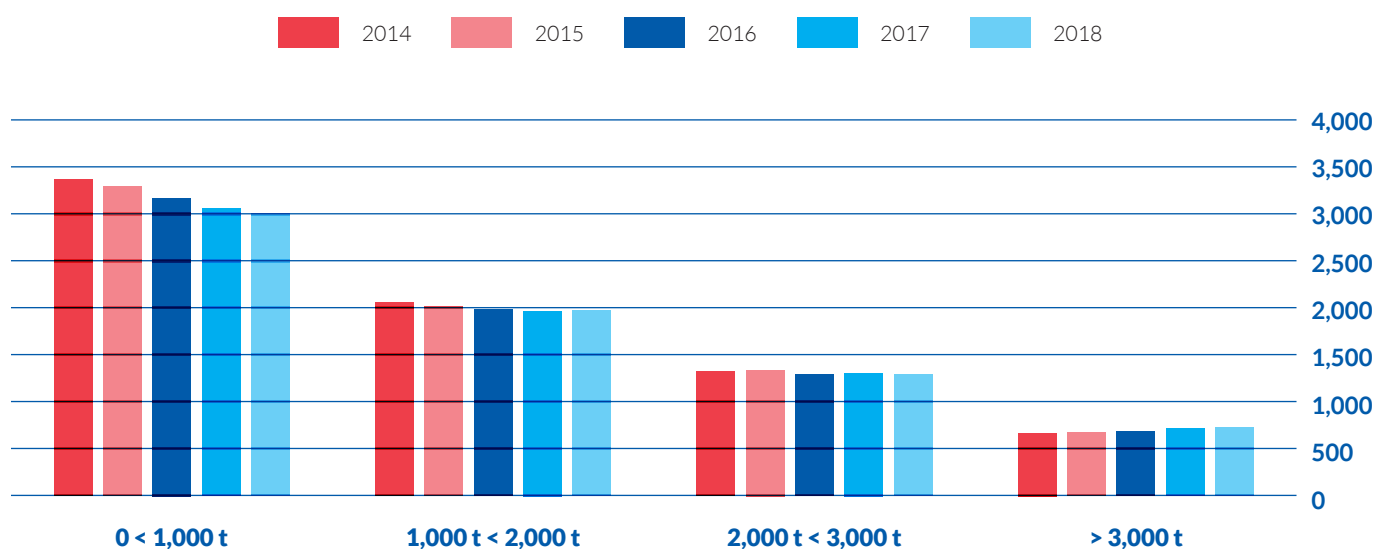
### DISTRIBUTION OF DRY CARGO VESSELS IN RHINE COUNTRIES PER COUNTRY OF REGISTRY (IN %, 2018)



Source: CCNR based on national sources (see figure above)

The number of vessels belonging to the loading capacity class (0 < 1,000 t) is falling, although the results differ somewhat from one country to another. While the number of Belgian, Dutch and French small vessels has fallen since 2014, it has remained rather constant in the German fleet.

### NUMBER OF DRY CARGO VESSELS PER TONNAGE CLASS IN RHINE COUNTRIES \*

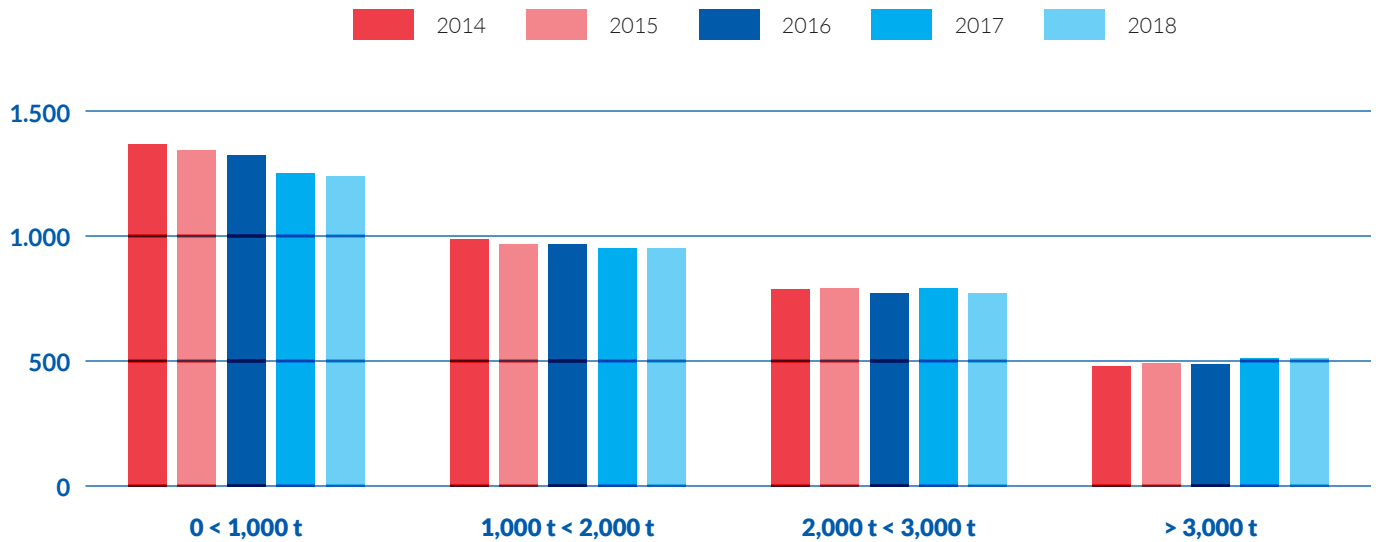


Source: CCNR based on national sources.

\* Rhine countries = Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland. Data for Germany for 2018 are from 2017, as the German fleet data for 2018 were not yet available.

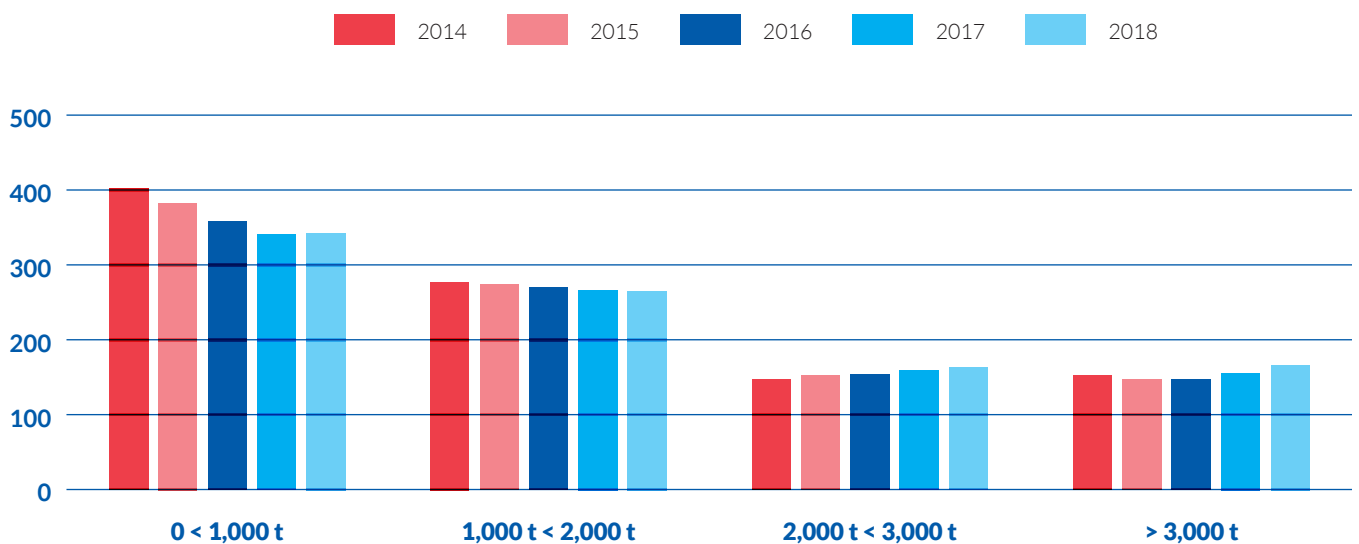
When the dry cargo vessel fleets of Rhine countries are compared with one another, it can be observed that the size class of the largest vessels (> 3,000 t) is present in the Belgian and Dutch fleet, but almost absent in the French and German dry cargo fleet.

#### NUMBER OF DRY CARGO VESSELS PER TONNAGE CLASS IN THE DUTCH FLEET



Source: Centraal Bureau voor de Statistiek

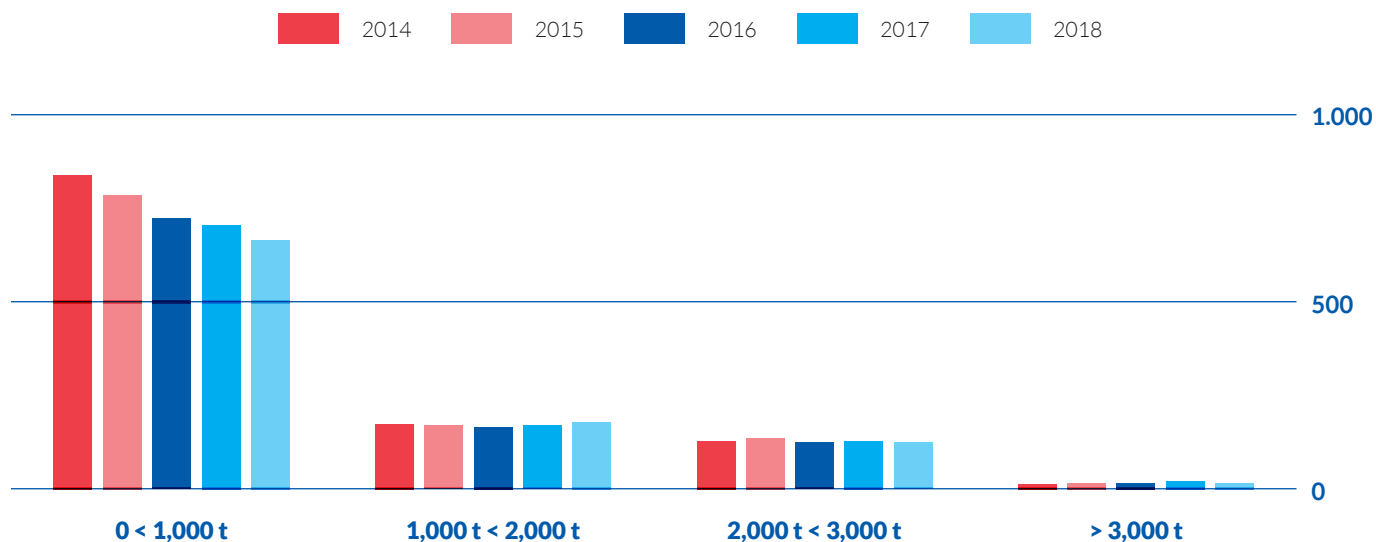
#### NUMBER OF DRY CARGO VESSELS PER TONNAGE CLASS IN THE BELGIAN FLEET



Source: ITB / Belgian ministry of transport

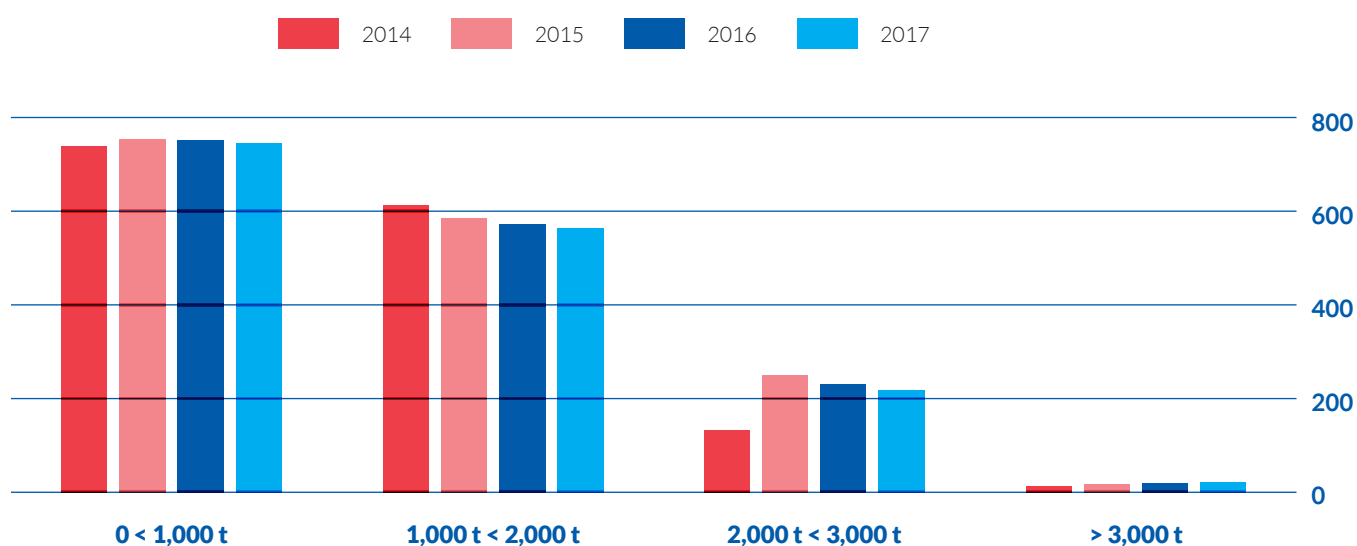
In France the share of the size class (0 < 1,000 t) is the highest of all Rhine countries. This share was 72% (in terms of number of vessels) in 2014 in France but decreased to 67% in 2018. A further decrease in the future can be expected, due to several economic problems in this category.

#### NUMBER OF DRY CARGO VESSELS PER TONNAGE CLASS IN THE FRENCH FLEET



Source: VNF

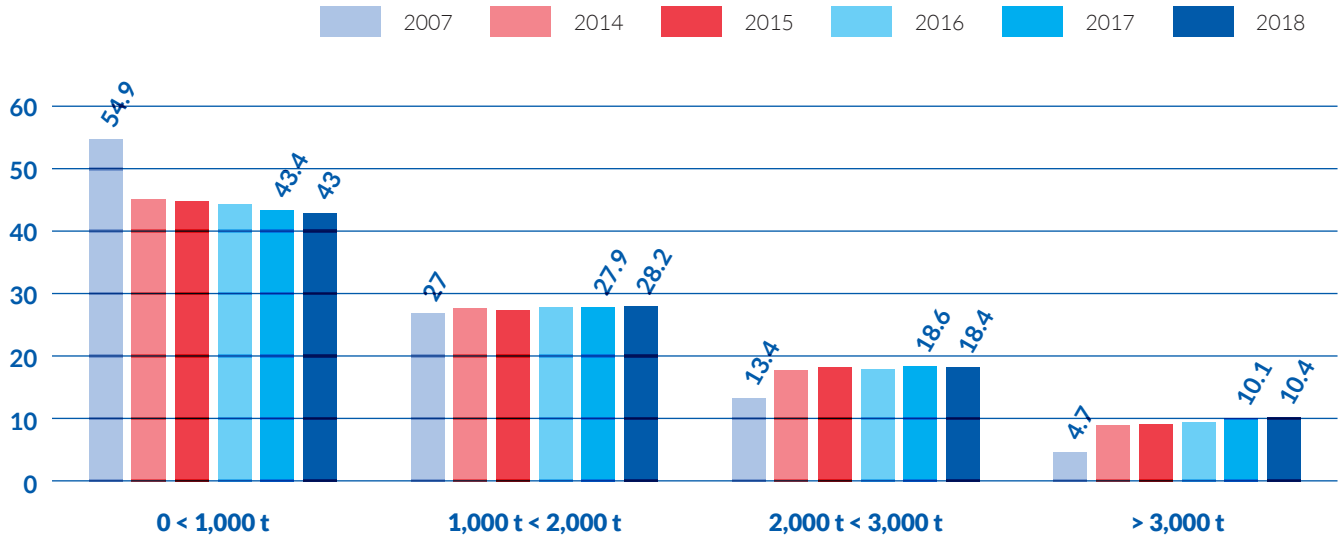
#### NUMBER OF DRY CARGO VESSELS PER TONNAGE CLASS IN THE GERMAN FLEET



Source: CCNR based on German Waterway Administration

Looking at the total Rhine fleet of dry cargo vessels, it can be seen that the shares of the different size classes have not changed dramatically since 2014. But they have changed over the last ten years when comparing the 2007 with the 2018 figures.

#### NUMBER OF VESSELS PER TONNAGE CLASS IN % OF TOTAL NUMBER OF DRY CARGO VESSELS IN THE RHINE FLEET\*



Source: CCNR based on national sources.

\*Share is based on the number of vessels that fall in a certain tonnage size class, compared to the total number of dry cargo vessels in the Rhine fleet. Therefore, the shares for each year add up to 100%.

## LIQUID CARGO VESSELS

Data show an increase in the total loading capacity of the tanker fleet in Rhine countries between 2005 and 2010, due to the investment in new double hull vessels. 2011 was the year with the highest increase in double hull vessels (+127), followed by the year 2010 (+112). Since then, the newbuilding rate eased, to reach 33 new double hull vessels in 2018 (including conversions from single to double hull).<sup>21</sup> In 2019, according to the European Barge Inspection Scheme (EBIS), there were 1,079 double hull tankers in Europe.

As the newbuilding rate eased from 2011 onwards, and the single hull vessels were phased out from the fleet in certain numbers year per year (due to the approaching end of the transition period),<sup>22</sup> the total size of the tanker fleet in Rhine countries diminished after 2011.

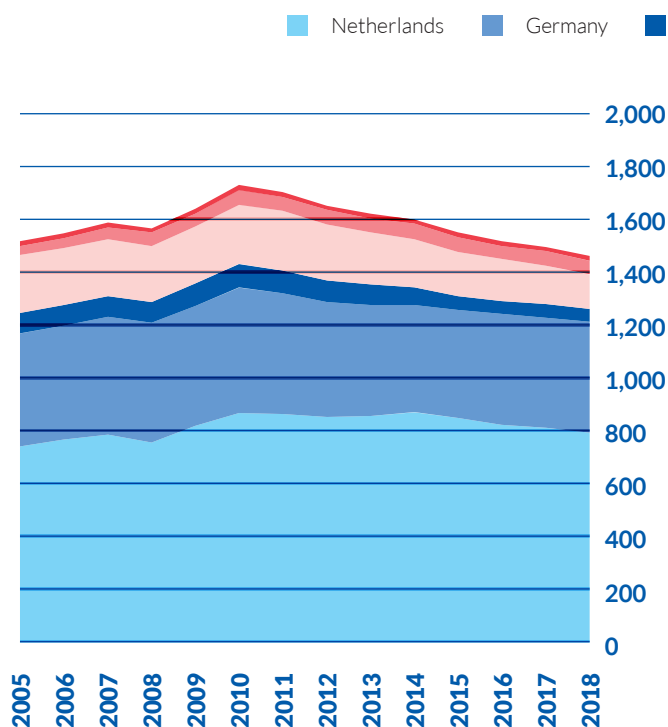
The loading capacity however remained at a high level, as there were still large new double hull vessels coming on the market in the years after 2011, while the single hull vessels that left the market were quite small.

<sup>21</sup> Source: European Barge Inspection Scheme (EBIS).

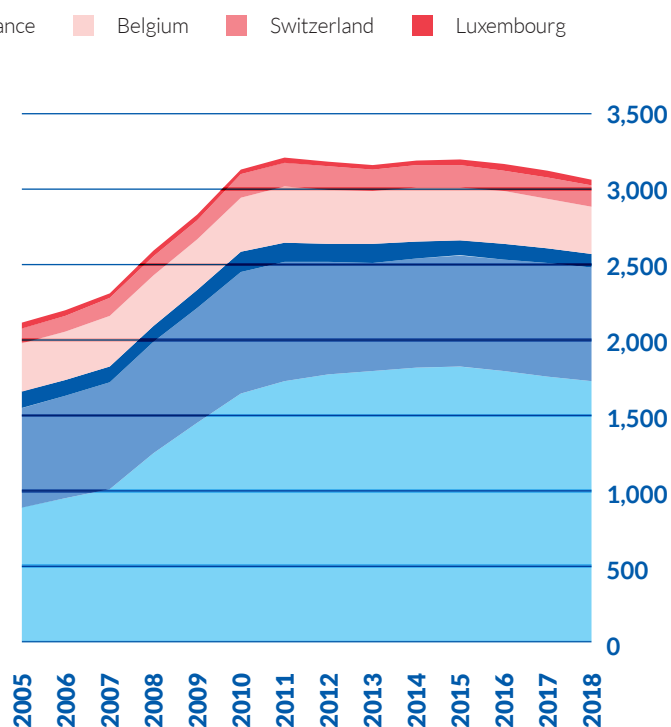
<sup>22</sup> Due to the transition scheme, the majority of liquid cargo has to be transported in double hull vessels as from 1.1.2019.



## NUMBER OF LIQUID CARGO VESSELS IN RHINE COUNTRIES



## LOADING CAPACITY OF LIQUID CARGO VESSELS IN RHINE COUNTRIES (IN 1,000 T)

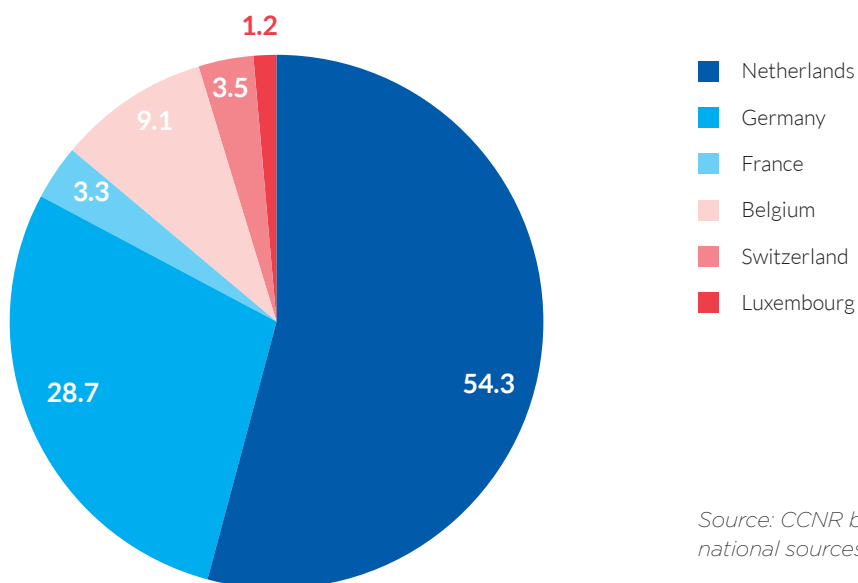


Source: CCNR based on national sources

Regarding the countries of registration, for the liquid cargo fleet, the Netherlands has a share of around 54% in the total number of tanker vessels in all Rhine countries.

## DISTRIBUTION OF LIQUID CARGO VESSELS IN RHINE COUNTRIES PER COUNTRY

(IN %, 2018)

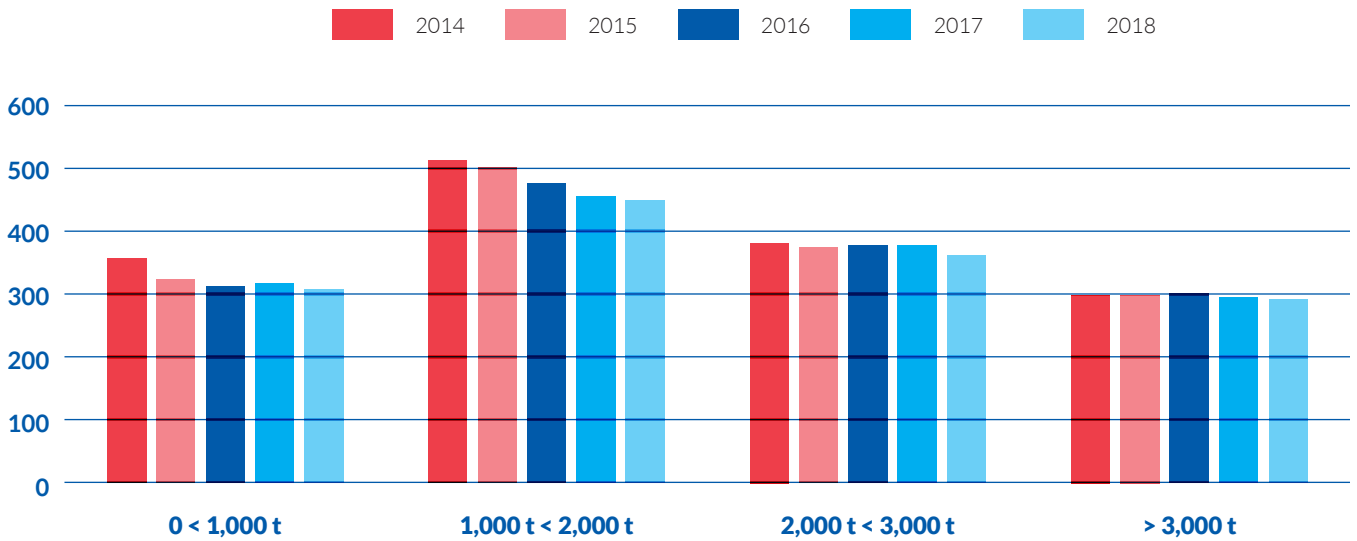


Source: CCNR based on national sources

The overall evolution of the number of vessels per size classes shows that the rather small tanker vessels (0 < 1,000 t; 1,000 < 2,000 t) have decreased in number since 2014.

In 2018, the number of vessels in the two smallest tonnage size classes (0 < 1,000 t; 1,000 < 2,000 t) was 761 in Rhine countries, compared to 873 in the year 2014. This means a decrease of 112 vessels over a period of only four years.

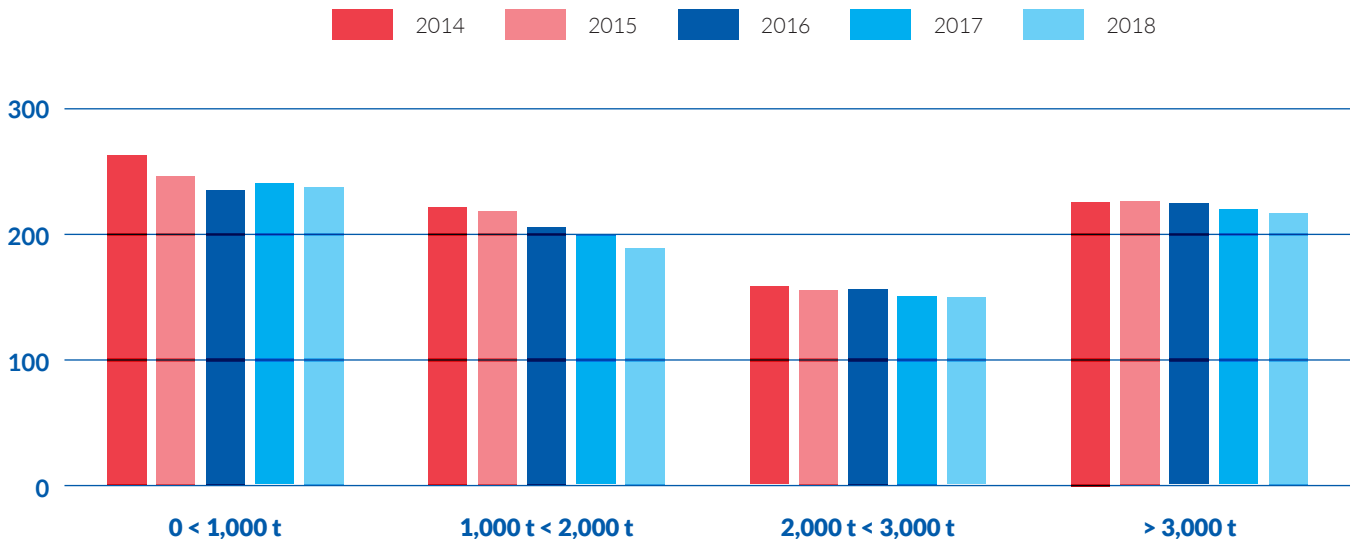
#### NUMBER OF LIQUID CARGO VESSELS PER TONNAGE CLASS IN RHINE COUNTRIES



Source: CCNR based on national sources.

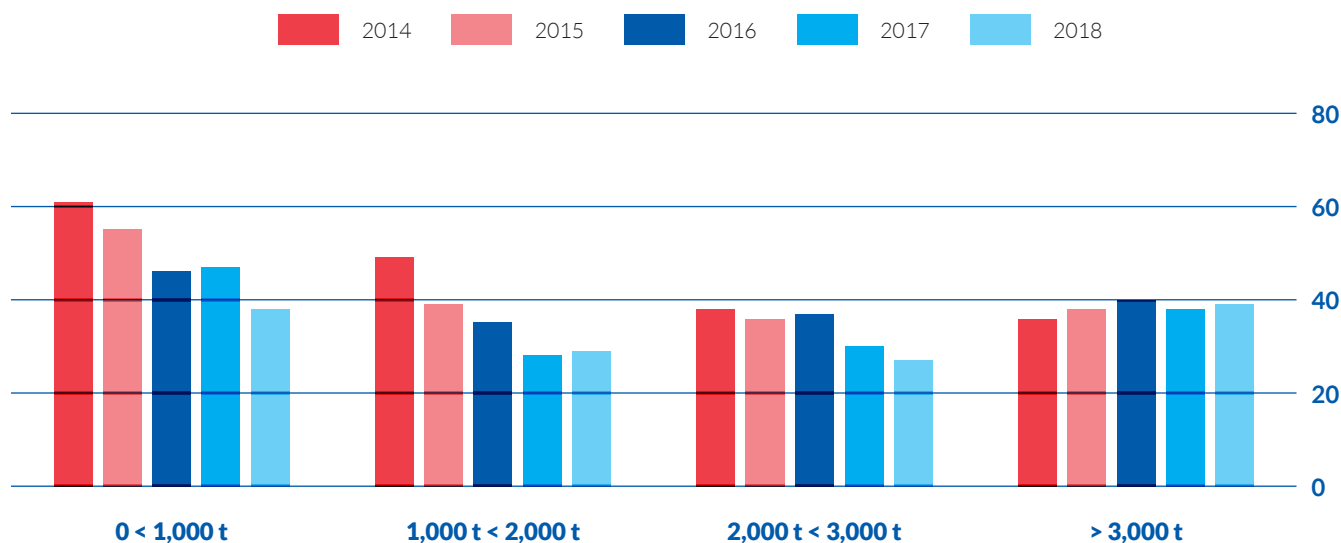
There is one remarkable common point with the dry cargo fleet. Also for liquid goods vessels, the number of vessels in the size category (> 3,000 t) is quite significant in the Dutch and Belgian fleet, and again at a quite low level in the French and German fleets.

#### NUMBER OF LIQUID CARGO VESSELS PER TONNAGE CLASS IN THE DUTCH FLEET



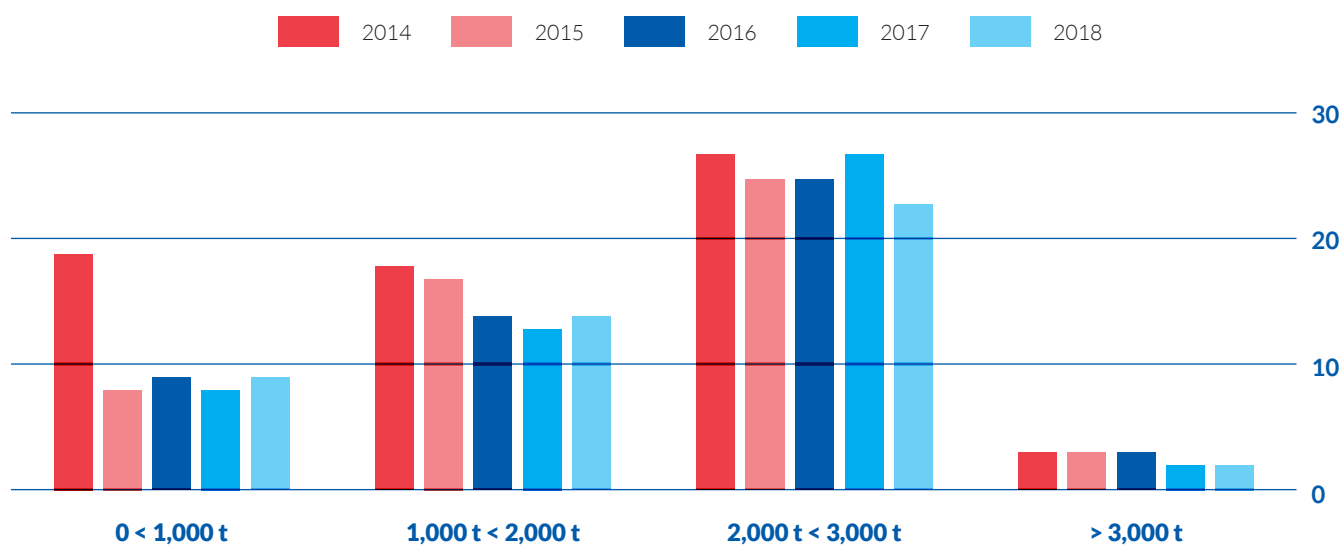
Source: Centraal Bureau voor de Statistiek

## NUMBER OF LIQUID CARGO VESSELS PER TONNAGE CLASS IN THE BELGIAN FLEET



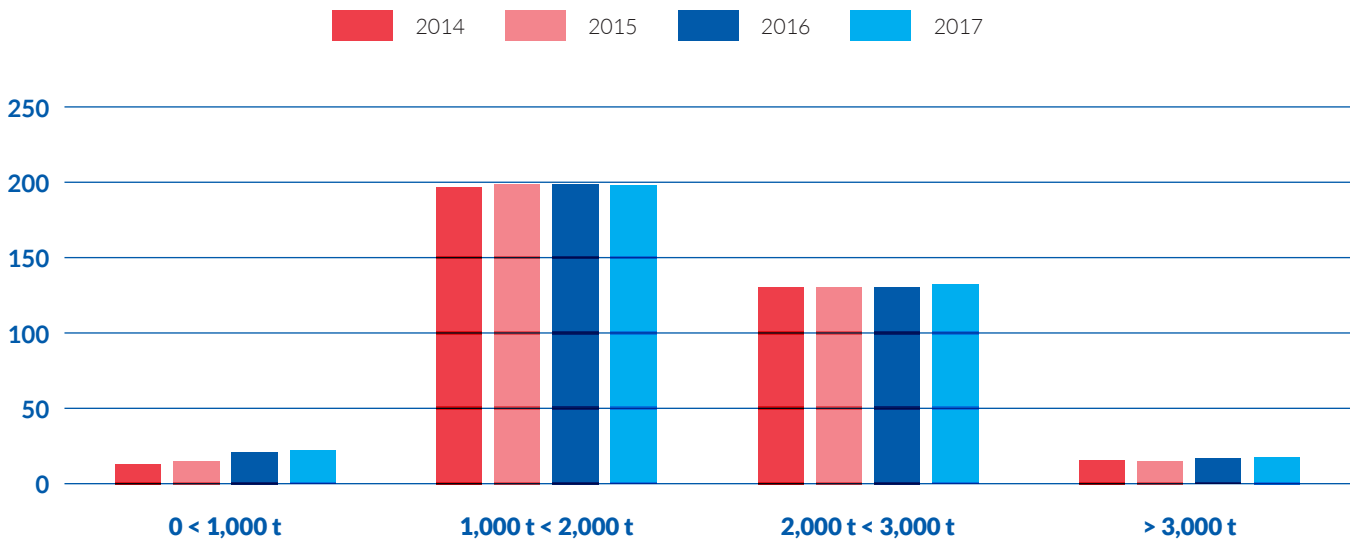
Source: CCNR based on ITB / Belgian ministry of transport

## NUMBER OF LIQUID CARGO VESSELS PER TONNAGE CLASS IN THE FRENCH FLEET



Source: CCNR based on VNF

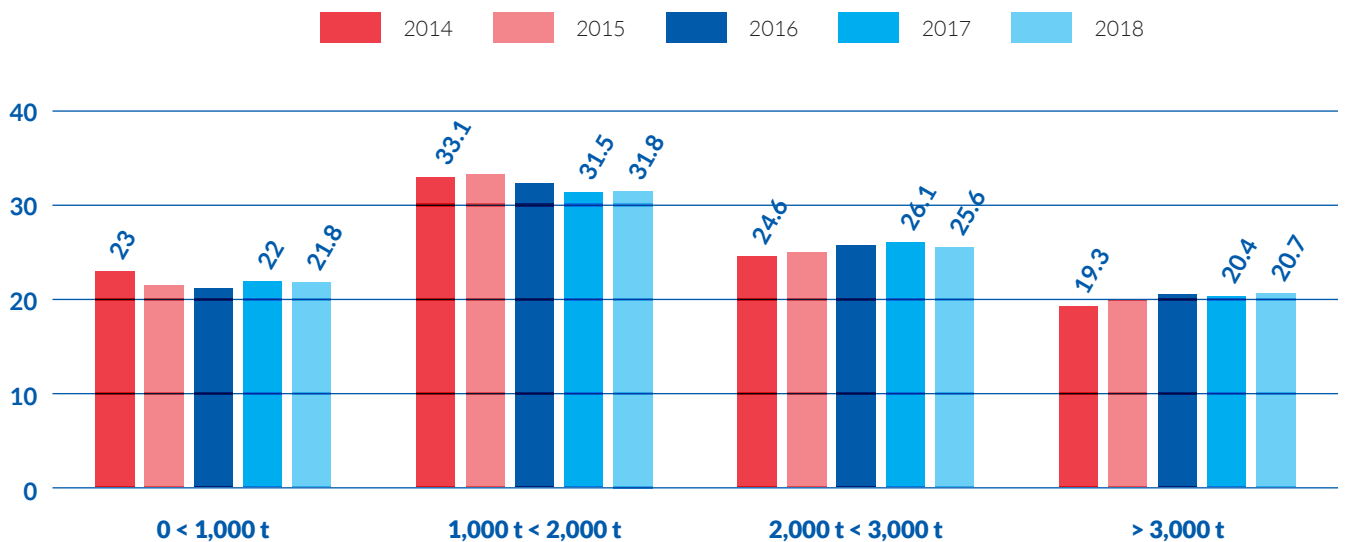
### NUMBER OF LIQUID CARGO VESSELS PER TONNAGE CLASS IN THE GERMAN FLEET



Source: CCNR based on German Waterway Administration

The distribution of all active liquid cargo vessels in Rhine countries shows that the two largest size classes have increased their share, while the share of the two smaller size classes has been reduced.

### NUMBER OF VESSELS PER TONNAGE CLASS IN % OF TOTAL NUMBER OF LIQUID CARGO VESSELS IN THE RHINE FLEET\*



Source: CCNR based on national sources.

\*Share is based on the number of tanker vessels that fall in a certain tonnage size class, compared to the total number of tanker vessels in the Rhine fleet. Therefore, the shares for each year add up to 100.

In the Rhine countries, there are currently also around 1,240 push & tug vessels of which 718 are Dutch and 411 are German push & tugs. Their number has been quite constant since 2008.

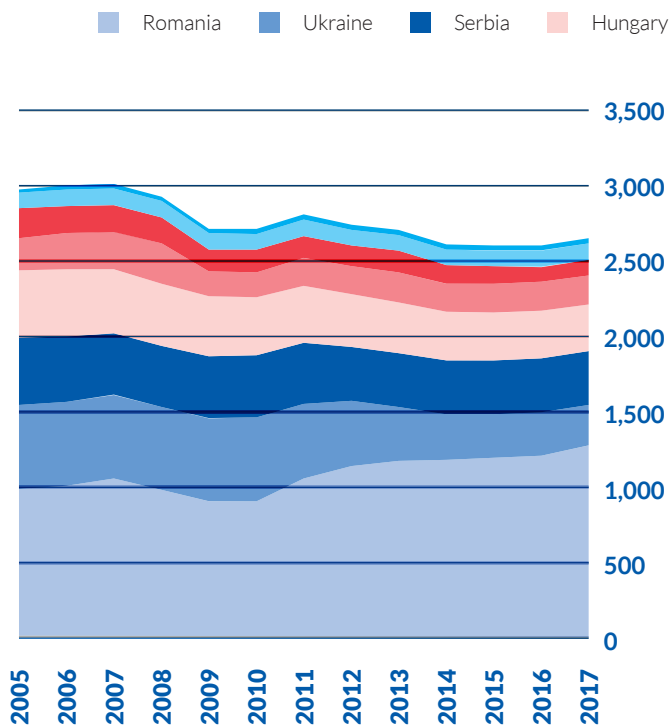
# DANUBE FLEET

## ■ DRY CARGO VESSELS

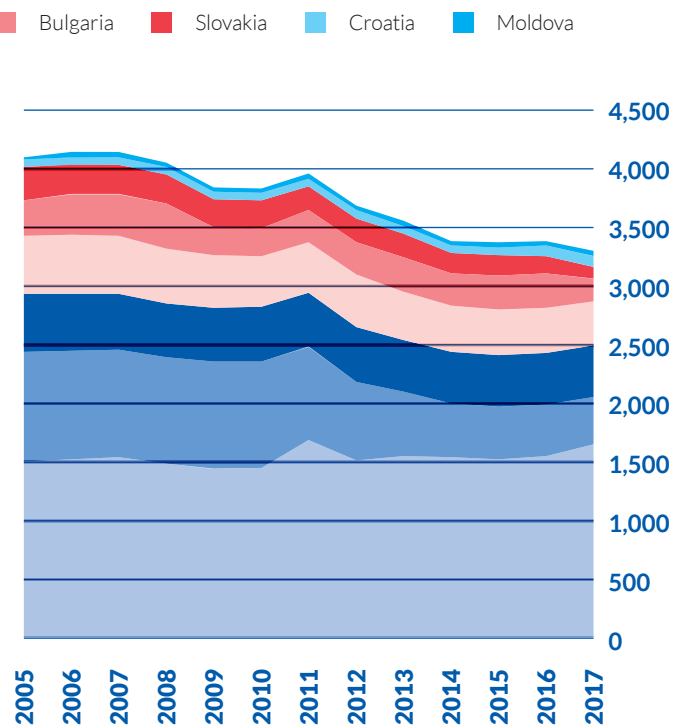
The following figure contains the series regarding dry cargo vessels (self-propelled vessels and barges, but without push & tug boats) in Danube countries. Both the number of vessels and the loading capacity has decreased since 2005.

### Evolution of the dry cargo fleet in Danube countries

NUMBER OF DRY CARGO VESSELS IN DANUBE COUNTRIES



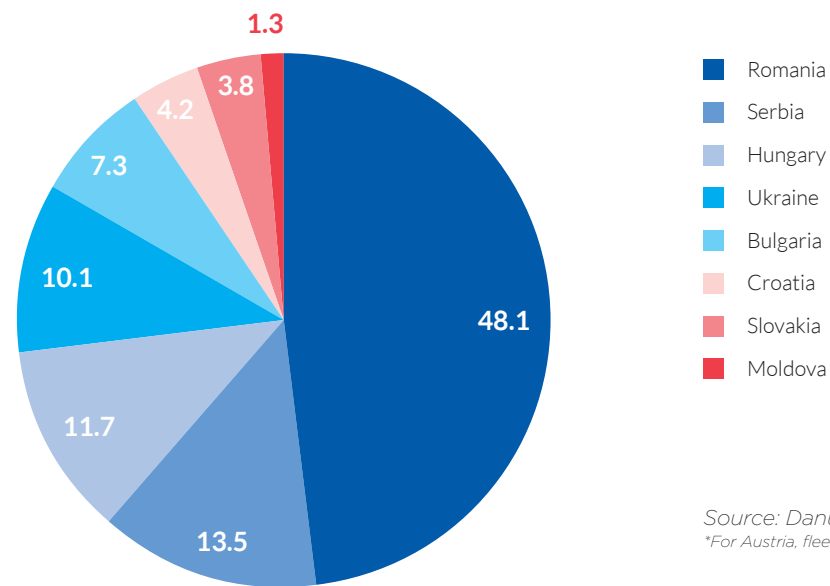
LOADING CAPACITY OF THE DRY CARGO DANUBE FLEET (IN 1,000 T)



Source: Danube Commission

The Romanian dry cargo fleet is the largest in the Danube area with a share of around 48% of all dry cargo vessels.

## DISTRIBUTION OF DRY CARGO VESSELS IN THE DANUBE FLEET PER COUNTRY OF REGISTER (IN %, 2017)\*

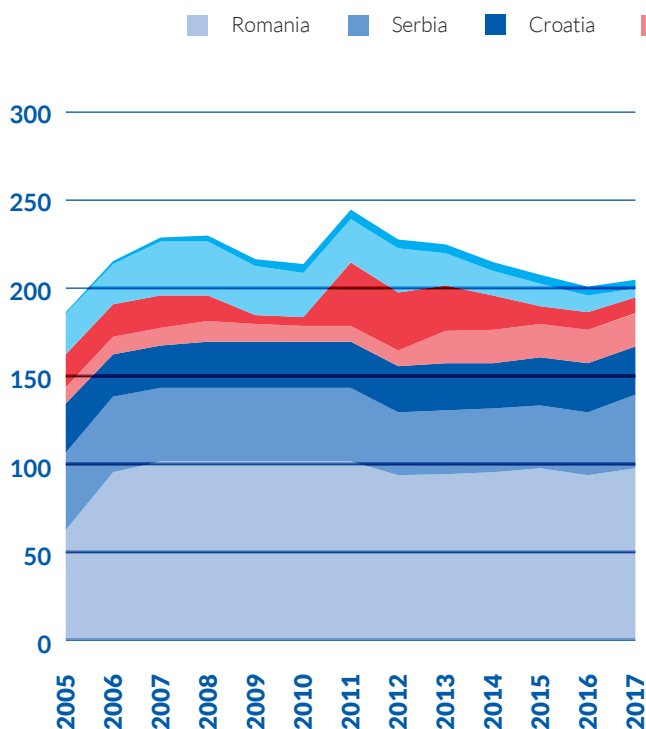


Source: Danube Commission.  
\*For Austria, fleet data are not available.

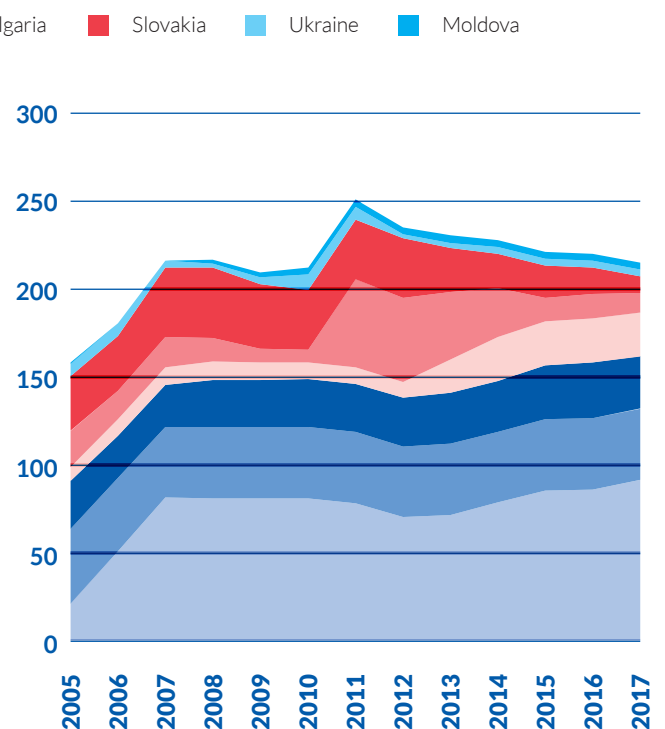
## LIQUID CARGO VESSELS

### Evolution of the liquid cargo fleet in Danube countries

#### NUMBER OF LIQUID CARGO VESSELS IN DANUBE COUNTRIES



#### LOADING CAPACITY OF THE LIQUID CARGO DANUBE FLEET (IN 1,000 T)

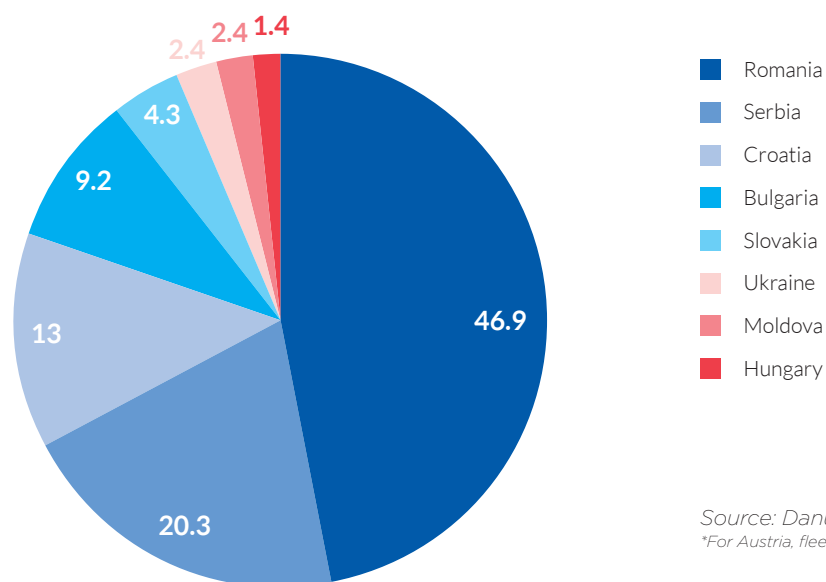


Source: Danube Commission



For the liquid cargo fleet, Romania also has the largest share in the Danube area with around 47% of all tanker vessels.

#### DISTRIBUTION OF LIQUID CARGO VESSELS IN THE DANUBE FLEET PER COUNTRY OF REGISTER (IN %, 2017)\*



Source: Danube Commission.

\*For Austria, fleet data are not available.

In 2017, there were 657 push & tug vessels in Danube countries, of which 300 were Romanian vessels. As in the Rhine region, the number of push & tugs has been rather stable over the last 10 years.



# CARGO FLEET

## IN OTHER EUROPEAN COUNTRIES

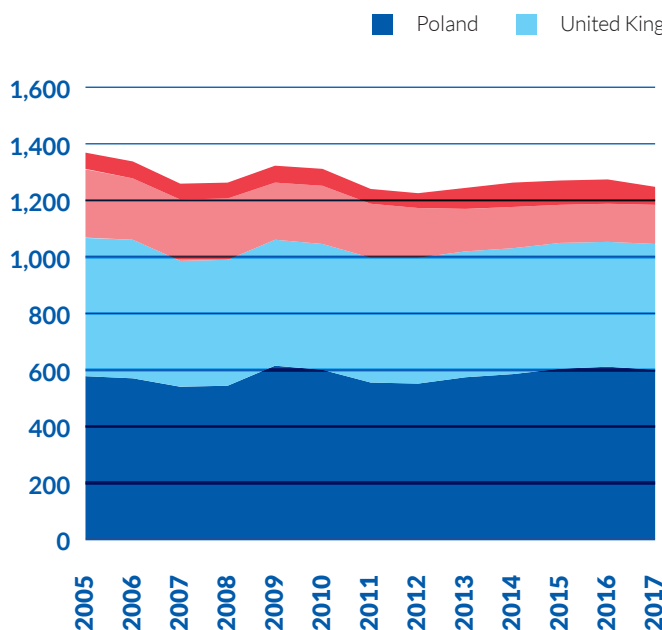
For Poland, the Czech Republic, the United Kingdom and Lithuania, the fleet figures from 2005 until 2017 are consistent and were taken from the Eurostat data [*iww\_eq\_loadcap*]. It must be mentioned that within this database, a distinction between dry cargo and tanker vessels is not possible.

- Information provided by the Statistical Office of Poland indicates that out of 598 freight vessels, there were 9 tanker vessels, of which 7 are self-propelled and 2 are pushed tanker barges.
- According to the Czech Ministry of Transport, among the 139 freight vessels in the Czech fleet, there is only one tanker vessel (which was built in 1951 and it has a loading capacity of 297 tonnes).
- The Statistical Office of Lithuania indicates that 16 out of the 63 freight vessels in Lithuania are tanker vessels.

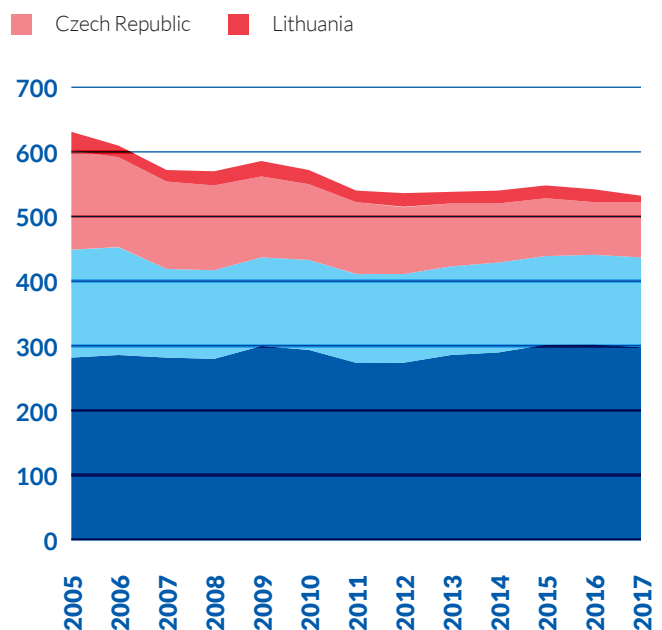
For Italy, Eurostat data<sup>23</sup>, as well as statistics from the Italian Ministry of Transport, indicate a strong structural break in the number of vessels between the years 2009 and 2010, which points to a statistical re-classification or any other fundamental change. Therefore, it was decided not to put the Italian figures into the graph together with the other countries.

For the years 2011-2017, Italian figures seem quite consistent: both the Eurostat and the Italian Ministry of Transport data point to a number of 63 self-propelled cargo vessels in Italy, and to 73 dumb and pushed barges for 2017. Altogether, there are 136 Italian cargo carrying vessels in 2017.

NUMBER OF SELF-PROPELLED CARGO VESSELS  
AND DUMB AND PUSHED BARGES \*



LOADING CAPACITY OF SELF-PROPELLED CARGO  
VESSELS AND DUMB AND PUSHED BARGES (1,000 T) \*



Source: Eurostat [*iww\_eq\_loadcap*].

\*Dry cargo and tanker vessels taken together.

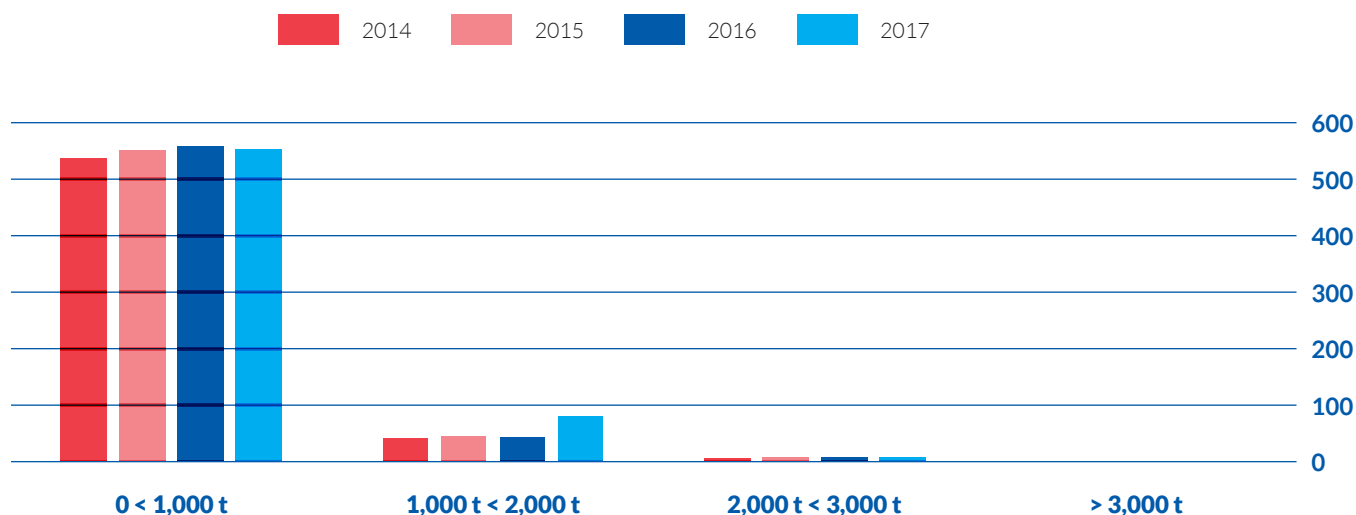
<sup>23</sup> [*iww\_eq\_loadcap*]

The Italian fleet contained 14 push & tug boats in 2017, compared to 219 push & tugs in Poland, 92 in the United Kingdom, 71 in Czech Republic and 37 in Lithuania.

The average loading capacity of cargo carrying vessels in these five countries is lower than the values observed for the fleets in Rhine countries. Among these five countries, the Czech vessels had an average loading capacity of 626 tonnes in 2017 and hereby were even the largest ones. For the Polish fleet, an average value of 501 tonnes is observed for 2017, and 310 tonnes for the British fleet. Overall, the smallest vessels are Lithuanian with an average loading capacity of only 159 tonnes.

In the following distribution of vessels, according to size classes for the Polish and Lithuanian fleets, the majority of vessels that fall into the size class < 1,000 t actually have a much lower loading capacity than 1,000 tonnes.

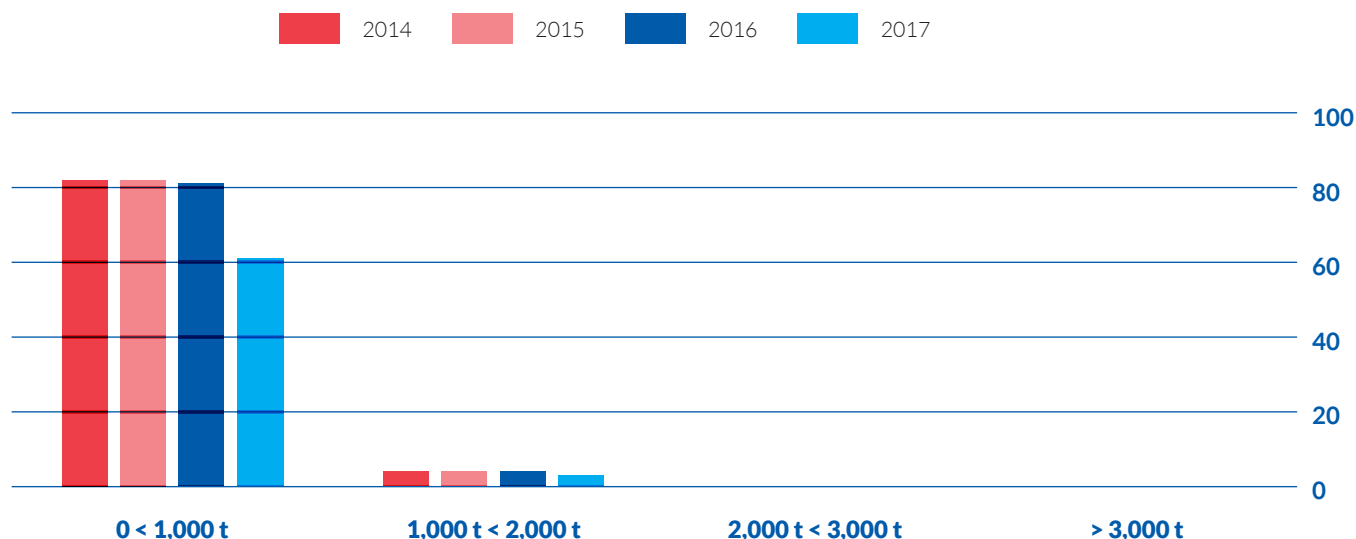
#### NUMBER OF POLISH CARGO CARRYING VESSELS BY LOADING CAPACITY\*



Source: Statistical office of Poland.

\*Self-propelled vessels and dumb and pushed barges. Without push & tugs.

#### NUMBER OF LITHUANIAN CARGO CARRYING VESSELS BY LOADING CAPACITY\*



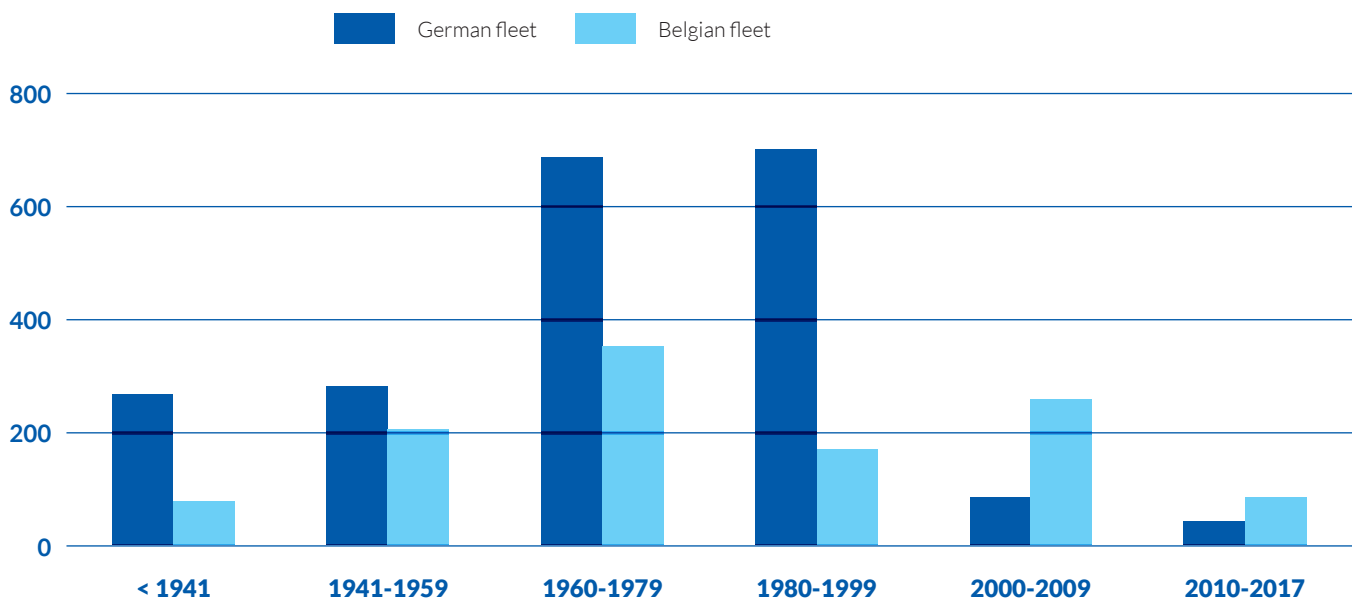
Source: Statistical office of Lithuania.

\*Self-propelled vessels and dumb and pushed barges. Without push & tugs.

# AGE STRUCTURE OF FLEETS<sup>24</sup>

The fleets of the European countries are not only of different size, but have also a different average age and a different age structure. For the comparison between the Belgian and the German vessels, it can be noted that a greater number of German vessels were constructed before the end of the 1990s. However, for the vessels built after 1999, the Belgian fleet shows a higher number of vessels.

## NUMBER OF VESSELS PER YEAR OF CONSTRUCTION IN THE BELGIAN AND GERMAN FLEET\*



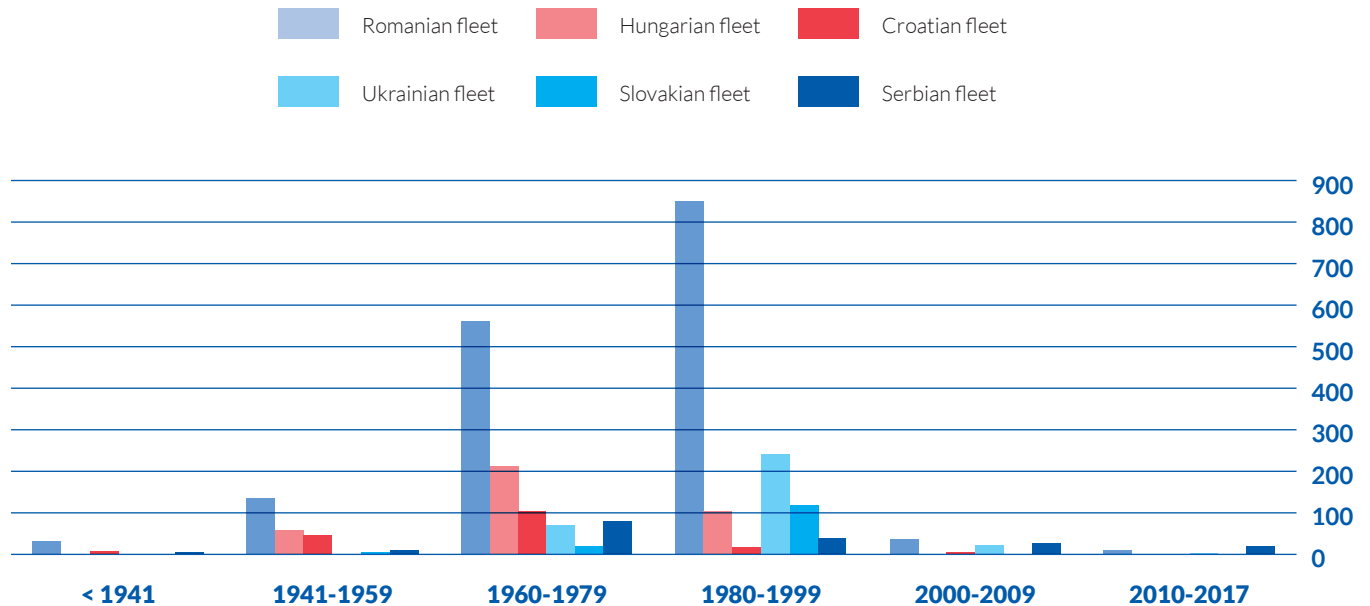
Source: CCNR based on German Waterway and Shipping administration, Belgian ministry of transport.

\*Included are dry cargo vessels, liquid cargo vessels and push & tug boats.

The Danube fleet has a high number of vessels that were built between 1960 and 1990. Since the year 2000 not many new vessels were built for the Danube.

<sup>24</sup> The age distribution of fleets is not available for all countries in Europe.

### NUMBER OF VESSELS PER YEAR OF CONSTRUCTION IN DANUBE COUNTRIES \*

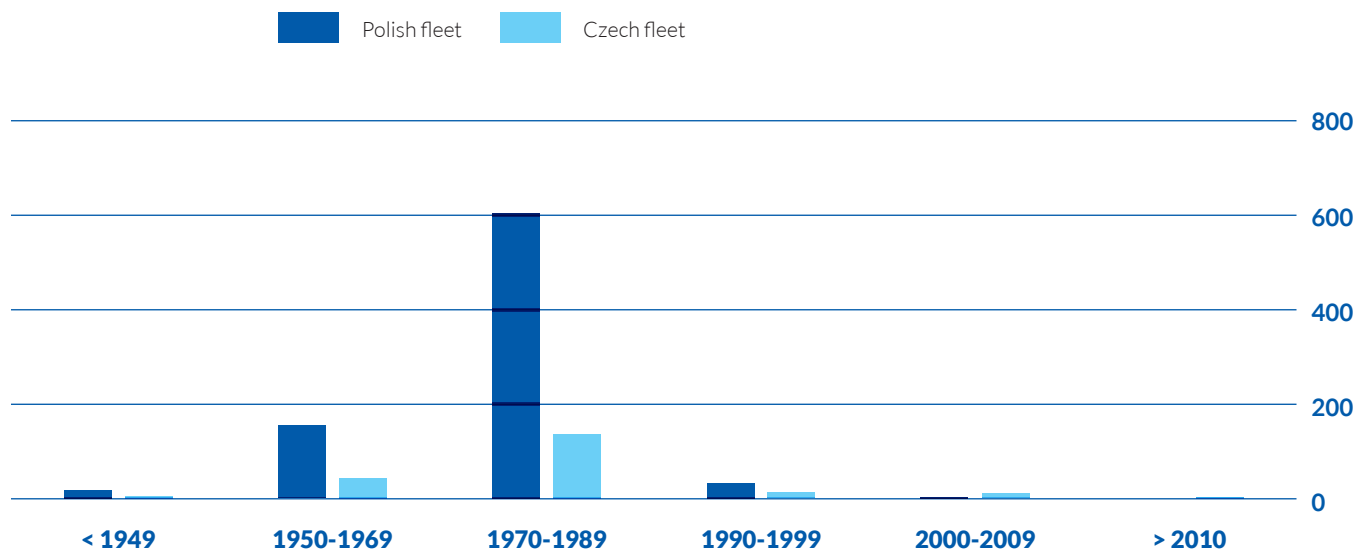


Source: Danube Commission.

\*Included are dry cargo vessels, liquid cargo vessels and push & tug boats.

For the Polish and Czech fleets, the age structure shows also that only very few new vessels were built in the new millenium starting in the year 2000.

### NUMBER OF VESSELS PER YEAR OF CONSTRUCTION IN THE POLISH AND CZECH FLEETS



Source: Statistical Office of Poland and Czech Ministry of Transport

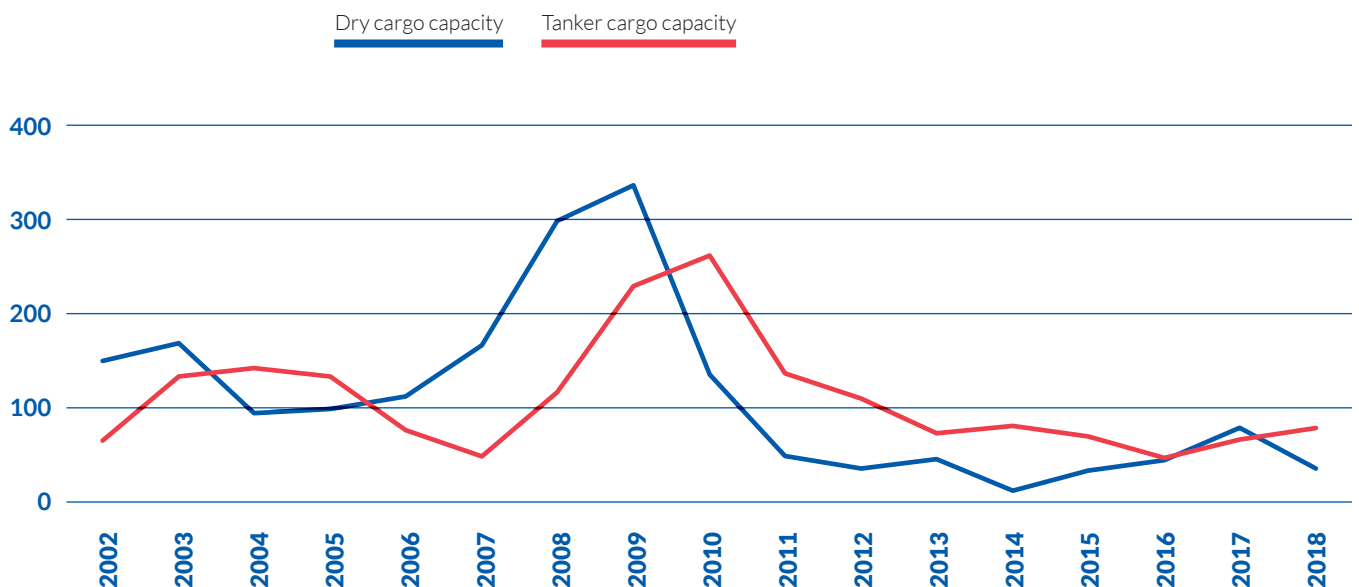
# NEW VESSEL CONSTRUCTION

In 2018, the liquid cargo tonnage added to the market was about **18%** higher than in 2017

In 2018, the new loading capacity that was added to the market fell in the dry cargo sector, while it increased by 18% in the liquid cargo sector. In 2018, 17 new dry cargo vessels (self-propelled cargo vessels and pushed barges) came on the market (nine of them in the Netherlands). This newbuilding rate represented a decrease compared to 2017, both in terms of number of vessels and in terms of loading capacity added.

The tanker segment increased its newbuilding rate in 2018 for the third year in a row. One third of the new 2018 tanker vessels were in the Dutch register, another third in the German register, and the remaining third are in the registers of Belgium, Luxembourg, Switzerland and France. With four out of 28 new tankers, Luxembourg increased its share strongly compared to previous years.

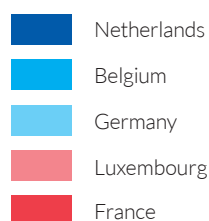
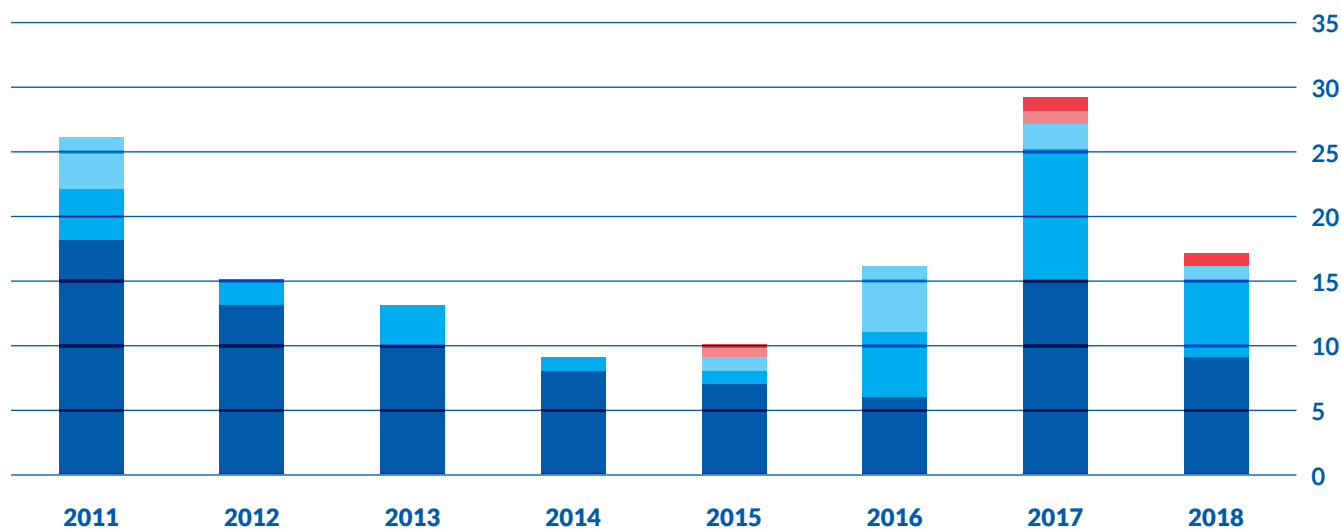
## NEW CAPACITY COMING ON THE MARKET IN DRY AND TANKER CARGO SECTORS (TONNAGE 1,000 T)



Source: IVR



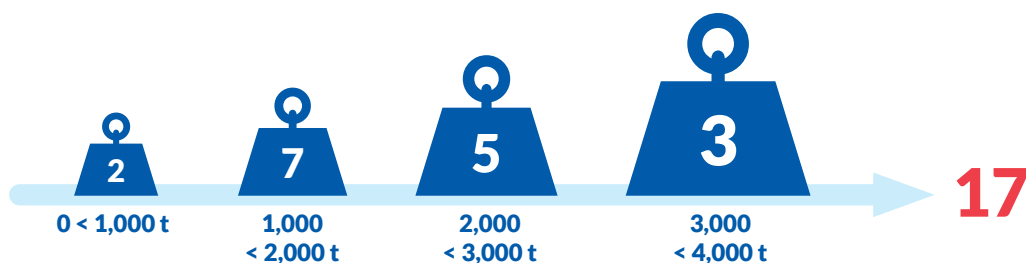
### NEW DRY CARGO VESSELS COMING ON THE MARKET PER COUNTRY OF REGISTER (NUMBERS, 2011-2018)



Source: IVR

The three largest new dry cargo vessels (with a loading capacity of over 3,000 tonnes) were put into service in the Netherlands (MS PANERAI, MS REHOBOTH) and in France (MS PYTHAGORE).

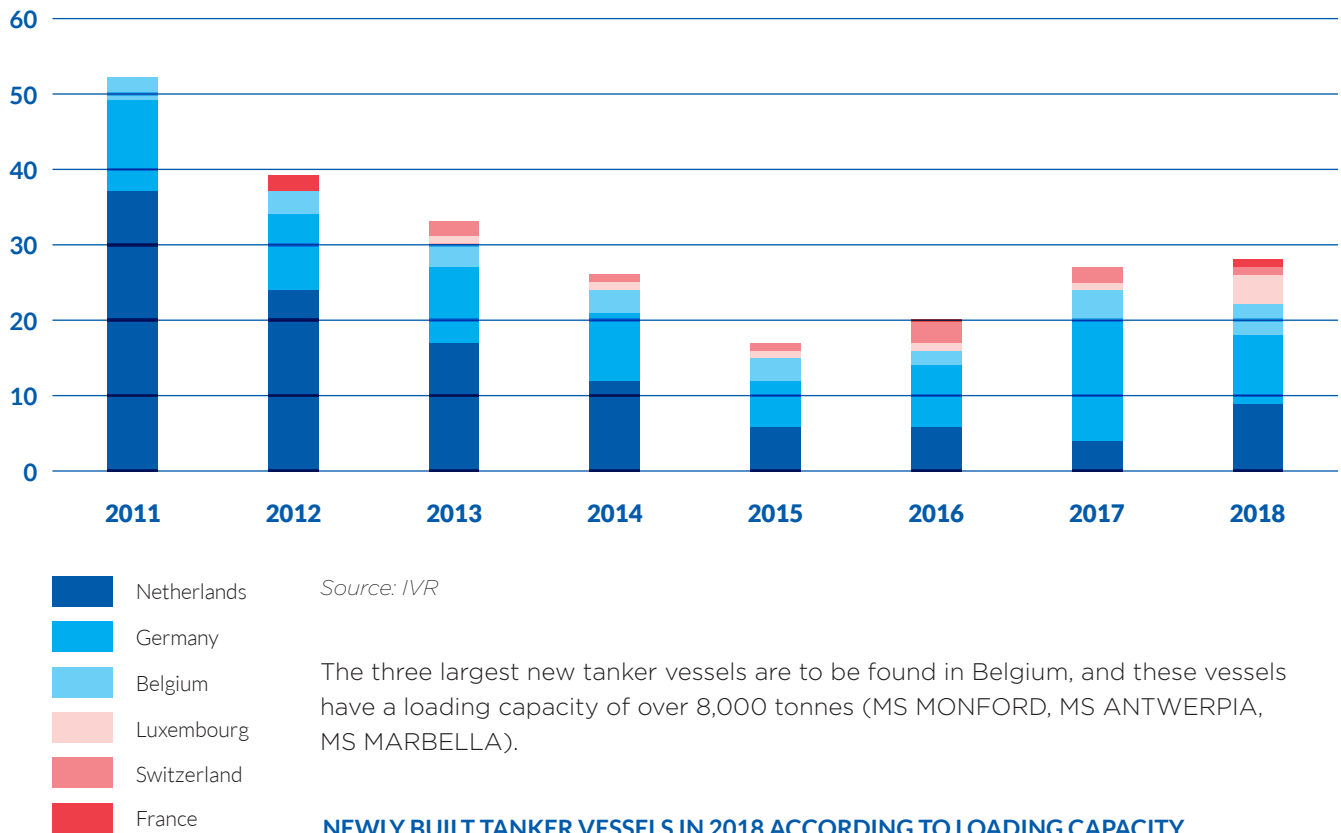
### NEWLY BUILT DRY CARGO VESSELS IN 2018 ACCORDING TO LOADING CAPACITY



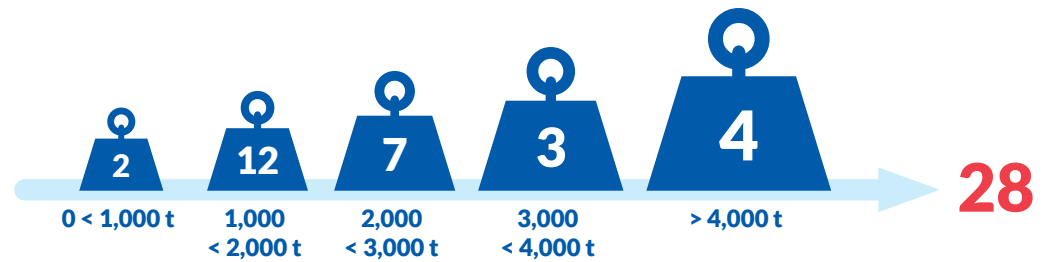
Source: IVR

In 2018, nine new tanker vessels were registered in the Netherlands and nine new vessels were also registered in Germany. In Belgium and Luxembourg, four new tanker vessels were registered, and one new vessel in France and Switzerland.

## NEW TANKER VESSELS COMING ON THE MARKET PER COUNTRY OF REGISTER (NUMBERS, 2011-2018)



## NEWLY BUILT TANKER VESSELS IN 2018 ACCORDING TO LOADING CAPACITY



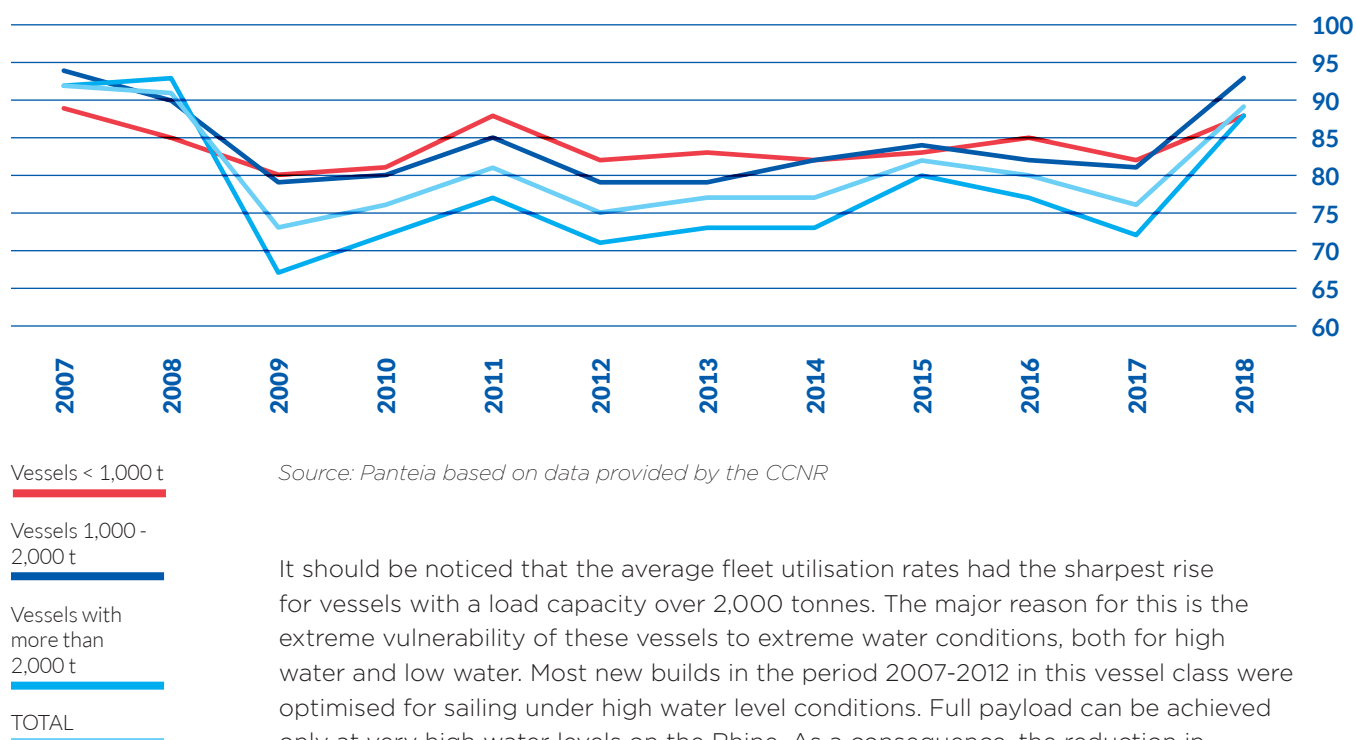
New tug boats, push boats and push-tugs are less frequently observed. In the period between 2012 and 2018, only 23 newbuildings from this group came on the European market, and 15 out of the 23 were in the Netherlands. In 2018, there were three newbuildings, compared to four in 2017.

# CAPACITY MONITORING

## Dry cargo vessels

In 2018, the average utilisation rate<sup>25</sup> of the dry cargo fleet increased sharply compared to 2017. In the corresponding graph, the evolution of the demand/supply ratio in inland navigation is plotted for the different fleet segments. It should be noted that all vessel categories contributed to the increase in capacity utilisation, mainly as a result of the severe low water levels on the Rhine river which affected navigation negatively in the second half of 2018. In November 2018, water levels reached a multi-annual low on nearly all Rhine river sections.

### CAPACITY UTILISATION OF THE RHINE FLEET (DRY CARGO VESSELS) OVER TIME PER FLEET SEGMENT (IN %)



It should be noticed that the average fleet utilisation rates had the sharpest rise for vessels with a load capacity over 2,000 tonnes. The major reason for this is the extreme vulnerability of these vessels to extreme water conditions, both for high water and low water. Most new builds in the period 2007-2012 in this vessel class were optimised for sailing under high water level conditions. Full payload can be achieved only at very high water levels on the Rhine. As a consequence, the reduction in payload is more severe when water levels drop significantly. In order to accommodate large payloads, the vessels lightweight (without cargo) and the corresponding draft, is also high. This results in minimum payloads under low water conditions. Several large dry cargo vessels were not able to reach the Middle- and Upper Rhine in November last year, as the draft in the Middle-Rhine sections was not sufficient to even allow empty vessels of the largest capacities.

Contrarily, the capacity utilisation rose less sharply for vessel categories <1,000 tonnes and 1,000 to 2,000 tonnes. These vessels are generally optimised for navigating the Dutch or German canal networks with significant draft limitations (2.50 to 2.80 metres). The light weight and empty draft of these vessels is relatively low, which allows them to pass the shallow section of the Middle Rhine even under difficult low water conditions. The products that are generally transported by vessels in these size classes are agricultural products.

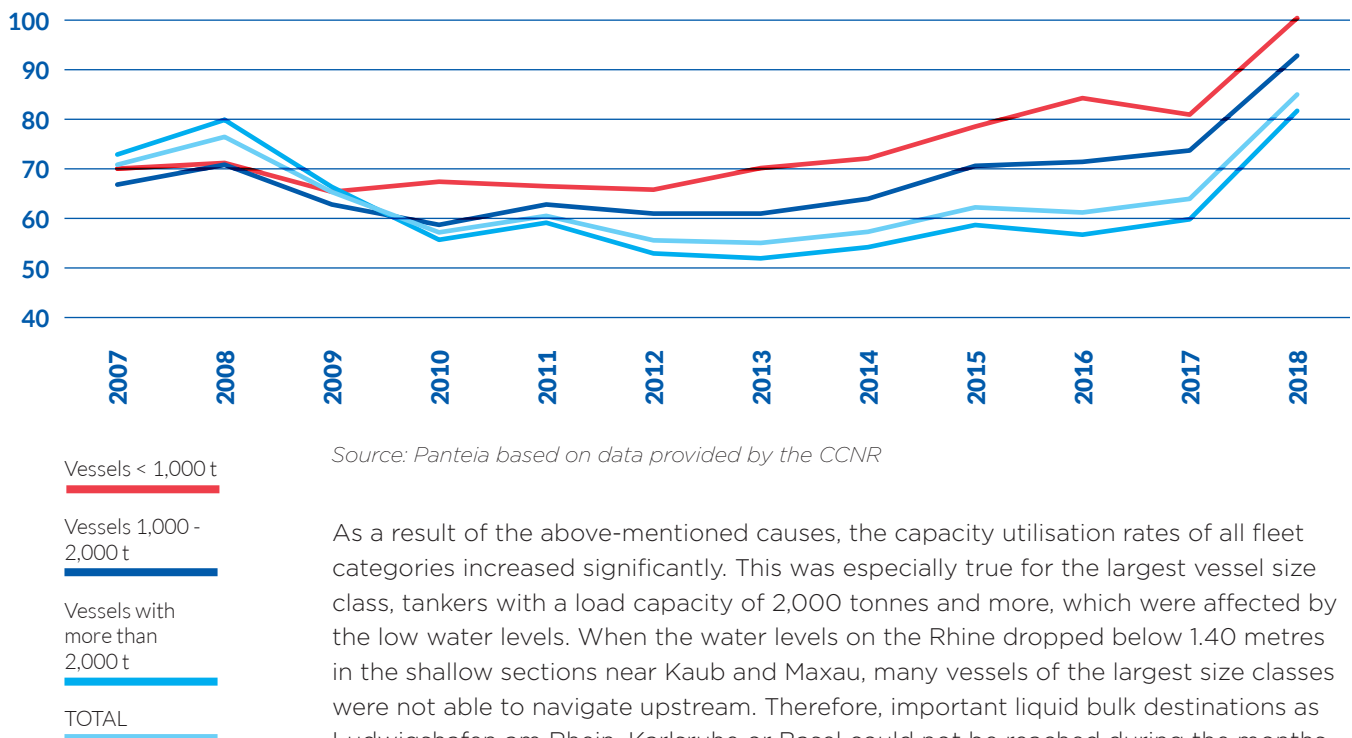
<sup>25</sup> Defined as the relationship between the needed tonnage (needed due to transport demand in a certain year) and the available tonnage of that same year, in %. The methodology is available on demand.

It has been clear from the last years that the dry cargo fleet has shown a structural recovery from the crisis. All-time low water levels, both in absolute terms and also regarding the time span, resulted in pre-crisis capacity utilisation levels for all vessel categories. No overcapacity has been seen in the last year for any vessel size class; in the second half of 2018, even shortages were noted. However, an increase in fleet capacity is not recommended for barge owners as the underlying cause can be found in incidental water levels. Barge owners, however, should rethink the vessel design and optimise the current fleet to sail under low water conditions. This could also make the fleet less vulnerable to high water levels.

### Liquid cargo vessels

In 2018, the average utilisation rate of the liquid cargo fleet rose by 21 percentage points from 64% to 85%. The major reason for this increase is the decommissioning of single hull tankers on the one hand, which reduced the fleet capacity significantly (2018 was the last year in which single-hull tankers could be used to transport gasoline according to ADN rules) and on the other hand, the severe low water levels which affected navigation on the Rhine during the entire second half of 2018.

### CAPACITY UTILISATION OF THE RHINE FLEET (LIQUID CARGO VESSELS) OVER TIME PER FLEET SEGMENT (IN %)



As a result of the above-mentioned causes, the capacity utilisation rates of all fleet categories increased significantly. This was especially true for the largest vessel size class, tankers with a load capacity of 2,000 tonnes and more, which were affected by the low water levels. When the water levels on the Rhine dropped below 1.40 metres in the shallow sections near Kaub and Maxau, many vessels of the largest size classes were not able to navigate upstream. Therefore, important liquid bulk destinations as Ludwigshafen am Rhein, Karlsruhe or Basel could not be reached during the months of October and November. On rare occasions, some large single hull tankers could be deployed to transport gasoline upstream. In other circumstances, smaller vessels (1,000 to 2,000 tonnes) were deployed on Rhine stretches.

It should be noted that in the past year, no overcapacity was identified in the liquid bulk sector. Shortages of vessels were noted in all size classes, as a result of the low water levels and the extreme vulnerability of the fleet to low water conditions. This should however be seen as an incidental year. This is also the case for the dry bulk sector, shippers and barge owners should rethink the vessel design and optimise it in such a way that dry bulk can be transported to the Middle and Upper Rhine even during low water periods.









# 06

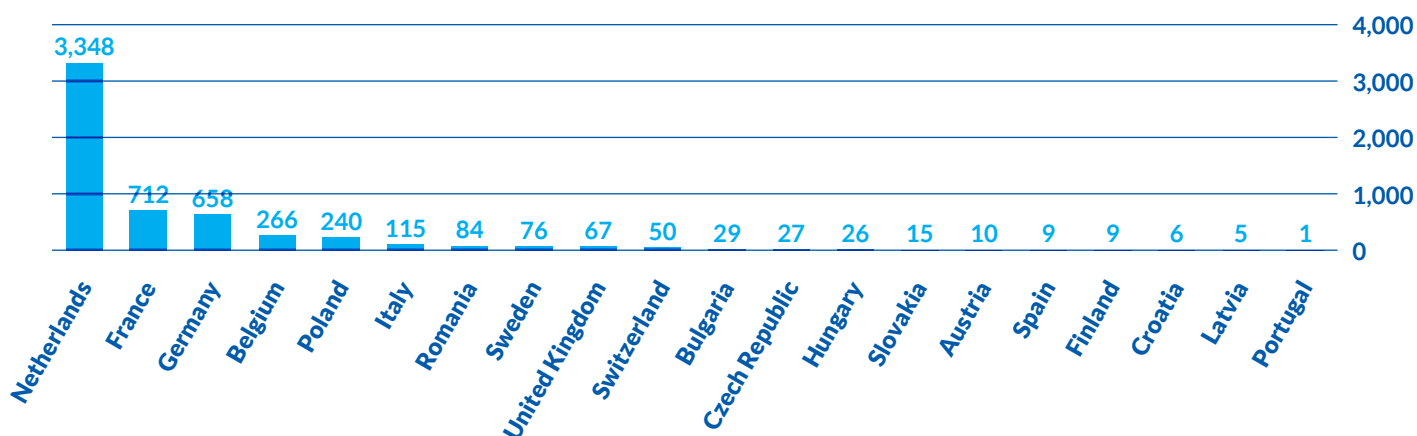
## COMPANIES, EMPLOYMENT, TURNOVER, OPERATING CONDITIONS

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- In 2016, there were 5,753 IWW goods transport companies in Europe. Almost 90% of them were registered in Rhine countries. These countries accounted for 74% of the 22,087 employees active in IWW goods transport in 2017, and the Danube countries for 13%.
- There are 4,000 IWW passenger transport companies in Europe, and 18,645 employees. 44% of the European IWW passenger companies are registered in Rhine countries. Regarding employment, the share of Rhine countries is even higher: 63% of all employees in IWW passenger transport are employed in companies in Germany, France, the Netherlands and Belgium (data for Switzerland are missing).
- The age structure of persons active in goods and passenger transport taken together is currently dominated by persons aged between 25 and 55. They have a share of 58% in Germany and 61% in Belgium. The share of persons younger than 25 is 10% in Germany and 5% in Belgium.

# GOODS TRANSPORT COMPANIES

NUMBER OF IWT COMPANIES IN GOODS TRANSPORT IN EUROPE\* (2017)



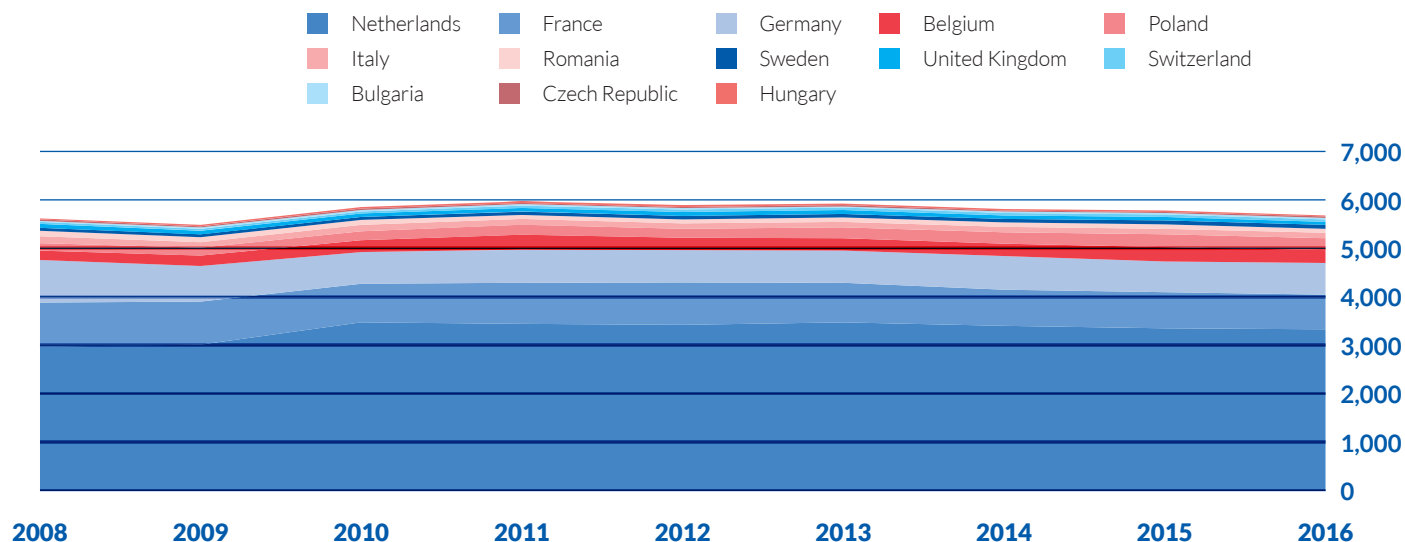
Source: Eurostat [sbs\_na\_1a\_se\_r2] and Eidgenössische Steuerverwaltung (CH).

\*Data for 2016

In 2016<sup>26</sup> there were 5,753 IWW goods transport companies in Europe (EU plus Switzerland), of which 87.5% were registered in Rhine countries (the Netherlands, Germany, Belgium, France, Switzerland).

The evolution of the total number of European goods transport companies followed a slight downward orientation in recent years. The number of companies has also been falling slightly in the Netherlands since the year 2010.

NUMBER OF IWT COMPANIES IN GOODS TRANSPORT IN EUROPE

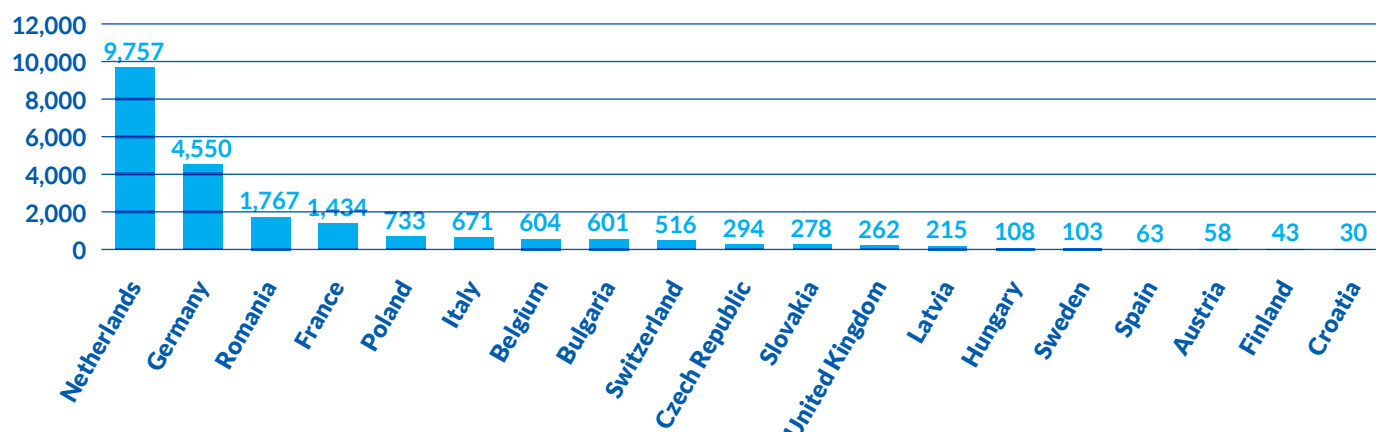


Source: Eurostat [sbs\_na\_1a\_se\_r2], Eidgenössische Steuerverwaltung (CH)

<sup>26</sup> The year 2016 was the most recent year for Eurostat statistics on companies.



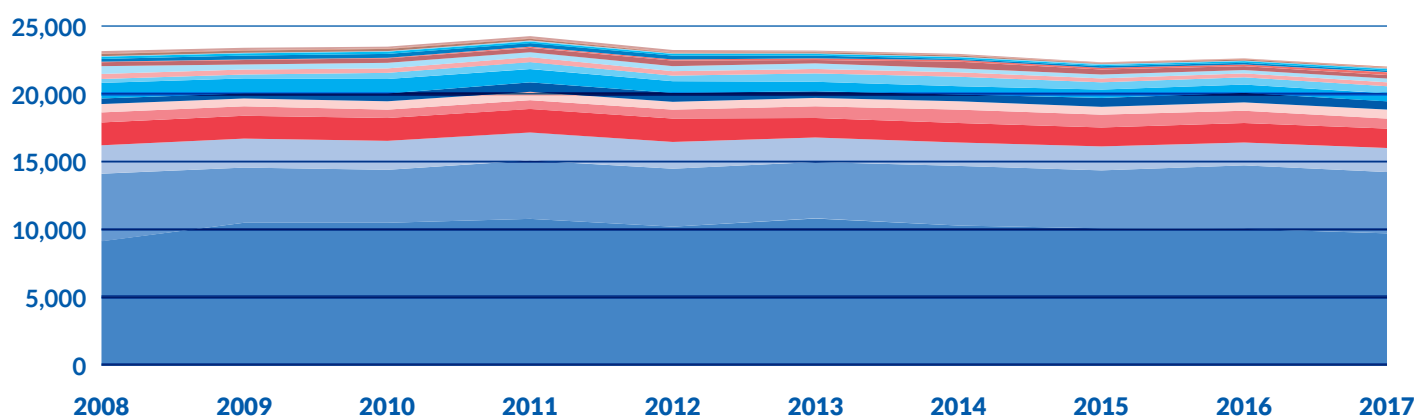
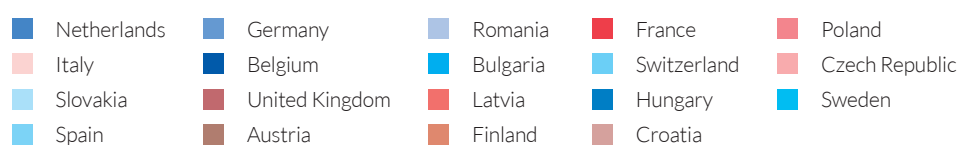
## NUMBER OF EMPLOYEES IN IWT GOODS TRANSPORT IN EUROPE\* (2017)



Source: Eurostat [sbs\_na\_1a\_se\_r2]  
\*Data for 2017

The number of employees (persons working in the IWW sector) in IWW goods transport was 22,087 in 2017, and 74% of these employees were working for companies in Rhine countries. The Danube countries account for 13% of all employees.

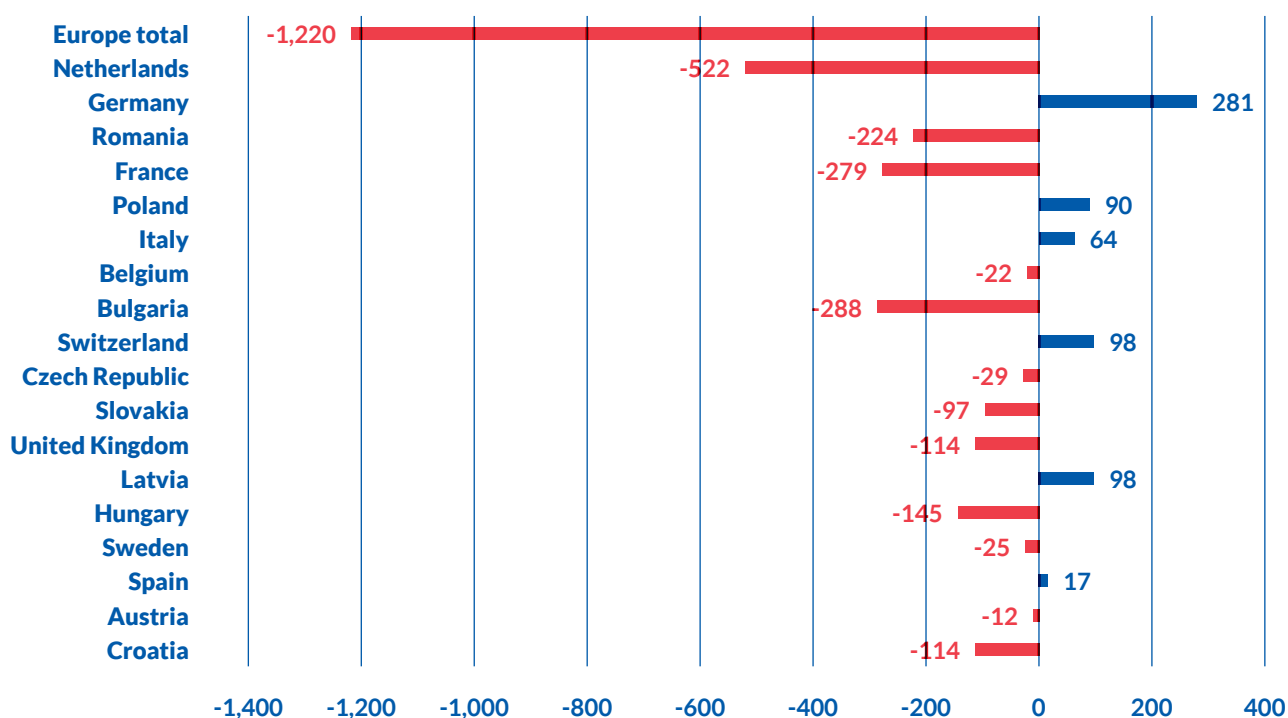
## NUMBER OF EMPLOYEES IN IWT GOODS TRANSPORT IN EUROPE



Source: Eurostat [sbs\_na\_1a\_se\_r2]

If the number of employees in goods transport in 2017 are compared with the numbers in the previous five years (in 2012), a decrease can be observed for Europe as a whole, and also for large IWW countries such as the Netherlands, Romania, France and Bulgaria. Very few countries had more employees in IWW goods transport in 2017 than in 2012 (Germany, Poland, Italy, Switzerland and some smaller ones).

### DIFFERENCE IN THE NUMBER OF EMPLOYEES IN IWW GOODS TRANSPORT IN 2017 COMPARED TO 2012

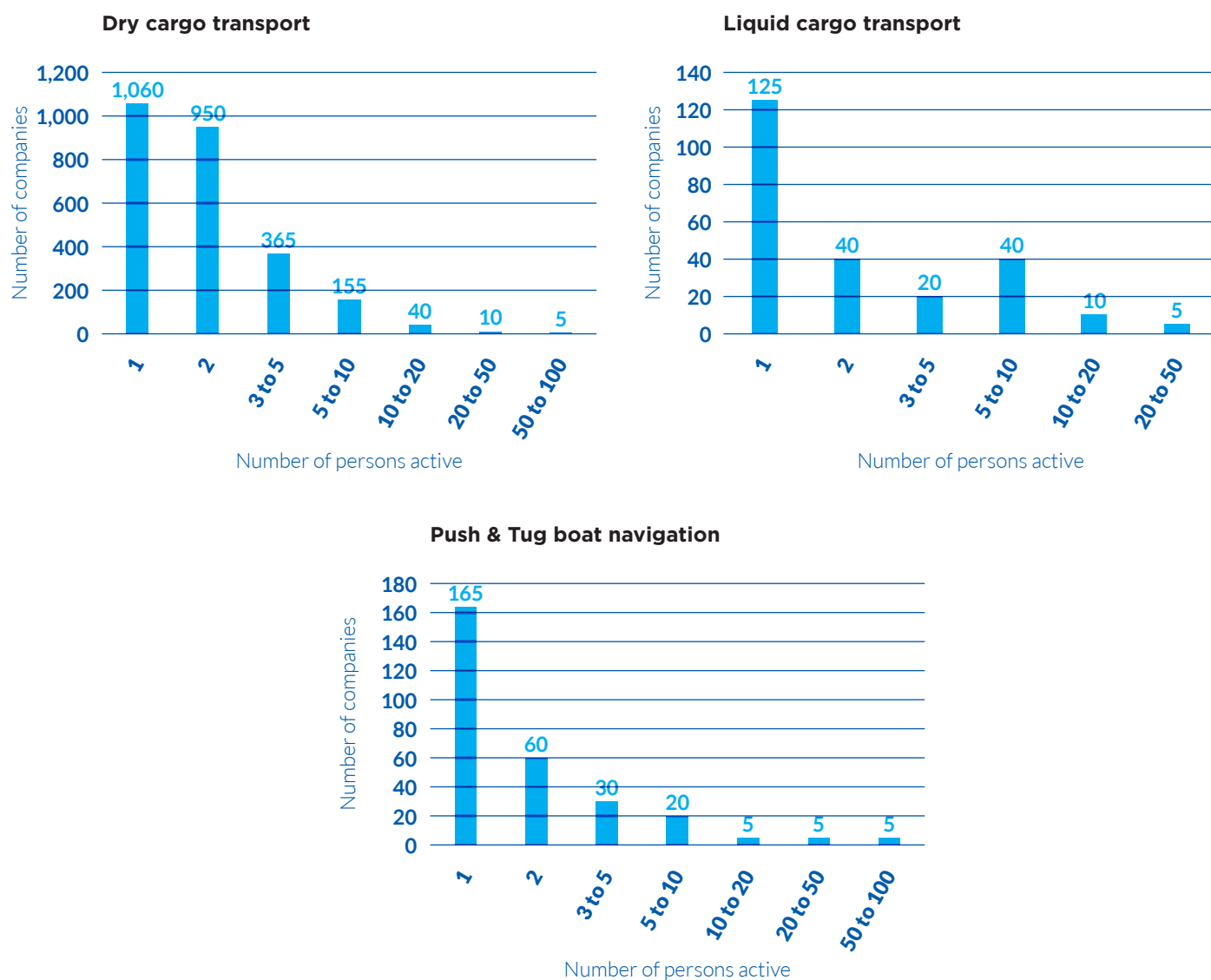


Source: Eurostat [sbs\_na\_1a\_se\_r2]

When analysing the decrease in employees in the Netherlands, it is necessary to take into account that the majority of Dutch IWW companies are very small, with only one or two employees. The decline in the number of active persons mirrors the decrease in the Dutch companies in the same time period.

The reasons for this evolution can be due to problems of companies' successions in small single vessel owner companies, but also due to specific economic problems which small companies are often facing (difficult access to external financing, high financial burden of necessary investments).

### NUMBER OF IWT COMPANIES PER SIZE CLASS (NUMBER OF PERSONS IN THE COMPANY) IN THE NETHERLANDS IN Q1 2019



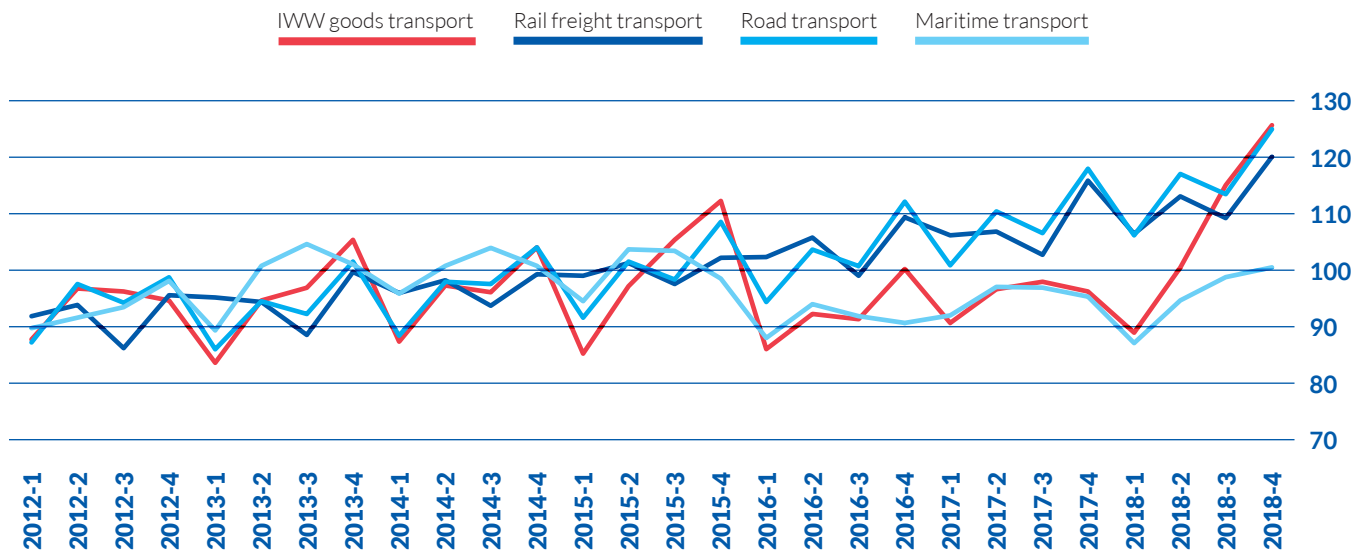
Source: Centraal Bureau voor de Statistiek (Netherlands). Data refer to the situation in Q1 2019.

The share of the companies with only one person active is 41% in the Dutch dry cargo segment, 51% in tanker shipping, and 58% in the push & tug segment. The situation in the Netherlands is not exceptional when compared to many other countries. According to data for France (from INSEE), only 2% of all French IWW freight transport companies have 10 employees or more. For French passenger transport companies, this share is 10%.

### Quarterly turnover development in goods transport

Despite an overall drop in goods transport in the Netherlands in 2018, turnover rose. The reason was the increase in freight rates, due to the low water levels (see chapter 5). Since 2012, the turnover in rail and road freight transport evolved more evenly than in maritime and inland waterway transport.

### TURNOVER DEVELOPMENT IN THE NETHERLANDS IN GOODS TRANSPORT, PER MODE (INDEX 2015=100)

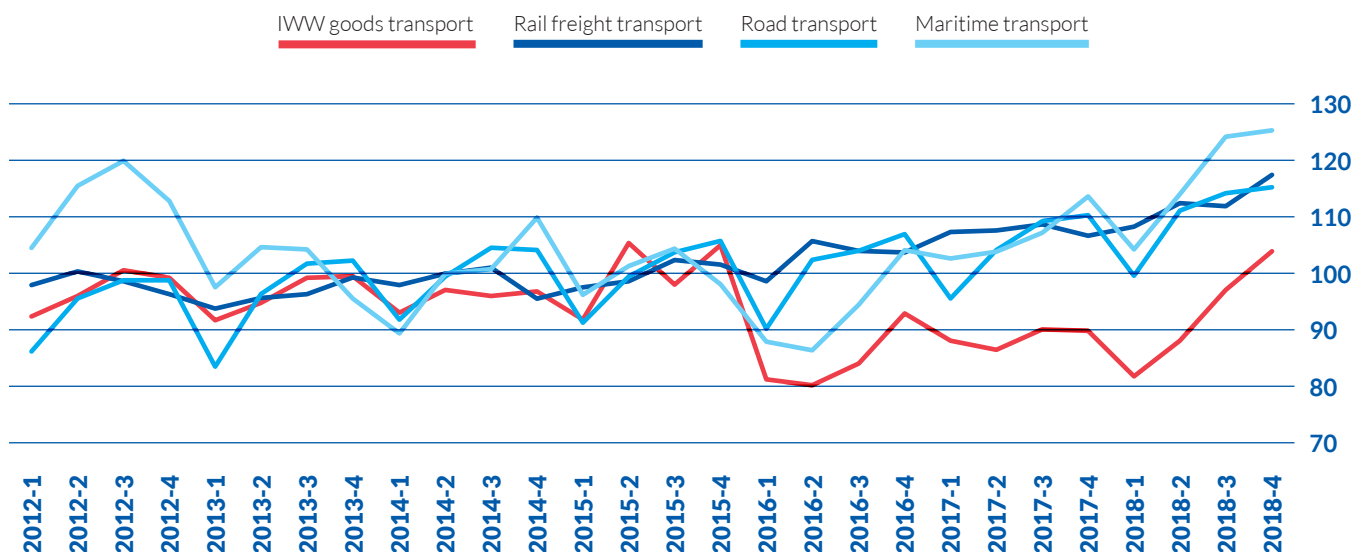


Source: Centraal Bureau voor de Statistiek (CBS)

The turnover of the German IWW goods transport companies (see following figure) also increased due to rising transport prices in 2018. However, its level was still well below the turnover level of other transport modes.

Both in Germany and in the Netherlands, IWT turnover dropped strongly after Q4 2015, and remained on a lower level for some time afterwards. In Q4 2015, there was a low water period on the Rhine, resulting in a strong reduction of cargo traffic. Although transport prices increased over a short period of time (boosting turnover temporarily in Q4 2015), the years 2016 and 2017 saw a much lower average turnover level in both countries.

### TURNOVER DEVELOPMENT IN GERMANY IN GOODS TRANSPORT, PER MODE (INDEX 2015=100)



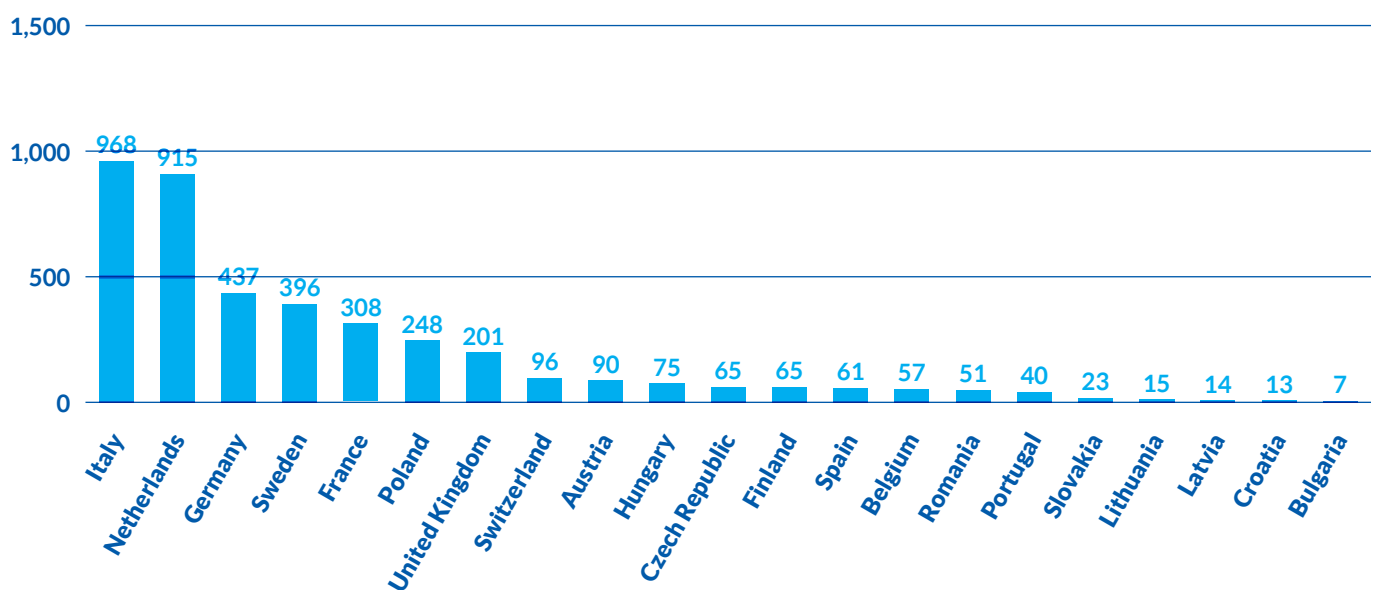
Source: Destatis

# PASSENGER TRANSPORT

## NUMBER OF COMPANIES, EMPLOYMENT AND TURNOVER EVOLUTION

The 4,000 IWW passenger companies in Europe are active in different segments: river cruises, day trip navigation on rivers, canals and lakes. The ferry transport of passengers is also part of the sector. The first position of Italy is due to the many lakes in the country (see chapter on day trip vessels), and due to canal boats in Venice. The Netherlands and Germany have many day trip ferry vessels.

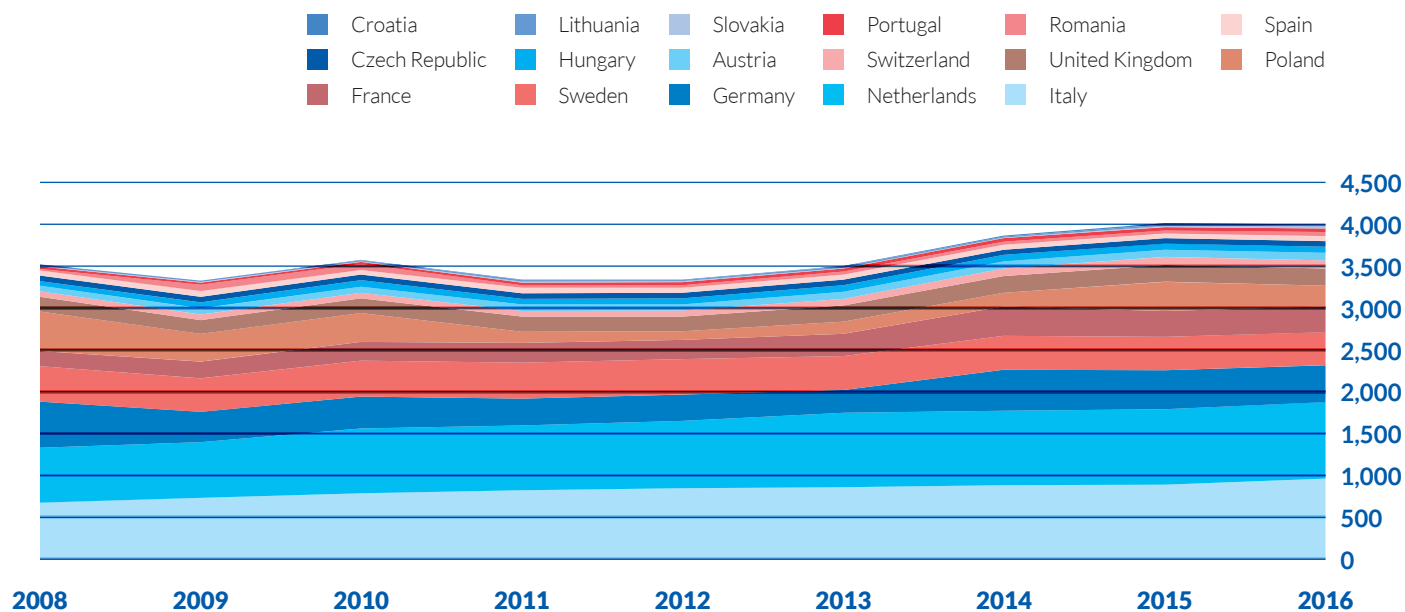
### NUMBER OF IWW COMPANIES IN PASSENGER TRANSPORT IN EUROPE\*



Source: Eurostat [sbs\_na\_1a\_se\_r2] and Eidgenössische Steuerverwaltung (CH).  
\*Data for 2016

The evolution of the total number of European passenger transport companies has followed an upward trend since the year 2013.

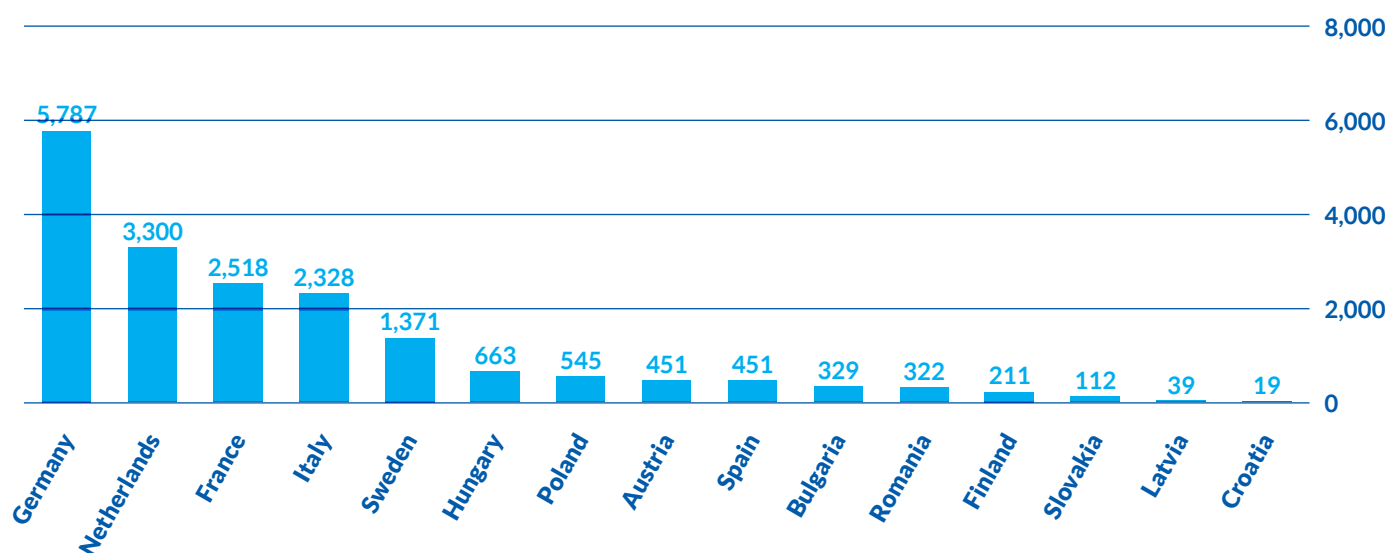
## NUMBER OF IWW COMPANIES IN PASSENGER TRANSPORT IN EUROPE



Source: Eurostat [sbs\_na\_1a\_se\_r2], Eidgenössische Steuerverwaltung (CH), CBS (NL)

The number of employees in IWW passenger transport amounted to around 18,645 in 2016 and has increased in recent years. Three Rhine countries are in the top three positions (Germany, the Netherlands, France). These three countries are very active in river cruises, and in day trip navigation on rivers and canals.

## NUMBER OF EMPLOYEES IN IWW PASSENGER TRANSPORT IN EUROPE\*



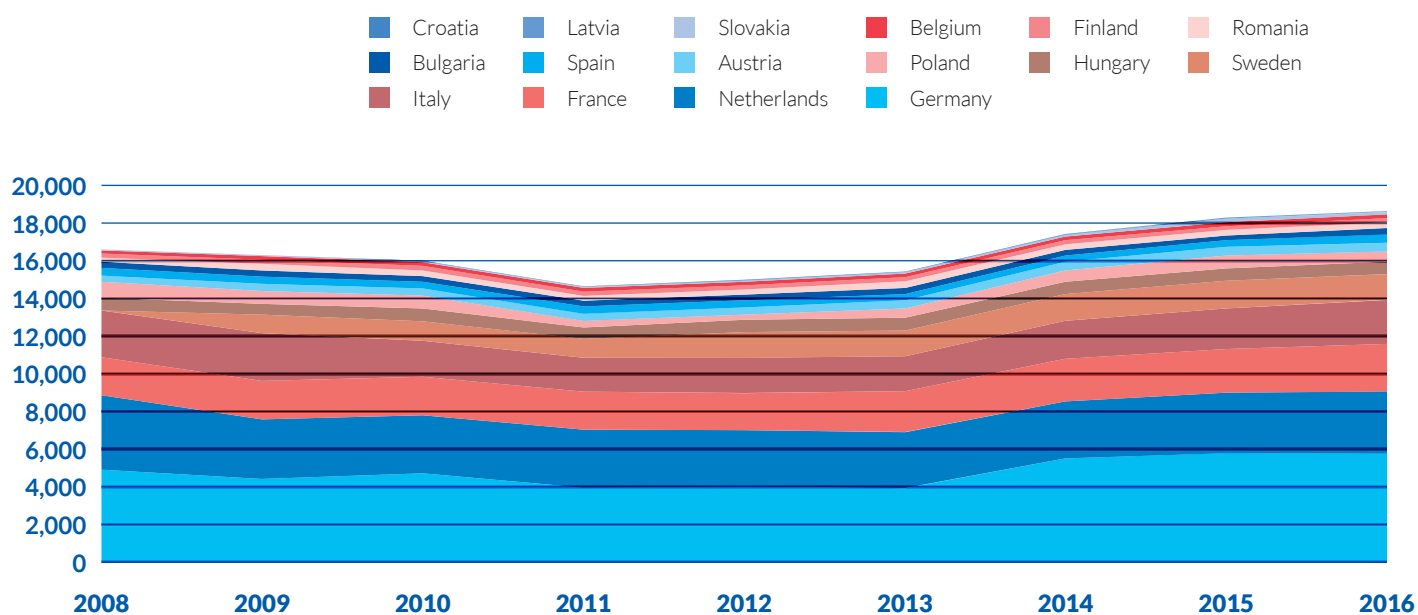
Source: Eurostat [sbs\_na\_1a\_se\_r2].

\*Data for 2016, no data for Switzerland

One part of the positive evolution in the number of companies and employees in passenger navigation since the year 2013 is the boom in river cruises that became more and more intense that year, mainly due to the arrival of large numbers of US-American tourists from overseas. In addition, passenger navigation is also increasing its economic indicators in countries where not many cruise vessels are registered.



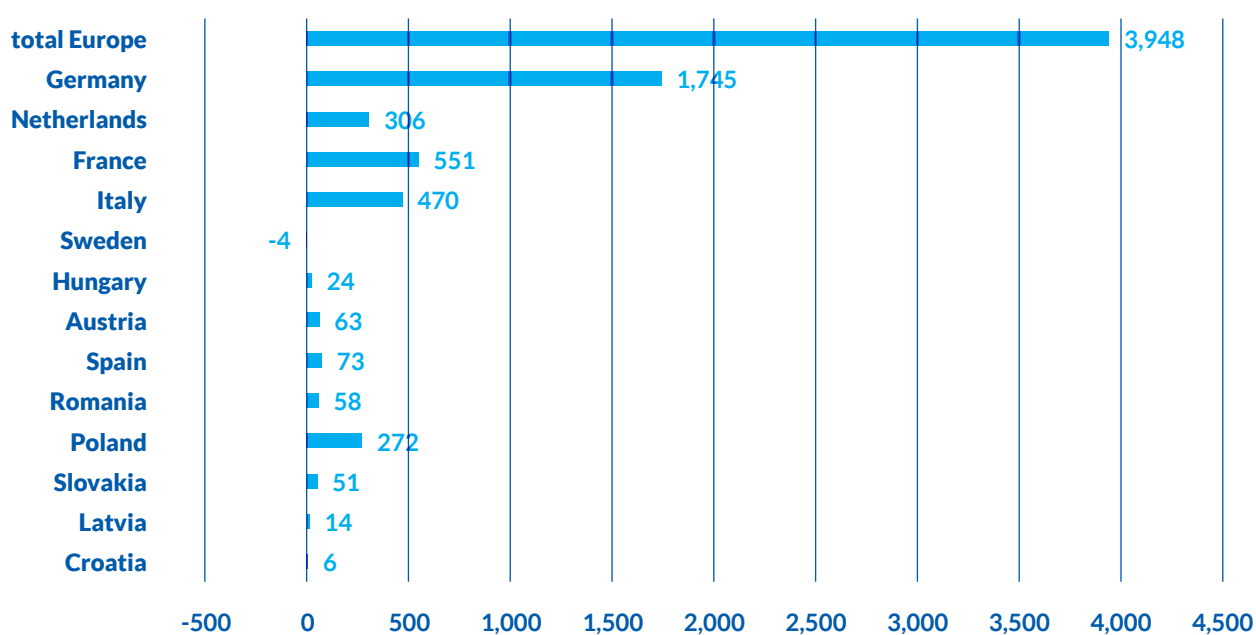
## NUMBER OF EMPLOYEES IN IWW PASSENGER TRANSPORT IN EUROPE



Source: Eurostat [sbs\_na\_1a\_se\_r2]

Almost all European countries have been able to increase their number of employees in passenger navigation since the year 2012. The strongest increase took place in countries where there were already many persons active in this market segment.

## DIFFERENCE IN THE NUMBER OF EMPLOYEES IN IWW PASSENGER TRANSPORT IN 2016 COMPARED TO 2012 \*



Source: Eurostat [sbs\_na\_1a\_se\_r2]

\*No data for Switzerland

IWW passenger transport

Rail passenger transport

Maritime passenger transport

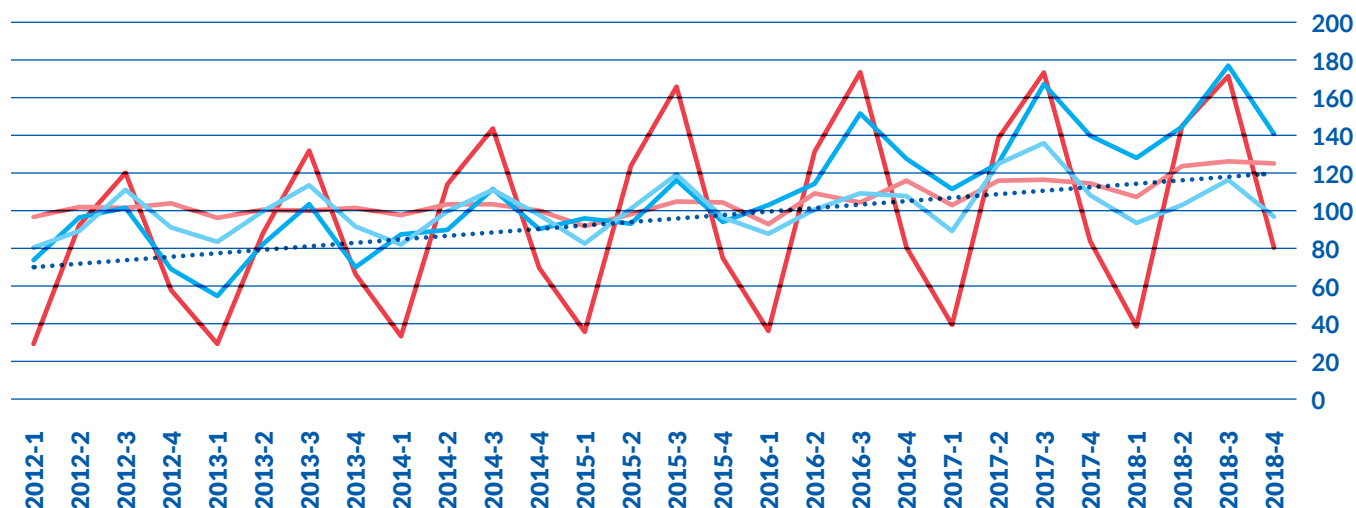
Air passenger transport

Linear (IWW passenger transport)

### Quarterly turnover development in passenger transport

Quarterly turnover data for IWW passenger transport are available for Germany and France and are compared with data for other transport modes. A very high seasonality of inland waterway passenger transport can be observed, which is a clear feature of the sector, despite recent activities to extend the season to the winter period.

### TURNOVER DEVELOPMENT IN PASSENGER TRANSPORT IN GERMANY PER MODE OF TRANSPORT (INDEX 2015=100)\*



Source: Destatis

\*Includes a linear trend for IWW passenger transport

IWW passenger transport

Rail passenger transport

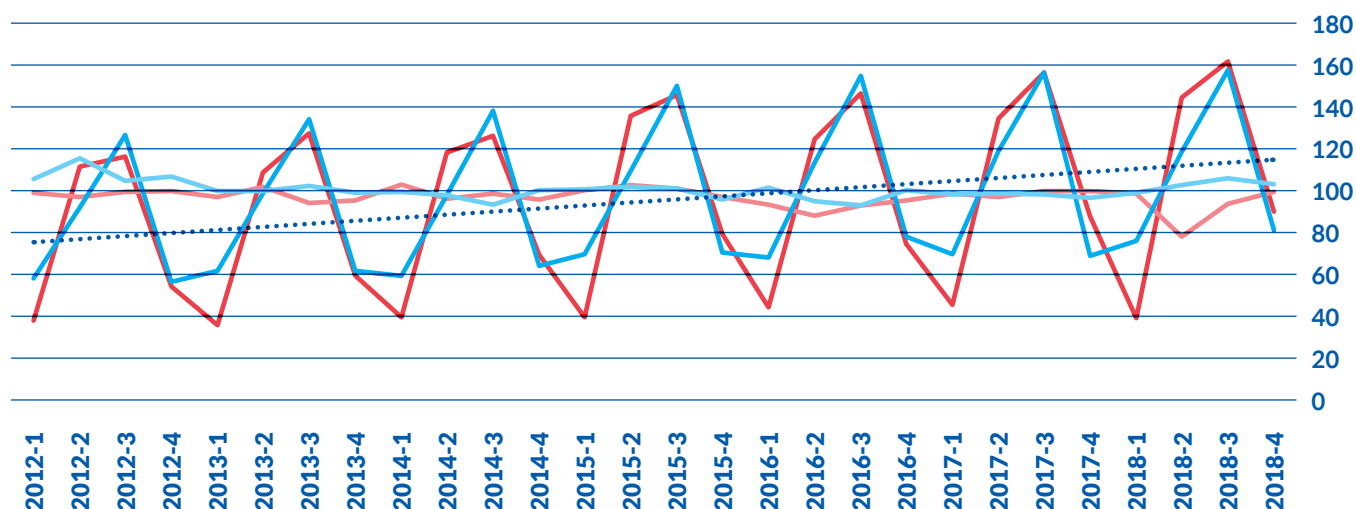
Maritime passenger transport

Air passenger transport

Linear (IWW passenger transport)

The overall trend of the turnover in IWW passenger transport is positive. For France, it has been noted that even the air passenger traffic has a more stagnant evolution than passenger transport on inland waterways.

### TURNOVER DEVELOPMENT IN PASSENGER TRANSPORT IN FRANCE PER MODE OF TRANSPORT (INDEX 2015=100)\*



Source: INSEE

\*Includes a linear trend for IWW passenger transport.

# GROSS OPERATING SURPLUS / TURNOVER RATIO

## Definition and sources

The *gross operating surplus* (GOS) of a company or a sector is an indicator for the profitability. When calculating the GOS, only part of the total cost is deducted from the gross production value. The GOS thus corresponds to the gross production value minus the cost of intermediate products (goods and services) and less compensation of employees (personnel costs).<sup>27</sup> Data for this ratio (in percentage terms) are available from the Eurostat database on structural business statistics [sbs\_na\_1a\_se\_r2].<sup>28</sup>

## Data for European countries

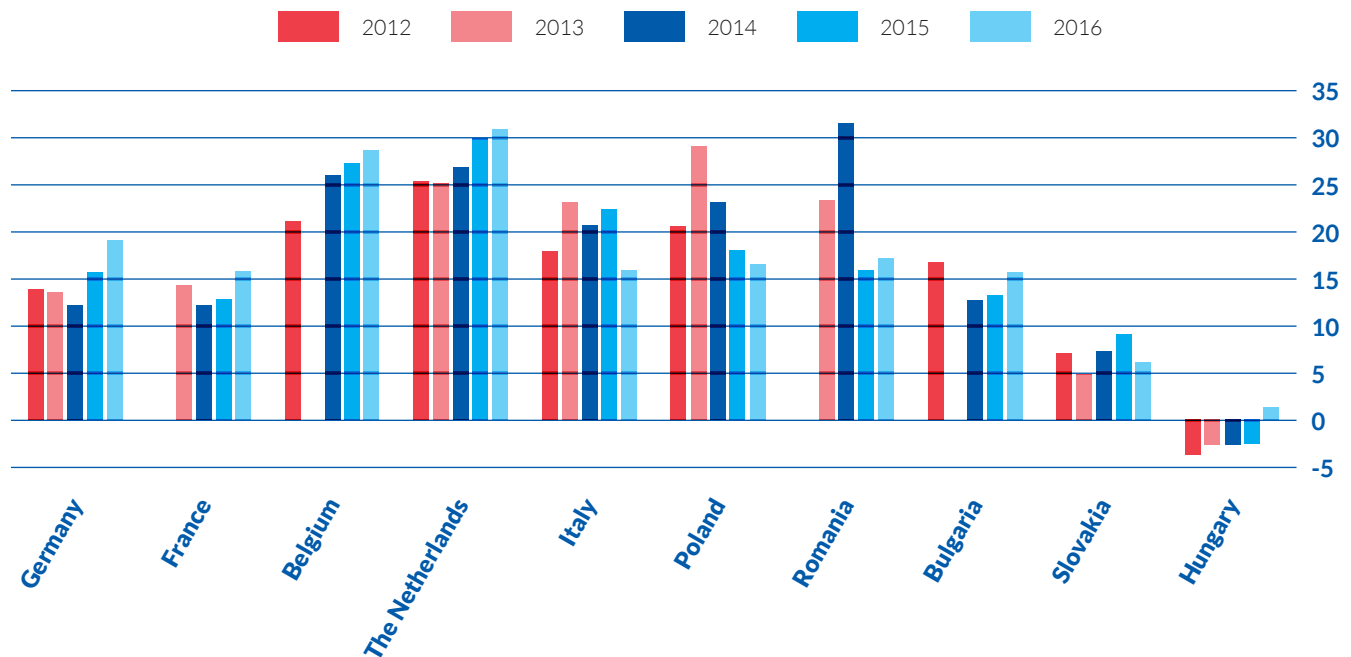
From the following figure that shows the *GOS / turnover ratio* in goods transport, it is clear that this profitability indicator has similar values in the Belgian and Dutch sectors, which are higher than in German and French industries. This is explained by better natural conditions (infrastructure, water depths) for inland navigation in the ARA region compared to large parts of France and Germany. In addition, an increasing trend for the Rhine countries (including France and Germany), as well as quite mixed results for the other countries under study, can be observed.

Also, for the Danube countries, it is observed that the lower Danube countries (Romania, Bulgaria) show a more favourable value for the GOS / turnover ratio than the Middle Danube countries (Hungary, Slovakia). It can also be explained by the better natural conditions. Hungary, a country at the Middle Danube, even had a negative value until the year 2015.

<sup>27</sup> See: Eurostat, *Statistics explained* ([https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Gross\\_operating\\_surplus\\_\(GOS\)\\_-\\_.NA/de](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Gross_operating_surplus_(GOS)_-_.NA/de))

<sup>28</sup> The Eurostat database does not contain data for this variable for the Netherlands. However, the CBS has data for the total net operating surplus and the total amortization in the Dutch inland navigation industry. Therefore, it was possible to calculate the gross operating surplus for goods transport in the Netherlands by adding amortization to the net operating surplus. As the sum of these two variables gives the gross operating surplus, it can be compared correctly with the data for the other countries taken from the Eurostat database.

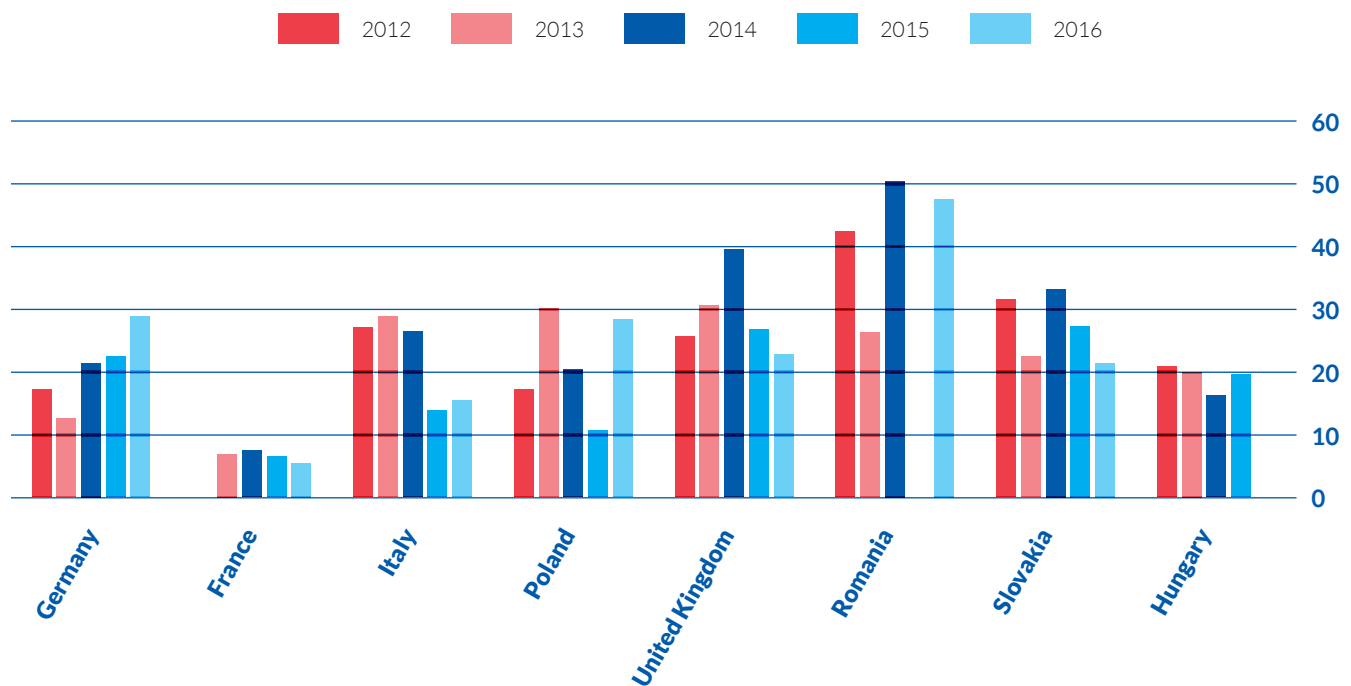
### GROSS OPERATING SURPLUS / TURNOVER RATIO IN THE IWW GOODS TRANSPORT SECTOR



Source: Eurostat [sbs\_na\_1a\_se\_r2] and calculation CCNR based on CBS data

In passenger transport, the GOS / turnover ratio is higher than in goods transport for Germany, Poland, Romania, Slovakia, Hungary, but lower for France, and at about the same level for Italy.

### GROSS OPERATING SURPLUS / TURNOVER RATIO IN THE IWW PASSENGER TRANSPORT SECTOR

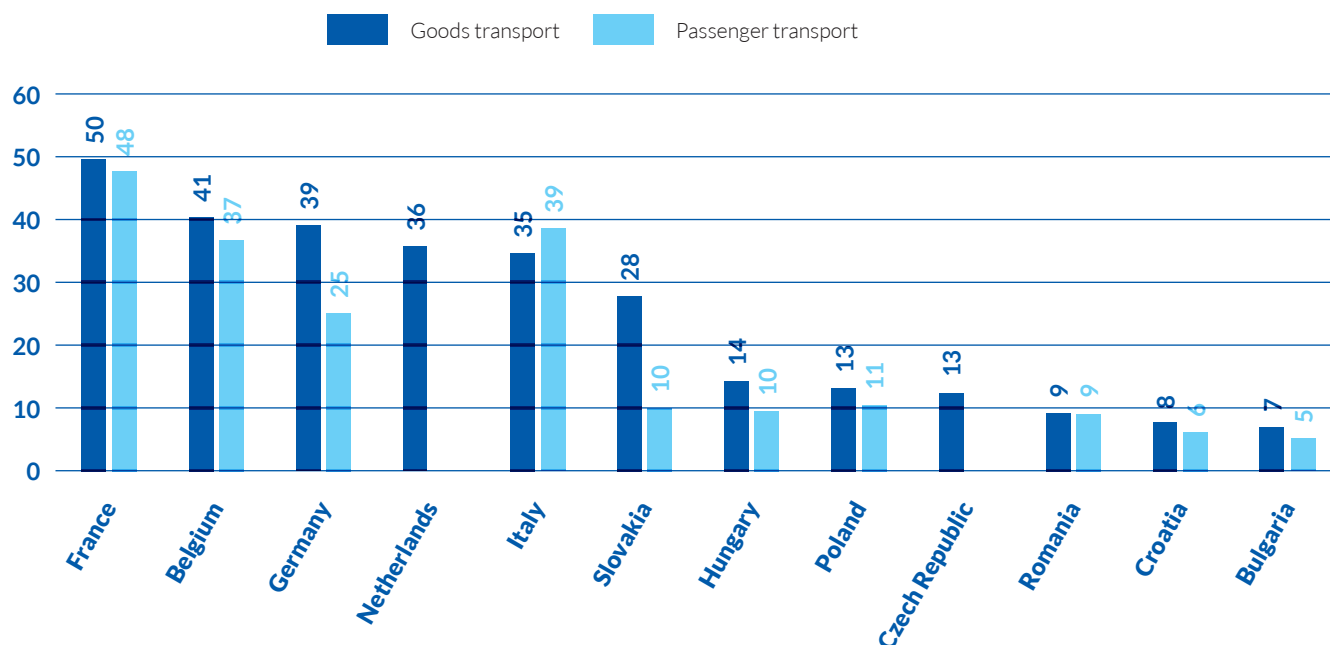


Source: Eurostat [sbs\_na\_1a\_se\_r2]

Concerning France, its low profitability value is explained by relatively high personnel costs (see next figure).

#### AVERAGE ANNUAL PERSONNEL COSTS PER PERSON ACTIVE IN IWW TRANSPORT

(IN 1,000 € / PERSON, 2016) \*



Source: Eurostat [sbs\_na\_1a\_se\_r2] and CBS (NL).

\*Data are rounded-up for visibility purposes. The value for the Netherlands concerns goods transport and passenger transport taken together, but goods transport has a share of 92%.

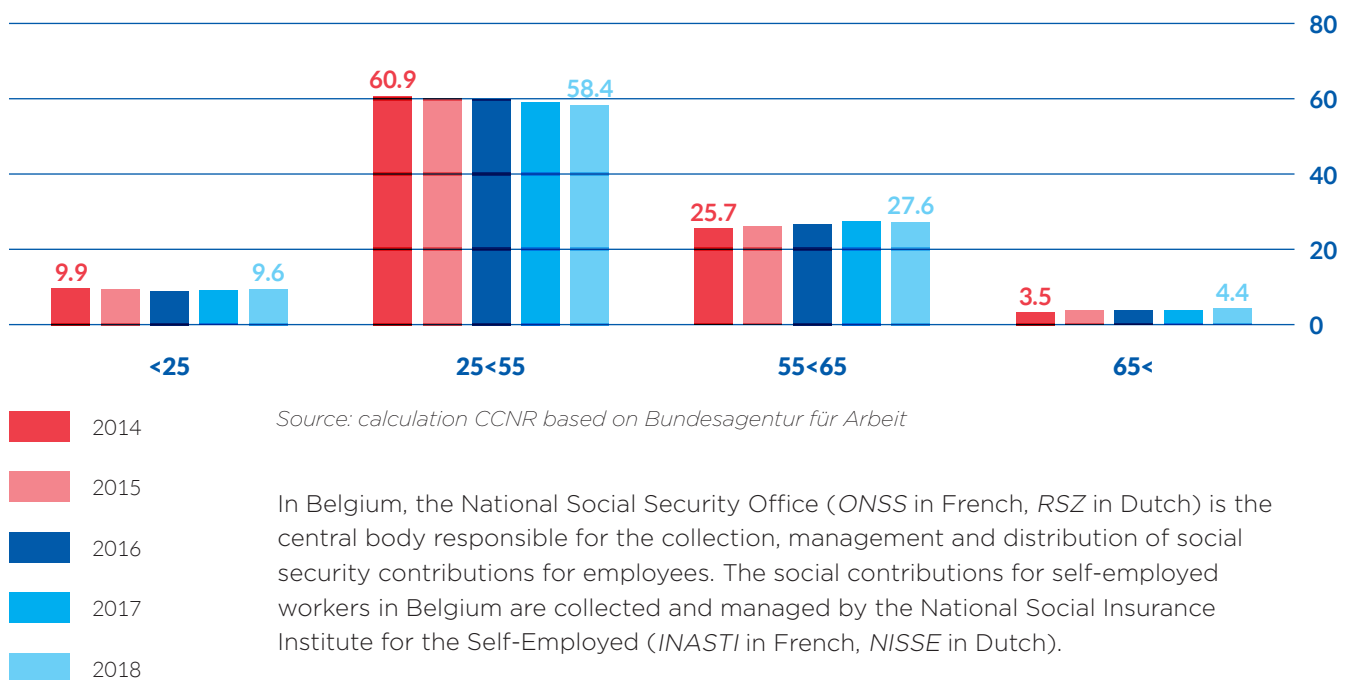


# AGE STRUCTURE OF PERSONS ACTIVE IN INLAND NAVIGATION AND NUMBER OF APPRENTICES

The German Federal Employment Agency (Bundesagentur für Arbeit) disposes of a central database of nearly all persons working under a social security regime in Germany. Its databases can be analysed according to age classes of employees and the professions that these employees have learnt.

The following figure shows the percentage shares of four age classes for German persons with a profession in navigating an inland vessel (both goods and passenger transport).

## AGE STRUCTURE OF PERSONS WITH THE PROFESSION 'SKIPPER IN INLAND NAVIGATION' IN GERMANY



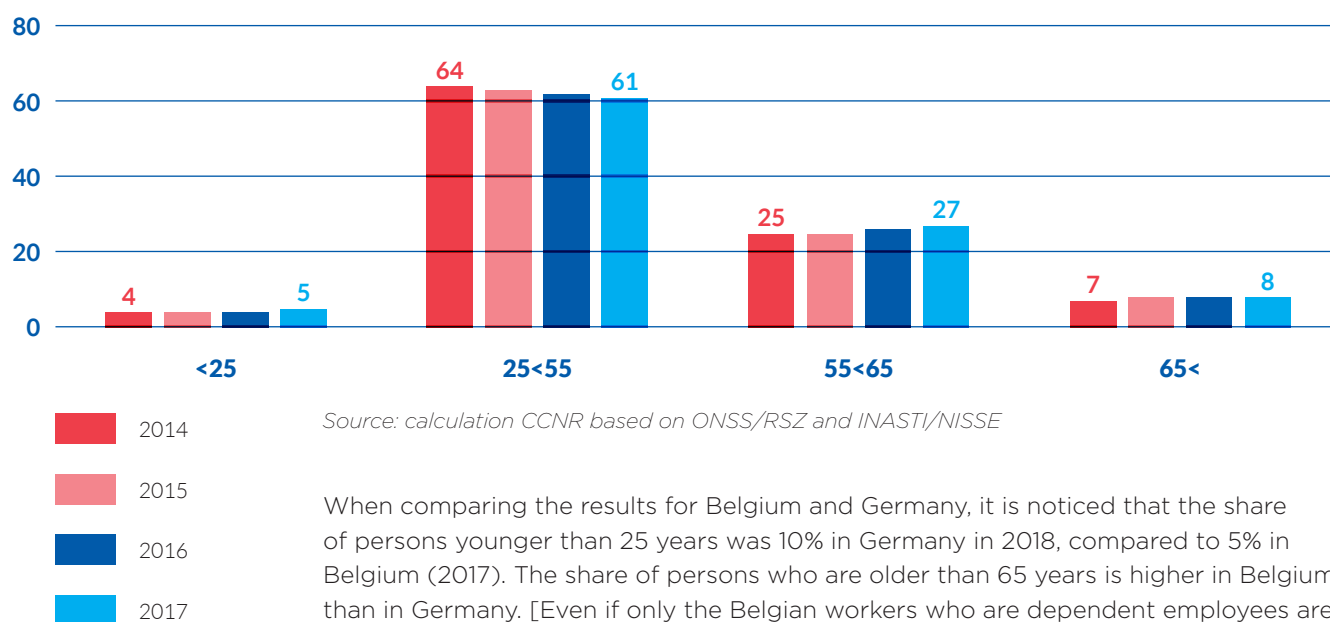
In Belgium, the National Social Security Office (ONSS in French, RSZ in Dutch) is the central body responsible for the collection, management and distribution of social security contributions for employees. The social contributions for self-employed workers in Belgium are collected and managed by the National Social Insurance Institute for the Self-Employed (INASTI in French, NISSE in Dutch).

In order for the Belgian data to be comparable with the German data, the data for the dependent and independent inland navigation Belgian workers have been added together, and the age structure was calculated for the total number of workers (as well as for the independent and the dependent separately).<sup>29</sup>

<sup>29</sup> The result shows quite strong differences between the independent and dependent workers. The share of people active who are over 65 years is 11% for the independent Belgian persons, compared to only 1% for those who are dependent. The share of persons younger than 25 years is 2% for the independent employees, but 8% for the dependent employees (all values for 2017/2018).



### AGE STRUCTURE OF PERSONS WITH THE PROFESSION 'SKIPPER IN INLAND NAVIGATION' IN BELGIUM

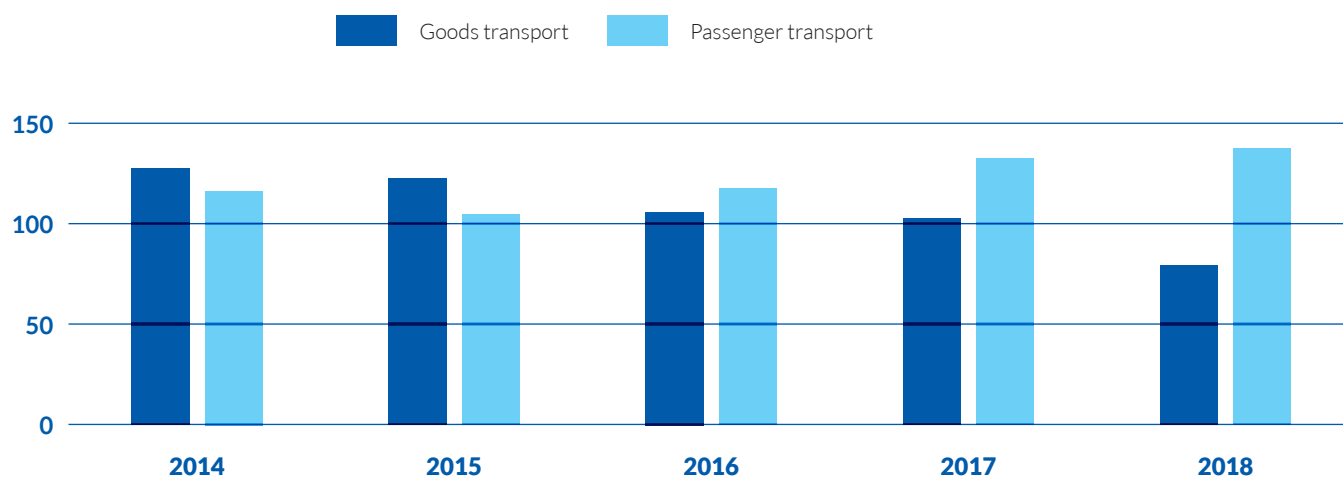


When comparing the results for Belgium and Germany, it is noticed that the share of persons younger than 25 years was 10% in Germany in 2018, compared to 5% in Belgium (2017). The share of persons who are older than 65 years is higher in Belgium than in Germany. [Even if only the Belgian workers who are dependent employees are taken into account, the share of the youngest age group is slightly lower (8% in 2018) than in Germany (10% in 2018)].

The differences between the two countries should also be seen from the viewpoint of market structure. Indeed, the type of independent vessel owner is more common in Belgium than in Germany. Therefore, the share of independent entrepreneurs is certainly higher in the Belgian sector than in the German sector. This explains to a certain extent the slight differences in the age structure in Belgium.

Finally, it can be observed that the rising trend in Germany for the number of companies and employees in passenger transport had an influence on the choice of apprentices regarding their field of job training. The figures in passenger transport increased in 2016, 2017 and 2018, while those for goods transport decreased.

### NUMBER OF APPRENTICES IN THE GERMAN INLAND NAVIGATION SECTOR







# 07

## RIVER CRUISES

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- The fleet of river cruise vessels in Europe in 2018 amounted to 359 active vessels, including 10 new and 3 modernised vessels that were introduced into the market in 2018. For 2019, 20 new vessels are expected to join the fleet.
- Over the last 12 years the river cruise fleets in smaller river cruise regions which are not connected to the Rhine or the Danube, such as the Rhône-Saone, Seine and Douro, have expanded and sometimes more than doubled.
- River cruises have been experiencing a boom since 2013, mainly due to the large number of American tourists booking river cruise holidays. In 2018, there was an increase of 14.6%, compared to 2017, reaching a total of 1.64 million river cruise passengers.
- For the first time, the annual report also contains information on the fleet of small river cruise vessels (with 10 to 39 beds) navigating in Europe. This fleet is composed of 67 vessels, the majority of which are more than 50 years old. Main regions of operation are the Netherlands and France.



# FLEET FOR RIVER CRUISES

The fleet for river cruises in the EU region is mainly concentrated on Central European waterways<sup>30</sup>. Indeed, in 2018, the number of active river cruise vessels on Central European waterways represented close to 75% of the total river cruise fleet in the EU. The greatest concentration of river cruise vessels can be observed on the Rhine/Main/Main-Danube Canal/Danube area, with 253 vessels, including 35 on the Netherlands-Rhine axis. Despite the fact that all other European rivers not connected to the Rhine or the Danube are smaller cruising regions, their river cruise fleet has been expanding in the last decade, as follows:

- Rhône-Saône (22 vessels in 2018 compared to 10 in 2006),
- Seine (20 vessels in 2018 compared to 5 in 2006) and,
- Douro (20 vessels in 2018 compared to 6 in 2006).

The river cruise vessel fleet in Europe<sup>31</sup> has constantly increased since 2004, to reach 359 active vessels in 2018 with 52,078 beds.

In the season 2018, 10 new vessels were also introduced to the market, adding 1,501 beds. Three more existing vessels were modernised (including one which was converted into a cruise vessel from a cargo barge), increasing the capacity of the fleet by an additional 181 beds. As no ship was removed from the fleet in 2018, and taking into account the usual alterations to other ships, the net increase in 2018 was 13 vessels with about 1,462 beds (+ 2.9% compared to + 5.5% in 2017).

**10** entirely new cruise vessels and three modernised vessels were introduced to the European market in 2018

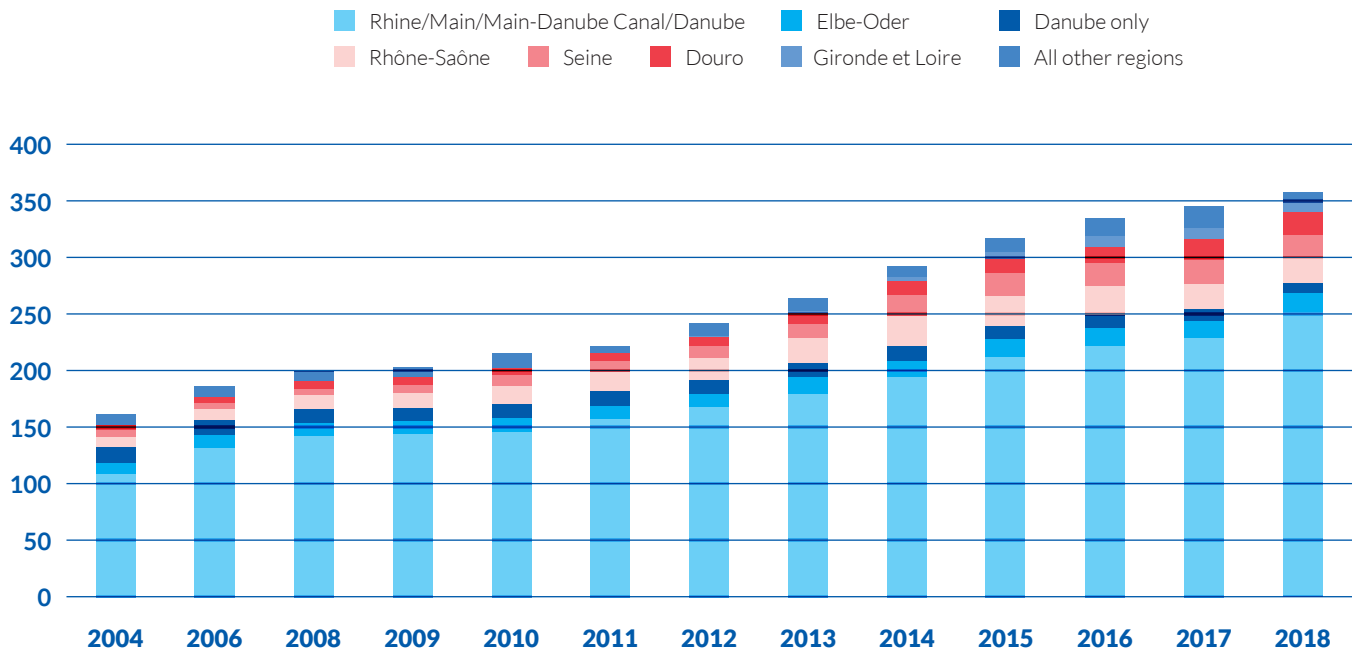


The Rhine and the Danube have been interconnected since the completion of the Main-Danube Canal in 1992, allowing easy and permanent transfer of vessels between the Rhine and Danube basins. Regarding transfer of vessels between isolated European rivers (for instance between the Rhine and the Seine), the number of transferred vessels has been quite small over the years but has recently increased. Indeed, some vessels, which often navigate for the first time on the Rhine or the Danube, can then be transported years later to other rivers such as the Rhône or the Seine. Recently, more ships than before were ordered directly for navigation on the Rhône or the Douro (especially in 2017).

<sup>30</sup> Rhine/Main/Main-Danube Canal/Danube/Elbe-Oder

<sup>31</sup> The European River cruise fleet, as it is defined in this report, comprises the fleet in the EU and in Switzerland.

## NUMBER OF RIVER CRUISE VESSELS IN THE EU BY REGION OF OPERATION (2004 - 2018)



Source: Hader, A. (2018), *The River Cruise Fleet*

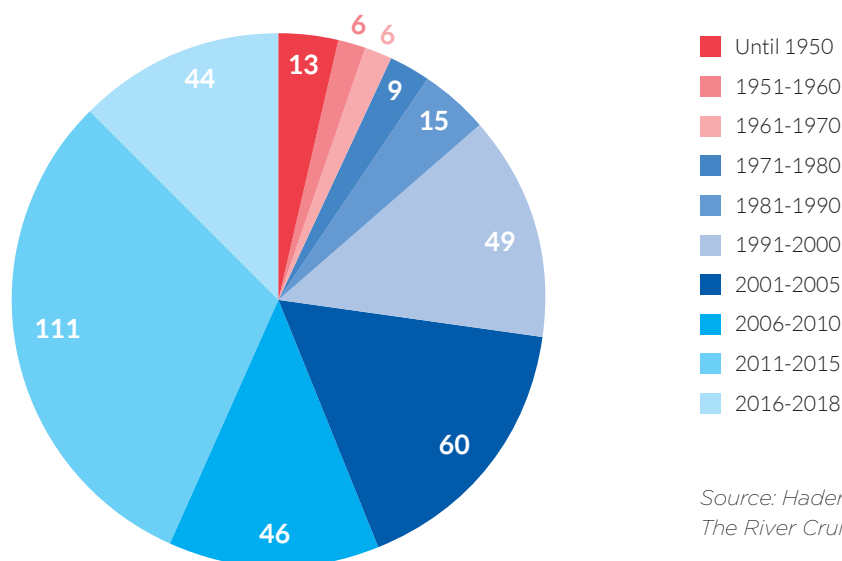
Until the 1990s, the fleet expanded at a slow pace. Indeed, cruise vessels from before the 1990s only make up 13.6% of today's river cruise fleet. The age structure of the European fleet shows that the number of newbuildings then started to grow until reaching a peak between 2011 and 2015, a period during which 31% of the current fleet was built. This extreme expansion came to an end in 2016, mainly due to the terrorism threat in Europe.

Terrorism outside the EU region can also be a factor reducing fleet expansion. For instance, after the terrorist attacks of 2001 in the USA, companies with a high share of American customers (Grand Circle, Holland River and Viking River) invested less into new vessels for Rhine and Danube voyages, due to American customers being less attracted to cruises outside the USA.

The river cruise fleet in Europe grew by 195 vessels between 2004 and 2018 – an increase of

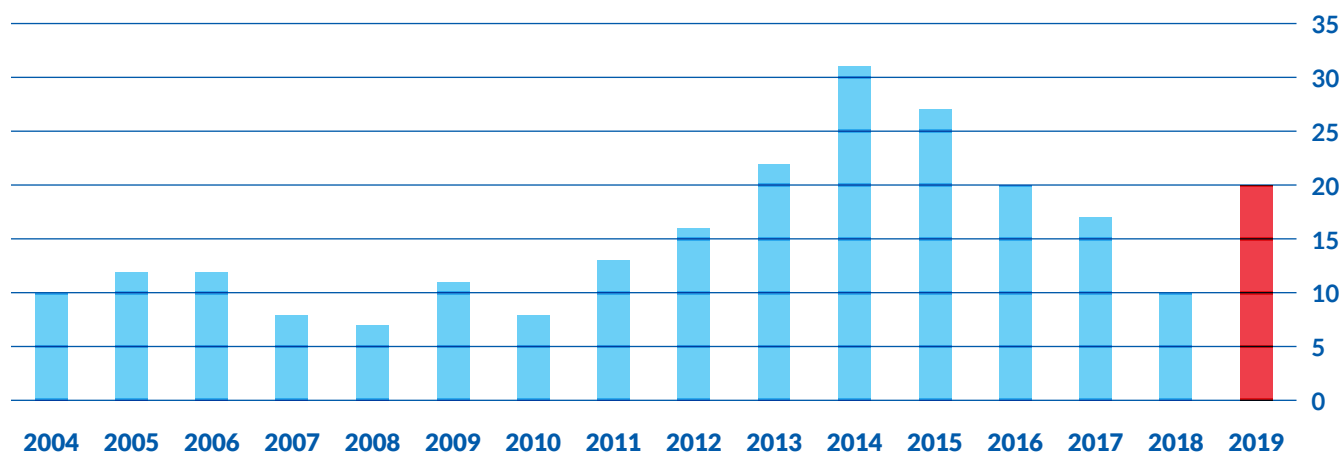
**119%**

### NUMBER OF RIVER CRUISE VESSELS IN THE EU BY YEAR OF CONSTRUCTION



In 2019, the number of new ships is expected to rise to 20 (two times higher than in 2018). The increase in demand from American customers and a healthy demand in the German speaking market can mainly explain this rise.

### NEW RIVER CRUISE VESSELS FOR THE EUROPEAN MARKET 2004-2019\*



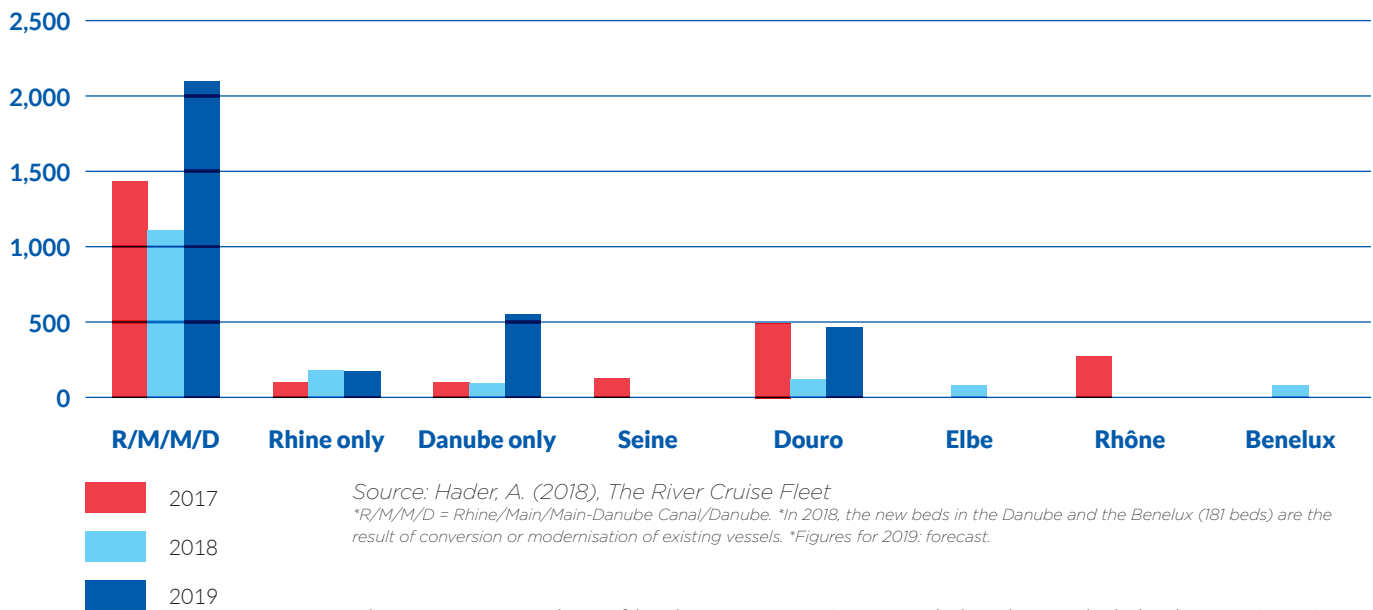
Source: Hader, A. (2018), *The River Cruise Fleet*.

\*2019: forecast based on order books

Compared to the year 2017, when a strong regional diversification was observed for newbuildings, in 2018, only one new vessel was deployed on a river disconnected from the Rhine and Danube (on the Douro). Two converted vessels were ordered to operate directly in the Benelux region.

Prevision for the year 2019 shows that four new vessels should operate on the Douro out of the 20 expected newbuildings and corresponding to 14% of the expected new bed capacity.

## NEW CRUISE CAPACITIES IN 2017, 2018 AND 2019 PER REGION OF OPERATION (NUMBER OF BEDS) \*\*\*



The average number of beds on new cruise vessels has been slightly decreasing since 2012 to reach 150 in 2018. However, based on order books, the average number of beds for the newbuildings in 2019 is expected to rise to 165 beds.

Indeed, eight large cruise vessels with high passenger capacity (superior or equal to 190 beds) are planned to be delivered in 2019. Those large vessels will represent 46% of the new bed capacity in 2019 and will all navigate either on the Danube or on the Rhine/Main/ Main-Danube Canal/Danube. The largest river cruise vessel ever built for Europe, the AMAMAGNA (for 196 passengers), will be part of the 2019 delivery.

The figure below shows the evolution of active river cruise vessels worldwide, which amounts to 875 vessels in total in 2018. **Europe has the largest river cruise fleet today**, followed by the Nile and other African rivers.

The active cruise fleet in Europe represents  
**41%** of the world active cruise fleet

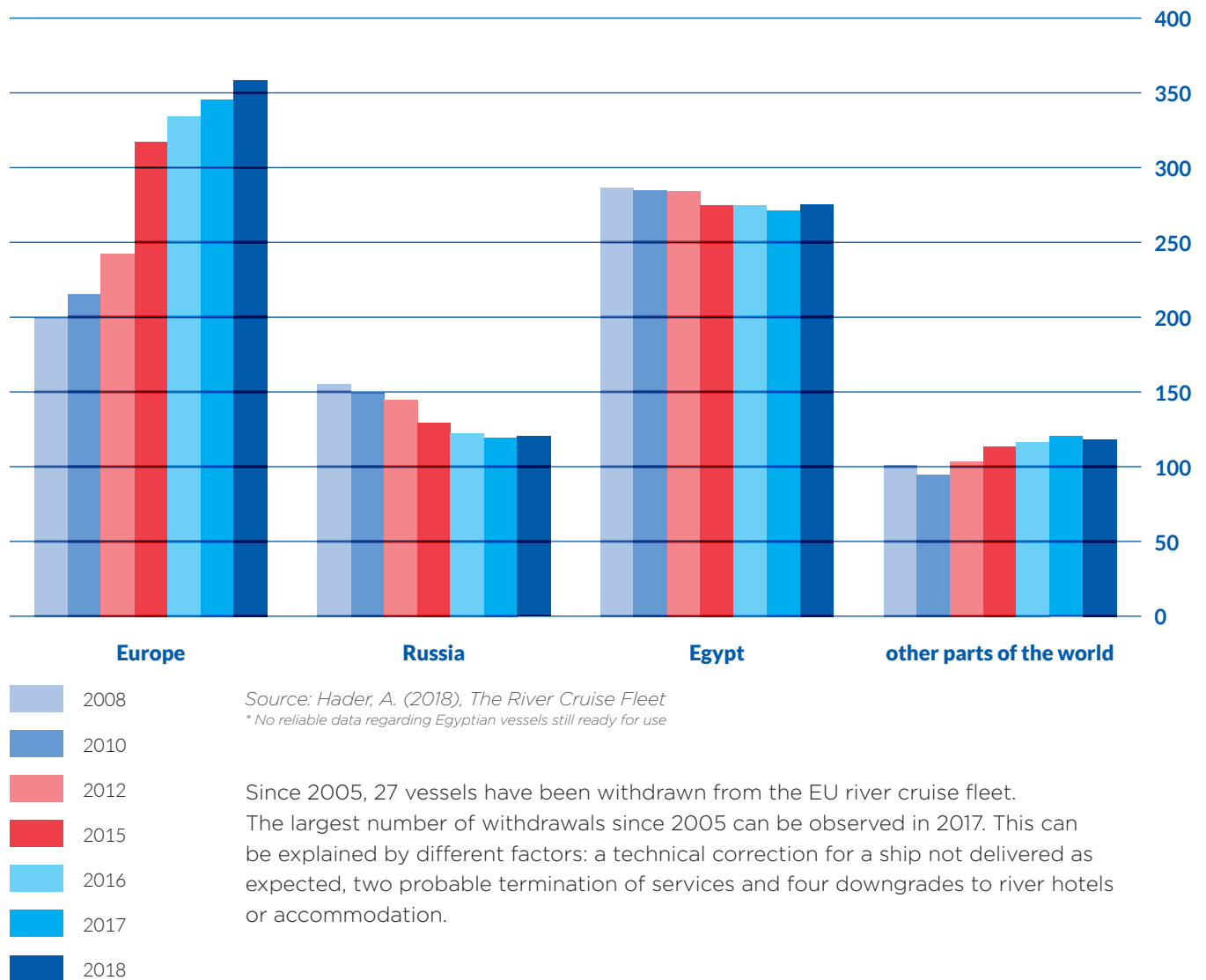
Today, the Nile fleet remains quite large, with close to 280 cruise vessels. However, while the EU fleet has grown faster than ever in recent years, the business in Egypt has been and is still suffering from an important political crisis. The situation of the Nile fleet seems to be slowly improving.

After a constant decrease in the Russian fleet since 2004, the cruise fleet in Russia gained one new boat in 2018, totaling 121 cruise vessels (compared to 120 in 2017). The fleet in Russia and Ukraine however remains quite old on average. In the wake of the political developments in Russia and the Ukraine, the number of foreign river cruise tourists has declined in these countries which represents of course no major incentive for a renewal of the fleet.



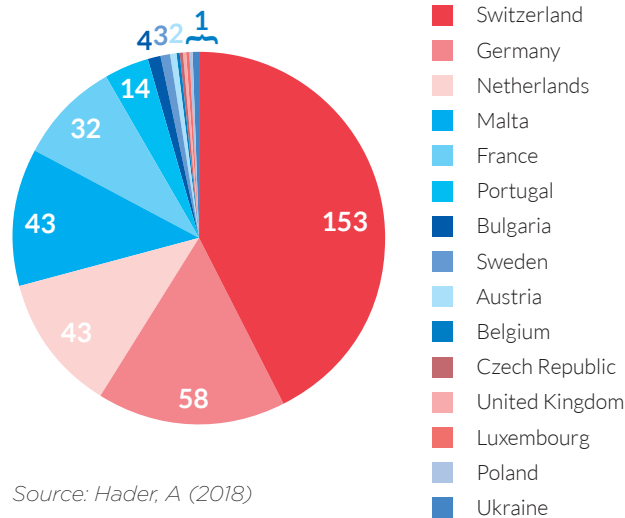
While the American cruise fleet only contributes to a low extent to the world river cruise fleet, it can be observed that the US fleet has consistently been rising since 2011. The fleet in Asia is also following a similar trend.

#### DISTRIBUTION OF RIVER CRUISE VESSELS PER REGION WORLDWIDE (NUMBER OF VESSELS) \*



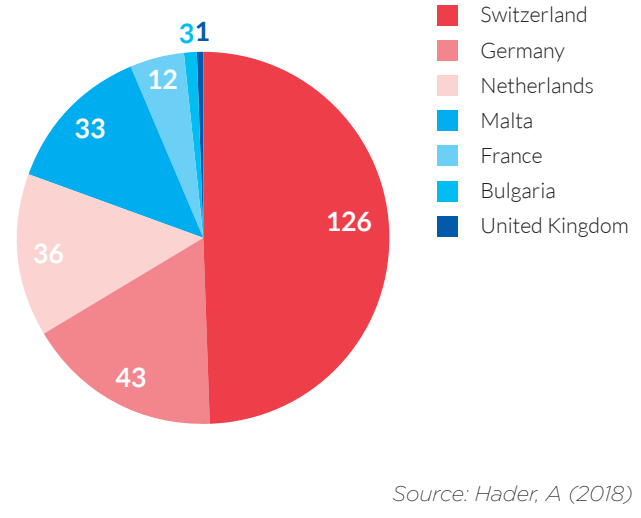
**In 2018, the demand was so important**  
that new vessels were introduced to the EU market,  
and no single vessel was withdrawn

### RIVER CRUISE VESSELS REGISTERED IN THE EU REGION (IN NUMBER OF VESSELS)



Source: Hader, A (2018)

### RIVER CRUISE VESSELS REGISTERED IN THE RMD<sup>32</sup> AREA (IN NUMBER OF VESSELS)



Source: Hader, A (2018)

There were 153 ships, or 43% of European river cruise vessels in the EU region, registered in Switzerland. In terms of number of registered vessels, Switzerland not only dominates the EU region, but also that of the Rhine-Main-Danube (R-M-D). Switzerland also holds a large share on the Rhône-Saône river, the Seine and the Elbe. This can be explained by the fact that many shipping companies have their headquarters in Basel and in other Swiss cities. Most of these river cruise vessels belong to tour operators based in the USA but which are managed in Switzerland.

In Germany, 58 river cruise vessels are registered, and comes in second position. The distribution among the rivers shows similarities with Switzerland. There are as many river cruise vessels registered in the Netherlands and in Malta, both placed in third position, with 43 vessels each. Vessels registered in the Netherlands sail mainly on Dutch rivers while those registered in Malta sail mainly on the Rhine-Main-Danube area and occasionally in France. Operators of vessels registered in Malta are shipowners from the USA, Australia, Malaysia, Slovakia and the Netherlands.

In France, 32 river cruise vessels are registered, coming in fourth position and sailing mainly on French waters. In Portugal, 14 river cruise vessels are registered, sailing mainly on the Douro. The popularity of the Douro has increased sharply recently. The majority of the fleet is operated by a Portuguese company.

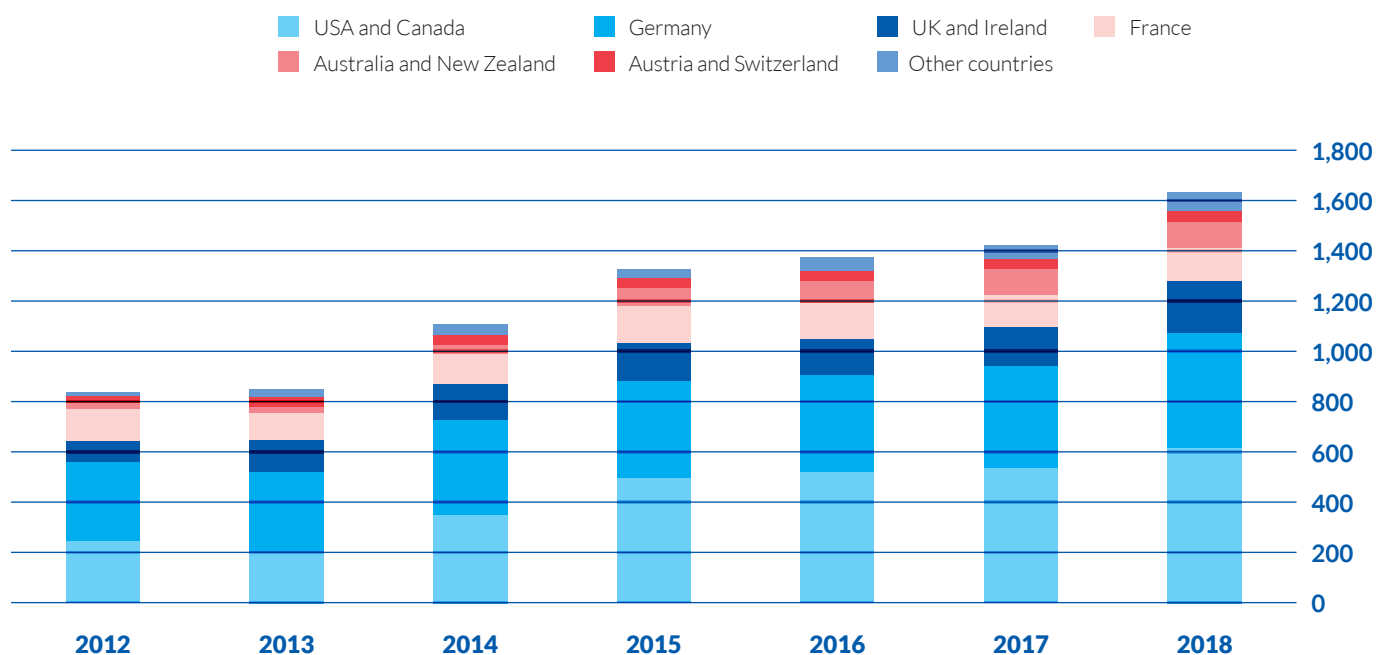
Four vessels are registered in Bulgaria, which sail on the Danube. This fleet is currently being modernised in order to be allowed to navigate on the Rhine. Three vessels that navigate on the Göta Canal between Stockholm and Gothenburg are registered in Sweden. In Austria, only two Danube ships are registered. One river cruise vessel is registered in each of the following countries: Belgium, Luxembourg, Czech Republic, the UK, Poland and Ukraine. Many different countries of registration can also be found on the Elbe and on the waterways between the Elbe, the Oder and the Baltic Sea coasts. Since the fleet structure is very similar on the Seine and the Rhône, the countries of registration of vessels sailing on those rivers are also similar.

<sup>32</sup> Rhine/Main/Main-Danube Canal/Danube area

# DEMAND FOR RIVER CRUISES

Despite low waters, the river cruise industry experienced a boom in 2018. The number of river cruise passengers on European rivers increased by 14.6% to reach 1.64 million. US-Americans and Canadians were again the most important source market with a share of 37.7%, followed by Germans (28.1%) and British and Irish (12.8%).

## NUMBER OF PASSENGERS ON EUROPEAN CRUISE VESSELS BY NATIONALITY (IN 1000)



Source: IG River Cruise / German Travel Association (DRV) / SeaConsult

The strong growth in 2018 reflects the increase of capacities in recent years. In 2018 alone, the net increase of capacities was 13 vessels and about 1,462 beds. Low waters did not threaten the activity too greatly, since a lot of regions of operation were not severely impacted by low waters. This was the case in particular for French regions, which experienced strong demand growth in 2018.

Another explanation is a swift shift in the age structure of travelers. 2018 brought a wave of younger people wishing to experience river cruise vessels. The share of German travelers in the age group 41-55 rose from 11.8% to 18.3% in 2018. The share of persons aged 26-40 was more than four times higher in 2018, with a share of 8.3% in 2018 compared to only 2% in 2017.<sup>33</sup>

<sup>33</sup> Source: IG River Cruise / DRV / SeaConsult (2019), Der Fluss-Kreuzfahrtmarkt 2018



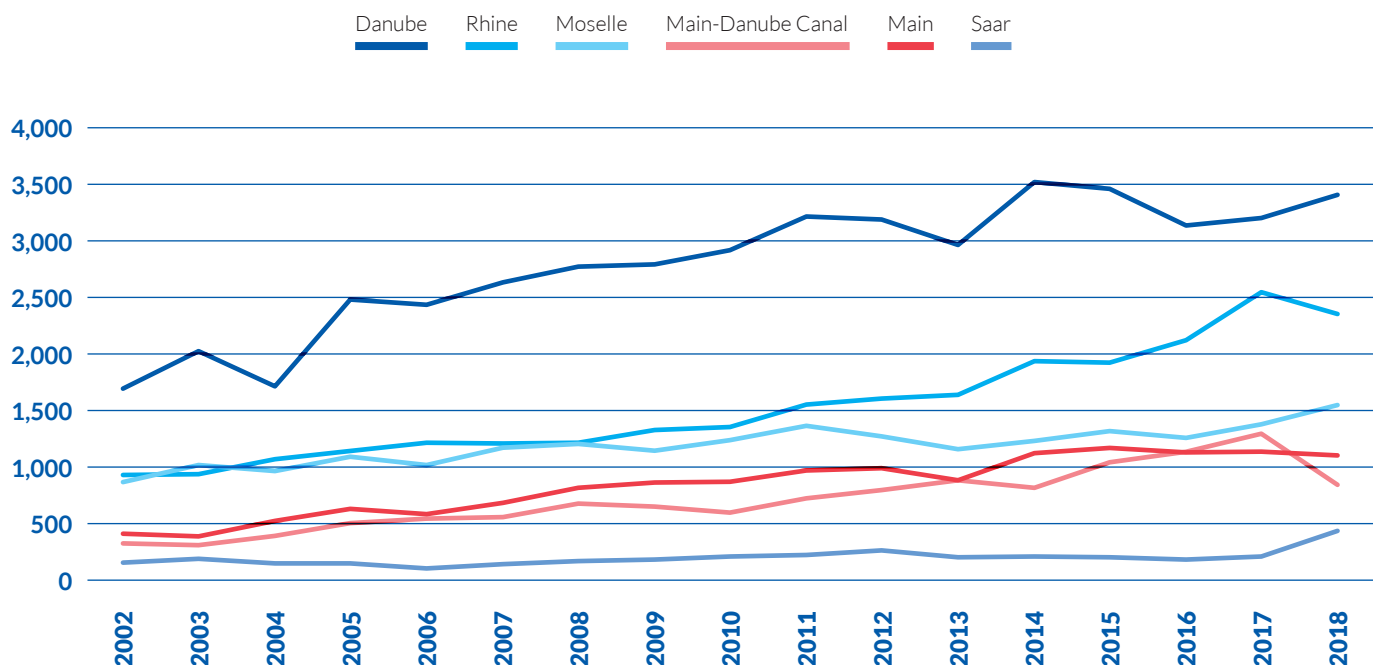
## Among German river cruise tourists, the share of the age group 26-40 years was four times higher in 2018 than the previous year

Another new trend is the strongly increasing preference of German river cruise passengers for high-price-segments: the premium segment increased its market share from 39.4% in 2017 to 45.6% last year, while the luxury and ultra-luxury segments (taken together) rose from a share of 6.3% in 2017 to 14.3% in 2018. Due to the overall demand increase, and the rising importance of premium and luxury segments, the revenues from ticket sales reached a record high in 2018. Revenues from tickets purchased by German tourists increased by 18% compared to 2017.

With regard to nationalities, the group of travelers with the highest demand growth in 2018 were 'other nationalities', which comprise tourists from Asia, Russia, Scandinavia and Eastern Europe. Their numbers in total increased by 41%. The second strongest growth was observed for British and Irish tourists (+31%). The numbers for the two largest nationalities (US-Americans/ Canadians and Germans) increased at about the same rate (14.3% and 14.7% respectively).

Data on the number of cruise vessels passing locks along Rhine, Danube, Moselle and other rivers show an increase for the Danube of 6% in 2018. On the Moselle, the figures at the lock of Koblenz reflect an increase of vessels by 12%. On the Saar, cruise vessel traffic more than doubled.

### YEARLY NUMBER OF CRUISE SHIP TRANSITS ON EUROPEAN RIVERS\*



Source: Generaldirektion Wasserstraßen und Schifffahrt

\*Sum of upstream and downstream traffic of cabin vessels at the following locks: Jochenstein (Danube), Iffezheim (Rhine), Koblenz (Moselle), Kelheim (Main-Danube Canal), Kostheim (Main), Kanzern (Saar).

The curve for the Mosel is based on cabin vessels passing the lock of Koblenz, where the Mosel joins the Rhine. The figures for 2018 reveal a real boom of cruise traffic on the Mosel. In 2018, the number of cabin vessels passing the Koblenz lock was 1,542, and 12% higher than in 2017. According to the *Mosel Commission*, other locks along the Mosel also registered strongly rising cruise vessel numbers in 2018: the locks of Zeltingen and Fankel, located along the romantic Mosel valley between Koblenz and Trier, saw 971 and 1,062 cruise vessels passing in 2018 (+19% and +25%).<sup>34</sup>

The curve for the Danube shows the number of cabin vessels passing the German-Austrian border, which is 32 km downstream from Passau. This city is an important point of departure and arrival for Danube cruises going to Vienna or Budapest, or even further downstream. The number of cabin vessels passing the German-Austrian border increased by 6% in 2018 and reached 3,406 transits.

Cruise traffic from Passau downstream consists of short trips of 5, 7 or 8 days on the routes Passau-Vienna-Bratislava-Budapest-Passau and Vienna-Bratislava-Budapest, as well as trips to and from the Rhine and Main ports. The number of these short cruises can furthermore be observed on the basis of the lock of Gabčíkovo at the Slovakian-Hungarian border. According to the *Danube Commission*, the number of cabin vessel transits at Gabčíkovo was 3,945 in 2018, carrying 548,800 passengers.

Passau is also a point of departure for longer trips, to the Danube delta with a duration of 14, 15 or 16 days. The number of passengers and ship transits for these trips can be observed by looking at the figures of the lock of Mohacs in southern Hungary. There were 754 cabin vessel transits in 2018, which corresponds to 106.6% of the 2017 figure. The number of passengers for these longer Danube trips was 103,560 in 2018 (+6.6% compared to 2017).<sup>35</sup>

<sup>34</sup> Source: *Mosel Commission (2019), Verkehrszahlen Mosel 2018, March 2019.*

<sup>35</sup> Source: *Danube Commission (2019), Marktbeobachtung der Donauschifffahrt – Bilanz 2018, April 2019.*



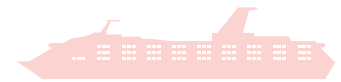
# RIVER CRUISE VESSELS WITH 10 TO 39 BEDS IN EUROPE

## Introduction

The river cruise fleet with 10 to 39 beds is older than the river cruise fleet with 40 beds or more. Most small river cruise vessels are former cargo vessels that have been converted into cruise vessels since the 1980s (Freycinet type).

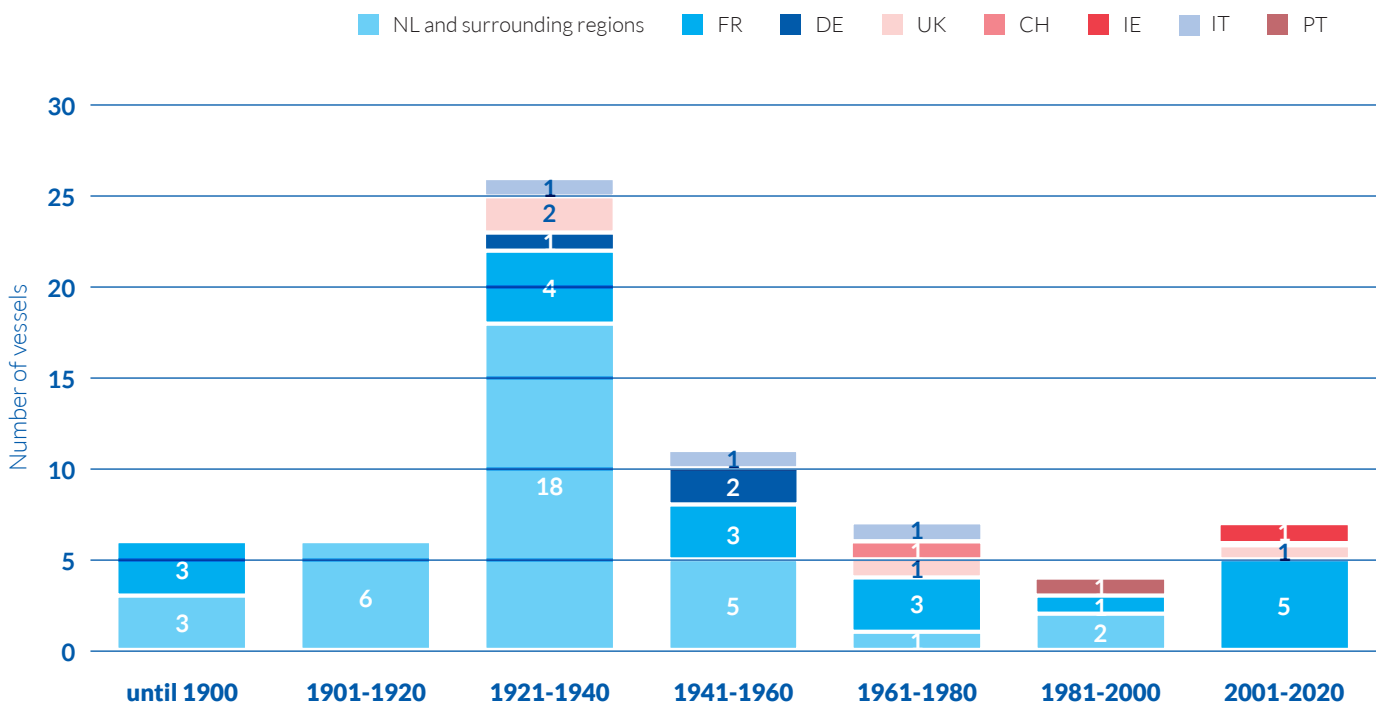
The analysis of the fleet showed that there are 67 small river cruise vessels navigating on European rivers. There are also several vessels with less than 10 beds operating on European rivers and canals. Those vessels were not taken into account in this analysis.

Despite the rather old age of small river cruise vessels in Europe, this fleet can be modern, even luxurious, and blends well with the historic canals and city views. This fleet is also well suited for a picturesque and gourmet tour.



The fleet of small river cruise vessels navigating in Europe is composed of **67 vessels,** the majority of which **50 years old** are more than

## AGE STRUCTURE OF SMALL RIVER CRUISE VESSELS IN EUROPE (BY YEAR OF CONSTRUCTION AND REGIONS OF OPERATION)



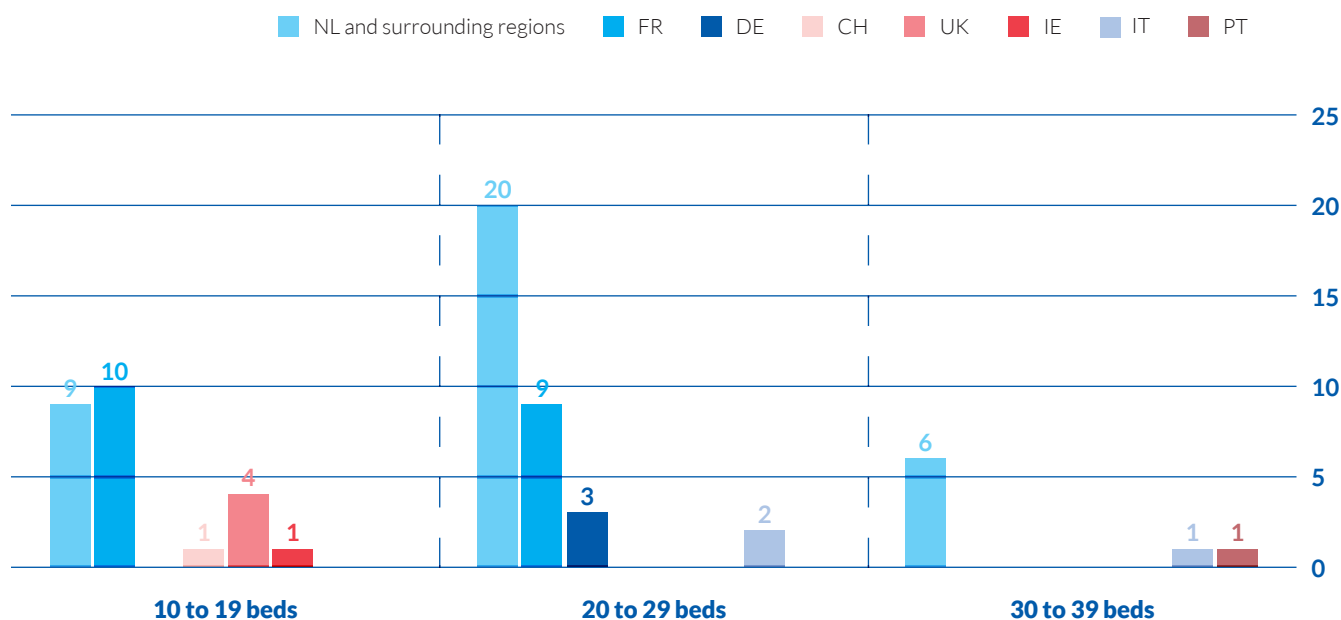
Source: A. Hader; January 2019



In the oldest group (vessels built before the 1900s), three ships were built in 1897 and three others at an unknown date. Six vessels were built between 1906 and 1913. The age class with the highest number of small cruise vessels contains vessels built in the 1920s and 1930s. There are 26 small river cruise vessels that belong to this age class and they have mostly been converted from former cargo vessels.

Since that time, the newbuilding activity for such small vessels continued to decrease until the end of the years 2000: 11 vessels built between 1941 and 1960, seven between 1961 and 1980, and four between 1981 and 2000. Between 2001 and 2019, seven new vessels were built. Out of these, five were ordered by *CroisiEurope* between 2014 and 2016. The number of newbuildings is very low compared to the more than 250 new larger river cruise vessels built during the same period.

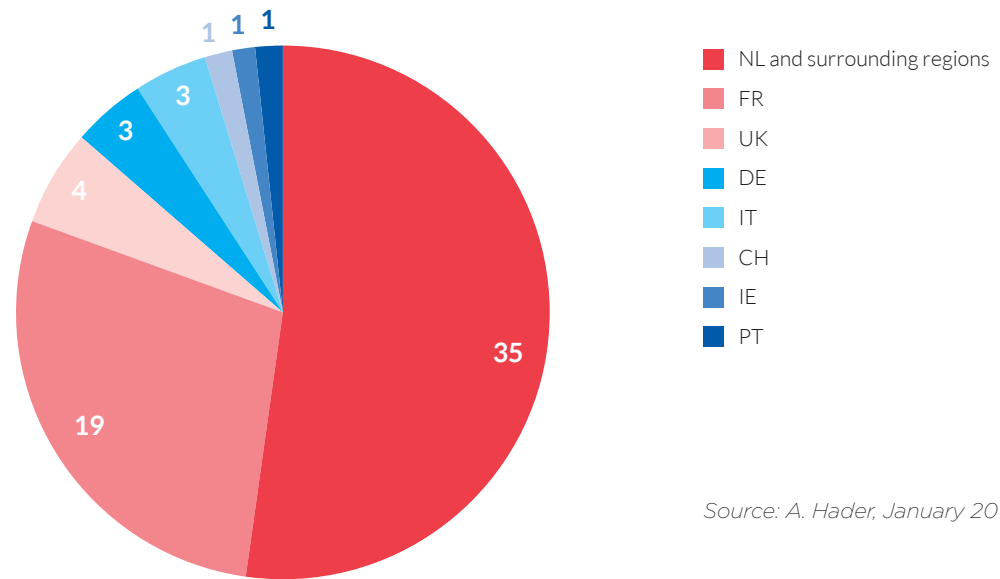
#### CAPACITIES OF SMALL RIVER CRUISE VESSELS IN EUROPE (IN NUMBER OF BEDS AND REGIONS OF OPERATION)



Source: A. Hader, January 2019

Approximately half (34) of the 67 small river cruise vessels have a capacity of between 20 and 29 beds, with 25 having a capacity of between 10 and 19 beds. Only a few vessels (8) have a capacity between 30 and 39 beds. Among the 25 small river cruise vessels of the smallest group, the common capacity is 12 beds.

#### CRUISING AREAS OF SMALL RIVER CRUISE VESSELS (IN NUMBER OF VESSELS)



The distribution of the vessels per cruising areas reveals that there are two regional niches for small river cruises.

The larger one is the Dutch network of rivers and canals, with 35 small river cruise vessels cruising in this area. Many of those can offer round trips in the Netherlands but also across the Belgian, French and German borders. This region is popular as many cyclists use the small river cruise vessels as a hotel when changing locations.

The second popular cruising areas are the French canals, with 19 small river cruise vessels in operation, mainly in Bourgogne and Provence. On French canals, there are no small river cruise vessels with more than 30 beds. *CroisiEurope* has however built a new series of five vessels with 22 beds in recent years. Another French peculiarity are the very small river cruise vessels, which often have only four to eight beds, but are not included in this analysis.

The rest of small river cruise vessels, 13 in total, are distributed among six other countries. In Germany, there are only three such vessels. The German river cruise vessel fleet is dominated by larger vessels. In the United Kingdom, only four small river cruise vessels navigate in Scotland and on the Thames. It is worth noting that many vessels with less than 10 beds also navigate on narrow canals in the United Kingdom but were not taken into account in this analysis. In Italy, three ships navigate on the Venice lagoon or the Po River, one of them being registered in the Netherlands. On the Shannon river in Ireland, most river cruise vessels also have less than 10 beds. Only one vessel built after the year 2000 fits within the chosen criteria for this analysis and belongs to the smaller group category.

**80%** of small river cruise vessels navigate on the Dutch 🇳🇱 (35 vessels) and/or French 🇫🇷 (19 vessels) networks of rivers and canals







# 08

## DAY TRIP VESSELS

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- Germany (913), the Netherlands (510), France (365), Italy (352) and Switzerland (255) register the highest number of day trip vessels in Europe.
- Day trip vessels are an important field for the introduction of new clean technologies. For instance, a 38-meter day trip vessel was introduced on the Seine in Paris in 2018, equipped with 100% electric propulsion.
- Overall, the number of day trip vessels in Rhine countries is rather stable. In large cities, the size of the fleet mostly follows an increasing trend.

# INTRODUCTION

Passenger transport on inland waterways has three main segments of activity: river cruises, day trips on rivers/canals (including ferry traffic) and day trips on lakes. According to Eurostat [sbs\_na\_1a\_se\_r2], the five countries in Europe with the highest turnover in passenger transport are (share of European turnover in percentage points): Switzerland (23.3%), Germany (20.3%), Italy (15.5%), France (13.9%), the Netherlands (8.4%). According to Eurostat definitions, turnover in passenger navigation on inland waterways contains turnover generated by river cruise vessels, day trip vessels on rivers/canals and ferries, and day trip vessels on lakes. Separate turnover figures are not available.

There are currently no Eurostat data on the number of passenger vessels or on the number of passengers on inland waterways.<sup>36</sup> Therefore, a statistical analysis of the national databases of European countries was undertaken, and revealed that Switzerland, Germany, Italy, France, and the Netherlands not only have the highest turnover of all European countries, but also the highest number of day trip vessels (on rivers/canals and lakes taken together, including ferries).

For Germany, Italy, the Netherlands, France and Switzerland, separate vessel databases for day trip vessels are available. For other countries, in Central and Eastern Europe, only the total number of passenger vessels is indicated by statistical offices or administrations. Nevertheless, it is possible to determine the number of day trip vessels for these countries as well, in an indirect way, by taking into account the number of river cruise vessels for each European country (see chapter on river cruises).

By applying this indirect calculation, information on the number of day trip vessels in Poland, the Czech Republic, Slovakia, Hungary and Romania results as follows: out of 117 passenger vessels in Poland, 116 are day trip vessels. The number of passengers was 1.26 million in 2017, compared to 1.28 million in 2016 and 1.1 million in 2015.

In the Czech Republic, there were 88 passenger vessels in 2017, compared to 85 in 2016 and 78 in 2015. Out of the 88 passenger vessels in the Czech Republic's register in 2017, 87 are day trip vessels and one is a cruise vessel. In Slovakia, a country with not many lakes, there are currently less than 20 passenger vessels registered.

The passenger vessels in Hungary, Slovakia and Romania are all day trip vessels, as none of these countries has a river cruise vessel (see chapter on river cruises). Hungary has a rather high number of day trip vessels (132 in 2017), due to the Danube and the Lake Balaton. The number of day trip passengers on the Danube has decreased in recent years from 709, 000 passengers in 2005 to 216,000 passengers in 2016 due to rising ticket prices. However, the number of passengers on Lake Balaton has remained rather constant over the years and counted 531,000 passengers in 2016.<sup>37</sup> In Romania, 75 passenger vessels were registered in 2017 and 2016, and 65 in 2015.<sup>38</sup>

<sup>36</sup> In 2019, pilot studies were launched by Eurostat in order to develop databases in the future.

<sup>37</sup> Source: Information provided by the Hungarian Statistical Office

<sup>38</sup> Source: Romanian Statistical Institute

Short profiles of the top five countries for the number of registered day trip vessels in Europe:



Germany not only has many rivers, but also many lakes, especially near the Alps and in the north-eastern parts of the country, but less lake vessels registered than in Switzerland or Italy. On the other hand, the number of day trip vessels active on rivers or canals in Germany is the highest in Europe.



The country holds an important position in the day trip vessel segment, where its importance is maybe best shown by the famous day trip vessels in Amsterdam. We will see that the age structure of the Dutch day trip vessels is very similar to that of the German day trip vessels on rivers and canals.



The three segments of passenger navigation are all present in France, but the river segment is the most important. Day trip vessels in Paris, for example, transport more than 7 million passengers per year. Paris has a share of 70% in terms of passengers transported on French day trip vessels.



Switzerland has the highest number of day trip vessels on lakes in Europe. Day trip vessels on rivers, however, play only a very small role. Day trip vessels following a scheduled service on lakes are integrated in the public transport system. More than 11 million passengers are counted each year on these vessels.



The strongest focal point of the country in terms of passenger transport is the lake segment, where Italy has the second highest number of day trip vessels navigating on its lakes. The demand analysis shows that the number of passengers is as high as in Switzerland for this segment. Despite the fact that day trip vessels active on rivers only play a minor role, it is worth nothing that passenger transport on the canals in Venice is not negligible for Italy's economy (161 vessels active in Venice).



# DAY TRIP VESSELS

## ON RIVERS AND CANALS

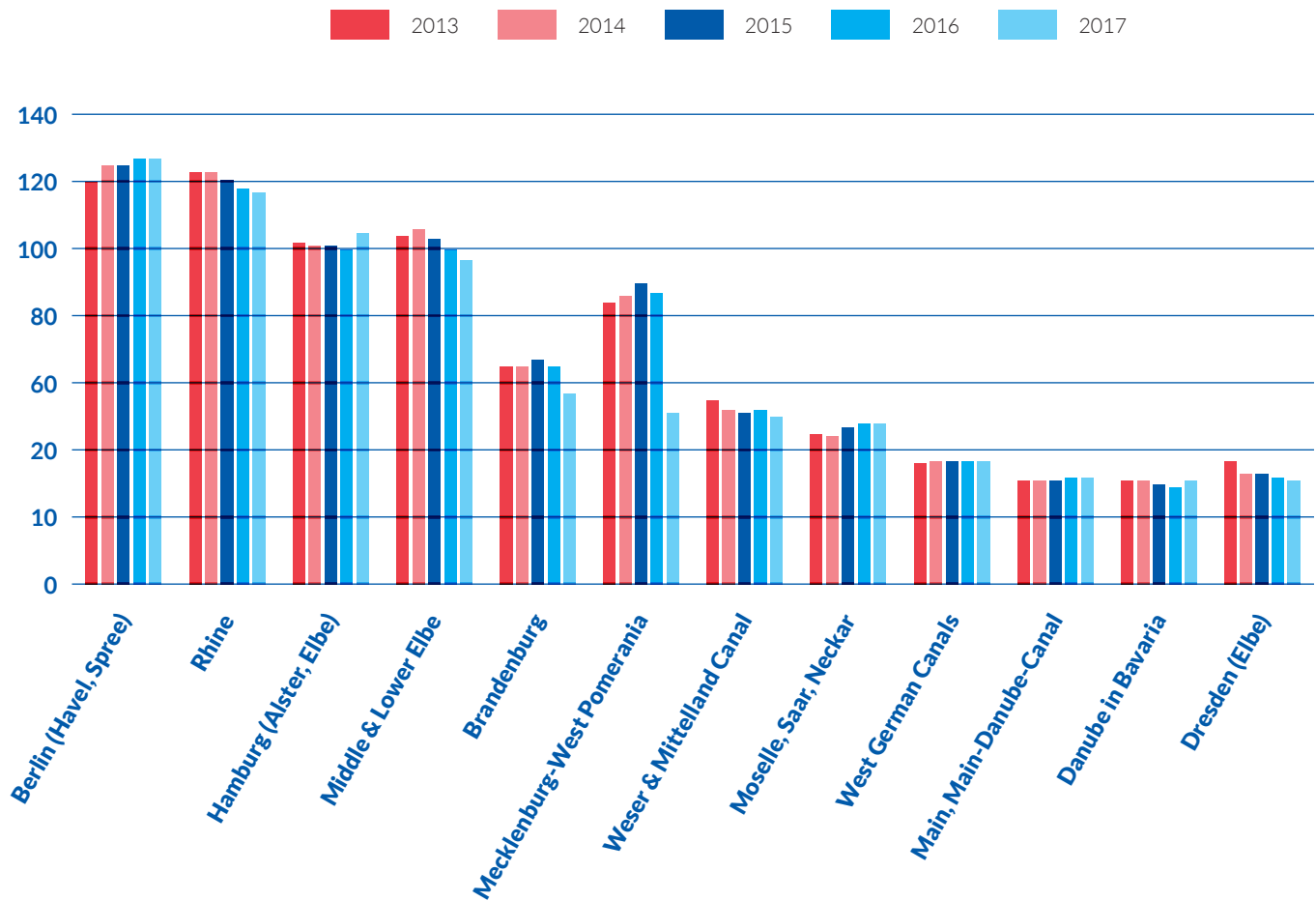


The two largest German cities, Berlin and Hamburg, play an important role in this segment, as does the Rhine. In Berlin, 127 day trip vessels were registered in 2017 with a home port in Berlin and thus operating on Havel and Spree as well as on the canals in and around Berlin. Hamburg follows close behind, with 105 vessels on the Alster and Elbe. Berlin and Hamburg are also the two German regions where the number of registered day trip vessels has increased the most during the last 10 years: between 2007 and 2017, the number of day trip vessels increased by 25 in Hamburg, and by 14 in Berlin. In terms of capacity (passenger seats), Hamburg registered the strongest growth (+26%) in Germany between 2007 and 2017.

In this market segment, the season has been extended from an “Easter to October” scheme by offering boat trips before Christmas. This had not only a positive effect on turnover, but also on the persons working in the sector, who are now mostly hired on a permanent basis, compared to seasonal job contracts in the past.

In general, day trip vessels are also an important field for the introduction of new clean technologies. Ship owners currently favour the replacement or conversion of existing day trip vessels rather than new construction. It might be explained by the enforcement of new European technical requirements (from 2008 to 2018) but also important uncertainties regarding alternative propulsion systems in the light of environmental regulations in urban centres.

## NUMBER OF DAY TRIP VESSELS ON RIVERS AND CANALS IN GERMANY PER REGION



Source: CCNR analysis based on German vessel database (ZBBD)

The Rhine accounts for 31,155 passenger places. Hereby, the romantic Middle Rhine (famous for its castles and small towns) holds 55% of these capacities, the lower Rhine (with large cities such as Cologne or Düsseldorf) 40% and the Upper Rhine 5%.

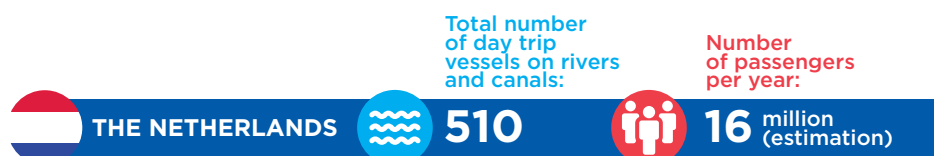
Comparing these figures with the graph on the number of vessels above, it can be noted that the average number of passenger seats per day trip vessel differs from one region to another. Rhine vessels have a rather large average capacity of 266 seats, similar to vessels on the Moselle & Saar (279). Danube vessels are the largest, with an average of 347 passenger seats in 2017.

In Berlin (168) and Hamburg (187), the day trip vessels are much smaller, due to the restricted size of waterways, locks and low bridges in cities (for example, the bridges in the *Speicherstadt* in Hamburg, built in 1888).

**GERMAN REGIONS WITH HIGHER CAPACITIES OF DAY TRIP VESSELS (PASSENGER SEATS)  
IN 2017 COMPARED TO 2007, INCLUDING GROWTH RATE (%)**

Region	2017 / 2007 in %
Hamburg	+26%
Danube in Bavaria	+16%
Lower Elbe	+8%
Upper Rhine	+7%
Moselle & Saar	+6%
Berlin (Havel & Spree)	+5%
Middle Elbe	+3%
Dresden and Upper Elbe	+2%
Main & Main-Donau-Kanal	+2%

Source: calculation CCNR based on German vessel database (ZBBD)



In the Netherlands, day trip vessels represent an integral part of tourism, especially in Amsterdam with its small canals (*Grachten*), an UNESCO world heritage site since 2010. According to the city of Amsterdam<sup>39</sup>, 165 of these canals exist in the city, with a total length of 75 km. The oldest Gracht dates from 1385. There are 14 locks in the network and 1,282 bridges and, according to the city's information, the number of *rondvaartboten* (day trip vessels) amounts to Amsterdam 110.

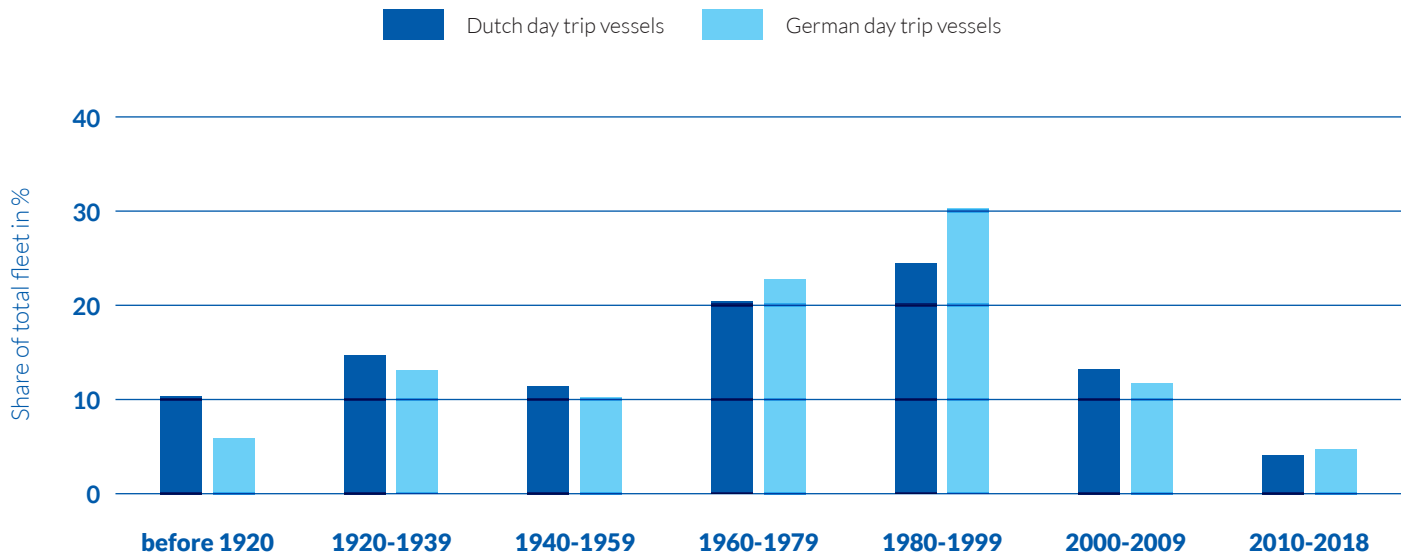
According to the IVR vessel database, more day trip vessels are active in Amsterdam: 143 day trip vessels<sup>40</sup> in the IVR database have Amsterdam as home port, or are owned by companies which have their headquarters in Amsterdam. These 143 vessels represent 28% of the total number of day trip vessels in the country.

The comparison with the age structure of the German day trip vessels (on rivers/canals) reveals a similarity in the overall picture (see following graph). Data on the years of construction (source: IVR) show that only a very small part of the Dutch day trip vessels were built after 2009, which is explained by ship owners currently favouring the replacement or conversion of existing day-trip vessels rather than new construction.

<sup>39</sup> <https://amsterdam.org/nl/feiten-en-cijfers.php>

<sup>40</sup> The following vessel types of the IVR database were hereby taken into account: day cruise ships, passenger ships Amsterdam type, passenger ferries, passenger ships < 45 m.

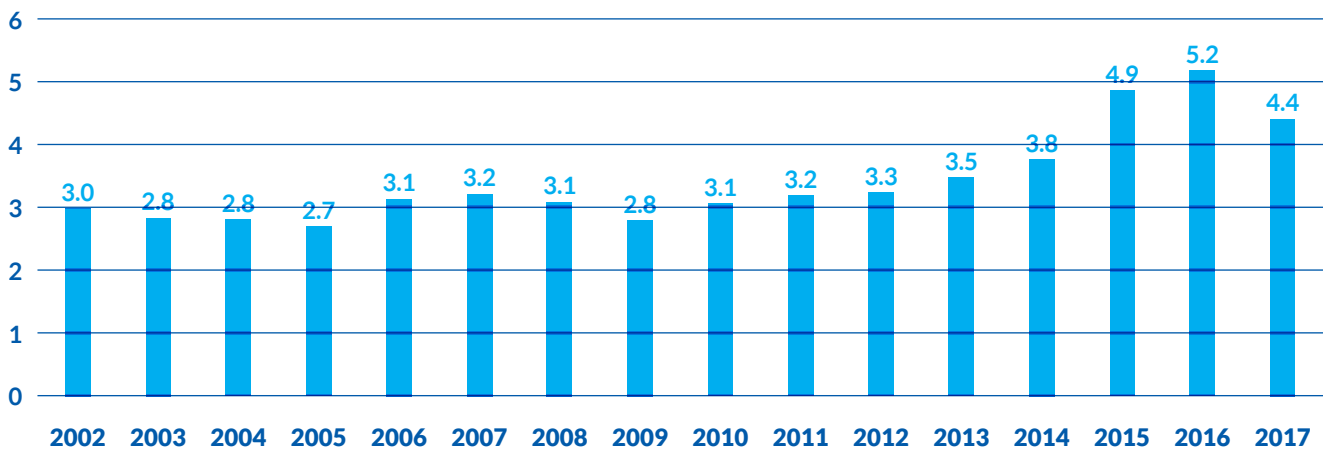
### AGE STRUCTURE OF DAY TRIP VESSELS ON RIVERS OR CANALS IN THE NETHERLANDS AND IN GERMANY (IN %)



Source: CCNR analysis based on IVR database (NL) and ZBBD (DE).

With regard to demand, there are no official data on the passengers transported over the whole country, but figures provided by the city of Amsterdam are available.

### NUMBER OF PASSENGERS ON DAY TRIP VESSELS IN AMSTERDAM (IN MILLION PERSONS)



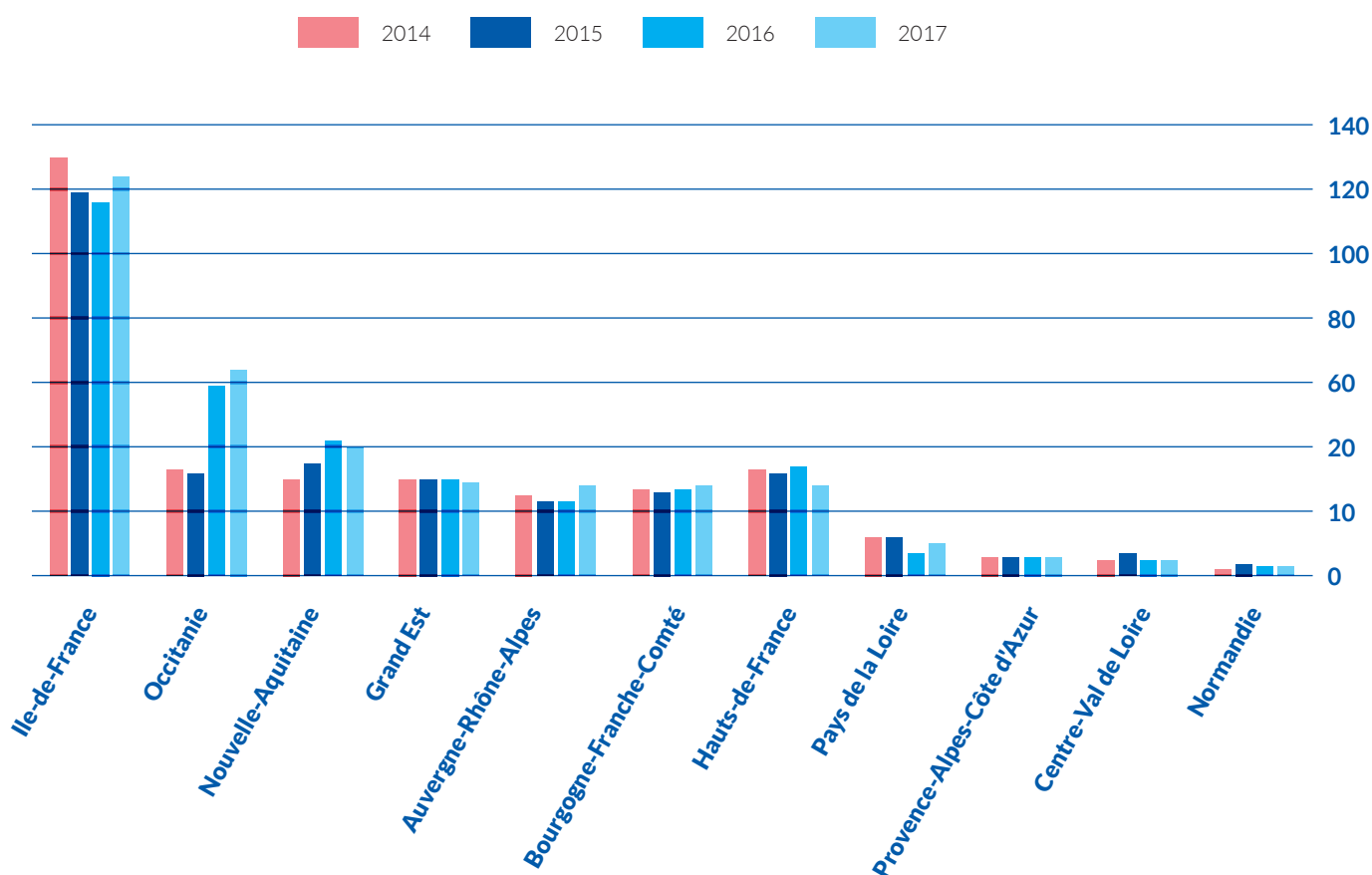
Source: City of Amsterdam (Kerncijfers Amsterdam)

An increasing trend is observed for the years since 2010. The peak in the year 2016 correlates with a strong fall in another major European city – Paris. Indeed, passenger transport in Paris and the surrounding Ile-de-France region decreased strongly in 2016, mainly due to the terrorist attacks. The combined results for both cities show that crisis-situations have an impact on tourists' behaviour, who tend to switch from one destination to another.



The average capacity per vessel differs considerably between Paris (233 passenger seats) and all other parts of France (78). On the national level, where the overall average value amounts to 130, the strong differences in the size of vessels and in touristic concepts is therefore hidden.

#### NUMBER OF DAY TRIP VESSELS ON RIVERS AND CANALS IN FRANCE PER REGION

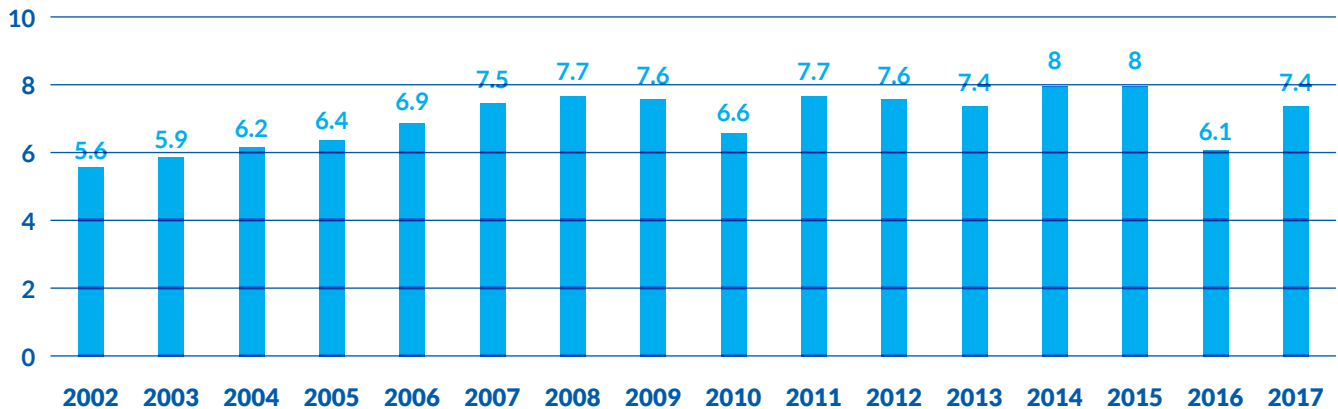


Source : Voies Navigables de France (VNF)

The share of Paris and the surrounding region of Ile-de-France is 34% in terms of number of vessels, 61% in terms of capacity (passenger seats) and 70% in terms of passengers transported. This confirms not only the larger size but also the higher degree of utilisation of the Paris day trip vessels. More than half of all passengers in Paris (61%) were foreign tourists in 2017, while this share was only 54% in 2014.

The following figure on the passenger demand in Paris shows the strong decrease of passengers in the wake of the terrorist attacks in Paris in 2015 and 2016, as mentioned above. Passengers now seem to have returned after these crisis years. This is also true for river cruise vessels in Paris (see chapter on river cruises).

### NUMBER OF PASSENGERS ON DAY TRIP VESSELS IN PARIS AND ILE-DE-FRANCE REGION (IN MILLION PERSONS)



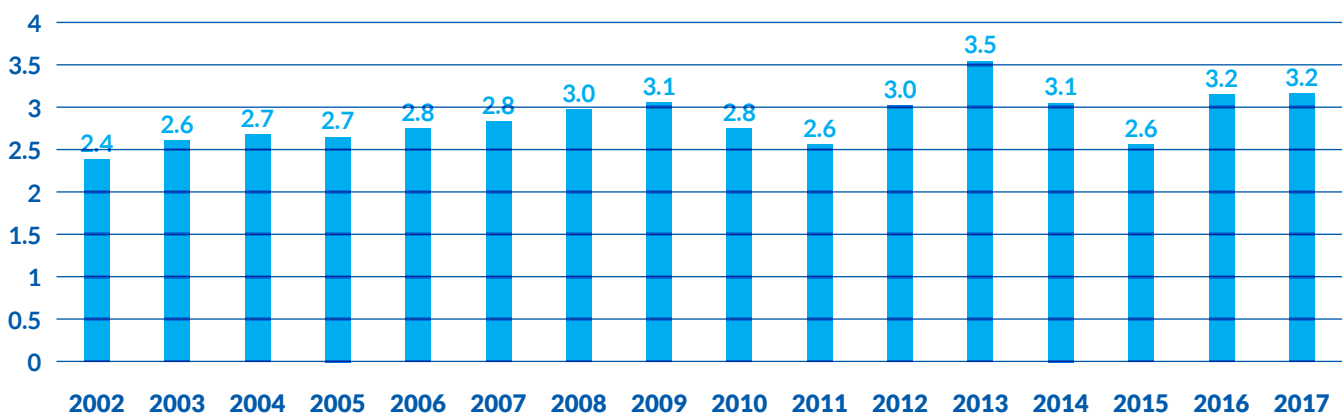
Source : Voies Navigables de France (VNF)

In Paris, some new developments of the fleet should be mentioned as well: trimaran vessels are being developed, with an electric propulsion, and equipped with audio-guides (instead of loudspeakers) in 14 languages, including the languages of three BRIC countries (Hindi, Russian, Chinese).

Innovation knows no limits. In 2018, a new, 38-meter-long vessel for the Seine was introduced in Paris, equipped with 100% electric propulsion (no noise, no vibrations), and hosting a Michelin star restaurant. The prices are 100 Euro for a lunch menu with three courses, and up to 500 Euro for dinner, with five courses and wines included.<sup>41</sup> The rising share of rather wealthy foreign tourists from BRIC countries on the boats in Paris supports the business idea of this company.

All other French regions taken together hosted 3.2 million tourists on their boats in 2017. Among these, there are also 0.77 million passengers on day trip vessels in Strasbourg.<sup>42</sup> The fleet in Strasbourg includes 10 boats in 2019, each with a capacity of 90-100 seats. The company *Batorama* plans to acquire other small boats, the so-called "river taxis", for luxury discovery trips in small groups. Among other projects led by the company, since 2014, it has organised a city tour which includes a visit to the European Parliament.

### NUMBER OF PASSENGERS ON DAY TRIP VESSELS IN ALL OTHER REGIONS IN FRANCE (IN MILLION PERSONS)



Source : Voies Navigables de France (VNF)

<sup>41</sup> See the article in *Le Parisien* (August 30<sup>th</sup> 2018): Alain Ducasse lance son navire ecole et gastronomique sur la Seine.

<sup>42</sup> Source: *Batorama*



# DAY TRIP VESSELS

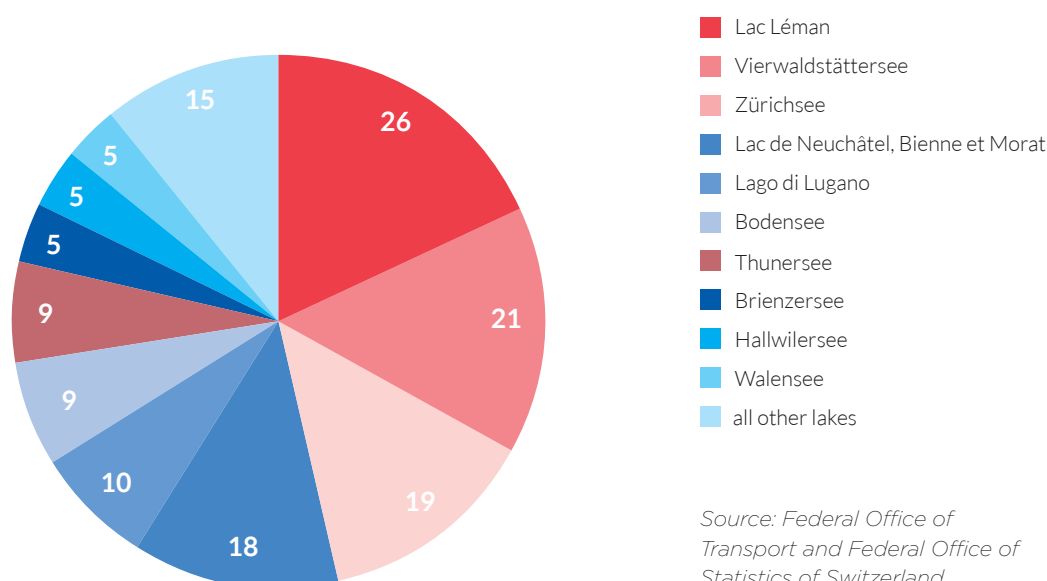
## ON LAKES



In Switzerland, 150 day trip vessels (of which 142 are active on lakes) belong to the category of public transport. This means that these vessels are open to the public, follow a scheduled service, and therefore require a federal licence.<sup>43</sup> The companies that own and operate these vessels can be public or private. Due to the scheduled services (regular timetables for the transport service), a certain overlap between touristic and public passenger transport can be assumed for these vessels. Their number has been quite stable since the year 2000.<sup>44</sup>

The second group of day trip vessels in Switzerland are those which do not follow a scheduled service, but are used for day trip tours, for entirely touristic purposes. According to the *Federal Office for Statistics*, there are currently 105 of these vessels active on Swiss lakes. These two groups of public and private transport vessels form the entire day trip vessel fleet on lakes in Switzerland (247 vessels in total). The operating area of the 142 vessels that follow a scheduled service (public transport) are shown in the following figure.

**NUMBER OF VESSELS ON LAKES IN SWITZERLAND FOLLOWING A SCHEDULED SERVICE (2018)**



<sup>43</sup> Source: Information provided by the Federal Office for Statistics of Switzerland. The large majority of day trip vessels in Switzerland are active on lakes. Eight vessels are active on the Swiss part of the Rhine and two on the Rhone.

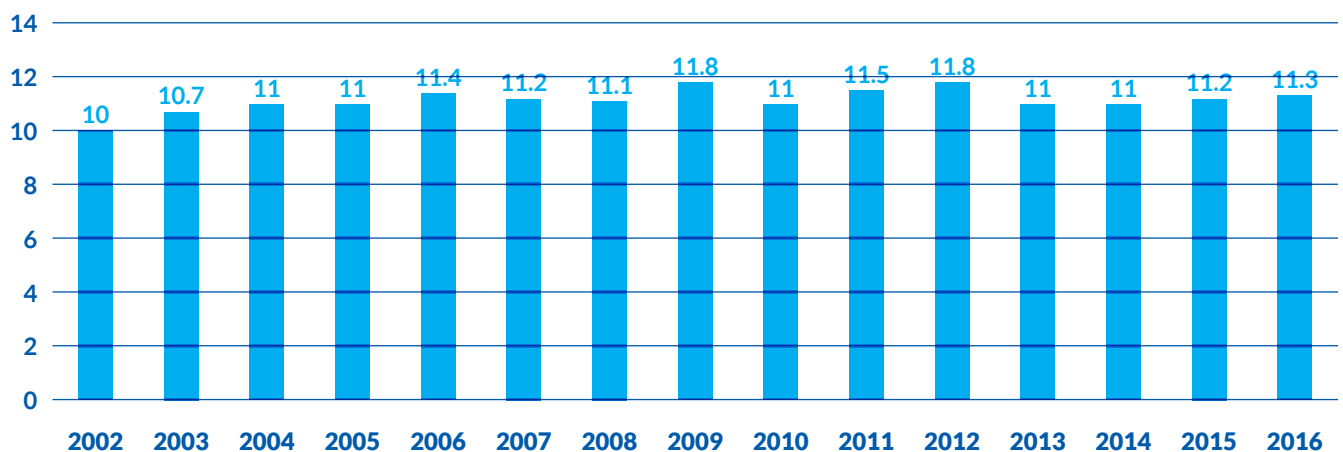
<sup>44</sup> Source: Federal Office for Statistics of Switzerland

Among the 142 vessels that follow a scheduled service, there are 16 steam-boats, of which eight are active on Lac Léman, five on the Vierwaldstättersee, and the remaining five operate on Zürichsee, Thunersee, Lac de Neuchâtel and Brienersee. Three of the eight steam-boats active on Lac Léman are now equipped with diesel-electric propulsion systems driving paddle wheels.

Regarding the number of passengers, the Federal Office of Statistics produces data for the number of passengers transported by the 142 vessels following scheduled services, but not for the vessels which do not follow a scheduled service. The Office states that the number of passengers transported by the first group of vessels is much higher than the number of passengers transported by the second group of vessels.

The passenger figures for Switzerland can be compared to the number of passengers transported on lake vessels in Italy (also scheduled service vessels), presented in the next part of this report. The results show a very similar number of passengers in both countries, but for the year 2012, a drop can be observed in Italy, possibly due to the economic crisis.

#### NUMBER OF PASSENGERS TRANSPORTED BY VESSELS ON LAKES (SCHEDULED SERVICES) IN SWITZERLAND (IN MILLION PERSONS)



Source: Federal Office of Statistics of Switzerland

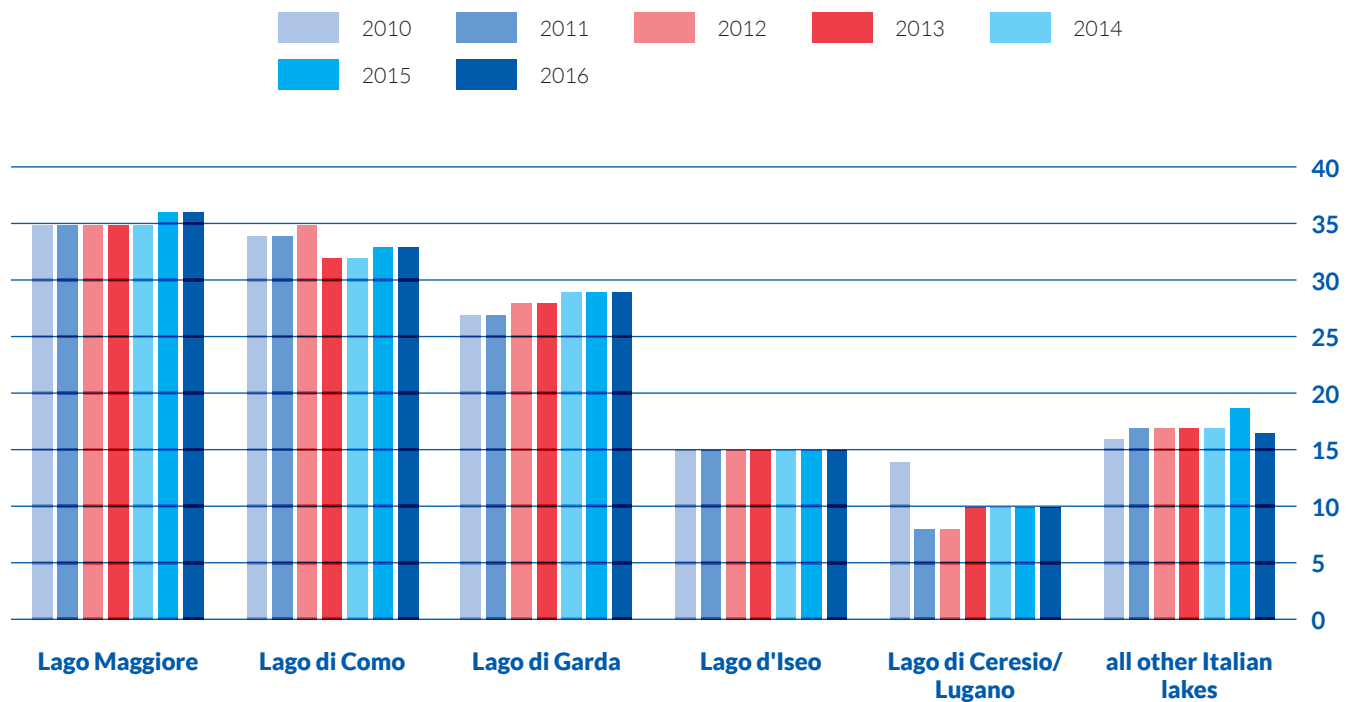




According to the Italian Ministry of Transport, in 2016 there were 138 vessels on Italian lakes following a regular liner traffic, which is the equivalent of the scheduled service in Switzerland. Recent figures for vessels not operating on a regular liner service are not available, but the latest available figures point to a number of around 53 for this type of lake vessel.<sup>45</sup>

The three lakes Lago Maggiore, Lago di Como and Lago di Garda account together for 71% of all Italian lake vessels operating on a scheduled service. The number of vessels has remained rather constant in recent years.

#### NUMBER OF LAKE VESSELS FOLLOWING A SCHEDULED SERVICE IN ITALY BY REGION (2016)

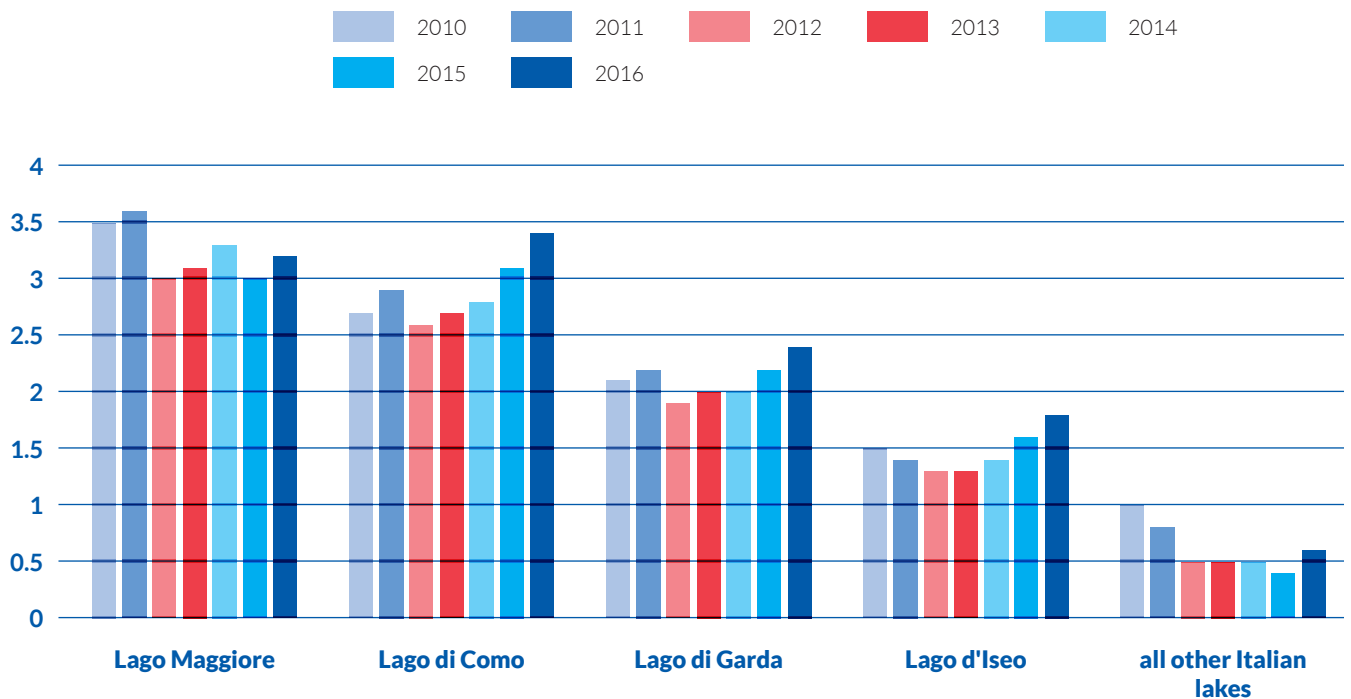


Source: Italian Ministry of Transport (Conto Nazionale delle Infrastrutture et Trasporto)

The total number of passengers within liner traffic (11.4 million passengers) is distributed according to the capacities on the lakes in a quite logical manner.

<sup>45</sup> Figure for 2009, source: Italian Ministry of Transport

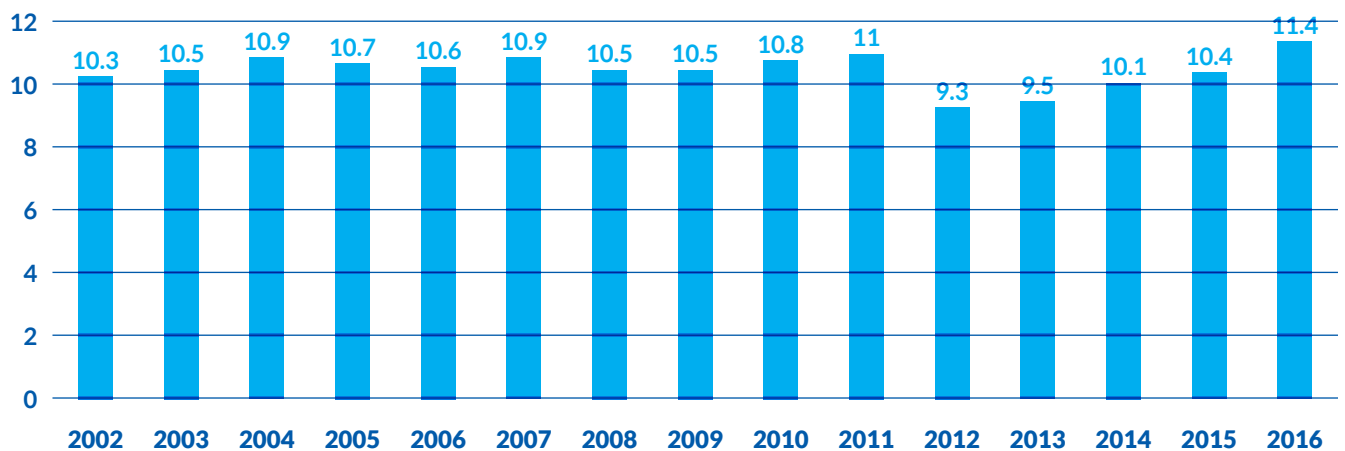
### NUMBER OF PASSENGERS ON LAKE VESSELS FOLLOWING A SCHEDULED SERVICE IN ITALY PER REGION (IN MILLION PERSONS)



Source: Italian Ministry of Transport (Conto Nazionale delle Infrastrutture et Trasporto)

As previously mentioned, the demand on lake vessels in Italy dropped quite significantly in 2012, but regained strength afterwards. This could be explained by the economic crisis in 2011 and 2012, which had a more severe impact on the Italian economy than on the Swiss economy.

### NUMBER OF PASSENGERS TRANSPORTED BY VESSELS ON LAKES (SCHEDULED SERVICES) IN ITALY (IN MILLION PERSONS)



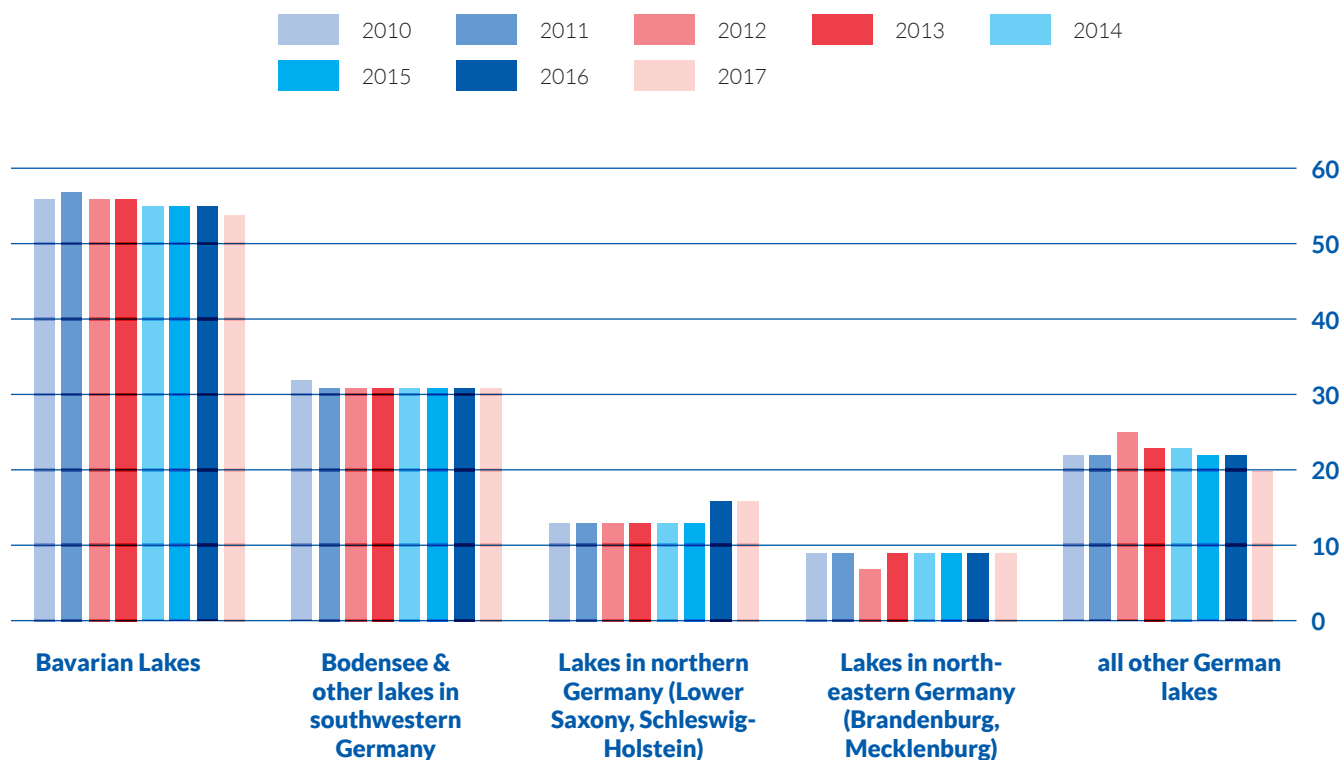
Source: Italian Ministry of Transport (Conto Nazionale delle Infrastrutture et Trasporto)



The hotspots of day trip vessels on lakes in Germany are the regions in the south, with Bavarian lakes (Chiemsee, Starnberger See, Ammersee, Königsee, etc.) and the Bodensee, which is an international lake, shared by Germany, Switzerland and Austria. The lakes in Bavaria had 54 vessels in 2017 with a total capacity of almost 14,000 passenger seats. They represent 45% of the total capacity (passenger seats) in Germany. The average capacity of a lake vessel in Bavaria is of 259 seats.

The vessels on the Bodensee and other lakes in the south-western state of Baden-Württemberg are even larger, with an average capacity of 343 passenger seats. Lake vessels in the north-eastern parts of Germany (Lake district in Brandenburg and Mecklenburg) are much smaller, with an average capacity of only 57 passenger seats.

#### NUMBER OF VESSELS ON LAKES IN GERMANY BY REGION



Source: CCNR analysis based on German vessel database

In Bavaria, some companies have to guarantee regular ferry service to islands located in some lakes. The same goes for lakes, rivers and coastal areas in other German federal states (e.g. Hamburg, Mecklenburg, Berlin). Apart from these services, passenger navigation operations are not viewed as part of public transportation services.

# SURVEY AMONG COMPANIES

## ACTIVE IN DAY TRIP NAVIGATION

### Introduction

A questionnaire was developed and sent to 201 day trip navigation companies.<sup>46</sup> The completed questionnaire was returned by 55 companies (response rate = 27.4 %). The questionnaire contained several questions regarding economic trends in the day trip navigation sector, investment plans, greening activities, short-term and long-term influencing factors for the demand side, etc.

Companies in Germany had a share of 46% among the 201 companies that were contacted, and a share of 54% of all companies that returned the completed questionnaire. Companies in the Netherlands and in France each had a share of 17.5% of all companies contacted, and both countries had also the same share within all completed questionnaires (14.5% each). Two more Rhine countries (Belgium and Switzerland) each made up 7.3% of all completed questionnaires. Although Rhine countries represented around 98% of all received (completed) questionnaires, the questionnaire had also been sent to companies in Danube countries as well as in countries in Central and eastern Europe. Non-Rhine countries taken together had a share of 12.4% of all companies that were contacted.

The most important results of the survey are shown in the figures below. The idea is to make similar surveys also for future market observation reports, covering other market segments, for example the liquid cargo or the dry cargo sector.

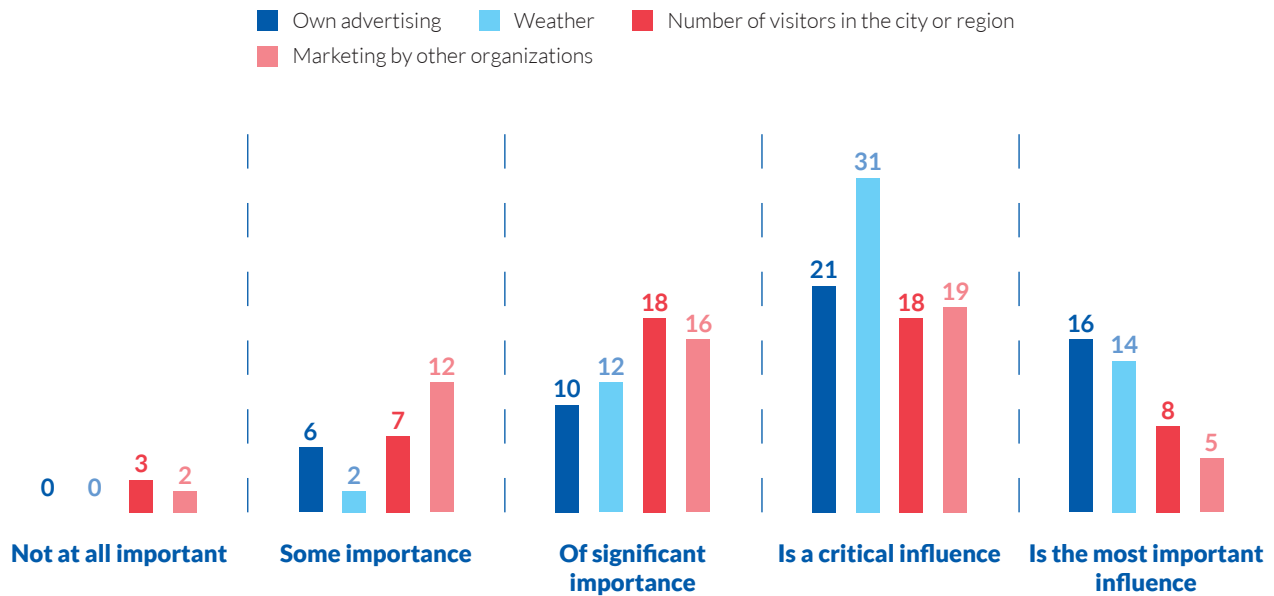
### Main results of the survey

It appears that the two most important short- and medium-term factors for passenger demand are the company's own advertising/marketing activities, followed closely by the weather. The number of visitors in the city or in the region is less important than these two main factors. This might be explained by the fact that in certain regions, passenger demand comes mainly from the population living in the region itself.

<sup>46</sup> Questionnaire available on request



### IMPORTANCE OF INFLUENCING FACTORS FOR PASSENGER DEMAND IN THE SHORT- AND MEDIUM-TERM – CONDENSED SURVEY RESULTS (QUESTION 2) \*

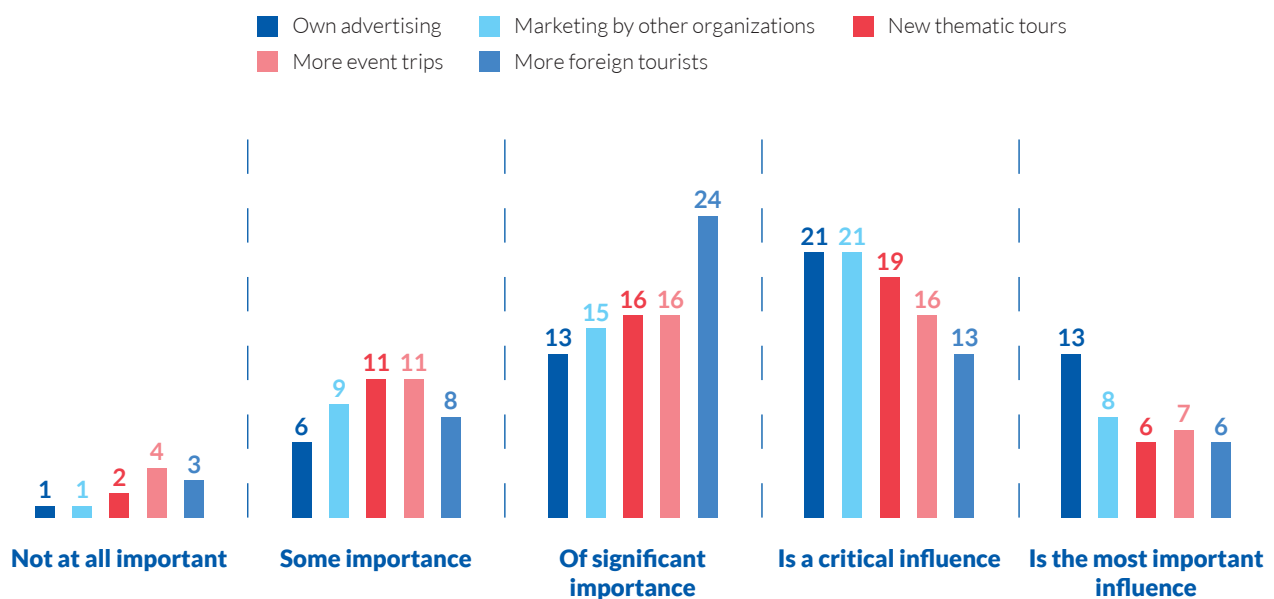


Source: CCNR survey

\* Figures in the chart show the number of companies that answered the question in the indicated way.

Marketing activities by other organisations were specified in the questionnaire as activities performed by the city, the region, the state, or by tourist associations, professional or trade associations. It shall be seen in the next figure that these 'external' marketing activities become more important in the long run.

### IMPORTANCE OF INFLUENCING FACTORS ON PASSENGER DEMAND IN THE MEDIUM- AND LONG-TERM – CONDENSED SURVEY RESULTS (QUESTION 3) \*



Source: CCNR survey

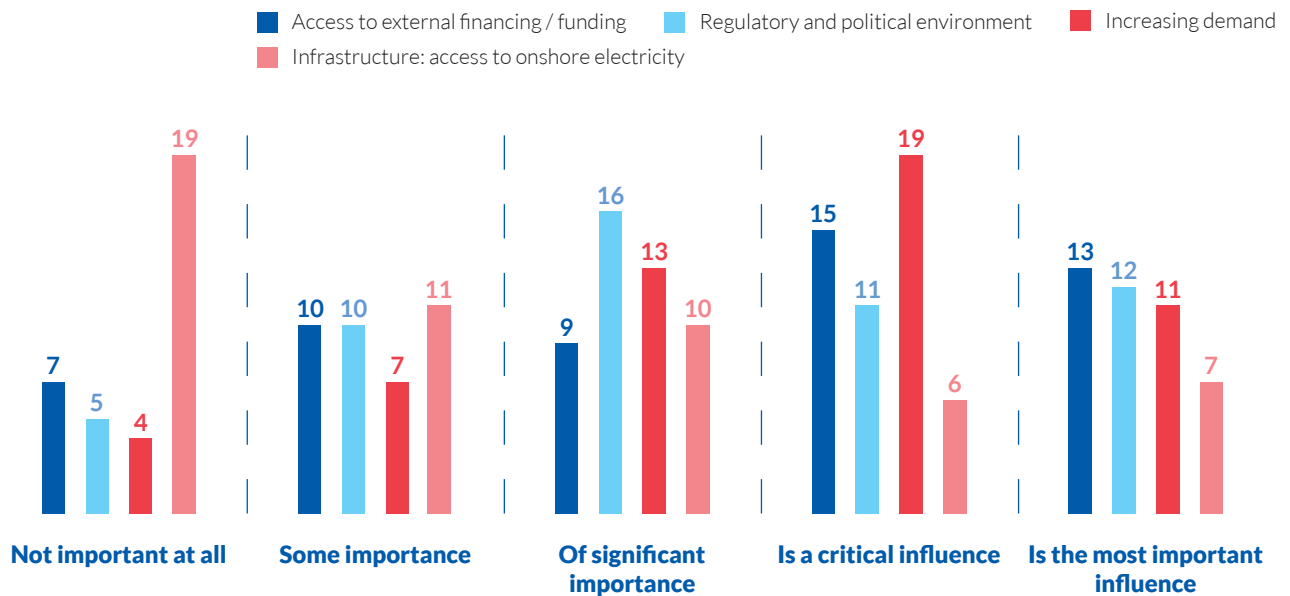
\* Figures in the chart show the number of companies that answered the question in the indicated way.

In the middle and long run, passenger demand for day trip vessels is also strongly influenced by the company's own marketing activities. However, in contrast to the short run perspective, marketing activities by other organisations play a much greater role in the long run perspective and are in second place.

New thematic tours and more event trips are factors that seem to bear the same influence. The number of foreign tourists in the city or region is considered to be important but stands behind the afore-mentioned factors.

In another question (question 5), the companies were asked to indicate the importance of four influencing factors for their investment behaviour. These four influencing factors were taken from different fields: the economic field (demand growth; access to external finance or funding), the technical field (access to onshore electricity) and the regulatory/political field, which also contains many technical aspects.

#### IMPORTANCE OF INFLUENCING FACTORS FOR INVESTMENT BEHAVIOUR – CONDENSED SURVEY RESULTS (QUESTION 5) \*



Source: CCNR survey

\* Figures in the chart show the number of companies that answered the question in the indicated way.

The graph shows an important tendency: the access to external finance or subsidies is a fundamental precondition for investing.

This can be explained by the fact that many day trip vessel companies (and many inland navigation companies in general) are rather small companies, which need to rely on external financing or on funding for realising their investment plans. Behind the financial factor, demand growth and the regulatory and political environment are also quite important. On the other hand, access to onshore electricity is clearly the very last factor taken into consideration by a company before investing.

Another question (question 6) contained three parts on greening:

**a) 'Are you already using one of the following alternative propulsion technologies [diesel-electric; all-electric (batteries); Liquefied Natural Gas (LNG); Gas-to-Liquid (GTL); hydrogen] aboard your vessels? If so, which ones?'**

The most frequent alternative technology indicated by companies was diesel-electric propulsion (44%), followed by pure electric propulsion (34%), and Gas-to-Liquid (16%). LNG and hydrogen propulsion together had a share of 6%.

**b) 'Do you have any future plans to convert your fleet or (any additional) parts of it to alternative propulsion systems?'**

The replies to this question showed a certain discrepancy between German companies on the one hand (where the plans for a conversion were often indicated as 'very probable' or also 'definitely'), and French companies on the other hand, where the possible answer 'highly unlikely' received the large majority of votes. The results of Dutch, Belgian and Swiss companies showed that they lay somewhere between the French and the German types of answer.

**c) 'What are the most important constraints currently deterring your company from a large-scale introduction of alternative types of propulsion?'**

Five answers (A1-A5) were possible. The companies mostly indicated the following answers: A2 = insufficiently profitable (share of 30% of all answers), A4 = regulatory environment still too uncertain (share of 26% of all answers) and A1 = start-up finance too expensive / shortage of debt capital (share of 25% of all answers).













# 09

## OUTLOOK

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- The still ongoing expansion in the construction sector, which started in 2014, benefited the IWW transport of sand, stone, gravel and building materials.
- This correlation can be seen by comparing construction activity to the volumes of sand, stone, gravel and building materials transported via IWW; this phenomenon is best visible in the Netherlands.
- The EUROCONSTRUCT outlook foresees a slowdown in growth for the European construction market in the period 2019-2021. Nevertheless, the building activity should continue to grow in the medium and long-term.
- Other goods segments also have a positive outlook, for example chemicals, due to the evolution of life sciences in modern economies, and metals.



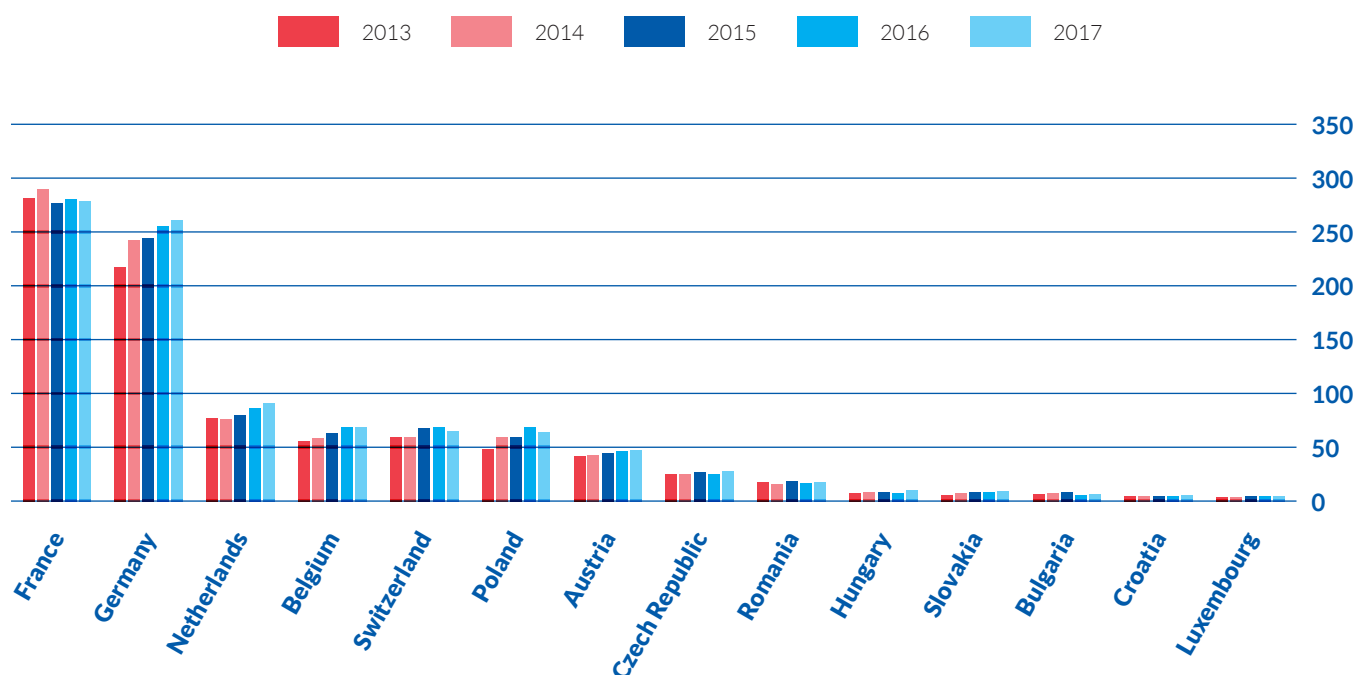
# TRANSPORT OF SAND, STONES, GRAVEL AND BUILDING MATERIALS

The transport of sand, stones, gravel and building materials is quite important in inland waterway transport, especially in western Europe. The volumes and shares of this segment in important IWT countries are given below:<sup>47</sup>

- 74.0 million t in the Netherlands in 2018 (20% of total IWT)
- 50.0 million t in Belgium in 2017 (25% of total IWT)
- 26.7 million t in Germany in 2018 (14% of total IWT)
- 21.9 million t in France in 2018 (37% of total IWT)
- 6.1 million t in Romania in 2018 (21% of total IWT)

The construction sector, which is the underlying sector of activity for this goods segment, expanded its activity in large parts of western Europe in recent years, especially in Germany, the Netherlands and in Belgium. The reasons for this expansion are analysed by economic research institutes, such as the *Ifo Institute for Economic Research* which has a longstanding tradition of research in the construction sector.

## PRODUCTION VALUE OF THE TOTAL CONSTRUCTION SECTOR IN EUROPEAN IWW COUNTRIES (IN BILLION EURO)



Source: Eurostat [sbs\_na\_con\_r2]

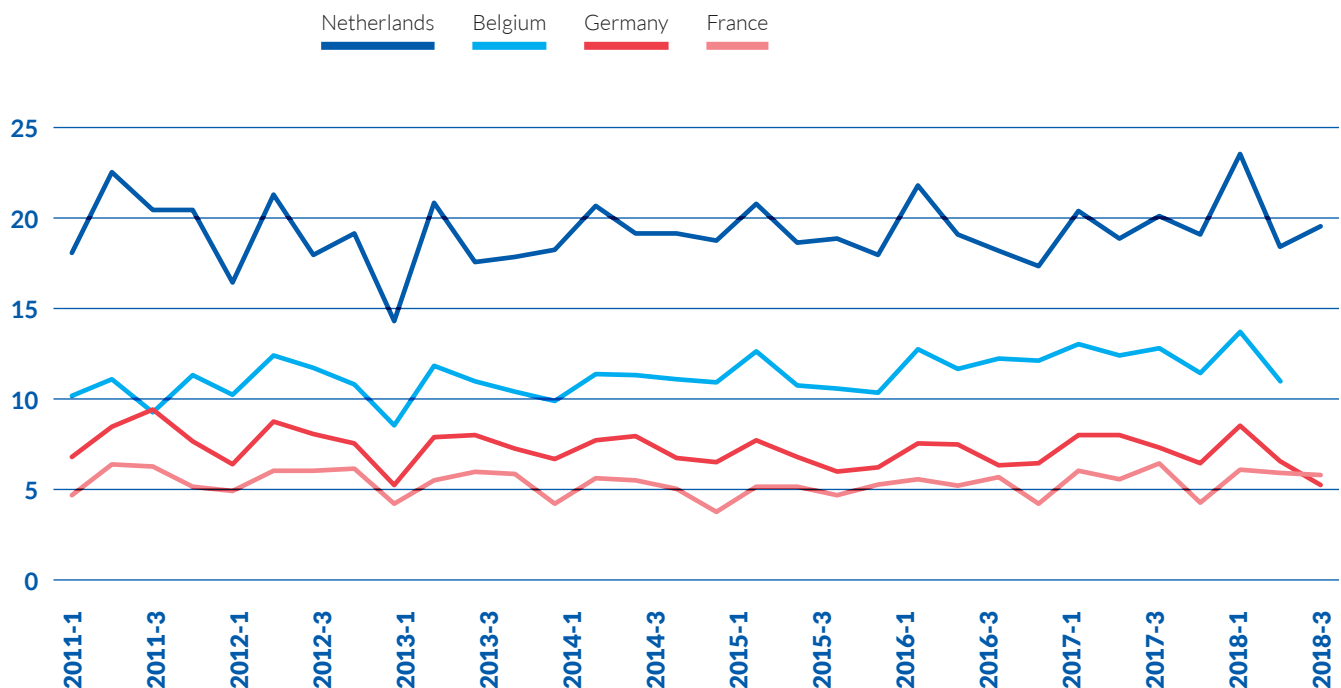
<sup>47</sup> There are indeed statistical problems for this segment. Within the NST 2007 goods classification, a distinction between sand, stones, gravel and building materials from ores is not possible anymore. (It was possible under the previous goods classification NST/R). Due to this change in the goods classification, a split between the two product segments is only possible on the basis of very detailed data, which are unfortunately not available for many European countries. The data for Rhine countries and for Romania were produced by analysing detailed data from national statistical offices (for Belgium, Germany, the Netherlands, Romania), and VNF (France). In this instance, the following NST 2007 Codes are taken into account: 035 (sands, stones, gravel, tone), 092 (cement, chalk, burnt plaster), 093 (other construction materials).

The *Ifo Institute for Economic Research* is a Munich-based research institution and one of Germany's largest economic think-tanks. According to its assessment, a cyclical upward movement started in 2014 in the European construction sector, caused by several economic and demographic factors:<sup>48</sup>

- The recovery of European macroeconomic framework conditions after the financial crisis
- Persistently low interest rates in Europe
- High demand for residential building construction
- Internal migration towards urban regions and immigration from abroad
- Higher public investment in the construction of new transport infrastructure

The overall level and evolution of the transport of sand, stones, gravel and building materials on inland waterways in Western Europe is shown in the following figure on a quarterly basis:

#### QUARTERLY IWW TRANSPORT VOLUME OF SAND, STONES, GRAVEL AND CONSTRUCTION MATERIAL (MILLION TONNES)



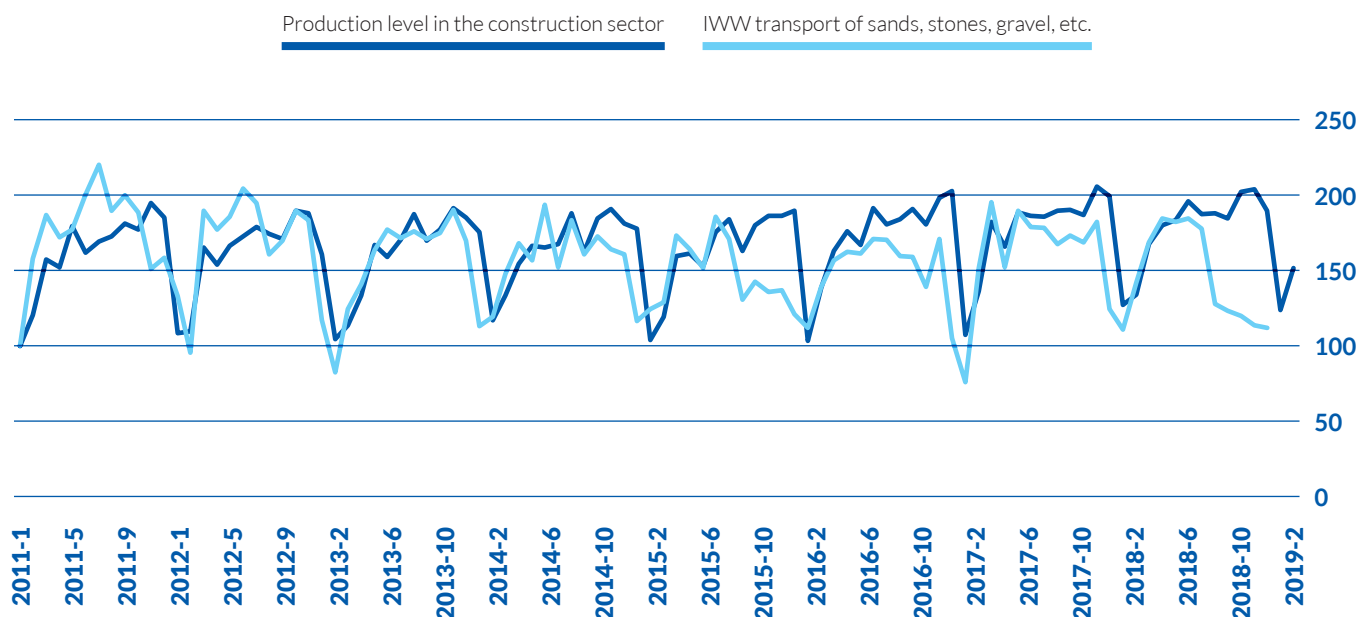
Source: CBS, Stat.Bel, Destatis, VNF

These quarterly data show seasonal variations in this sector which follow a similar movement between the countries under analysis (see 2013-1, 2015-2, 2016-2, 2018-1, 2018-2, 2018-3) and a rising tendency in Belgium and the Netherlands.

Using monthly data for Germany allows tracing the link between the construction activity and the IWW transport of sand, stones, gravel, etc. The correlation is quite intense, but the low water levels disturbed this correlation (in autumn 2015 and 2016, and in the second half of 2018). Large volumes of sand, stones and gravel were lost for German waterway transport due to these low water periods, at least temporarily.

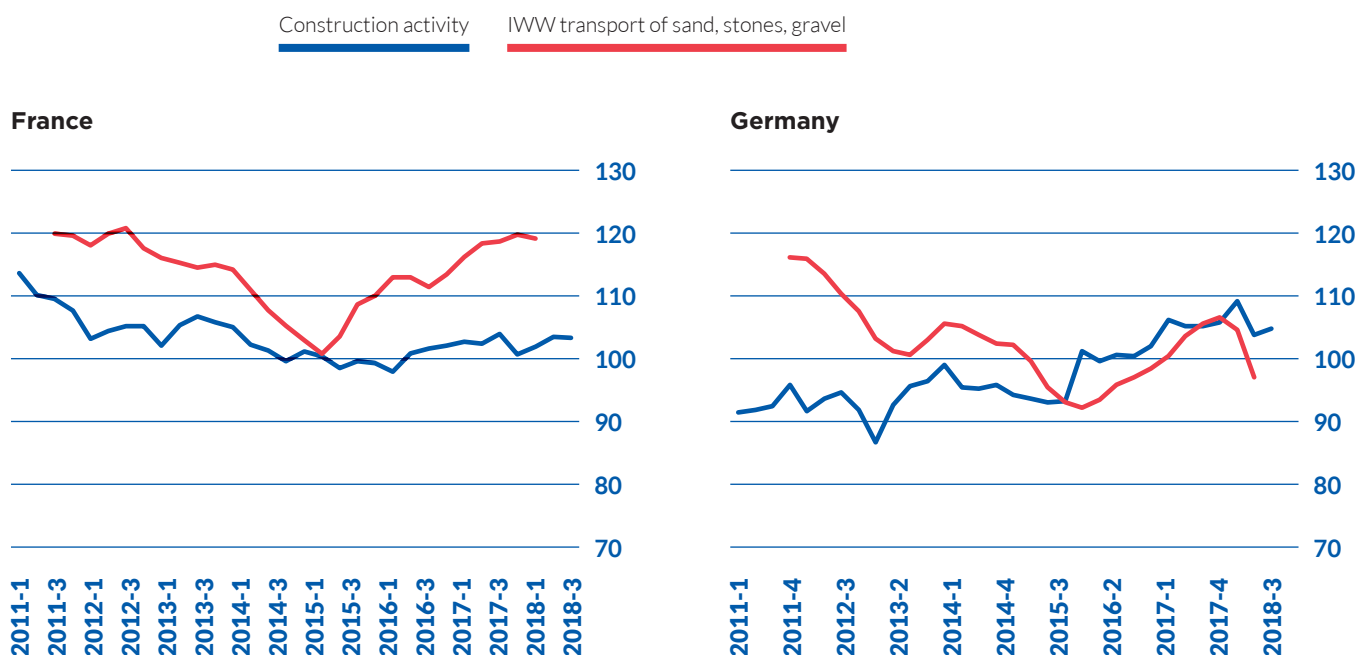
<sup>48</sup> See: Dorffmeister, Ludwig (2019a), *Europäische Bauwirtschaft bleibt bis 2021 auf Expansionskurs* (European Construction sector stays on expansion path until 2021), in: *ifo Schnelldienst* 2/2019, p. 47-54; and: Dorffmeister, Ludwig (2018), *Europäischer Bausektor: Aufschwung verliert bis 2020 spürbar an Kraft* (European Construction sector: upward movement loses momentum until 2020), in: *ifo Schnelldienst* 13/2018, p. 61-68.

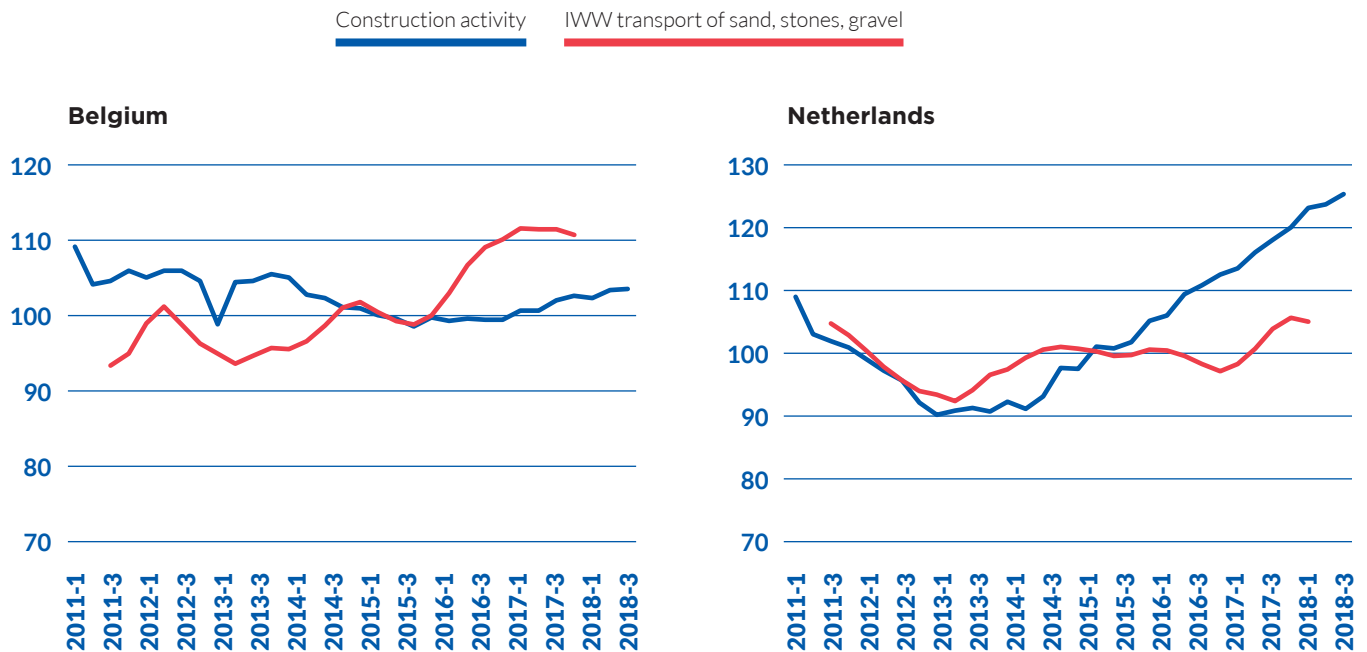
### MONTHLY PRODUCTION LEVEL IN THE GERMAN CONSTRUCTION SECTOR AND IWW TRANSPORT OF SAND, STONES, GRAVEL AND CONSTRUCTION MATERIAL IN GERMANY (INDEX 1/2011 = 100)



In order to answer the question regarding the impact of the upswing that started in 2014, it is necessary to compare the (seasonally adjusted) figures for the activity in the transport sector with seasonally adjusted data for IWW transport on a country level. The seasonal adjustment makes apparent the business cycle and trend components of the series which is crucial for detecting upswing or downswing patterns.

### QUARTERLY PRODUCTION LEVEL IN THE CONSTRUCTION SECTOR AND IWW TRANSPORT OF SAND, STONES, GRAVEL AND CONSTRUCTION MATERIAL (INDEX 2015 = 100) \*





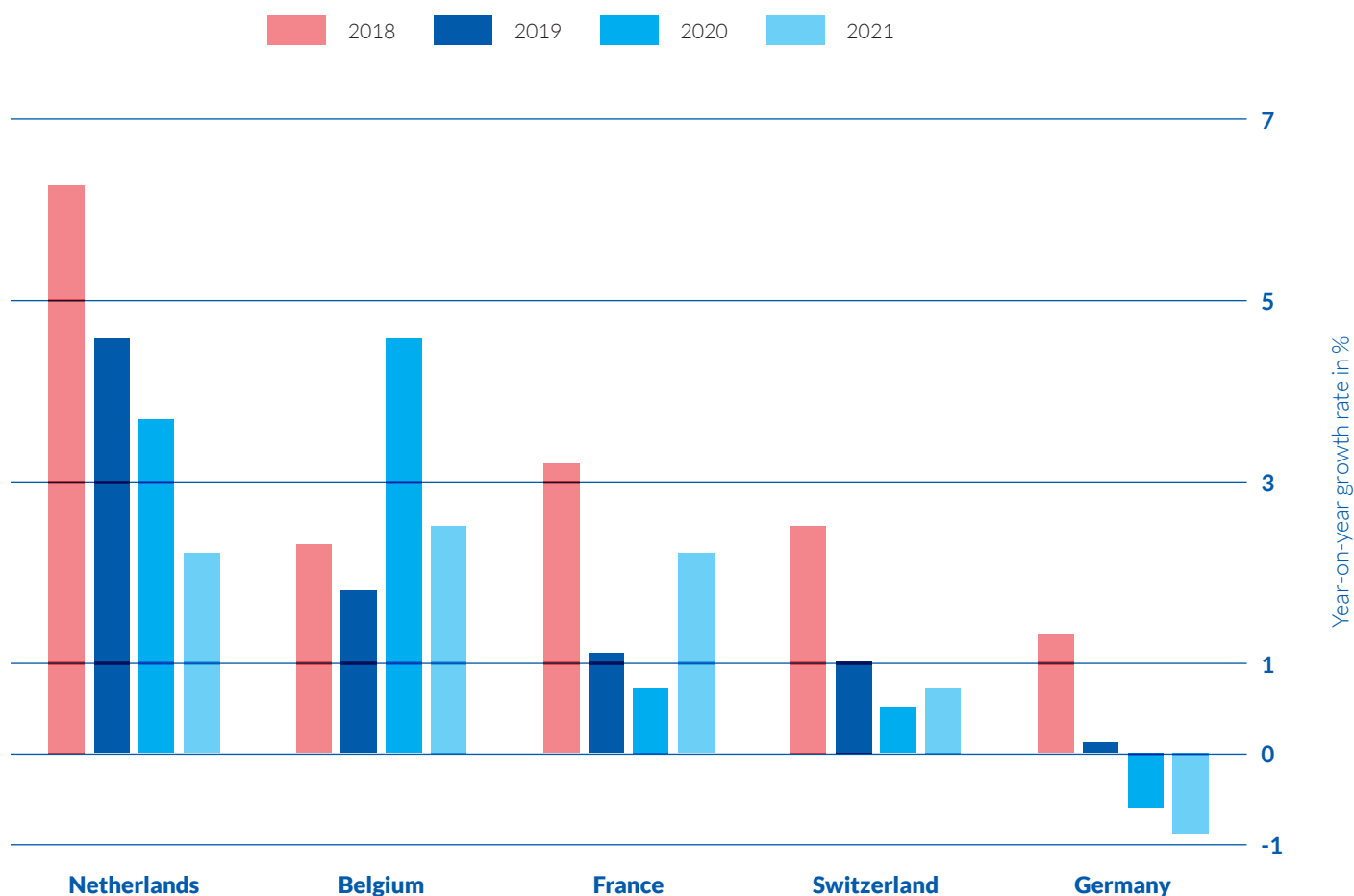
Source: CCNR based on data from Eurostat [sts\_copr\_m], CBS, VNF, Destatis, Statbel  
\* Seasonally adjusted data

The upswing in the construction sector from 2014 onwards is best visible in the Netherlands. In the three other countries, it came with a delay. There is a certain correlation between the activity in the construction sector and the transport of related goods, but this correlation is not perfect, due to quite different additional influencing factors which are at play.

For Belgium, France and Germany, the recovery of construction activity that occurred in 2015 and at the beginning of 2016 seems to have produced an impulse for the IWW transport of sands, stones, gravel and building materials. For the Netherlands, this impulse came earlier.

The Ifo Institute for Economic Research is also a member of a European network of economic research institutes (EUROCONSTRUCT), that conducts forecasts for the whole European construction sector twice a year. At its latest meeting in late November 2018, this consortium made an assessment on the economic outlook for the construction sector during the period 2019-2021. According to this outlook, the growth of the European construction market should slow down in the forecast period (2019-2021), as shown by falling growth rates in the following figure.

### FORECAST ON YEARLY GROWTH RATE OF TOTAL CONSTRUCTION OUTPUT PER COUNTRY (IN %)



Source: EUROCONSTRUCT

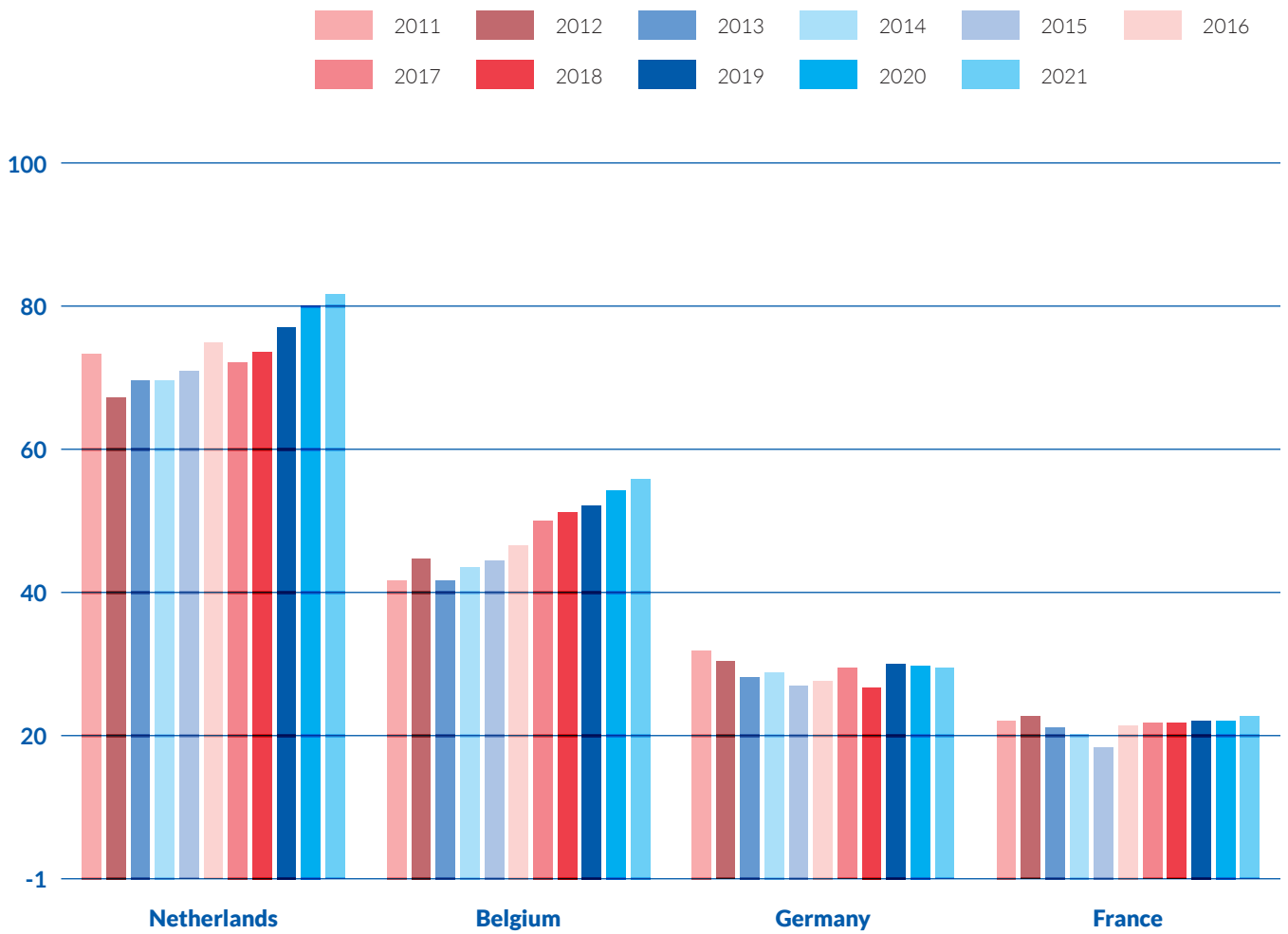
There are several reasons for easing growth rates, but capacity problems in the building industry seem to play one major role. A shortage of labour, and rising costs, as a result of the strong expansion of building activity in recent years, represent a bottleneck for further development at the same pace as previous years. Secondly, bottlenecks are also present when it comes to zones and areas for newbuilding which have become scarce.<sup>49</sup>

Nevertheless, the building activity will continue to grow, although at a slower pace than in recent years. For inland waterway transport of sand, stones, gravel and building materials, a forecast was established which is based on the expected growth rates of the building sector according to EUROCONSTRUCT.

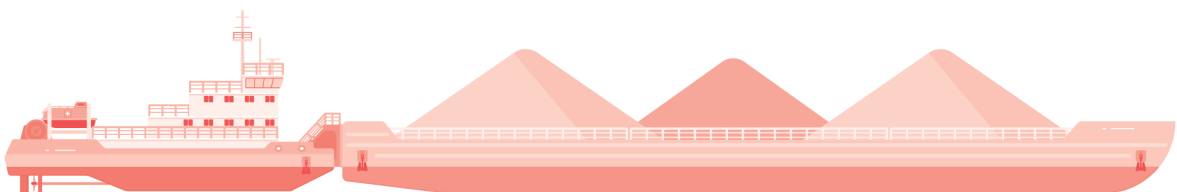
The following figure shows the evolution including the forecast values. The volumes in the Netherlands are expected to grow further until 2021 to a value of more than 80 million tonnes per year. Absolute growth is also foreseen for Belgium. For Germany, the results were corrected for the low water effects in 2018. The outlook for France and Germany points to a more stagnant evolution over the foreseeable horizon.

<sup>49</sup> See: Dorffmeister, Ludwig (2019b), *Zu den Kapazitätsengpässen in der Bauwirtschaft (capacity bottlenecks in the construction sector)*, in: ifo Schnelldienst, p.50-54.

**EVOLUTION OF YEARLY VOLUME OF SAND, STONES, GRAVEL AND BUILDING MATERIALS  
TRANSPORTED BY IWT AND FORECAST FOR 2019, 2020 AND 2021 (IN MILLION T)**



Source: CCNR





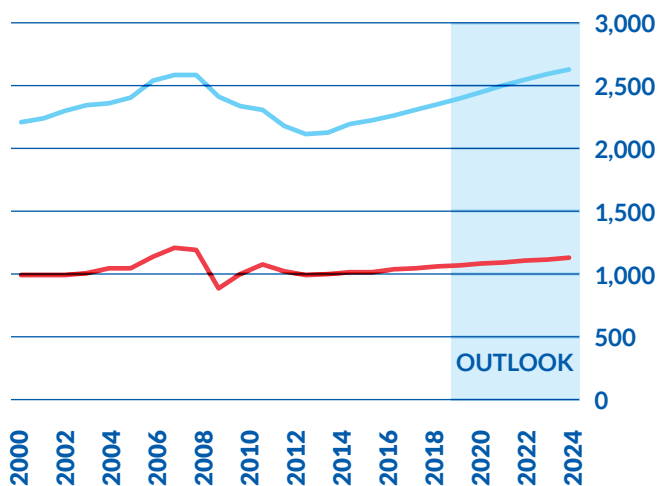
# TRENDS FOR IWT MARKETS

Long-lasting push factors for the construction sector are, as mentioned in the previous part, demographic growth in urban areas and also immigration. The more short- and medium-term factors (macroeconomic climate, interest rates) can change in a cyclical way.

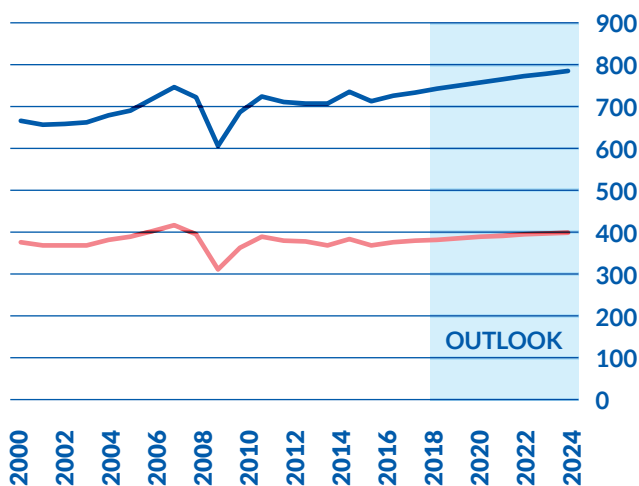
For chemicals, the outlook is also positive, and the evolution of life science segments in modern economies can be a push factor for growth in the future. Regarding metals, the outlook is positive as well, although the growth potential is not as strong as for the construction sector and for chemicals.

## GROSS REAL OUTPUT IN DIFFERENT ECONOMIC SECTORS IN THE EUROPEAN UNION \*

Construction Basic metals & metal products



Chemicals Fertilizers & basic chemicals

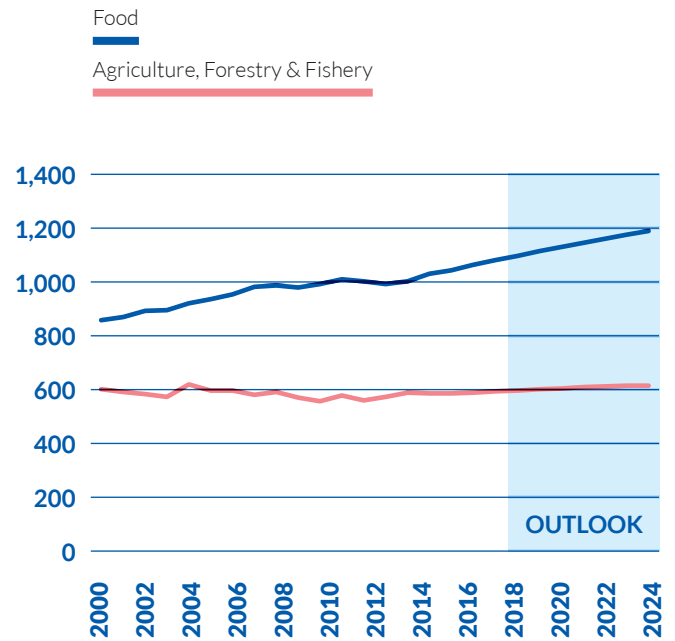
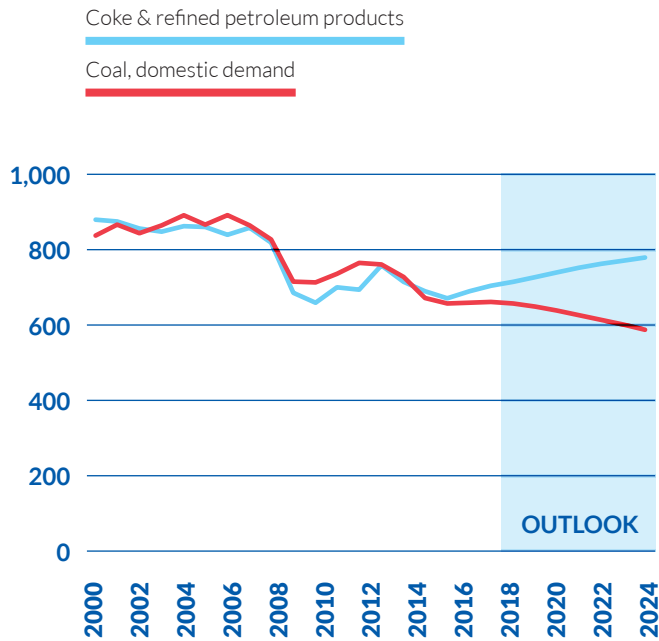


Source: Oxford Economics.

\* in billion US-\$, 2010 prices

Coal demand in the energy sector (steam coal) is decreasing, but for coal used in the steel industry, (coke), the outlook is far better. The transport of mineral oil products has a quite positive underlying trend, and besides, IWT can gain further market shares in this segment due to its high safety level. The production of fertilizers is also expected to increase until 2050, as it is the case for the agricultural production and for food production.

#### GROSS REAL OUTPUT IN DIFFERENT ECONOMIC SECTORS IN THE EUROPEAN UNION \*



Source: Oxford Economics.  
\* in billion US-\$, 2010 prices



## Glossary

**ARA region:** Amsterdam-Rotterdam-Antwerp

**BN:** Billion

**CPTPP:** Comprehensive and Progressive agreement for Trans-Pacific Partnership

**DANUBE COUNTRIES:** Austria, Bulgaria, Croatia, Hungary, Romania, Serbia, Slovakia

**ECB:** European Central Bank

**EU:** European Union

**EUROPE:** European inland navigation in this report includes two countries not belonging to European Union, Switzerland and Serbia

**FARAG region:** Flushing, Amsterdam, Rotterdam, Antwerp, Ghent

**FREIGHT RATE:** Price at which a cargo is delivered from one point to another

**GDP:** Gross Domestic Product (basic measure of the overall size of a country's economy)

**GOS:** Gross Operating Surplus, abbreviated as GOS, is gross output of an industry less the cost of intermediate goods and services (to give gross value added), and less compensation of employees and taxes and subsidies on production and imports

**IWT:** Inland Waterways Transport

**IWW:** Inland Waterways

**LOADING DEGREE:** Percentage of maximum vessel loading capacity

**MIO:** Million

**PP:** Percentage point (unit for the difference of two percentages. For example, moving up from 40% to 44% is a 4 percentage point increase, but is a 10 percent increase in what is being measured)

**RHINE COUNTRIES:** Belgium, France, Germany, Luxembourg, Netherlands, Switzerland

**TEU:** Twenty-foot Equivalent Unit (unit for container volume)

**TKM:** Tonne-Kilometer (unit for transport performance which represents volume of goods transported multiplied by transport distance)

**TRADITIONAL RHINE:** Rhine from Basel to the border between Netherlands and Germany

**WATERSIDE GOODS TRAFFIC:** Loading or unloading activity in ports, which includes inland vessels

## NATIONAL STATISTICS OFFICES

Acronym	Original Name	English Name	Country
BFS	Bundesamt für Statistik	Federal Office for Statistics	Switzerland
CBS	Centraal Bureau voor de Statistiek	Central Statistical Office	Netherlands
Destatis	Statistisches Bundesamt	Federal Statistical Office of Germany	Germany
GUS	Główny Urząd Statystyczny	Statistics Poland	Poland
INSEE	Institut national de la statistique et des études économiques	National Institute of Statistics and Economic Studies	France
INSSE	Institutul National de Statistica	National Institute of Statistics	Romania
KSH/ HCSO	Központi Statisztikai Hivatal	Hungarian Central Statistical Office	Hungary
LS	Lietuvos Statistikos Departamentas	Statistics Lithuania	Lithuania
Statbel	Statistics Belgium	Statistics Belgium	Belgium

## BOOKS, JOURNAL ARTICLES AND STUDIES

Original Name	English Name	Country
Ademmer, M.; Jannsen, N.; Kooths, S.; Mösele, S. (2019). Niedrigwasser bremst Produktion in: Wirtschaftsdienst 99 (1), 79-80	Ademmer, M.; Jannsen, N.; Kooths, S.; Mösele, S. (2019). Low water slows production level in: Wirtschaftsdienst 99 (1), 79-80	Germany
Dernières Nouvelles d'Alsace (DNA), article « Le port de Strasbourg pénalisé par les basses eaux du Rhin », (16 janvier 2019)	Dernières Nouvelles d'Alsace (DNA), article « The port of Strasbourg struggles with low waters on the Rhine », (16th January 2019)	France
Dorffmeister, Ludwig (2018), Europäischer Bausektor: Aufschwung verliert bis 2020 spürbar an Kraft (in: ifo Schnelldienst 13/2018, S. 61-68.	Dorffmeister, Ludwig (2018), European Construction sector: upward movement loses momentum until 2020, in: ifo Schnelldienst 13/2018, p. 61-68.	Germany
Dorffmeister, Ludwig (2019a), Europäische Bauwirtschaft bleibt bis 2021 auf Expansionskurs, in: ifo Schnelldienst 2/2019, S. 47-54	Dorffmeister, Ludwig (2019a), European Construction sector stays on expansion path until 2021, in: ifo Schnelldienst 2/2019, p. 47-54	Germany
Dorffmeister, Ludwig (2019b), Zu den Kapazitätsengpässen in der Bauwirtschaft, in: ifo Schnelldienst, S. 50-54	Dorffmeister, Ludwig (2019b), Capacity bottlenecks in the construction sector, in: ifo Schnelldienst, p. 50-54	Germany
Hader, A. (2018), The River Cruise Fleet Handbook 2018/2019	Hader, A. (2018), The River Cruise Fleet Handbook 2018/2019	Germany
Kehler Hafenbericht 2018	Kehl Port annual report 2018	Germany
Le Parisien, article « Alain Ducasse lance son navire écolo et gastronomique sur la Seine », (30 aout 2018)	Le Parisien, article « Alain Ducasse introduces his ecologically friendly gastronomic boat on the Seine », (August 30th 2018)	France

## OTHER SOURCES

Original Name	English Name	Country
Batorama	Batorama	France
Bundesanstalt für Gewässerkunde	German Federal Office for Hydrology	Germany
Bundesministerium für Verkehr und digitale Infrastruktur	Federal Ministry of Transport and Digital Infrastructure	Germany
Bundesagentur für Arbeit	German Federal Employment Agency	Germany
Centraal Bureau voor de Rijn- en Binnenvaar	Central Bureau for Inland Barging	Netherlands
Conto Nazionale delle Infrastrutture et Trasporto	Italian Ministry of Transport	Italy
Corporation Inland Tanker Barge Owners (CITBO)	Corporation Inland Tanker Barge Owners (CITBO)	Belgium/ Netherlands
Département de la logistique et de la navigation intérieure/ Abteilung für Logistik und Binnenschifffahrt	Department of Logistics and Inland navigation	Luxembourg
Deutscher Reiseverband	German Travel Association	Germany
De Vlaamse Waterweg	Waterways in Flanders	Belgium
Direction générale opérationnelle de la Mobilité et des Voies hydrauliques	Operational Directorate General for Mobility and Waterways	Belgium
Donaukommission	Danube Commission	Europe
Eidgenössische Steuerverwaltung	Federal Tax Administration	Switzerland
European Barge Inspection Scheme (EBIS)	European Barge Inspection Scheme (EBIS)	Europe
EUROCONSTRUCT	EUROCONSTRUCT	Europe
EUROSTAT	EUROSTAT	EU
European Central Bank	European Central Bank	EU
European Commission	European Commission	EU
Generaldirektion Wasserstraßen und Schifffahrt	Directorate-General for Waterways and Shipping	Germany
IG RiverCruise	IG RiverCruise	Europe
Institut national d'assurances sociales pour travailleurs indépendants (INASTI)/ (Rijksinstituut voor de Sociale Verzekeringen der Zelfstandigen (RSVZ)	National Social Insurance Institute for the Self-Employed (NISSE)	Belgium
Institut pour le transport pour la batellerie (ITB)	Institute for transport by skippers	Belgium
IVR	IVR	Netherlands
Kerncijfers Amsterdam	City of Amsterdam	Netherlands
Kieler Institut für Weltwirtschaft	Kiel Institute for the World Economy	Germany

Original Name	English Name	Country
Ministerstvo dopravy České republiky	Ministry of Transport of the Czech Republic	Czech Republic
Office fédéral des transport (OFT)/Bundesamt für Verkehr (BAV)	Switzerland Federal Office of Transport	Switzerland
Office national de Sécurité sociale (ONSS) / Rijksdienst voor Sociale Zekerheid (RSZ)	National Social Security Office (NSSO)	Belgium
Országos Vízügyi Főigazgatóság	General Directorate of Water Management	Hungary
Oxford Economics	Oxford Economics	World
PJK International	PJK International	Netherlands
Panteia	Panteia	Netherlands
Ports mentioned in the report	Ports mentioned in the report	Europe
Rijkswaterstaat	Ministry of Infrastructure and Water Management	Netherlands
SeaConsult	SeaConsult	Germany
Schweizerische Vereinigung für Schifffahrt und Hafenwirtschaft	Swiss Association for Shipping and Ports	Switzerland
Service Public Fédéral Mobilité et Transport / Federale Overheidsdienst Mobiliteit en Vervoer	Belgian Ministry of Transport	Belgium
Statistisches Amt für Hamburg und Schleswig-Holstein	Statistical Office of Hamburg and Schleswig-Holstein	Germany
Voies Navigables de France	Navigable Waterways of France	France
Wasserstraßen-und Schifffahrtsverwaltung des Bundes (WSV)	German Waterway and Shipping Administration	Germany
ZBBD	German vessel database	Germany



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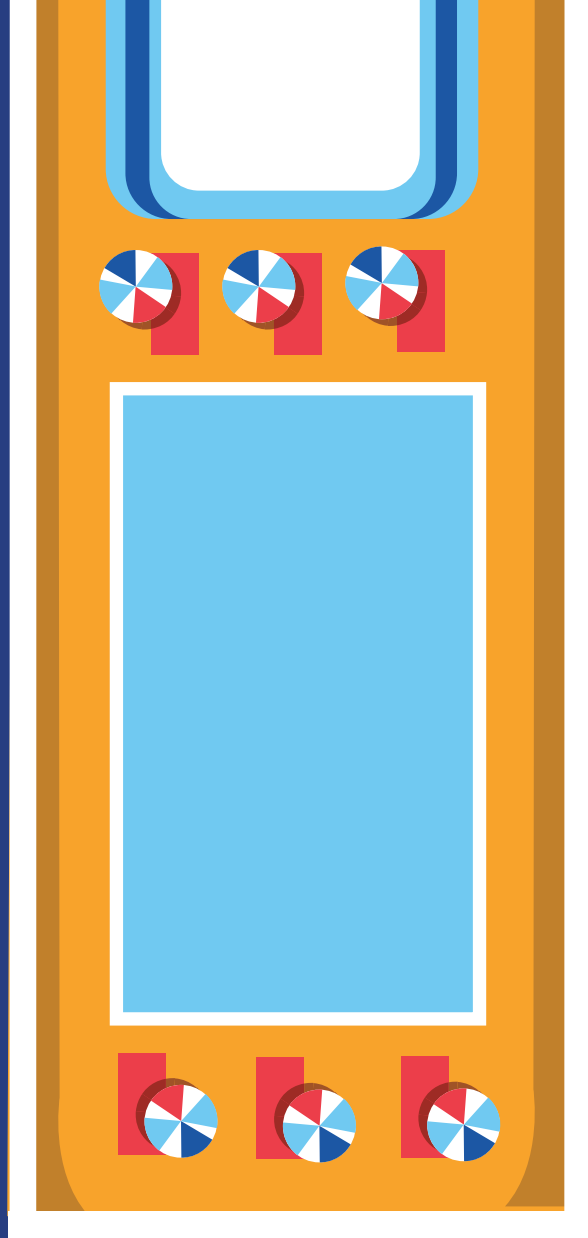
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