CCNR
CENTRAL COMMISSION
FOR THE NAVIGATION OF THE RHINE

European Commission

ANNUAL REPORT 2021

INLAND NAVIGATION IN EUROPE
MARKET OBSERVATION

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September 2021

FOREWORD

Bruno Georges
CCNR Secretary General

The Central Commission for the Navigation of the Rhine (CCNR) is pleased to present the 2021 edition of the European Inland Navigation Market Observation report, which analyses the main developments in European inland navigation in 2020. This year again, I would like to thank the European Commission for their valuable collaboration and support in our market observation activities.

In line with its objective of providing informed decision-making support for all stakeholders involved in inland navigation, this report covers a wide range of subjects, including macroeconomic conditions, trend developments related to goods segments and river basins, inland waterway transport in ports, operating conditions related to water levels and freight rates, the structure and evolution of the fleet of inland vessels, data on employment, the number of companies and the level of turnover, as well as data on river cruises. In addition to a section on the short and long-term macroeconomic outlook for the main inland navigation market segments, this year's report also includes a statistical annex, a valuable tool for data analysis.

Unfortunately, this year's report cannot avoid a particular emphasis on the dramatic and still ongoing Covid pandemic. Although the current vaccination campaigns offer some hope for the future, the health emergency caused by the coronavirus has weighed heavily on the economic indicators for 2020 and has not spared inland navigation. The fall in GDP in the EU in 2020 was indeed higher than during the financial crisis of 2009. In addition, delays in vaccination rollouts as well as threats of new Covid variants are likely to create additional uncertainties in all sectors of our economy. While the recovery path is still uncertain, GDP forecasts for 2021 and 2022 point to a recovery with expected growth rates of 4.4% in 2021 and 4.0% in 2022.

Both freight and passenger transport were affected by the pandemic and the ensuing policy actions and health measures. The damage reported by the entire inland waterway passenger transport industry was particularly severe, not only on the demand side but also on the fleet and supply side. My dearest wish is, of course, for a rapid and complete recovery of the whole sector, with the active support of all actors involved in inland waterway transport.

As in the past, the present work that you are about to consult is the result of intense collaboration with many actors, both public and private. As in previous years, we have been able to use statistical data and market information of the Danube, Moselle and Sava Commissions for their specific catchment areas. Equally important was our cooperation with Eurostat and national statistical offices, ports, national and regional waterway administrations as well as professional organisations, in particular the European Barge Union (EBU), the European Skippers' Organisation (ESO) and the Corporation of Inland Tanker Barge Owners (CITBO). It is only thanks to this fruitful cooperation with all stakeholders and their valuable input and expertise that we can collect all relevant data for our sector on a European scale, in a timely and efficient manner, for our annual report.

Last but not least, on the following page you will also find a message from my counterpart at the Danube Commission, Mr Manfred Seitz, with whom we continue and intensify our cooperation. The said Danube Commission sends us every year a detailed market report with very valuable data and information about freight and passenger transport on the different sections of the Danube. We are very grateful to the Commission for this annual contribution. It is therefore a great pleasure to share the foreword of the new annual report with its Director General.

In the hope that the pandemic and its continued strain on economies will soon be behind us, and that our European inland waterway transport sector will soon be thriving again, I wish you a good read of the annual report.

It is an honour for me to write a short foreword for the Market Observation Report 2021, which is published by the Central Commission for the Navigation of the Rhine (CCNR) as a joint project with the European Commission for the European Inland Navigation sector.

Manfred Seitz
Director General of the Secretariat

The cooperation between the Danube Commission (DC) and the Central Commission for the Navigation of the Rhine (CCNR) relating to market observation has followed a systematic approach since the signing of an administrative agreement in 2015 between the DC and the Directorate General for Mobility and Transport of the European Commission. Based on this agreement, a common methodology for the market observation publication was developed between the Secretariats in 2017 and has since further evolved during bilateral meetings.

The Secretariat of the DC transmits to the CCNR four reports per year providing a detailed insight into the structure and development of the IWT market in the Danube region and thus contributes to the overall European market observation coordinated by the CCNR.

The DC attaches great importance to the task of market observation with the aim of monitoring in a timely manner the economic activities of the Danube shipping sector in relation to the overall economic development of the Danube region, the competitive position of the sector in relation to the other transport modes and by paying special attention to the strong inter-relationship of fairway conditions and market performance. Our quarterly reports and the consolidated annual report are published on the website of the Danube Commission and are welcomed by the IWT sector and the public administrations alike as important inputs for commercial activities and for policy making.

Since mid-March 2020, the freight transport market on the Danube was strongly affected by the Covid-19 pandemic, thus resulting in economic decline in all Danube states and, respectively, in a drop in supply and demand in the main segments of the Danube transport market. The largest losses concern the passenger transport sector, keeping in mind that in 2019 record traffic volumes were achieved in both the Upper Danube and in the Danube delta with over 190 cabin cruise vessels operating on the Danube.

The freight transport market in 2021 and beyond is likely to be influenced by existing quotas for steel import in EU countries, as well as by the expected introduction of a carbon border tax on the import of metallurgical, chemical, petrol and petroleum products to the EU.

As in 2020, a certain stability in freight transport on the Danube can be ensured in 2021, thanks to grain transport, primarily from the ports on the Middle Danube to the Danube seaports, and especially Constanţa. Initial grain stocks from the 2020 harvest in the Danube countries, and satisfactory volumes of the 2021 harvest should allow this balance to be realised. Transport of animal fodder and chemical products (fertilizers), as well as petroleum products, are expected to remain stable.

Forecasts for the passenger transport sector on the Danube refer to the possible resumption of its main activity in 2022. This will, first and foremost, depend on the national restrictions linked to the pandemic. At the same time, with the easing of national and local restrictions, separate routes both on cruise and local transport lines could be resumed to a certain level in 2021.

Considering the challenges faced by the inland waterway transport sector with the need to deliver on the objectives of the European Green Deal and the Sustainable & Smart Mobility Strategy, comprehensive and accurate information on the European inland waterway transport sector will become even more important and will be a prerequisite to achieve the ambitious goal of shifting significantly more freight to inland waterways. Thus, I consider the joint report on Market Observation to be a cornerstone for successful future policy measures in line with the Inland Waterway Transport Action Plan NAIADES 2021-2027.

The Secretariat of the Danube Commission appreciates the cooperation with the CCNR in the field of market observation as a most successful and complementary initiative, both in terms of the quality of the market analysis and the forecasting of its development, which certainly will receive further strong support from the Danube Commission.

Kiel
Lübeck
Hamburg
Bremen
Amsterdam
Rotterdam
Nijmegen
Hannover
Münster
Magdeburg
London
Duisburg
Antwerp
Dunkirk
Brussels
Lille
Cologne
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Valenciennes
Frankfurt am Main
Le Havre
Luxembourg
Trier
Rouen
Mannheim
Metz
Nuremberg
Stuttgart
Regensburg
Paris
Strasbourg
Basel
Chalon-
sur-Saône
Lyon
Mantua
Venice
Ferrara
Marseille

Szczecin
Berlin
Dresden
Prag
Linz
Vienna
Bratislava
Budapest
Belgrade
Ruse
Constanța

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SUMMARY

The year 2020 saw an economic crisis out of the ordinary. Lockdowns, regulations of individual mobility and social distancing affected the economic behaviour of societies on an unprecedented scale. Real GDP[1] contracted by 6% in the EU in 2020, which is a stronger contraction than during the financial crisis in 2009 (-4%).

The impact that this pandemic had on economic activity was felt by the transport sector in general, and by inland navigation in particular. However, inland waterway cargo transport was more resilient than in earlier crisis situations, most likely because of an uneven reduction of economic activity across economic sectors:[2] The percentage decrease of goods transported on the Rhine was -8.4% in 2020, compared to -18.3% in 2009.

One example of this resilience was container transport, amounting to 15 million tonnes on the Rhine in 2020, which was only a small difference compared to the value of 2019 (15.2 million tonnes). However, all cargo segments related to steel production (representing 25% of Rhine transport), witnessed quite strong decreases (Iron ore: -14.2%; metals: -14.6%). The transport of sands, stones, gravel was reduced by 8.4%. Transport of agricultural products was a positive exception, reaching an increase in cargo transport on the Rhine in 2020 (+10.7%).

The resilience of IWT (Inland Waterways Transport) during the pandemic is not only found when looking at Rhine transport, but also when looking at inland waterway transport in large European seaports whose hinterland is intensively linked to the Rhine region:

- In the port of Rotterdam, inland waterway traffic reached a cargo turnover of 149.7 million tonnes (-2%).
- In the port of Antwerp, the result was almost stable compared to 2019 (101.0 million tonnes in 2020, 101.3 million tonnes in 2019).
- In the North Sea Port (Ghent, Terneuzen, Borsele, Flushing), the result was 55.0 million tonnes, representing a limited decrease of 6%.

The development of transport prices or freight rates in 2020 followed overall the transport demand. After a drop in the first half year, dry cargo freight rates on the Rhine recovered towards the second half year. For liquid cargo freight rates, the reduction of oil prices in March triggered a temporary uptake of transport demand in April and May. This resulted in temporarily higher freight rates for gasoil and components. However, when this effect subsided, freight rates settled on much lower levels in the second half of the year.

For cargo transport, the outlook is overall orientated towards recovery for 2021-2024, due to an expected increase of industry production in main source markets of IWT (steel and chemical production, refinery activity and mineral oil product demand, construction activity). However, the economic activity is expected to remain below end-of-2019 levels until 2022.

[1] Real gross domestic product (Real GDP) is an inflation-adjusted measure that reflects the value of all goods and services produced by an economy in a given year (expressed in base-year prices).
[2] The 2009 crisis was a more ‚classical' economic crisis with huge losses in industrial activity, while the 2020 crisis was more orientated towards losses in the service and tourism sector, which has less impact on cargo transport.

Due to the consequences of the pandemic (distance rules, travel restrictions, etc.), passenger transport was halted completely in March 2020 and was subject to strong restrictions throughout 2020.

The number of cruise vessel transits at the lock of Iffezheim on the Rhine went down from 2,929 in 2019 to 534 in 2020 (-82%). On other European rivers with considerable cruise traffic, the decrease was also severe. For the Danube at the German-Austrian border, figures dropped from 3,668 cruise ship transits to 324 (-91%). For the Moselle, there was a reduction from 1,536 vessel transits down to 469 (-70%) at the lock of Koblenz.

Likewise, the day-trip passenger segment suffered heavily from the crisis in 2020. In Strasbourg, for instance, the number of passengers dropped by almost 80% in 2020 compared to 2019.

For the outlook on passenger transport in 2021 and beyond, three main scenarios can be regarded as possible:

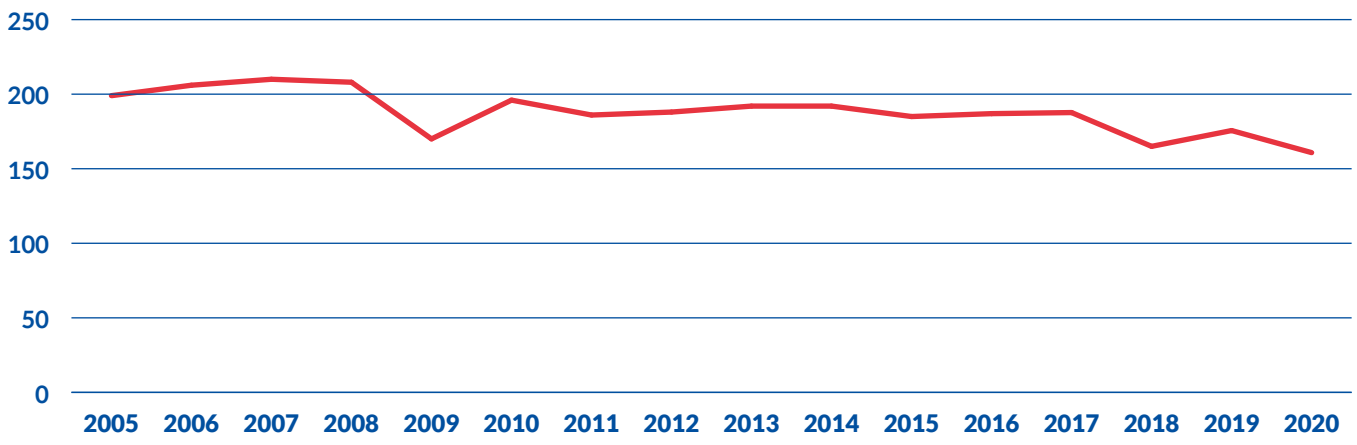
1) a complete lifting of quarantine in all countries;

2) easing or maintaining quarantine measures only in some countries;

3) maintaining restrictions on passenger transport.

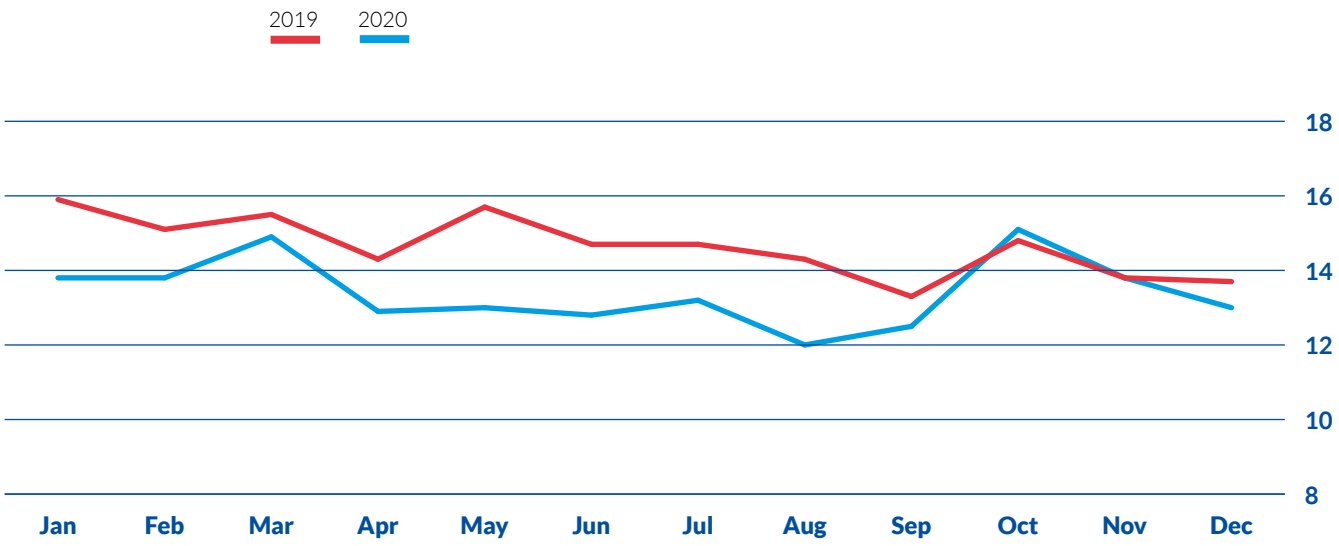
Which of these scenarios will materialize, will depend primarily on the pandemic situation at the end of 2021 and in the year 2022. Even in case of a complete lifting of restrictions, it is however likely that the pandemic will continue to impact inland navigation cruises, particularly because the high degree of risk aversion of major client groups from oversea.

FIGURE 1: **CARGO TRANSPORT ON THE TRADITIONAL RHINE** (IN MILLION TONNES)



Source: CCNR analysis based on Destatis

FIGURE 2: **CARGO TRANSPORT ON THE TRADITIONAL RHINE IN 2020 COMPARED TO 2019** (IN MILLION TONNES)



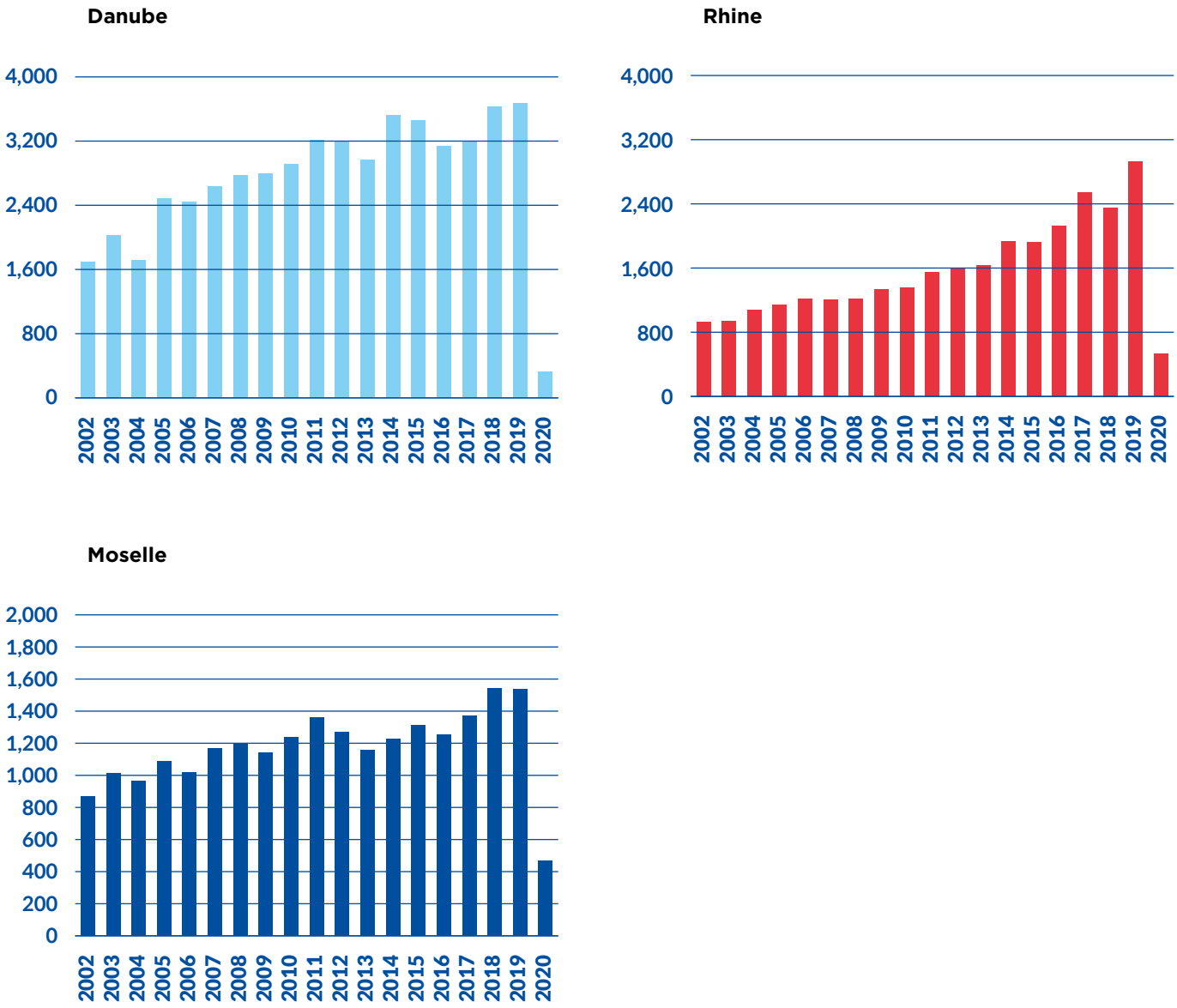
Source: CCNR analysis based on Destatis

TABLE 1: **GOODS TRANSPORT ON THE TRADITIONAL RHINE IN TOTAL AND BY LARGEST GOODS SEGMENTS**

Goods segment	2019	2020	2020/2019 in %
Traditional Rhine in total	174.1	160.0	-8.5
Mineral oil products	30.0	27.6	-8.0
Sands, stones, gravel	28.6	26.2	-8.4
Chemicals	20.1	19.3	-3.7
Iron ore	21.6	18.5	-14.2
Agribulk, food products	15.7	17.4	+10.7
Coal	22.4	17.1	-23.8
Goods in containers	15.2	15.0	-1.4
Metals	9.3	8.0	-14.6

Source: CCNR analysis based on Destatis

FIGURES 3, 4 AND 5: **YEARLY NUMBER OF CRUISE SHIP TRANSITS ON DANUBE, RHINE AND MOSELLE**



Sources: German Waterway and Shipping Administration and Moselle Commission
**Rhine = Upper Rhine (lock of Iffezheim). Danube = Upper Danube at the Austrian-German border (lock of Jochenstein). Moselle = lock of Koblenz.*

01

MACROECONOMIC CONTEXT AND OUTLOOK

- The ongoing Covid pandemic continues to weigh on economic indicators. Possible delays in the vaccination rollout and the threat of new variants of the virus produce uncertainty that is felt in all sectors.
- GDP decreased by 6.1% in 2020 in the EU. This is a stronger reduction than the one forecast a year ago.
- While the recovery path is still uncertain, GDP forecasts for 2021 and 2022 point to a recovery with expected growth rates of 4.4% in 2021 and 4.0% in 2022.
- The price of oil increased at the end of 2020 as a rebound effect, while iron ore prices saw an increase of 26% between 2020 and 2021 as a result of the Chinese recovery.

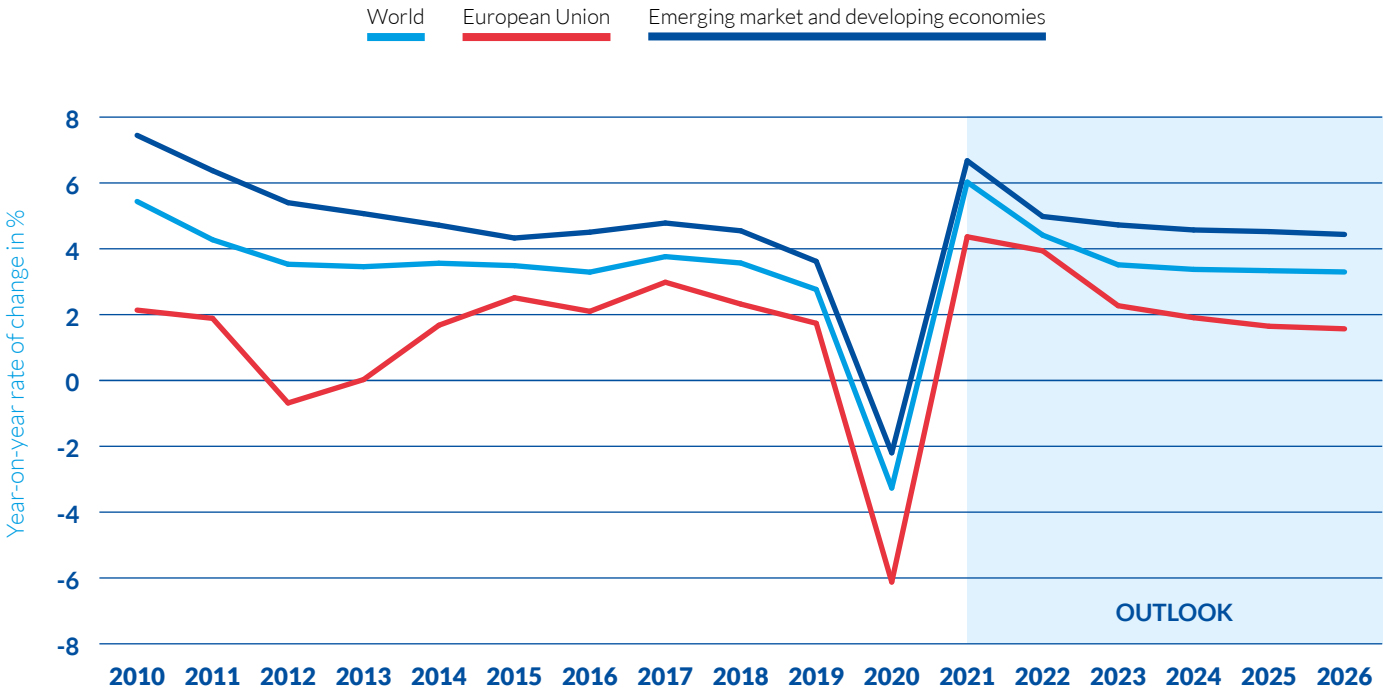
GDP contracted by **6.1%** in 2020 in the EU. GDP forecasts for 2021 and 2022 point to a recovery with expected growth rates of **4.4%** in 2021 and **4.0%** in 2022. However, strong uncertainty remains regarding the recovery path.

Gross Domestic Product (GDP) outlook

- The Covid pandemic continued to have a detrimental effect on citizens' lives in the year 2020 on a global scale. The crisis weighed heavily on many economic sectors. Global production slowed down sharply as a result of the various shutdowns in both advanced and developing economies. World GDP decreased by 3%, with a more severe decline within the EU (-6%).
- Due to the reopening of economies in the year 2020 before the second wave of contagion, the GDP decreased less severely than expected in the International Monetary Fund's (IMF) October 2020 World Economic Outlook (WEO).[1] According to the WEO published in April 2021, the global growth projection for the current year is 6%, moderating to 4.4% in 2022.
- Possible bottlenecks and the possible emergence of new, more dangerous virus mutations are critical points that could endanger and thus delay economic recovery or even lead to economic scarring. For this reason, uncertainty is predominant and forecasts for the future must be even more cautious than usual.
- The political action of governments is proving to be a decisive variable in the recovery. The outlook for the US economy has been revised upwards, in light of the massive relief packages that the Biden administration has allocated to combat the health and economic crisis.
- Conversely, it appears that the economic crisis will perpetuate in Europe, both as an effect of the vaccination bottlenecks at the beginning of the year and due to the inability to provide comparable relief measures. This is leading to increasing diverging paths between the USA and the EU.[2] An additional uneven cadence in reopening and reclosing the economies tied to the bottlenecks stated above, result in varying recovery paths.

[1] *Available at: World Economic Outlook, October 2020: A Long and Difficult Ascent (imf.org)*
[2] *Financial Times, available at: https://www.ft.com/content/0e9396cf-13b2-4034-ab09-c2366c264f91 (last consulted 6.05.2021)*

FIGURE 1: **PERCENTAGE CHANGE IN GDP, CONSTANT PRICES**



Source: IMF World Economic Outlook Database, Outlook from April 2021: World Economic Outlook Database, April 2021 (imf.org)

Trade barriers

- Global trade is expected to increase by 8.4%, while tourism is likely to suffer from the uncertainties of the pandemic for a longer period. Protectionist tendencies that already existed before the pandemic could slow down the global economic recovery.

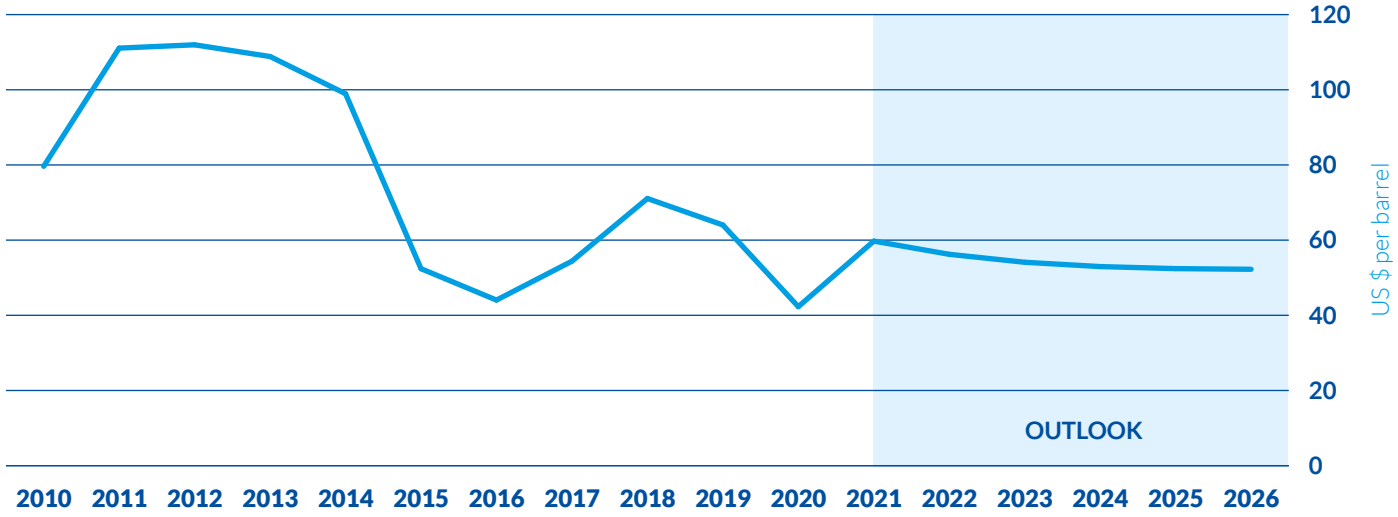
Commodity prices and output in IWT related branches

- In 2020, the restrictions on domestic and international mobility provoked a decline in oil demand. After the positive start of the vaccination rollout, prices rose by 41% in 2021 compared to 2020. However, futures markets indicate that this increase is a rebound effect and that oil prices will resume their downward trend in future years, reaching 52 US dollars per barrel in 2026.[3]

- Furthermore, difficulties encountered due to the vaccination campaigns and the second wave led to a weakening in demand for oil at the beginning of the year 2021, highlighting once again the feeling of uncertainty that was affecting every sector. The very moderate oil price level that is forecast for the coming years reflects also projections that GDP will remain well below the pre-pandemic trend path until 2024 for most countries. However, if economic recovery is faster and stronger than expected, then the oil price trajectory would certainly be more upward orientated.

[3] *International Monetary Fund, World Economic Outlook Database, April 2021*

FIGURE 2: **CRUDE OIL** (PETROLEUM)**, DATED BRENT, LIGHT BLEND 38 API, FOR UK, US $ PER BARREL**



Source: IMF World Economic Outlook Database, Outlook from April 2021

- Metal prices have increased since 2017, and this rise has accelerated in 2021. The acceleration was driven by a higher demand for basic metals on a global scale and by the rebound effect of Chinese recovery. With regard to iron ore, its price saw a steep increase of 26% between 2020 and 2021, continuing on a positive trend upheld by the recovery of Chinese steel production, which accounts for the largest part of steel production on a global scale today. Overall, metal and iron ore prices are expected to remain on a similarly high level in the coming years as has been the case in 2021. The share of European steel production within world production is decreasing further, while China's share continues to increase.

- Food prices have seen a general increase over the past year, particularly pronounced in the case of cereal prices and vegetable oil prices. Several factors drove this trend in 2020, including poor harvests in Europe and in the Great Plains region of the US, strong demand from China and a restrictive tax on wheat exports planned by Russia, one of the largest producers of wheat in the world. The smaller harvest result in Europe tends to be felt not only in terms of higher prices, but also in terms of a weaker grain transport in 2021 on European inland waterways (see chapter 8).

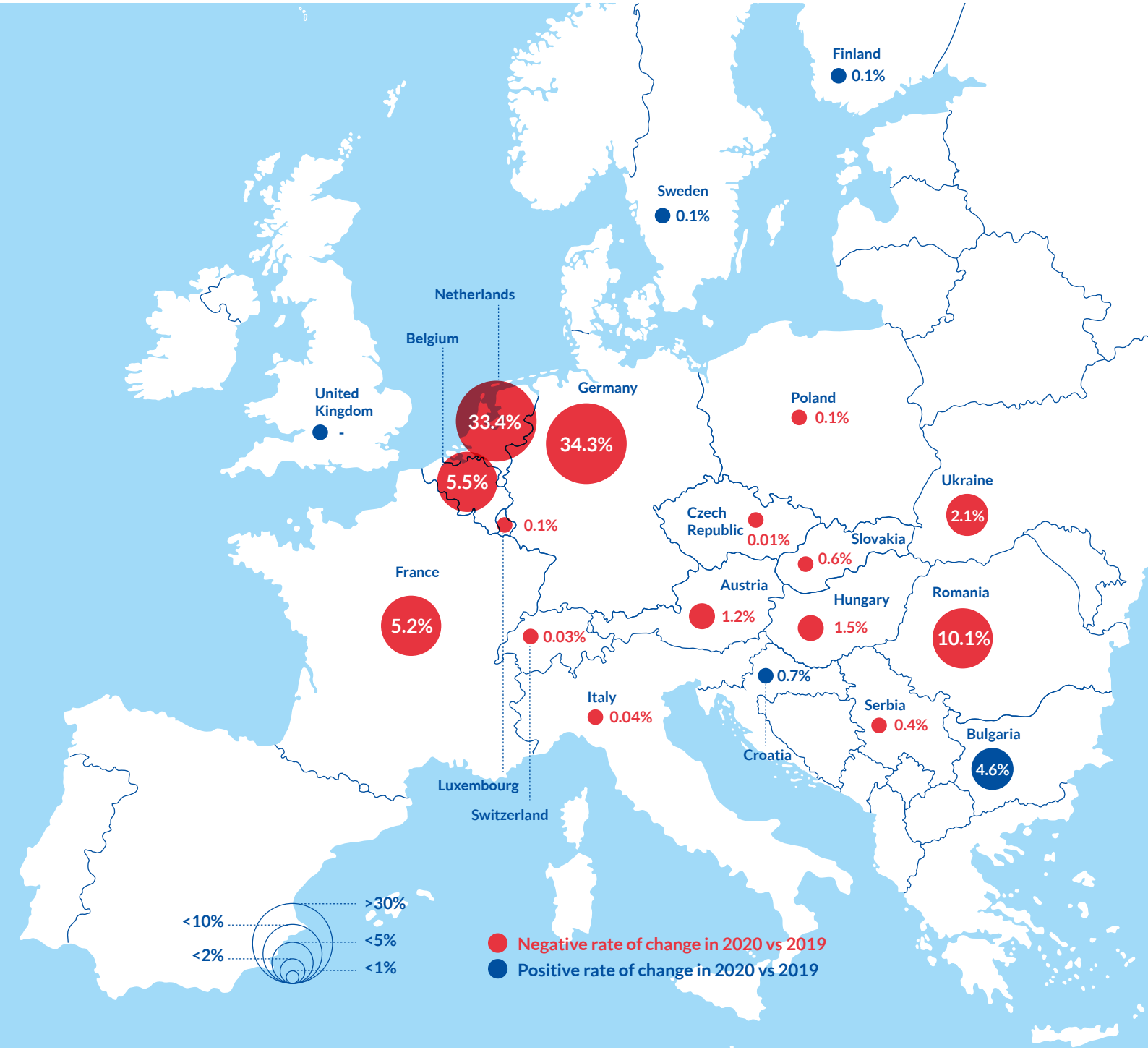
02

FREIGHT TRANSPORT ON INLAND WATERWAYS

- **Transport performance in IWT in the EU-27 (without the United Kingdom) amounted to 131.7 billion TKM in 2020, a reduction of 8.2% compared to 2019. By adding together transport performance of the three non-EU countries - Switzerland, Serbia and Ukraine - a transport performance of 135.1 billion tonnes has resulted for 2020 (-8.4% compared to 2019).**
- **Transport performance on the traditional Rhine decreased by 10% in 2020, compared to 15% in the low water year 2018, and 15% in the financial crisis year 2009. The only segment that registered higher figures in 2020 were agricultural products. Container transport almost remained constant.**
- **Despite reductions in iron ore, metals and coal transport, transport performance on the Danube decreased by only 1.4% in 2020, thanks to a vital upsurge in the transport of agricultural products.**

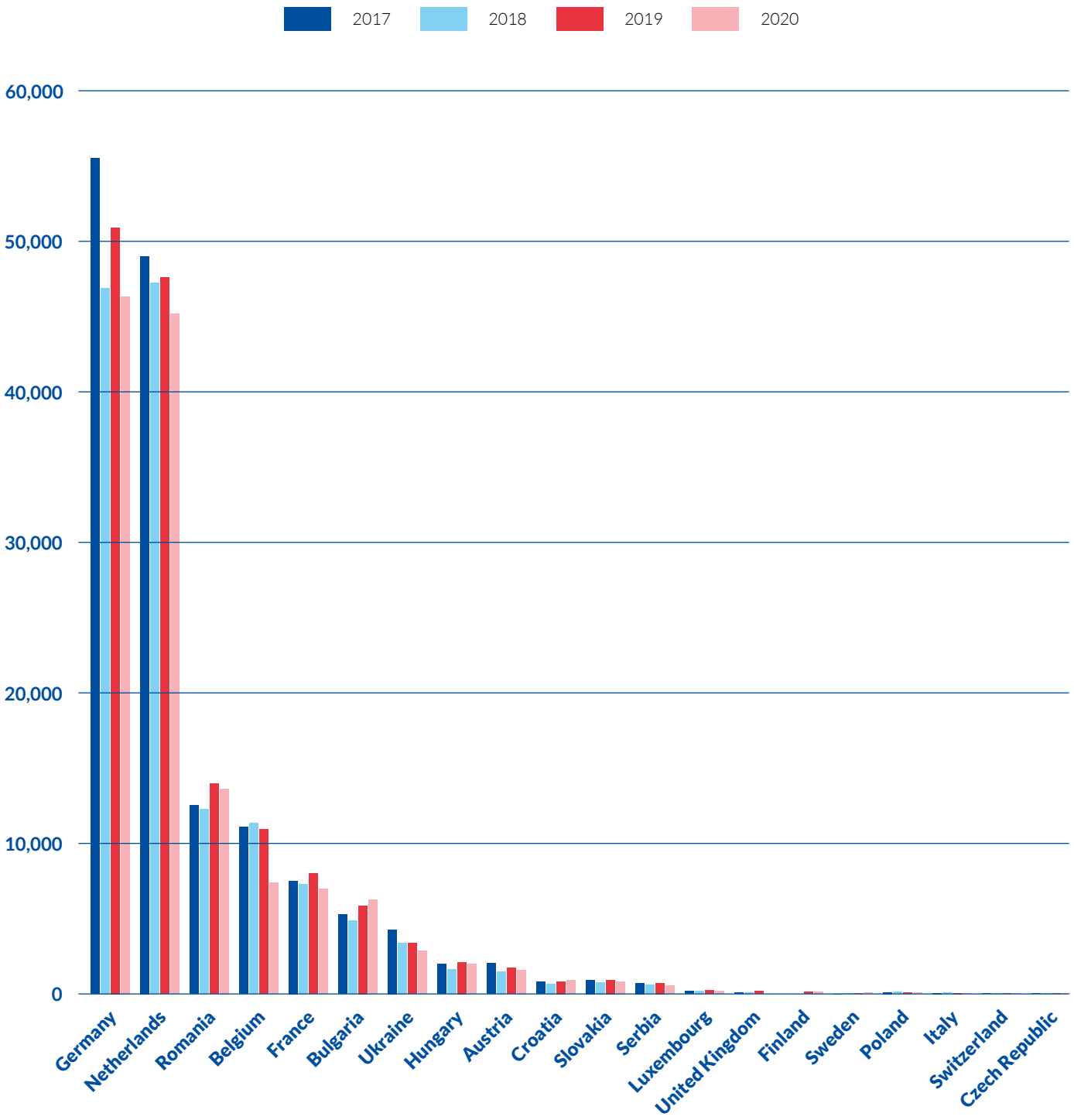
II TRANSPORT IN EUROPE
AND BY COUNTRY

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



Sources: Eurostat [iww_go_atygo], OECD (Serbia, Switzerland, Ukraine)
The share of IWT performance in Europe in 2020 for the United Kingdom is not available due to a delay in the publication of the data.

FIGURE 1: **IWT TRANSPORT PERFORMANCE IN 2017, 2018, 2019 AND 2020 IN MAIN EUROPEAN IWT COUNTRIES** (IN MILLION TKM)

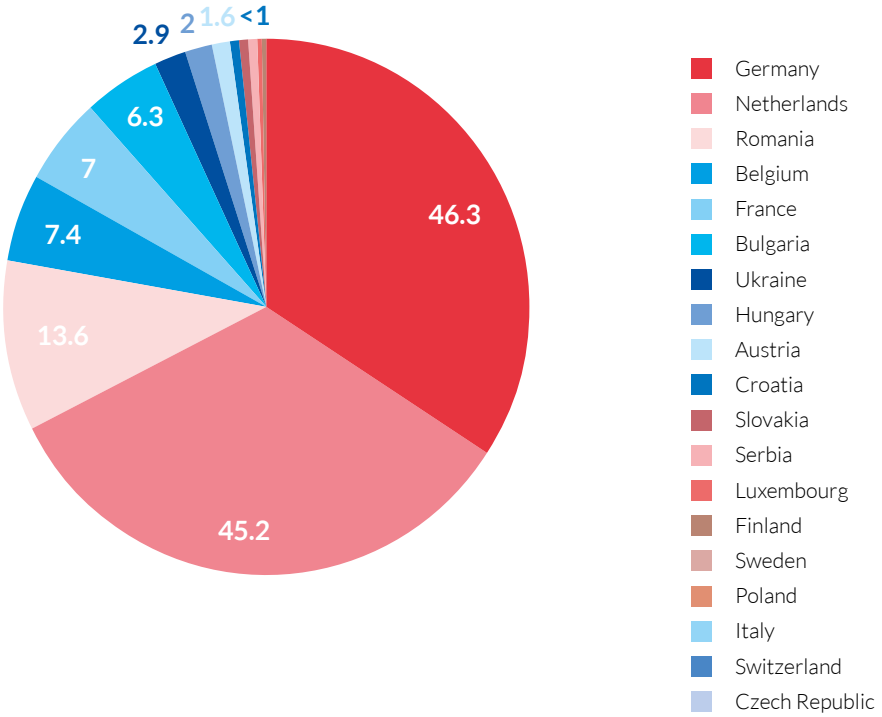


Sources: Eurostat [iww_go_atygo], OECD (Serbia, Switzerland, Ukraine)
The 2020 value for the United Kingdom is not available due to a delay in the publication of the data.

Ukraine is incorporated into the annual report for the first time. The main navigable rivers of Ukraine are the Dnieper, the Southern Bug and the Danube. From the perspective of the main territory of the Ukraine, the Danube forms a border with Romania along a rather short stretch in the most south-western part of the country. The Dnieper and the Southern Bug flow through the heartland of Ukraine. All three rivers flow in the north-south direction and empty their waters into the Black Sea.

Taking into consideration total transport performance, Rhine countries (Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland) accounted for 78.6% of total inland waterway transport performance in the EU-27, plus Switzerland, Serbia and Ukraine. The share for Danube countries was 19.1% (without Ukraine) and 21.2% (including Ukraine).

FIGURE 2: **YEARLY INLAND WATERWAY TRANSPORT PERFORMANCE IN EUROPEAN COUNTRIES** (IN BILLION TKM IN 2020) *

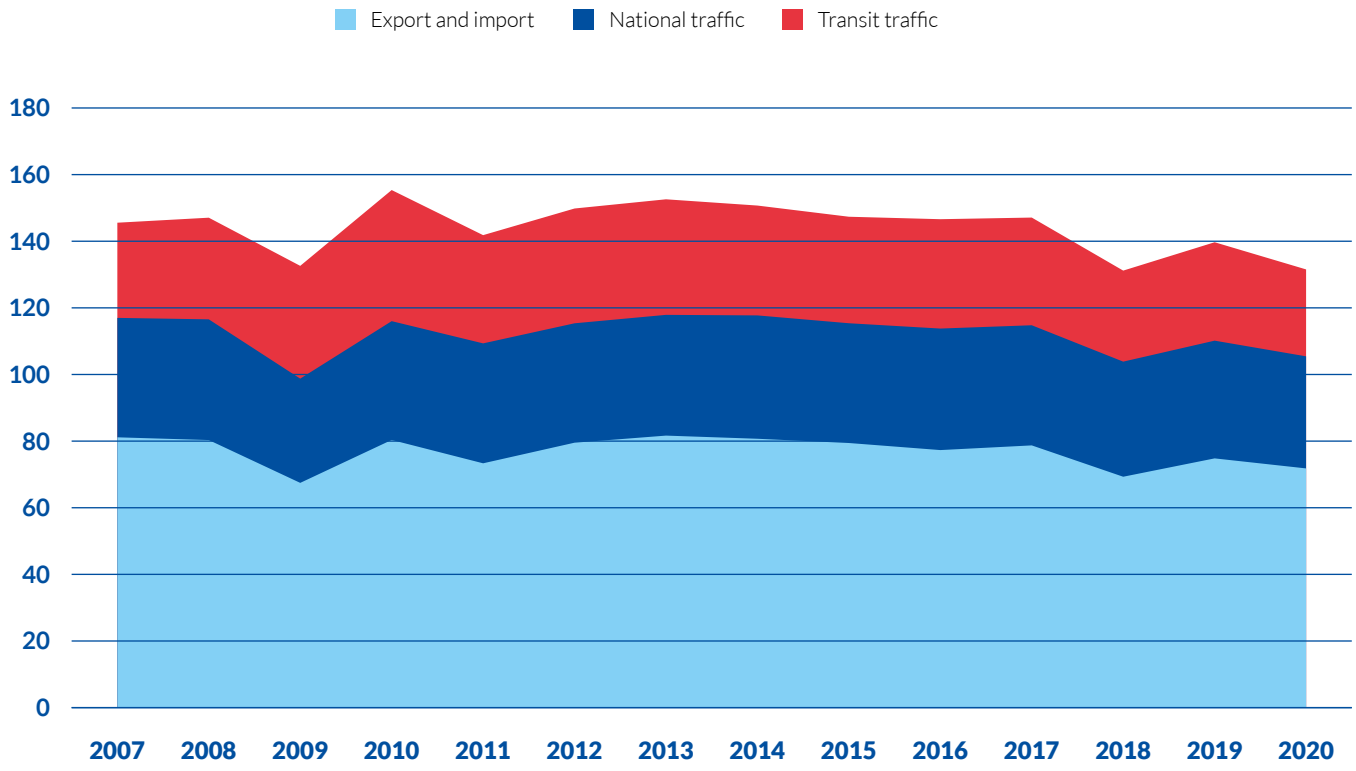


Sources: Eurostat [iww_go_atygo] and OECD
** Data for UK not available for 2020*

From the total inland waterway transport performance in Europe in 2020, which amounts to around 132 billion TKM, 74.4% represented transport that crossed a border in one way or another whether it be in the form of export, import or transit traffic. Transit traffic taken separately had a share of 19.8% in 2020, and export and import traffic each had a share of 27.3%.

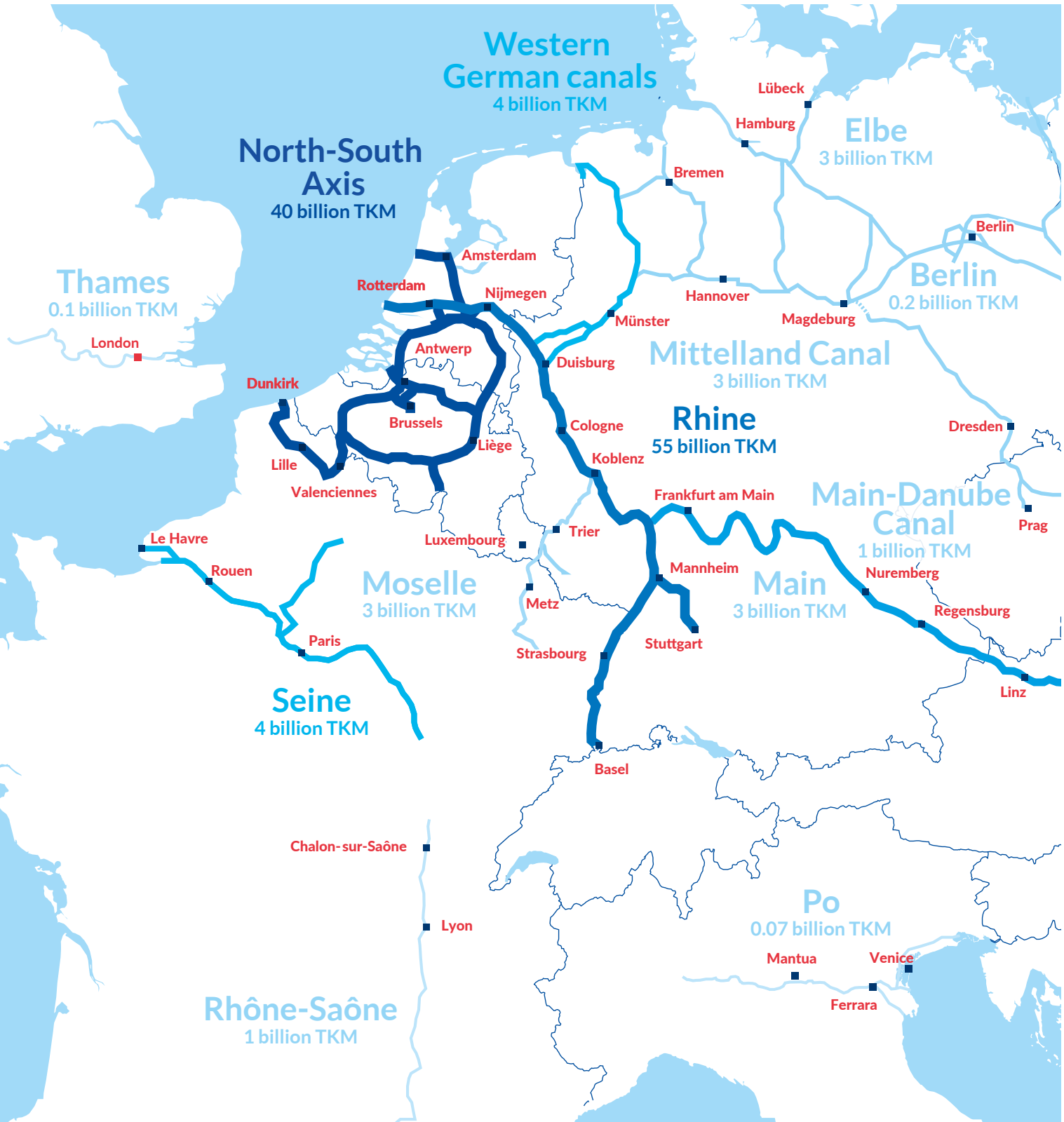
Inland waterway transport is particularly relevant for certain corridors. Current market characteristics show that for cross-border traffic within the Rhine-Alpine corridor, inland waterways have a modal share of 54%. For the North Sea-Mediterranean corridor, IWW cross-border traffic amounts to 35%, 38% for the North Sea-Baltic corridor and 14% for the Rhine-Danube corridor.

FIGURE 3: **YEARLY INLAND WATERWAY TRANSPORT PERFORMANCE IN THE EU-27***
(IN BILLION TKM)



Source: Eurostat [iww_go_atygo]
** EU-27 according to member countries in 2020*

TRANSPORT
BY MAIN EUROPEAN RIVER BASINS

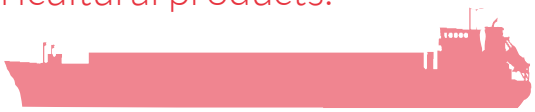


TRANSPORT PERFORMANCE IN MAIN EUROPEAN RIVER BASINS (IN BILLION TKM)

Sources: CCNR analysis based on Destatis, VNF, Eurostat

RHINE BASIN

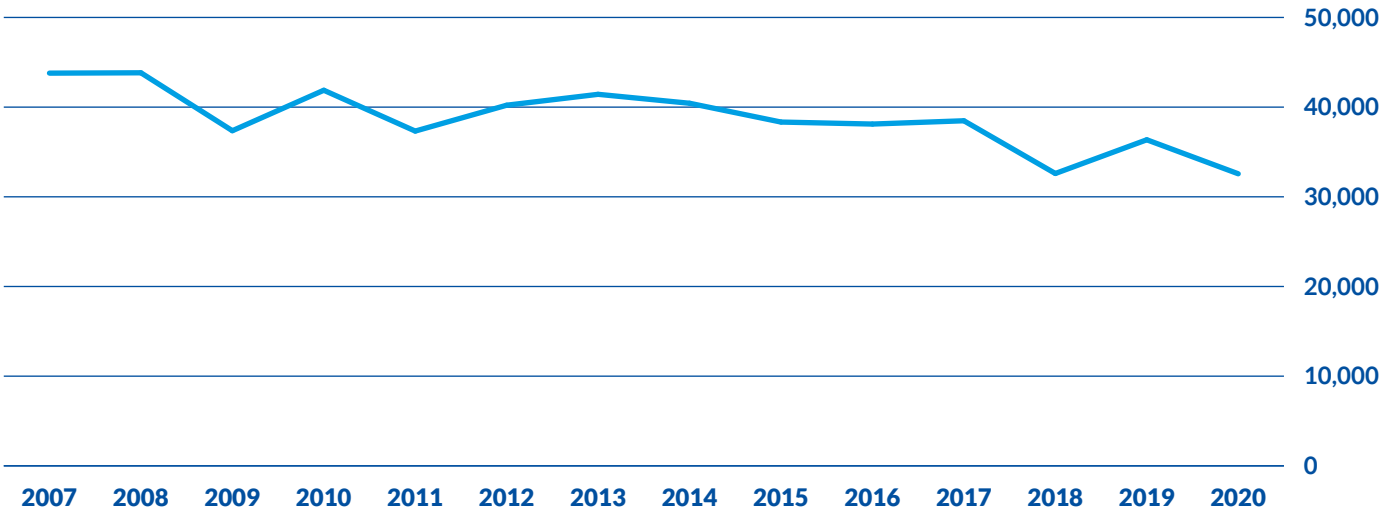
Transport performance on the traditional Rhine decreased by **10%** in 2020, compared to 15% in the low water year 2018, and 15% in the financial crisis year 2009. The only segment that registered higher figures in 2020 were agricultural products. Container transport nearly remained constant.



Transport volume and transport performance on the traditional Rhine

Cargo transport on the traditional Rhine (from Basel to the German-Dutch border) amounted to 160 million tonnes in 2020, which represented a decrease of 8.4% compared to 2019. Transport performance on the traditional Rhine reached 32.6 billion TKM, which was 10% less than in 2019. Total transport volume and transport performance on the traditional Rhine are calculated by the German Statistical Office *Destatis*, based on information provided by ports and skippers (see glossary).

FIGURE 4: **TRANSPORT PERFORMANCE ON THE TRADITIONAL RHINE** (IN MILLION TKM)



Source: CCNR analysis based on Destatis

Rhine transport at specific measurement points

Along with the overall cargo transport on the traditional Rhine (160 million tonnes), cargo transport can also be measured at specific measurement points (locks or border points). The relevant volumes represent the transport activity only at these particular points in a geographical, snapshot type of approach.[4]

The following table contains a set of measurement points in the Rhine basin which is used by the waterway and shipping administration in Germany.

TABLE 1: **MEASUREMENT POINTS FOR FREIGHT TRANSPORT IN THE RHINE BASIN AND RATE OF CHANGE 2020/2019**

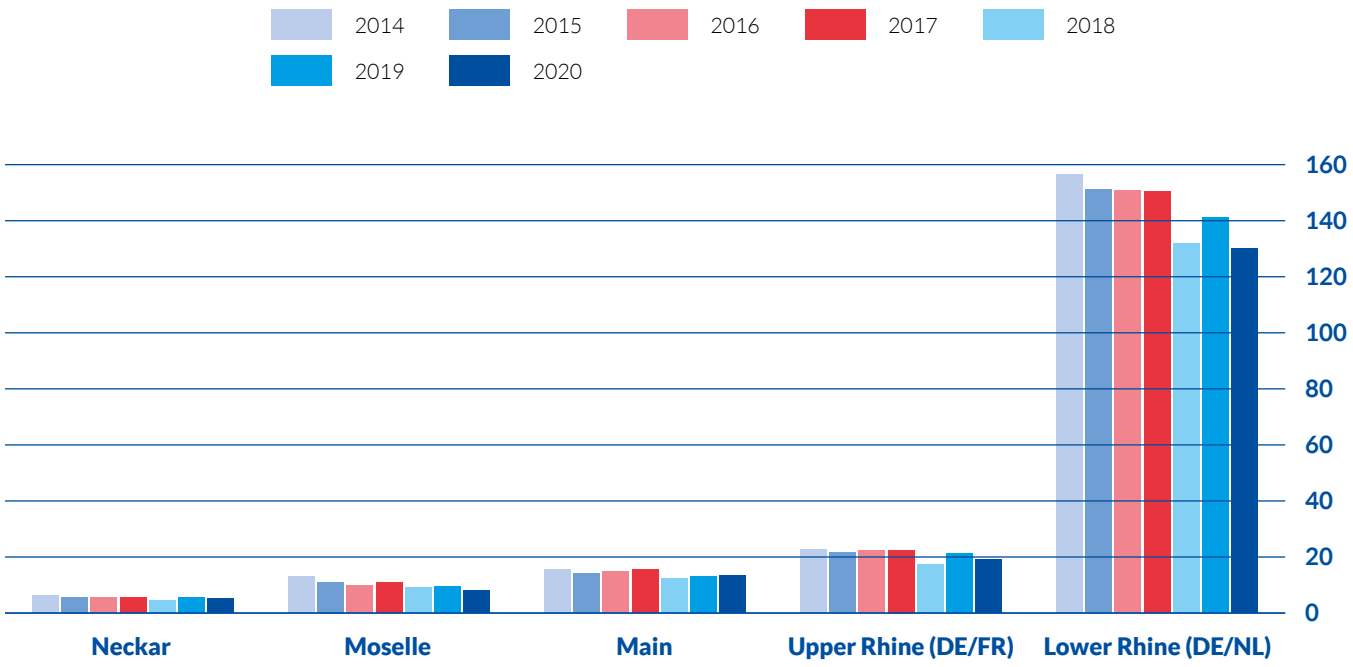
Rhine stretch / affluent	Measurement point	Name of measurement point	Volume of transport in 2020 in Mio. tonnes	Rate of change 2020/2019
Lower Rhine	Border Germany/ Netherlands	Emmerich	130.0	-7.9%
Upper Rhine	Border Germany/ France	Lock of Iffezheim	19.2	-9.9%
Main	Junction of Main and Rhine	Lock of Mainz-Kostheim	13.5	+2.3%
Moselle	Junction of Moselle and Rhine	Lock of Koblenz	8.1	-14.5%
Neckar	Junction of Neckar and Rhine	Lock of Mannheim-Feudenheim	5.1	-5.6%

Source: CCNR analysis based on data of the German Waterway Administration

Regarding the Moselle, a sharp decrease in coal transport in 2020 (by 39.6%) contributed significantly to the overall reduction of cargo transport, which amounted to 14.5% (lock of Koblenz). A positive development within Moselle transport is the increase of container traffic by 12.7%, from 22,290 TEU in 2019 up to 25,521 in 2020.[5] Compared to the year 2015, when TEU on the Moselle amounted to 16,896, container transport on the Moselle grew by 51% over only five years. In terms of overall cargo transport, however, this increase in container transport does not compensate for the decline in the traditional cargo segments (coal, iron ore) on the Moselle.

[4] Data for specific measurement points are provided by the German Waterway administration. The advantage of this method of measurement points is that it does not entail any kind of estimation, in comparison with the Destatis method which calculates an estimated Rhine transport, and thereby also uses assumptions about loading and unloading locations of the cargo for cases where information provided by skippers and ports is not sufficient. Although these assumptions reflect the reality to a high degree, they are not free from possible inaccuracies. On the other hand, the drawback of the method of the German Waterway Administration (method of measurement or border points) is that it measures cargo traffic only at one specific point of a river, while the Destatis method attributes each transport activity to certain rivers (see description in the glossary).
[5] Source: Moselle Commission (2021), report "Verkehrszahlen Mosel"

FIGURES 5: **YEARLY FREIGHT TRANSPORT AT DIFFERENT MEASUREMENT POINTS ALONG THE RHINE AND ITS AFFLUENTS** (IN MILLION TONNES)



Sources: German Waterway and Shipping Administration and Moselle Commission

The number of loaded vessels at the lower Rhine stretch, which has the highest traffic intensity of the Rhine, amounted to 100,000 vessels in 2020, representing a decrease of 3.5% compared to 2019. The average amount of cargo carried by a vessel when passing the German-Dutch border amounted to 1,300 tonnes per loaded vessel in the year 2020, compared to 1,362 tonnes in 2019.

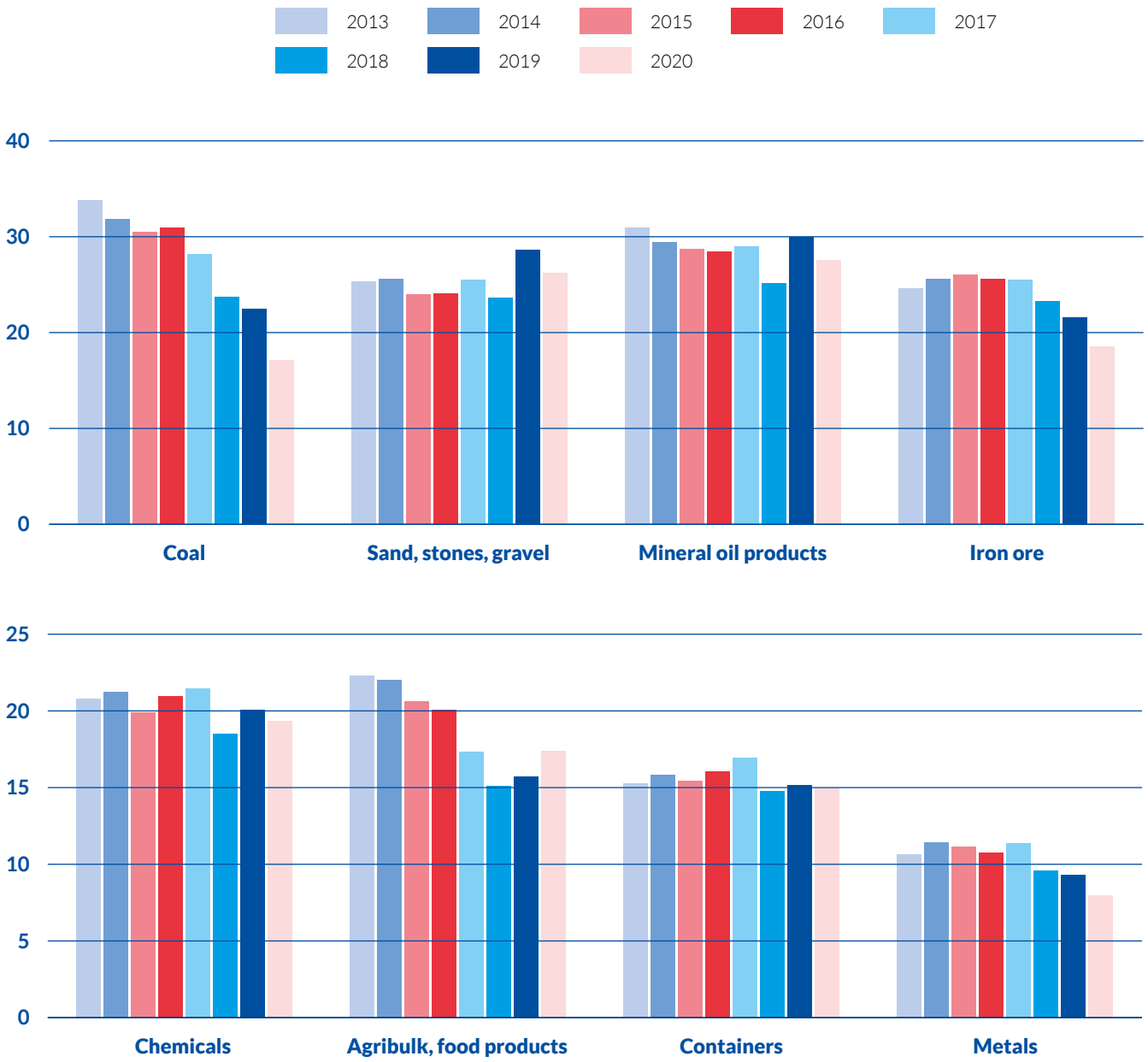
Rhine transport by cargo segment

An important trend per cargo segment in Rhine navigation concerns the phasing out of coal in the energy sector and the related decrease in coal transport. This decrease continued in 2020. Coal transport on the Rhine is made up of imported cargo volumes from abroad, and around half of these imports are used in the energy sector, while the other half are used for producing steel. Taking this steel related coal into account separately, all goods segments related to steel production account for approximately 25% of Rhine transport.

After the macroeconomic and world trade decline that started in 2017 and the low water year in 2018, steel related transport faced another year with negative influencing factors. The Covid crisis in 2020 provoked a sharp decrease in automobile and steel production and therefore a drop in related transport demand. Combined with energy transition, this explains why the sharpest decreases within Rhine transport in 2020 were seen for coal (-23.8%), iron ore (-14.2%) and metals (-14.6%).

The only segment with a positive result was the agribulk and food segment (+10.7%), which is closely correlated with harvest results. The explanation for this growth is indeed found in the higher grain volumes harvested in Europe. Cargo transported in containers (net-weight) amounted to 15.0 million tonnes, which was almost on the same level as in 2019 (15.2 million tonnes). In terms of TEU, the result was 1.967 million TEU in 2020, compared to 2.041 million TEU in 2019 (-3.6%).

FIGURES 6 AND 7: **GOODS TRANSPORTED ON THE TRADITIONAL RHINE BY TYPE OF GOODS** (IN MILLION TONNES) *



Source: CCNR analysis based on Destatis
** For containers: net-weight*

TABLE 2: **GOODS TRANSPORT ON THE TRADITIONAL RHINE IN TOTAL AND BY LARGEST GOODS SEGMENTS** (IN MILLION TONNES) **AND RATE OF CHANGE 2020/2019**

Goods segment	2019	2020	2020/2019 in %
Traditional Rhine in total	174.1	160.0	-8.4
Mineral oil products	30.0	27.6	-8.0
Sands, stones, gravel	28.6	26.2	-8.4
Chemicals	20.1	19.3	-3.7
Iron ore	21.6	18.5	-14.2
Agribulk, food products	15.7	17.4	+10.7
Coal	22.4	17.1	-23.8
Goods in containers	15.2	15.0	-1.4
Metals	9.3	8.0	-14.6

Source: CCNR analysis based on Destatis

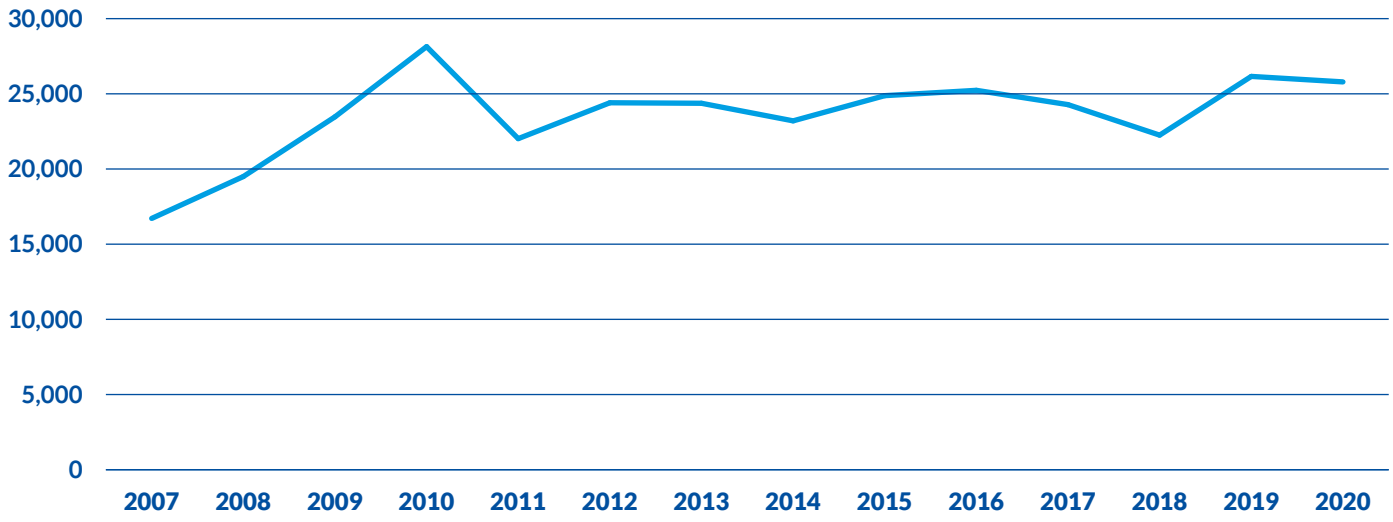
DANUBE BASIN

Despite of reductions in iron ore, metals and coal transport, transport performance on the Danube decreased by only **1.4%** in 2020, thanks to a vital upsurge in transport of agricultural products.

Transport volume and transport performance on the Danube

Cargo transport on the entire navigable Danube between Kelheim (Germany) and the Black Sea in Romania lies in the range between 36 and 40 million tonnes per year.[6] The transport performance on the Danube (EU Danube countries plus Serbia) reached 25.8 billion TKM in 2020, which was 1.4% less compared to 2019.

FIGURE 8: **TRANSPORT PERFORMANCE IN FREIGHT TRANSPORT ON THE DANUBE** (IN MILLION TKM) *



Sources: Eurostat [IWW_GO_ATYGO] and OECD (Serbia)
** Transport performance in IWT in all EU Danube countries plus Serbia*

Danube transport at specific measurement points

The statistical system used for observing Danube cargo transport at certain measurement points is similar to the system in the Rhine basin. The waterway administrations register data at certain borders or measurement points which are described for the Danube in the table below.

[6] *Source: Via Donau, several annual reports available at https://www.viadonau.org/newsroom/publikationen/broschueren (last consulted 3 June 2021)*

TABLE 3: **MEASUREMENT POINTS FOR DANUBE FREIGHT TRANSPORT AND RATE OF CHANGE 2020/2019**

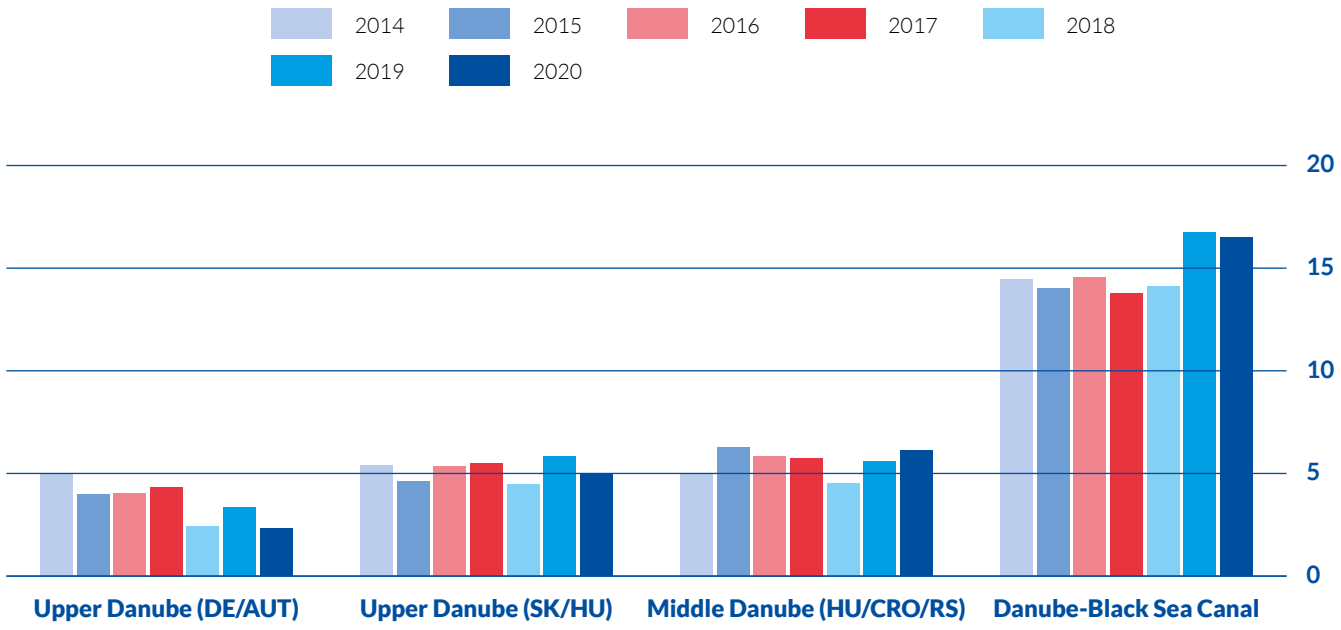
Danube stretch	Measurement point	Name of measurement point	Volume of transport in 2020 in Mio. tonnes	Transport volume 2020/2019
Upper Danube	Border Germany/ Austria	Lock of Jochenstein	2.3	-30.0%
Upper Danube	Border Slovakia/ Hungary	Lock of Gabčíkovo	5.0	-14.2%
Middle Danube	Border Hungary/ Croatia/Serbia	Mohács	6.1	+9.5%

Source: Danube Commission market observation

On the Danube, and in particular on the Lower and Middle Danube, transport by pushed convoys has a much higher share than it does on the Rhine. For the Middle Danube, the share of pushed convoys within total cargo transport was 75.7% in 2020, compared to 79.5% in 2019 and 78.7% in 2018.

Next to the measurement points along the Danube, yearly figures are also shown for the Danube-Black Sea Canal, running from Cernavodă on the Danube River to Constanţa (southern arm) and to Năvodari (northern arm) on the Black Sea. In 2020, this canal had a transport volume of 16.5 million tonnes (a decrease of only 1.4% compared to 2019).

FIGURE 9: **YEARLY FREIGHT TRANSPORT AT DIFFERENT MEASUREMENT POINTS ALONG THE DANUBE AND ON THE DANUBE-BLACK SEA CANAL** (IN MILLION TONNES)



Source: Danube Commission, several annual market observation reports

The Sulina Canal is another artificial waterway in Romania that connects the Danube with the Black Sea. The main part of freight transport activity on the Sulina Canal is performed by seagoing vessels. In 2020, transport on this canal reached a volume of 4.55 million tonnes.

TABLE 4: **GOODS TRANSPORT ON THE SULINA CANAL IN MILLION TONNES BY DIRECTION**

Direction/Year	2014	2015	2016	2017	2018	2019	2020
Danube ➡ Black Sea	3.24	3.26	3.25	3.61	3.67	4.33	2.87
Black Sea ➡ Danube	0.42	0.58	0.51	0.70	0.77	1.16	1.67
Total transport	3.67	3.85	3.76	4.31	4.44	5.49	4.55

Source: Danube Commission market observation

The total inland waterway transport handled by Romanian ports amounted to 27.3 million tonnes in 2020 (-4.1% compared to 2019). This includes the inland shipping volumes handled in the port of Constanţa amounting to 14.5 million tonnes.

Danube transport by cargo segment

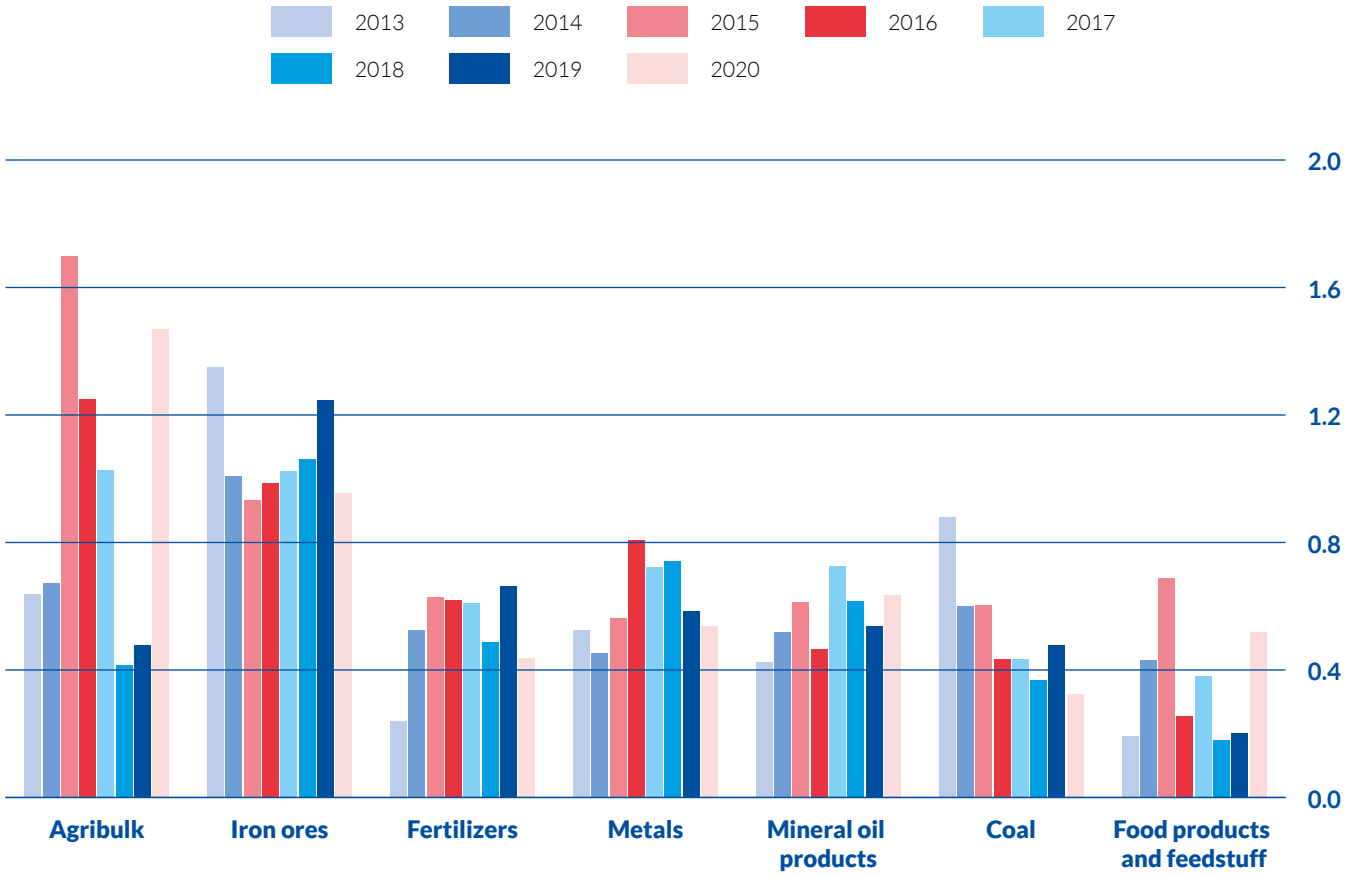
Cargo volumes of iron ore, metals, metal products, steel and coking coal account for 45-55% of all goods transport on the Danube.[7] Overall, iron ore and metals followed an increasing trend on the Danube between 2014 and 2019, despite low waters and macroeconomic hurdles. The reasons are the general positive macroeconomic growth environment in many Danube countries and in particular the growth in steel production in most of these countries between 2014 and 2019.[8]

In 2020, however, the decrease in demand for raw materials for the metal processing industry and for metal products led to a partial suspension of activity in this market segment. Further important developments were the reduction of import quotas of metals to the EU and the redistribution of supply flows as a result of the introduction of new customs duties in international trade. Altogether, there was no stabilisation of the indicators in the steel market segment of Danube navigation until the end of 2020.

The agricultural segment stabilised Danube transport: large volumes of grain and other agricultural products were transported from the ports on the middle Danube to the ports of the Danube Delta (Constanța). The transport market on the Danube for petroleum products and products of the chemical industry could be considered as relatively stable during the year.

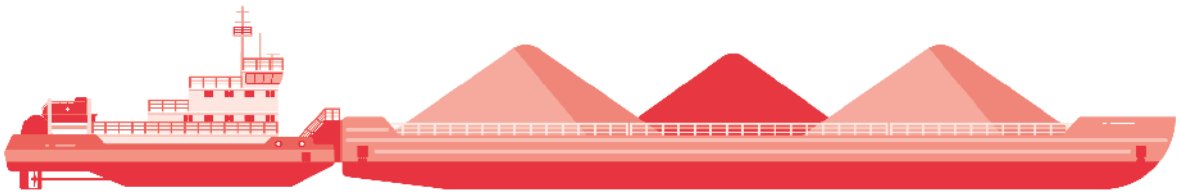
[7] *Source: CCNR / EC: Market Report 2014-2019 (2021), Main features and trends of the European Inland Waterway Transport Sector, p. 9*
[8] *Steel production in Romania grew by 9.2% between 2014 and 2019, in Hungary by 53.6% and in Serbia by 231%. Source: CCNR / EC: Market Report 2014-2019 (2021), p. 58*

FIGURE 10: **GOODS TRANSPORT ON THE MIDDLE DANUBE** (IN MILLION TONNES) *



Source: Danube Commission market observation
**At Mohács (southern Hungary - border area with Croatia and Serbia)*

On the Upper and Middle Danube, iron ore is entirely transported upstream, while grain, food products and foodstuffs are entirely transported downstream. The first point reflects the provision of the steel industry in Austria, Hungary and Serbia with raw materials, while the second point reflects the export of agricultural products from Croatia, Hungary and Serbia downstream to the Lower Danube region and to seaports.



CONTAINER TRANSPORT
PER COUNTRY IN EUROPE

Geographical structure

It is the case that 99.99% of all container transport performance (TKM) on European inland waterways occurs in the six Rhine countries (the Netherlands, Belgium, Germany, France, Switzerland, Luxembourg). On the Danube, container transport is still almost non-existent.

Whole EU

IWW container transport in the whole EU-27 amounted to 6.8 million TEU and 56.5 million tonnes in 2020, which was an increase of 2% (based on TEU) but a decrease of 3% (based on tonnes) compared to 2019.

The 56.5 million tonnes represented a share of 11.3% of total inland waterway transport in the EU. The share of container transport is following an upward trend as can be seen by the following figures for this share: 9.0% (2015), 9.9% (2018), 10.4% (2019), 11.3% (2020).

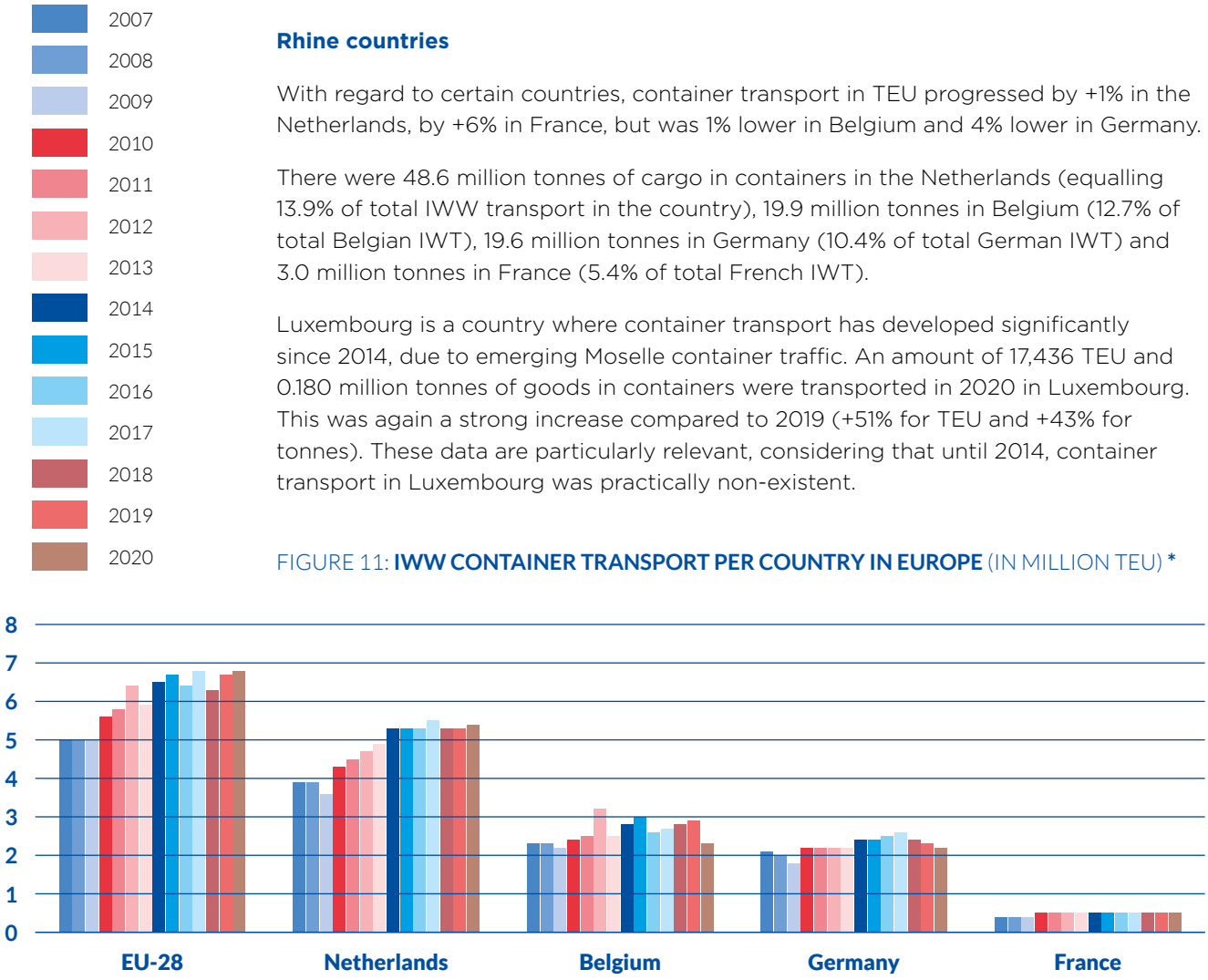
Rhine countries

With regard to certain countries, container transport in TEU progressed by +1% in the Netherlands, by +6% in France, but was 1% lower in Belgium and 4% lower in Germany.

There were 48.6 million tonnes of cargo in containers in the Netherlands (equalling 13.9% of total IWW transport in the country), 19.9 million tonnes in Belgium (12.7% of total Belgian IWT), 19.6 million tonnes in Germany (10.4% of total German IWT) and 3.0 million tonnes in France (5.4% of total French IWT).

Luxembourg is a country where container transport has developed significantly since 2014, due to emerging Moselle container traffic. An amount of 17,436 TEU and 0.180 million tonnes of goods in containers were transported in 2020 in Luxembourg. This was again a strong increase compared to 2019 (+51% for TEU and +43% for tonnes). These data are particularly relevant, considering that until 2014, container transport in Luxembourg was practically non-existent.

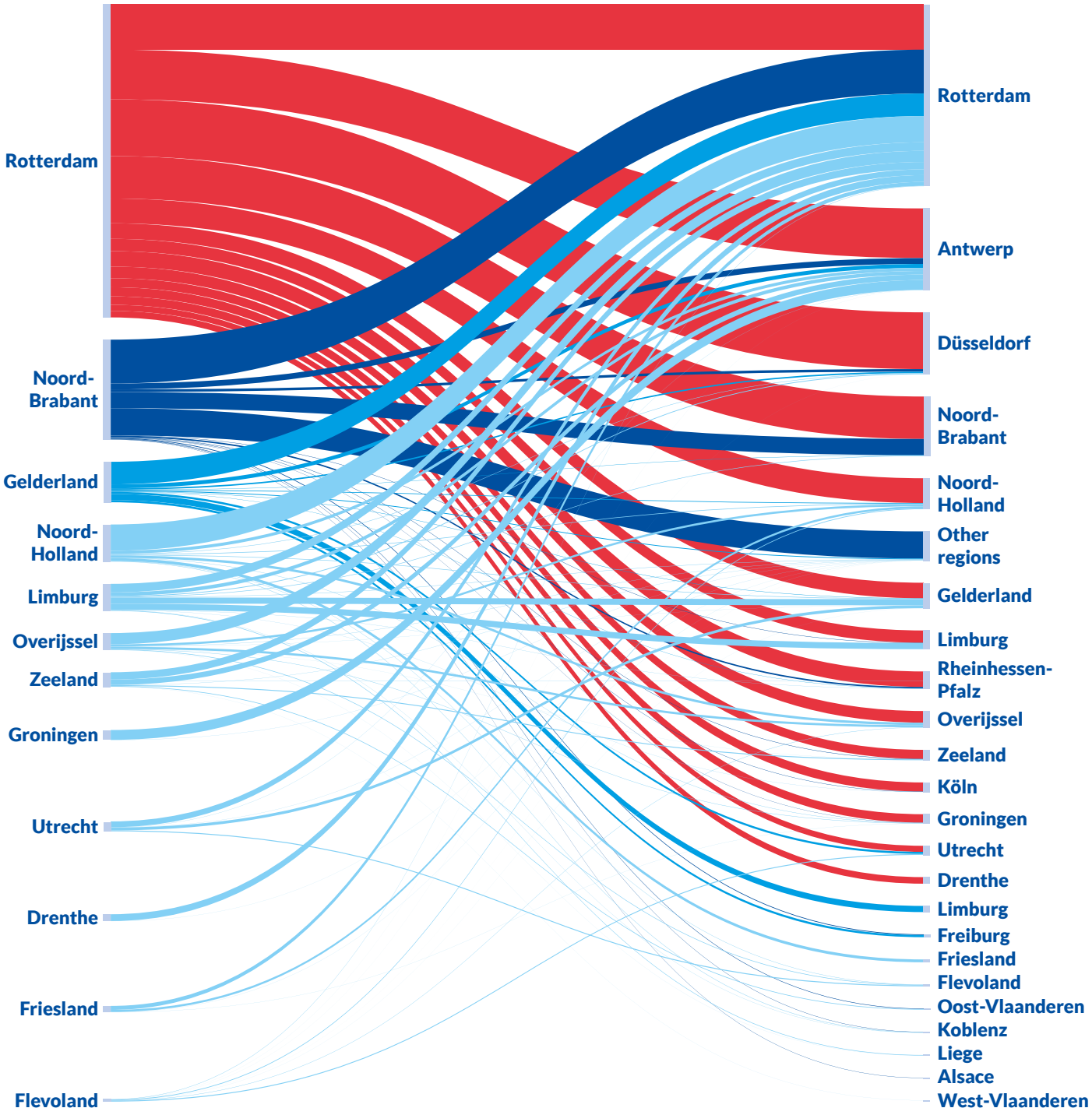
FIGURE 11: **IWW CONTAINER TRANSPORT PER COUNTRY IN EUROPE** (IN MILLION TEU) *



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-27 takes into account cross-border container traffic.*

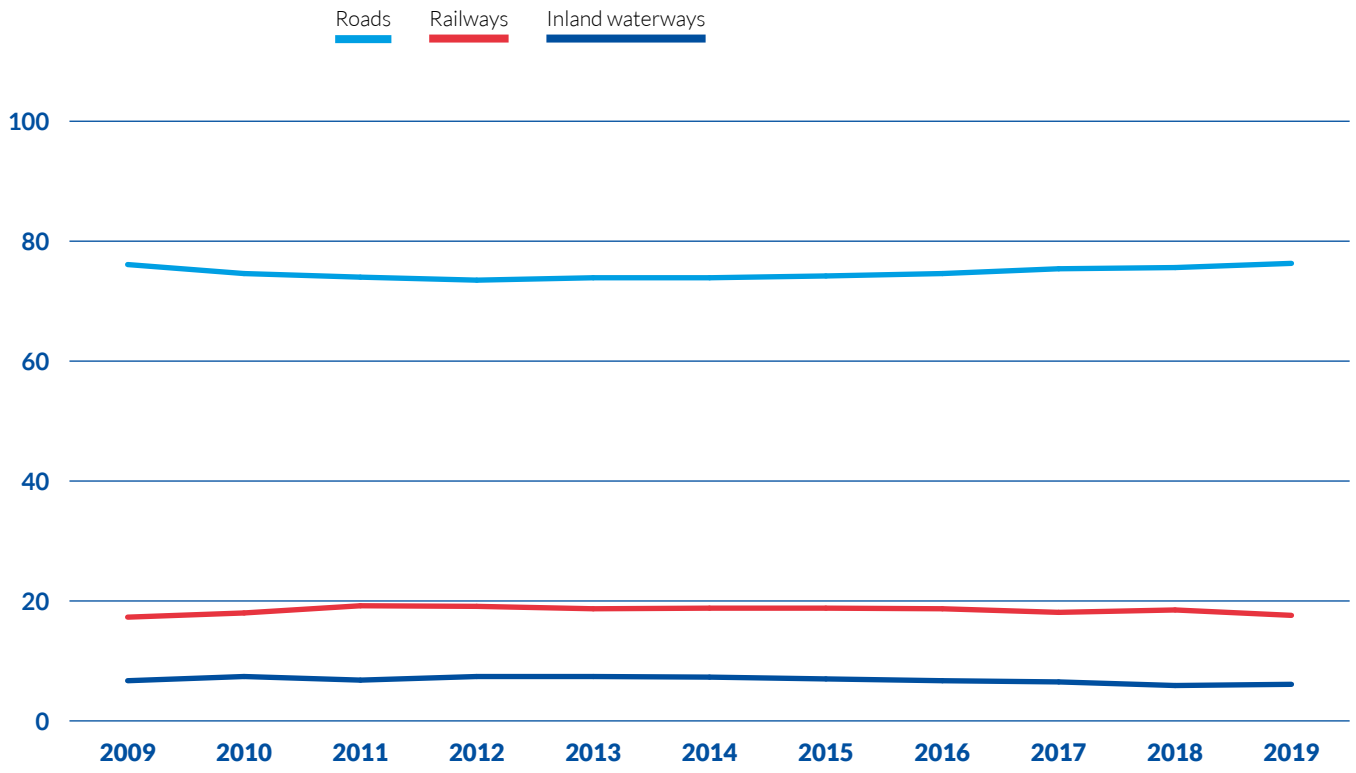
FIGURE 12: **CONTAINER** (TEU) **FLOWS FROM LOADING REGIONS IN THE NETHERLANDS TO REGIONS OF UNLOADING** (NUTS 2)



Source: CCNR analysis based on CBS data

INLAND NAVIGATION
AND OTHER MODES OF TRANSPORT

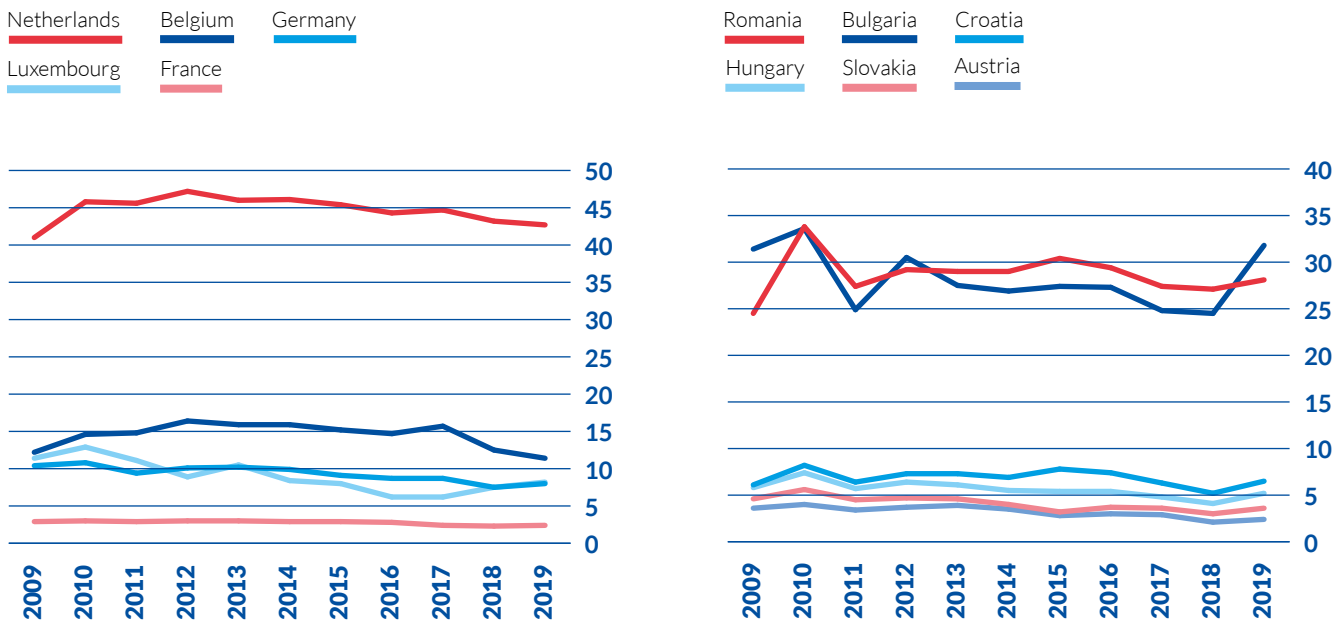
FIGURE 13: **MODAL SPLIT SHARE OF INLAND TRANSPORT MODES IN THE EU-27** (IN %) **2009-2019**



Source: Eurostat [tran_hv_frmod]

In the last decades, modal split shares have remained rather stable. The modal split of IWT at the level of the EU-27 was 6.1% in 2019 and thus behind road transport (76.3%) and rail transport (17.6%). The IWT modal share therefore remained at similar levels, while the modal share of rail transport decreased for the benefit of road transport. As many EU countries do not have inland waterways, the overall modal split of IWT on the EU level should not be used as a performance indicator for the success of inland waterway transport in the EU. In order to measure the success of IWT in the transport market, it is better to look at the modal split evolution of IWT in countries where there is a sufficiently dense inland waterway network, such as in the Netherlands, Belgium or Germany, or where inland navigation has traditionally been important for goods transport, as in many Danube countries.

FIGURES 14 AND 15: **IWW MODAL SPLIT EVOLUTION IN RHINE AND DANUBE COUNTRIES** (%, BASED ON TONNE-KILOMETRES) *



Source: Eurostat [tran_hv_frmod]
** Share of inland waterway transport performance in total (IWT + Road + Rail) transport performance. 2018 data for Belgium are estimated.*

The IWW modal split in EU countries shows varying trends. In the Netherlands, IWW modal split increased between 2009 and 2012 to reach 47.2%. It decreased in the following years, reaching 42.7% in 2019. The reduction in coal transport, which began in 2015, and the low water periods in 2015, 2017 and 2018, can explain parts of this downward trend. Such a downward trend is also visible in Belgium and Germany. In Luxembourg, the modal split of IWT has increased in recent years. Within Danube countries, Romania and Bulgaria record high IWT modal shares, in 2019 reaching respectively 28.1% and 31.8%. For the latter, it is the first time since 2012 that the IWT modal split in Bulgaria is higher than 30%, an important increase of 7.3 percentage points compared to 2018.

03

WATER LEVELS AND FREIGHT RATES

- **Water levels and navigating conditions on the Rhine and Danube were slightly more severe in 2020 than in 2019, but better than in 2018.**
- **Freight rates decreased for most cargo groups in 2020, although exceptions such as construction materials on the Rhine and agribulk on the Danube existed.**
- **For the last ten years, the annual averages of dry and liquid cargo freight rates in the Rhine region followed an upward tendency.**

WATER LEVELS

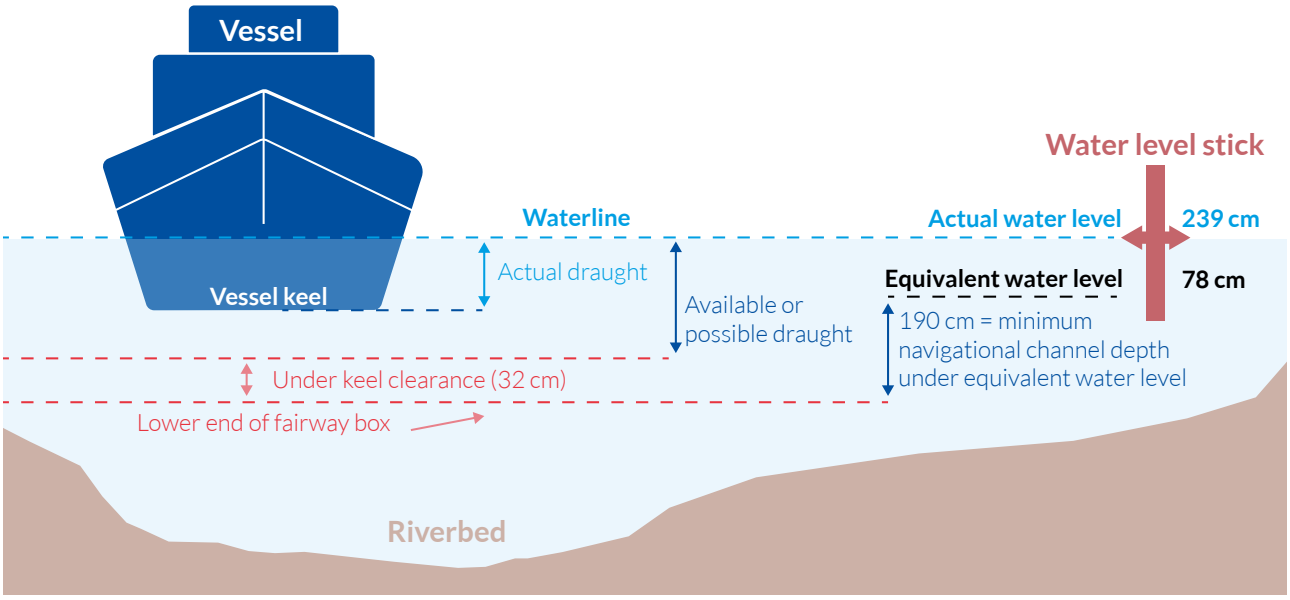
AND AVAILABLE VESSELS' DRAUGHT AT GAUGING STATIONS ON RHINE AND DANUBE

Water levels and navigating conditions were more severe in 2020 than in 2019, but better than in 2018. Freight rates decreased for most cargo groups in 2020, although exceptions such as construction material on the Rhine and agribulk on the Danube were present.

The available draught for a vessel at a certain gauge station is calculated with the formula:[9] possible or available draught = minimum navigation channel depth + (actual water level – equivalent water level) – under keel clearance.

If the actual water level equals the equivalent water level (indicating that the water level is very low), the difference (actual water level – equivalent water level) will be zero. In this case, the possible draught of a vessel should still be equal to the minimum channel depth minus the under-keel clearance (see illustration).

FIGURE 1: **ACTUAL WATER LEVEL, ACTUAL DRAUGHT, EQUIVALENT WATER LEVEL, MINIMUM NAVIGATION CHANNEL DEPTH AND POSSIBLE OR AVAILABLE DRAUGHT AT KAUB/MIDDLE RHINE ***



In this illustration, the date chosen to determine the available or possible draught is 3 September 2020, when the actual water level was 239 cm on average.

9 Regarding the formula, see: SVS Aktuell, Dec. 2018/Jan. 2019, pages 7 and 8, available at: http://www.svs-ch.ch/sites/default/files/svs-aktuell/winter_2018.pdf

Table 1 shows the analysis of daily data for gauge stations on the Rhine and Danube for the three years 2018, 2019 and 2020. It was found that an available draught which equals at least the minimum navigation channel depth of 1.90 m was achieved at Kaub:

- In 2018: on 63.5% of all days per year
- In 2019: on 98.3% of all days per year
- In 2020: on 87.3% of all days per year

The fact that the 'achievement rate' in 2018 and 2020 was lower than the target rate of 95% reflects the occurrence of strong low water periods in both years.

Duisburg-Ruhrort at the Lower Rhine offers higher water levels, channel depths and possible draughts in general, due to different morphological characteristics of the Rhine at this point. This is reflected by a higher target depth (2.80 m), but it was only in 2019 that this target could be reached at a rate of at least 95%.

Equivalent calculations can be carried out for the Danube. Two gauge stations on the Upper Danube in Austria are considered: Kienstock (122 km east of Linz and 90 km west of Vienna) and Wildungsmauer (250 km east of Linz and 38 km east of Vienna). The target depth for both stations is 2.50 m.

Better navigation conditions are observed for all four stations for the year 2019 compared to the strong low water year of 2018. In 2020 a relatively sizeable decrease can be noted due to the return of intense heat and dryness in summer 2020, with a reoccurrence of lower water levels.

TABLE 1: **ACHIEVEMENT OF MINIMUM NAVIGATION CHANNEL DEPTH AS AVAILABLE DRAUGHT IN 2018-2020** (IN % OF ALL DAYS PER YEAR)

Gauge station	Minimum navigation channel depth under the EWL*	2018	2019	2020
Kaub (Middle Rhine)	190 cm	63.5%	98.3%	87.3%
Duisburg Ruhrort (Lower Rhine)	280 cm	62.3%	95.3%	83.6%
Kienstock (Upper Danube)	250 cm	50.4%	63.3%	57.4%
Wildungsmauer (Upper Danube)	250 cm	43.3%	53.4%	46.2%

Sources: CCNR calculation based on data from the German Federal Waterways and Shipping Administration, provided by the German Federal Institute of Hydrology (BfG), and based on data from the Federal State of Lower Austria
** EWL = Equivalent Water Level*

The percentage values for the two Austrian Danube gauge stations are overall in line with information provided by the Danube Commission on navigating conditions on the Danube in 2020. According to the market observation report for the Danube, sufficient water supply was ensured only in March, which allowed the loading of freight vessels at a draught of 250 - 270 cm. For other months, this draught level was not achieved.

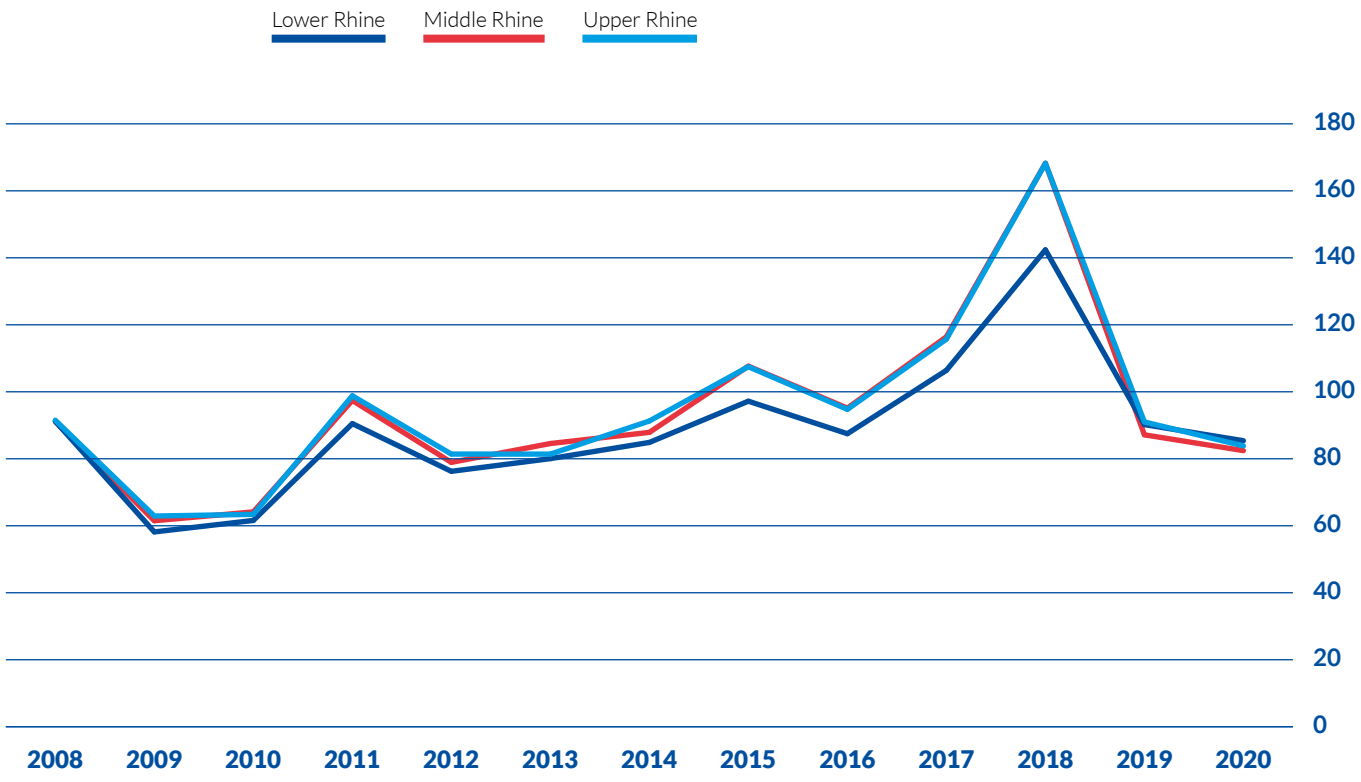
FREIGHT RATES
IN THE RHINE REGION

DRY CARGO FREIGHT RATES IN THE RHINE REGION

In 2020, the dry cargo freight rates in the Rhine region remained below the 2019 levels, with the exception of freight rates for construction materials. A recovery became visible towards the second half of the year 2020 for the Lower and Middle Rhine whereas the situation on the Upper Rhine did not show a recovery.

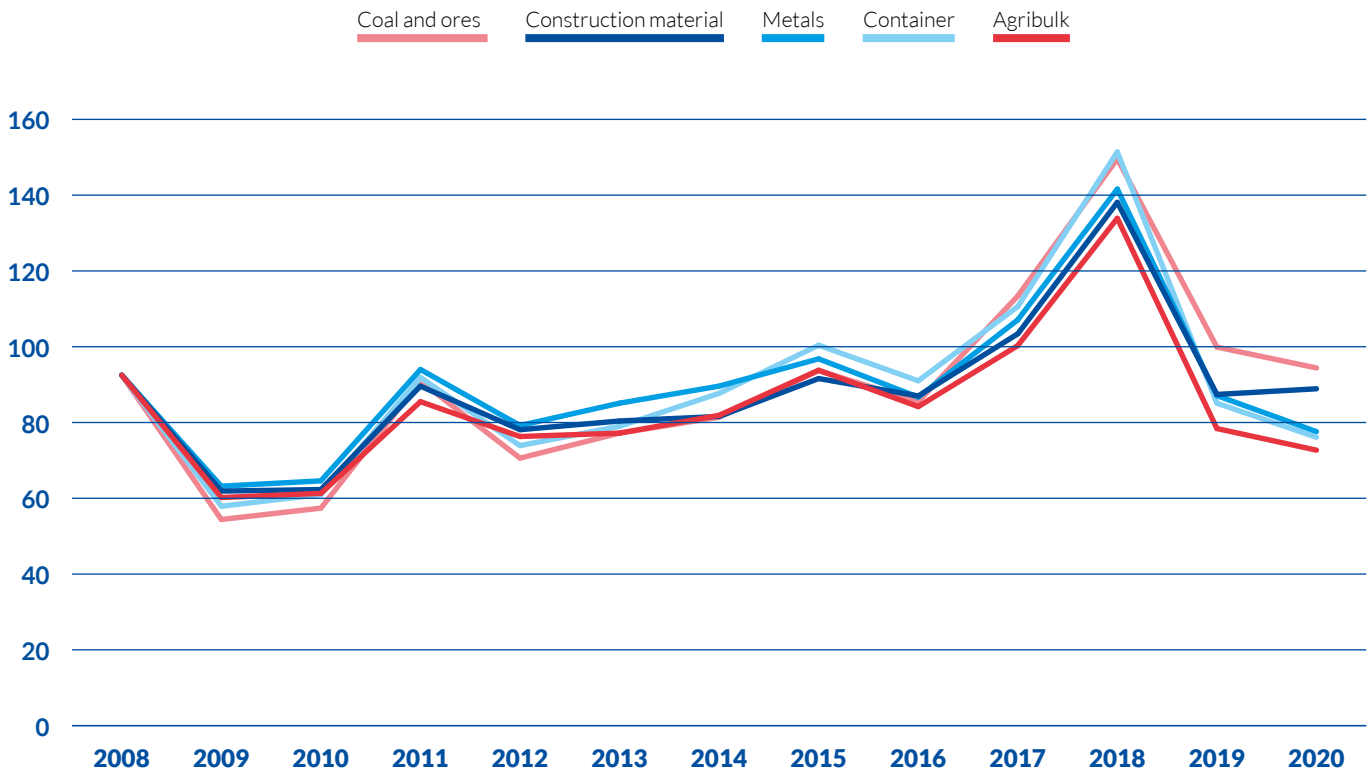
From a long-term perspective, an upward tendency is seen for dry cargo freight rates in the Rhine region. However, the high value of the index in the year 2018 is certainly an exception, as it was mainly caused by the low water period in that year.

FIGURE 2: **PANTEIA FREIGHT RATE INDEX FOR DRY CARGO TRANSPORT IN THE RHINE AREA** (INDEX 2015 = 100)



Source: Panteia

FIGURE 3: **PANTEIA FREIGHT RATE INDEX FOR DRY CARGO TRANSPORT ACORDING TO GOODS SEGMENT** (INDEX 2015 = 100)



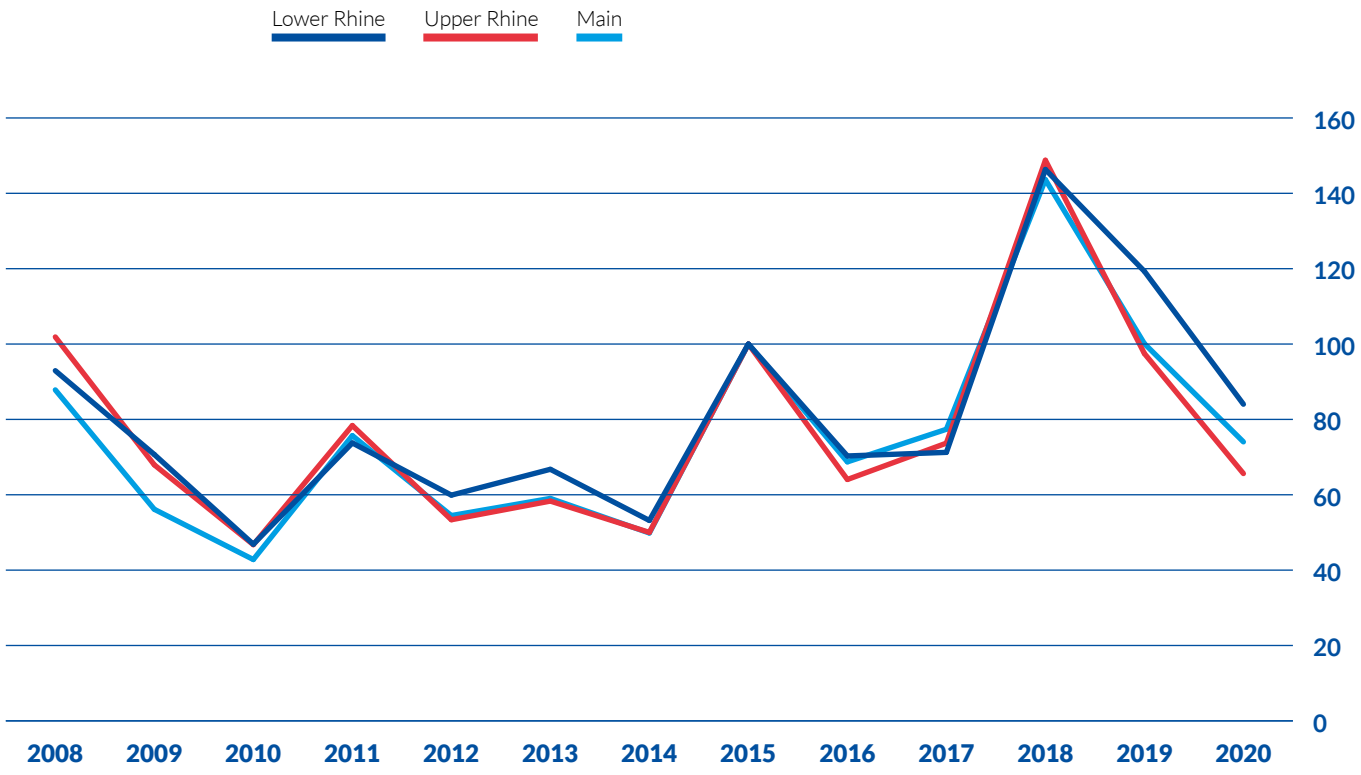
Source: Panteia

The dry cargo freight rates according to goods segments show significant decreases throughout the first half of the year 2020 compared to 2019. The recovery began around the third quarter of 2020. The goods segment of metals suffered the highest loss due to a lower transport demand partly linked to the reduction of automobile production and thus started its recovery around the last quarter of 2020. Similarly, coal and iron ore show the first half of the year to be weak but reaching a small peak around October 2020.

LIQUID CARGO FREIGHT RATES IN THE RHINE REGION

The liquid cargo freight rate index captured in figure 4 illustrates that liquid cargo freight rates for gasoil on the Rhine have followed a slightly increasing trend since 2010. The low water periods of 2011, 2015 and 2018 are hereby considered as positive outliers to this trend. Due to the Covid pandemic, the above-mentioned positive trend came to a halt. This is the case for all three stretches of the Rhine (Lower, Middle, Upper Rhine). The development of the freight rate index for gasoline on the Rhine is very similar to the graph for gasoil.

FIGURE 4: **PJK FREIGHT RATE INDEX FOR LIQUID CARGO TRANSPORT IN THE RHINE AREA** (INDEX 2015 = 100)



Source: CCNR calculation based on PJK International

FREIGHT RATES
IN THE FARAG REGION [10]

For the liquid cargo transport within the extended ARA region, a dataset on spot market freight rates provided by the tanker barge corporation CITBO[11] was analysed. Within the spot market data, the shares of the different product groups were as follows:

- Gasoil and components: share of 55% in 2020 (50% in 2019, 47% in 2018)
- Gasoline and components: share of 21% in 2020 (26% in 2019 and 35% in 2018)
- Biodiesel: share of 17.6% in 2020 (15% in 2019 and 11% in 2018)
- Chemicals: share of 5.4% in 2020 (9% in 2019 and 8% in 2018)
- Heavy and other products: share of 1.1% in 2020 (1% in 2019 and 2018)

Of all liquid cargo transported during the period under study (January until December 2020), 36% was loaded in Antwerp, 34% in Rotterdam, 9% in Flushing, 7% in Amsterdam, and 16% in all other ports. Regarding the ports of unloading: around 27% of the volumes were unloaded in Antwerp, 18% in Rotterdam, and 13% in Amsterdam. The rest was unloaded in other regions with a focus on Belgium, the Netherlands, Germany and Switzerland. Overall, the ports of unloading are geographically more diversified than the ports of loading, which reflects the logistics of mineral oil products (origin of products often in the FARAG region, demand side and consumers often in the near and far hinterland).

A freight rate index was calculated for gasoil and components, gasoline and components and biodiesel, based on the spot market freight rates.[12] For these three cargo segments, freight rates followed quite different trends in 2020:

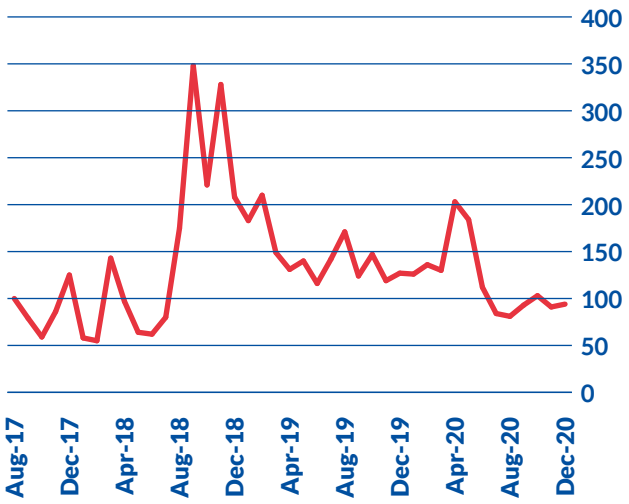
- **Gasoil and components:** a clear peak in April 2020 can be observed, which is explained by the sharp drop in oil and gasoil prices during the start of the pandemic. The price drop resulted in a higher demand for storage, as storing oil products is a means of benefitting from higher prices in the future. The storage activities resulted in more transport demand, so that freight rates for gasoil and components rose for a short period of time. However, when maximum storage capacity was reached, this extra activity subsided, so that freight rates dropped below pre-pandemic levels.
- **Gasoline and components:** a very stable development throughout the year 2020 is noticeable.
- **Biodiesel:** a clear peak in April 2020 can be seen, for which the explanation of gasoil and components can be applied as well. The overall trend during the year 2020 was downward orientated.

[10] Flushing, Antwerp, Rotterdam, Amsterdam, Ghent, Terneuzen
[11] https://citbo.com/
[12] The data on freight rates for chemical transport were not sufficient to allow an index to be constructed. The same was the case for time charter renting prices.

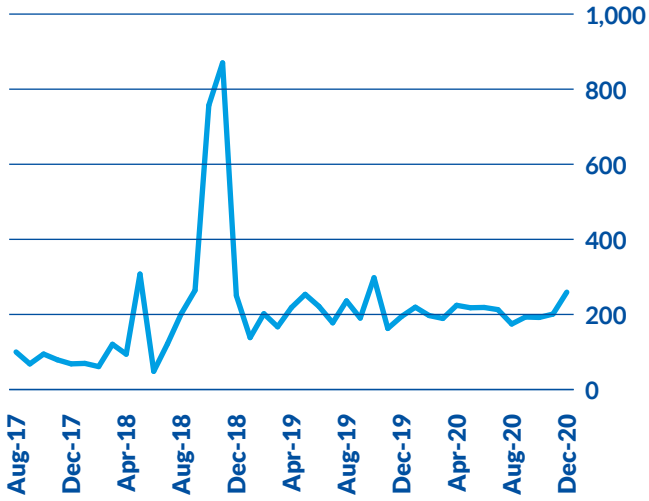
Gasoline and its components had the highest average spot market freight rates in absolute terms (€/tonne), as these trips are on average relatively long and therefore have to cover higher absolute costs (more fuel consumption, etc.). Transport of gasoline and components had an average duration of 21 hours, compared to 15 hours for gasoil and components. In 2020 the goods segment with the highest average duration of trips was Biodiesel with 25 hours.

FIGURES 5, 6 AND 7: **CITBO FREIGHT RATE INDEX FOR LIQUID CARGO SEGMENTS** (INDEX AUGUST 2017=100)

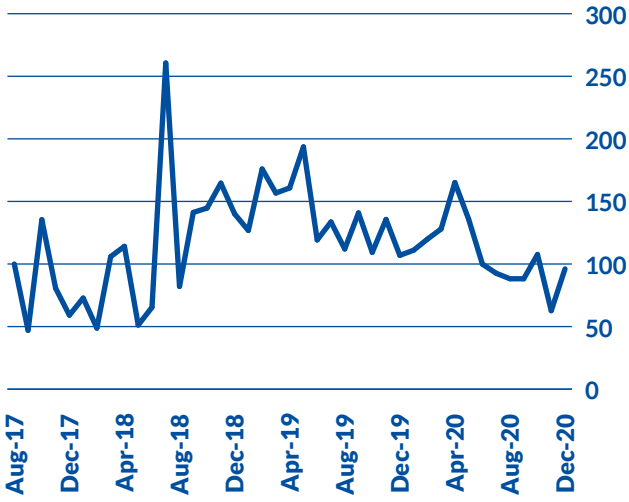
Gasoil and components



Gasoline and components



Biodiesel

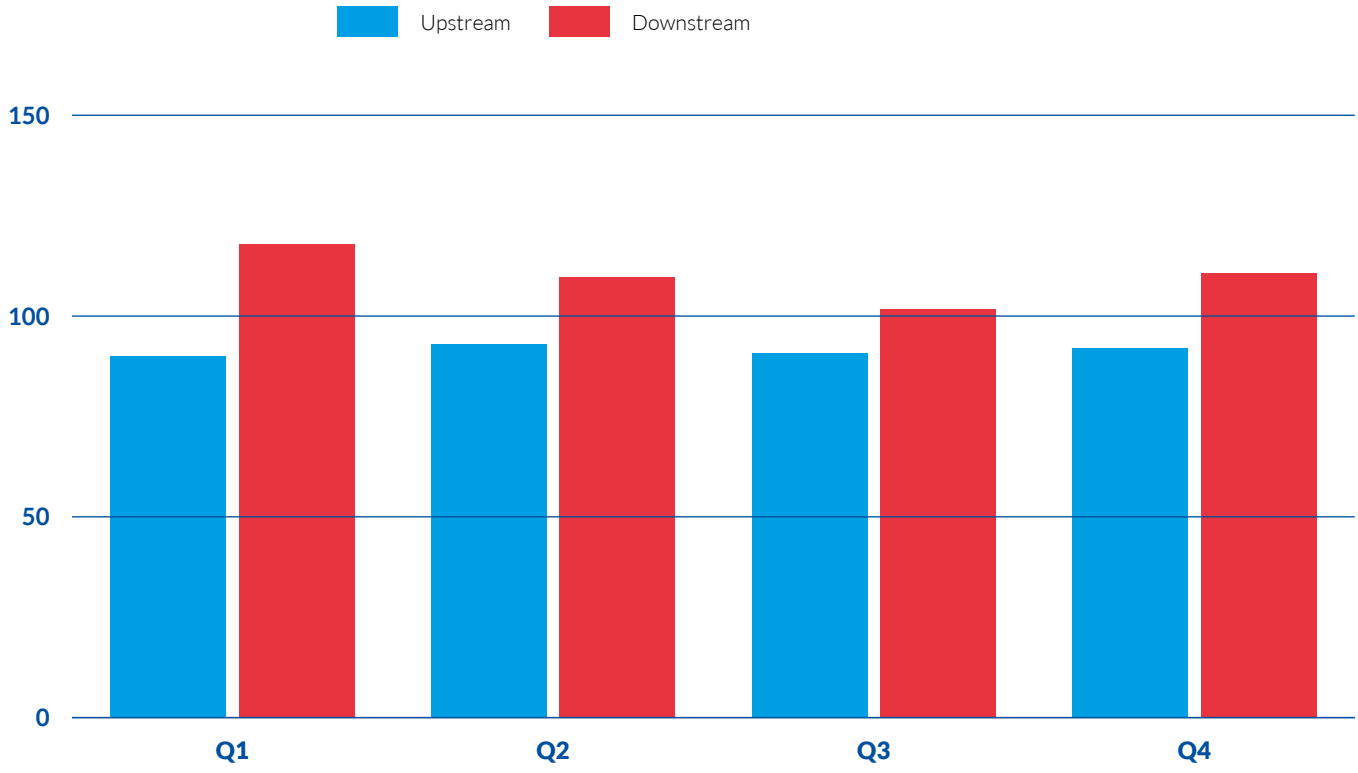


Source: CCNR analysis based on CITBO spot market freight rates

FREIGHT RATES
IN THE DANUBE REGION

Freight rates, although partly dependent on fuel prices, were mainly influenced by transport demand. Freight rates for upstream transport saw a decrease of 8% on average in the year 2020 whereas transport prices downstream saw an increase of 10%. These trends reflect the development of goods transportation. Iron ore, which is transported upstream on the Danube, faced a decline in demand due to the slowdown of automobile production but began to recover towards the end of year, in the fourth quarter. Downstream transport embraces mainly agricultural products which saw an increase throughout the year as can be seen by the downstream freight rate index.

FIGURE 8: **FREIGHT RATE INDEX 2020 BY QUARTER – DANUBE** (INDEX Q4 2019 = 100)



Source: market observation report of the Danube Commission

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CAUTION
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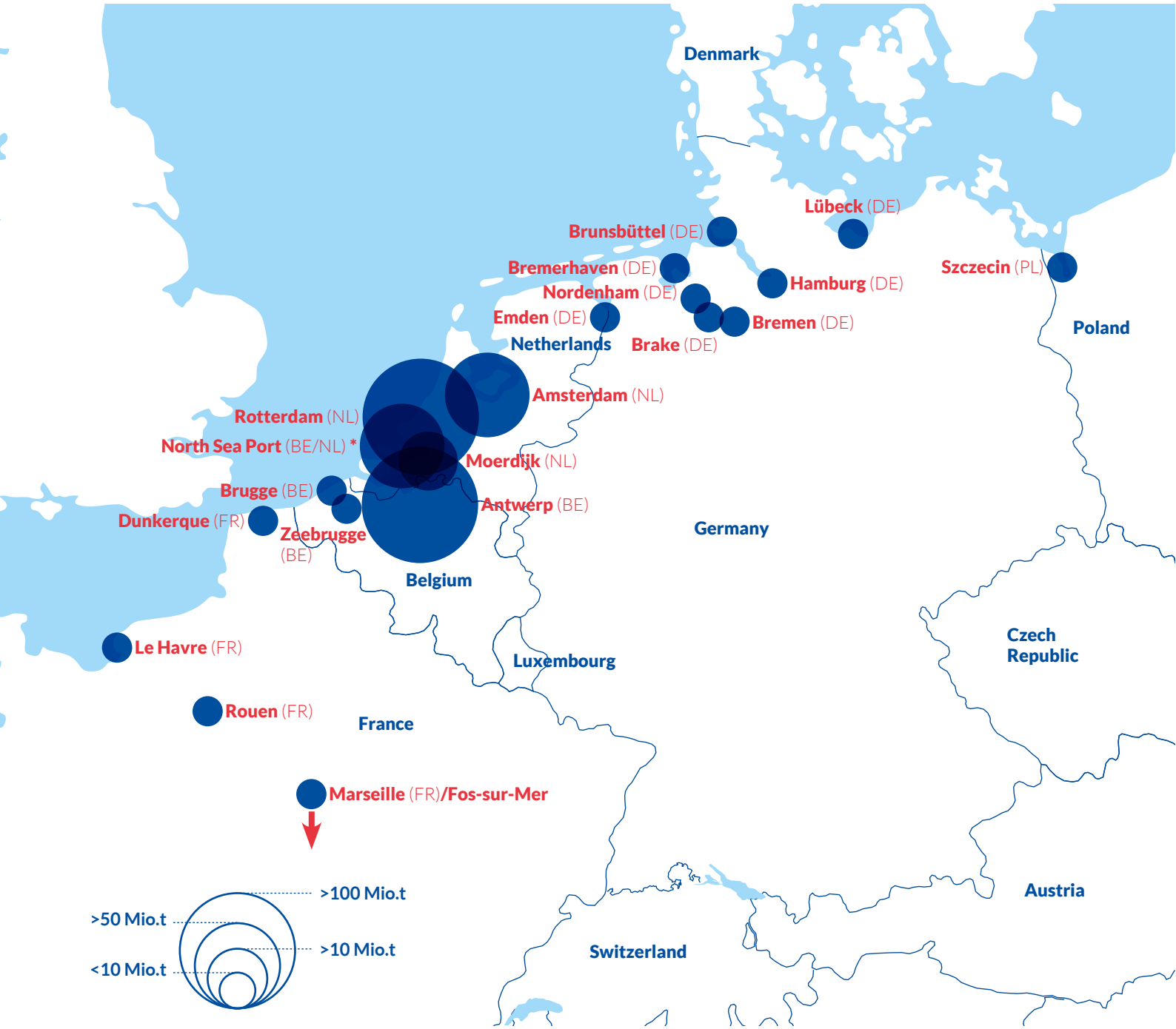
04

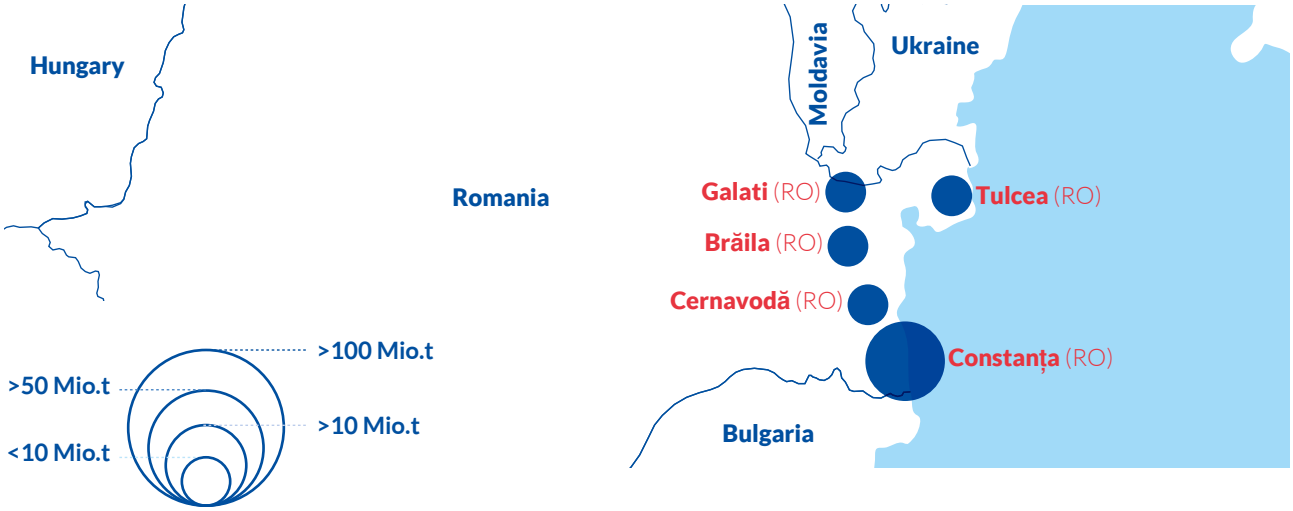
INLAND WATERWAY TRANSPORT IN PORTS

- **Inland waterway freight transport decreased in most seaports and inland ports in 2020.**
- **The development was less severe in seaports, as the results for Rotterdam (-2%), the North Sea Port (-6.1%), Hamburg (-6.1%) and Constanţa (-2%) show. The port of Antwerp even held IWT volumes constant.**
- **In major Rhine and Danube ports, the average decrease in IWT was 8%, mainly as a result of the pandemic. The largest European inland port, Duisburg, recorded an 11.3% reduction in its inland waterway transport. The second largest European inland port, Paris, recorded a 9.7% decrease.**

MAIN EUROPEAN
SEAPORTS



Sources: Port Statistics, Eurostat [iww_go_aport], CBS
** For most ports: data from 2019; Moerdijk: data from 2018; Szczecin, Zeebrugge, Brugge: data from 2016*

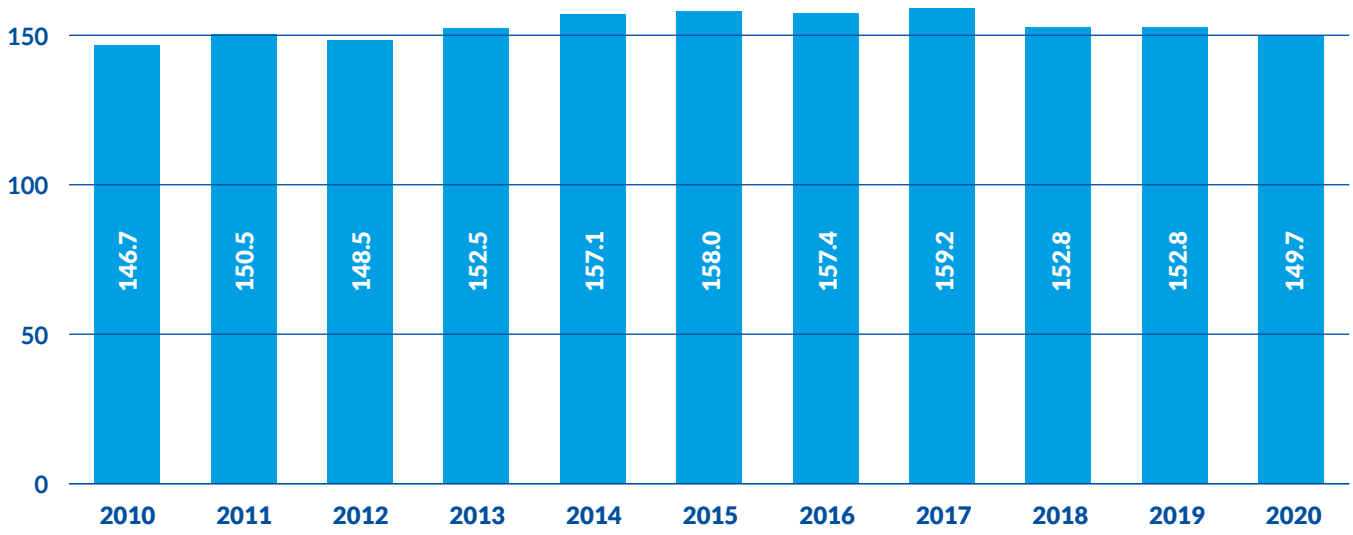


Source: Romanian national Institute of Statistics

ROTTERDAM

Rotterdam, the largest European seaport, remains the market leader in the Hamburg-Le Havre range by total maritime cargo throughput as it holds 36.6% of market shares, followed by Antwerp (19.4%), Hamburg (10.6%) and Amsterdam (8%).[13] The volumes of loaded or unloaded IWT cargo at the port of Rotterdam decreased by 2% to 149.7 million tonnes in 2020 (compared to 152.8 million tonnes in 2019). The liquid cargo segment increased by 15%, while the dry cargo segment decreased by 14%. Container transport decreased by 5%. As observed in previous years, outgoing traffic continues to play an important role at the port (almost 70%). In 2020, 92,552 inland vessels visited the port of Rotterdam.

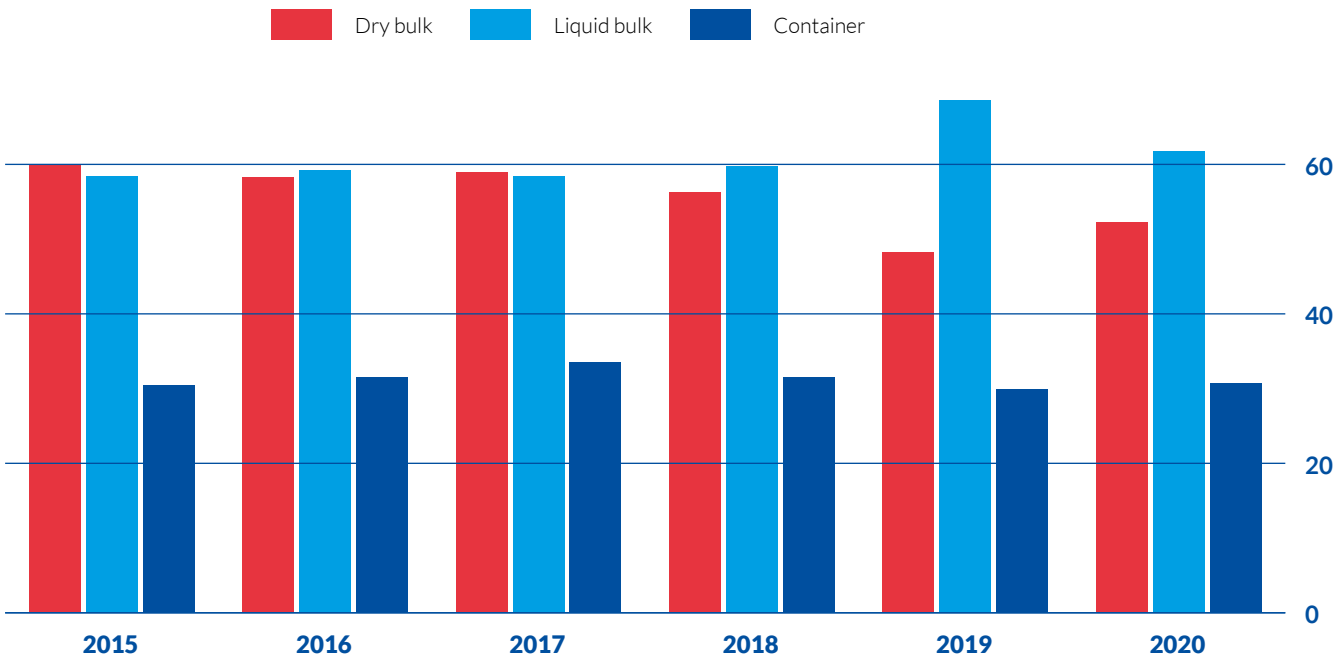
FIGURE 1: **INLAND WATERWAY TRANSPORT IN THE SEAPORT OF ROTTERDAM** (IN MILLION TONNES)



Source: Port of Rotterdam based on CBS

[13] *Port of Rotterdam Authority, annual report 2020: PDF - Quick Web Preview (portofrotterdam.com)*

FIGURE 2: **INLAND WATERWAY TRANSPORT IN THE SEAPORT OF ROTTERDAM PER CARGO SEGMENT** (IN MILLION TONNES) *



Source: Port of Rotterdam based on CBS
** General cargo is not taken into account in these calculations. In 2020, the volume transported for general cargo amounted to 4.9 million tonnes.*

ANTWERP

In 2020, 56,583 inland vessels frequented the port of **Antwerp** (compared to 56,585 in 2019). The IWT goods traffic at the port of Antwerp remained stable in 2020, reaching a volume of 101 million tonnes (compared to 101.3 in 2019). The share of imports increased slightly while exports decreased marginally. Overall, compared to 2010, an increase of 15% in total IWT traffic at the port can be observed.

The modal split for total maritime throughput (but excluding industrial traffic) in 2020 was as follows: 45% road, 47.3% IWT and 7.7% rail (compared to the following figures in 2019: 47% road, 44.7% barge and 8.4% rail).

As in 2019, the main IWT market segments at the port in 2020 were petroleum products, chemicals and containers. The first two make up for more than half of the total river traffic at the port. Containers come close behind with a share of 25% of total river traffic.

Despite the Covid pandemic, imports of petroleum products increased by 28.5% in 2020 compared to 2019, while imports of metal products (-22.4%), fertilizers (-5.7%), chemicals (-4.1%) as well as crude minerals and building materials (-12.5%) decreased. On the export side, the situation was different, with the crude minerals and building materials segment recording a strong increase (+55.4%) and petroleum products sustaining a limited decrease. However, export of metal products has also strongly decreased (-29.9%).

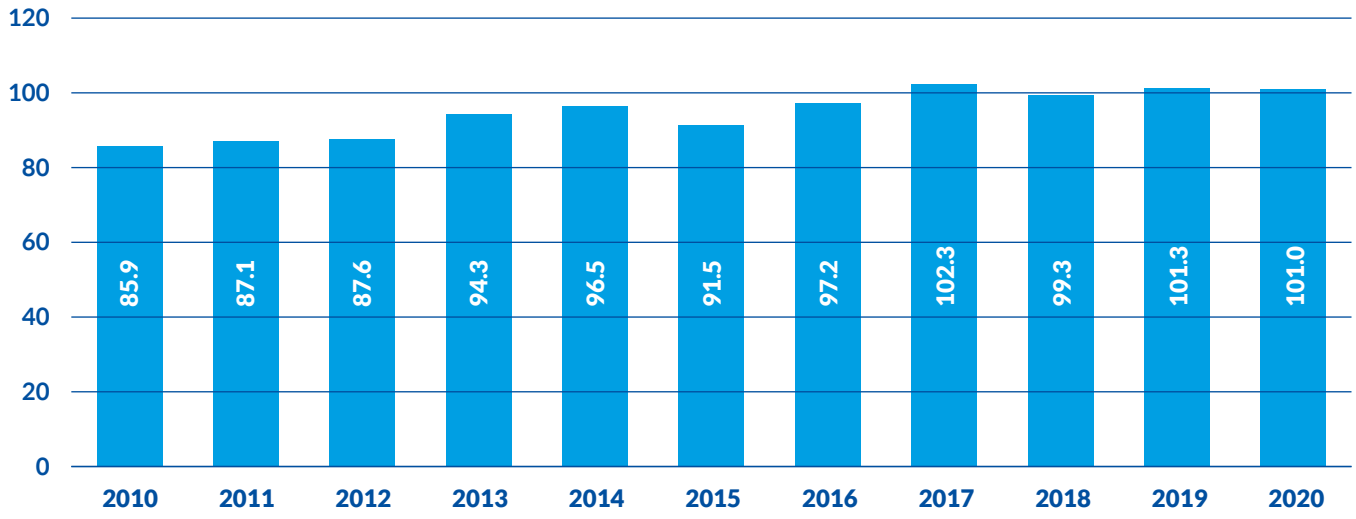
The overall positive results for petroleum products can be explained by the few exceptionally good months for the transport of such goods to and from the port (March, November and December 2020). The main driver for such positive results was the decrease in oil prices.

Overall, solid fuels have been following a downward trend since 2010, driven by the energy transition. While reaching a high peak in 2017, volumes of metal products have decreased since then and sustained the most important loss in 2020 (-29%) of all other cargo segments. This negative result can be explained on the one hand by trade limitations (import quotas in particular) which, since Q3 2019, have led to strong declines in maritime volumes. The Covid crisis came as an additional factor which further affected demand, particularly in the automobile industry, thereby leading to a major decline in transport for this cargo segment.

With regard to building materials, volumes have increased since 2015. For this segment, 2020 was quite particular since it recorded exceptionally good results (February 2020) but also extremely low ones (December 2020). Overall, the first half year 2020 was rather positive, while the second part of the year remained stable compared to the other years.

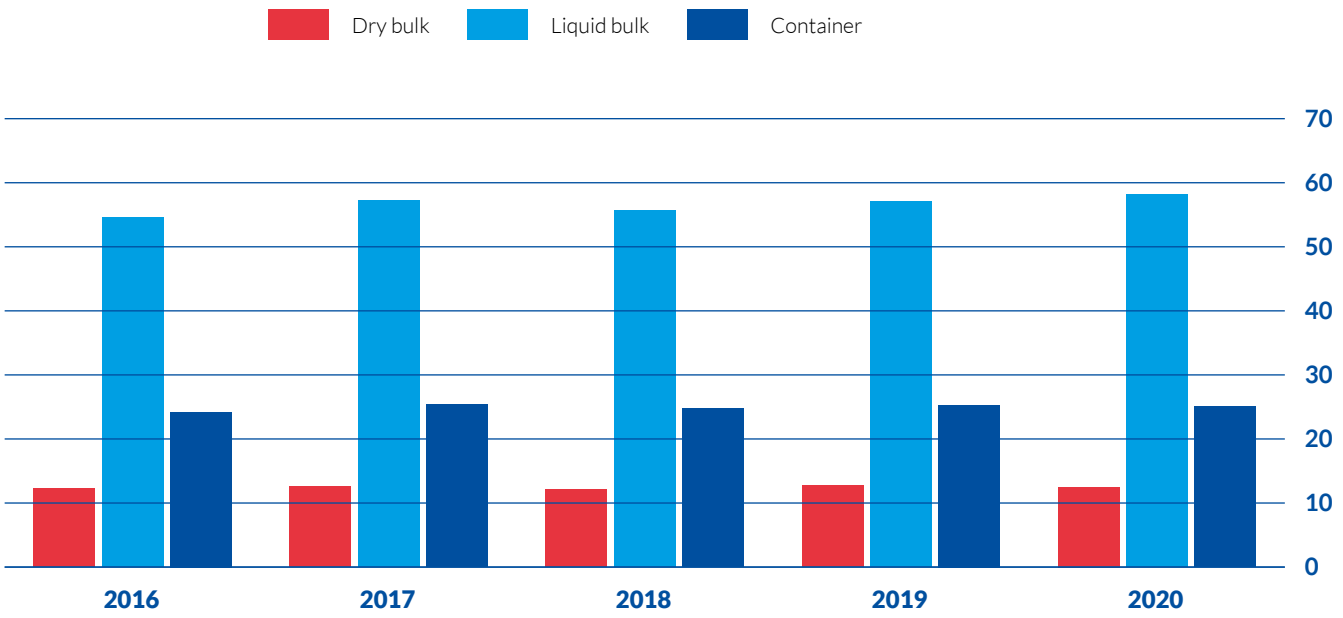
Container volumes remained stable in 2020 compared to 2019 but in general have been following an upward trend.

FIGURE 3: **INLAND WATERWAY TRANSPORT IN THE SEAPORT OF ANTWERP** (IN MILLION TONNES)



Source: Port of Antwerp

FIGURE 4: **INLAND WATERWAY TRANSPORT IN THE SEAPORT OF ANTWERP PER CARGO SEGMENT** (IN MILLION TONNES) *



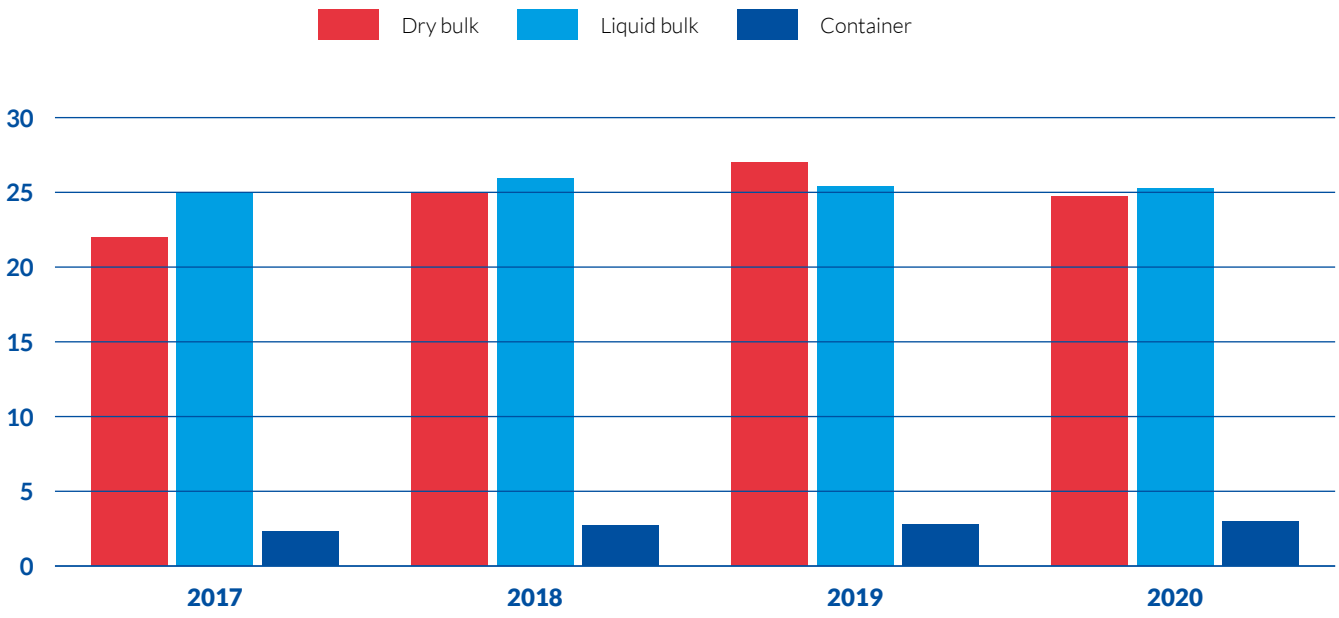
Source: Port of Antwerp
** Ro/ro, general and not assigned goods are not taken into account in these calculations (in 2020, the volume transported for these three cargo types amounted to 5.1 million tonnes, mostly attributed to conventional goods).*

NORTH SEA PORT

In the **North Sea Port (Ghent, Terneuzen, Borsele, Flushing)**, total river traffic amounted to 54.95 million tonnes in 2020, a 6.1% decrease compared to 2019, mostly due to the Covid pandemic. In 2020, 41,446 inland vessels called at the port (compared to 47,000 in 2019). While in normal circumstances the evolution of seagoing and inland traffic is the same, it can be observed that inland waterway traffic was hit to a lesser extent than seagoing traffic (-11% compared to 2019), the latter also having to cope with the impact of Brexit.

Regarding inland waterway traffic at the port, dry bulk registered a small decline (-0.5%), mostly related to reduced volumes of minerals and building materials at the beginning of the Covid crisis, as a result of the first lockdown which lasted from March until May 2020. During this period, the construction industry was indeed at a standstill. On the liquid bulk side, the decline was stronger (-8.4%) mainly due to a decrease in liquid petroleum products. This is an indirect effect of the Covid crisis, which impacted transport movements and thereby use of liquid petroleum products. Transport of containers increased by 4.3%. It is worth noting that a decline of 39% was also observed for conventional goods. This was mostly due to a decrease in products from the metallurgical sector. The steel industry was indeed hit quite strongly by the crisis.

FIGURE 5: **INLAND WATERWAY TRANSPORT IN THE NORTH SEA PORT** (IN MILLION TONNES)



Source: North Sea Port
** Ro/ro and conventional cargo are not taken into account in these calculations (in 2020, the volume transported for these two cargo types amounted to 1.99 million tonnes, mostly attributed to conventional cargo).*

HAMBURG

Volumes transported by IWT decreased by 6.1% in 2020 (8.3 million tonnes) compared to 2019 (8.9 million tonnes) in the port of **Hamburg**. This result is mainly driven by the strong decrease in export volumes (-23.5%), while the import volumes increased (+13.6%). Of course, this is mostly linked to the Covid pandemic.

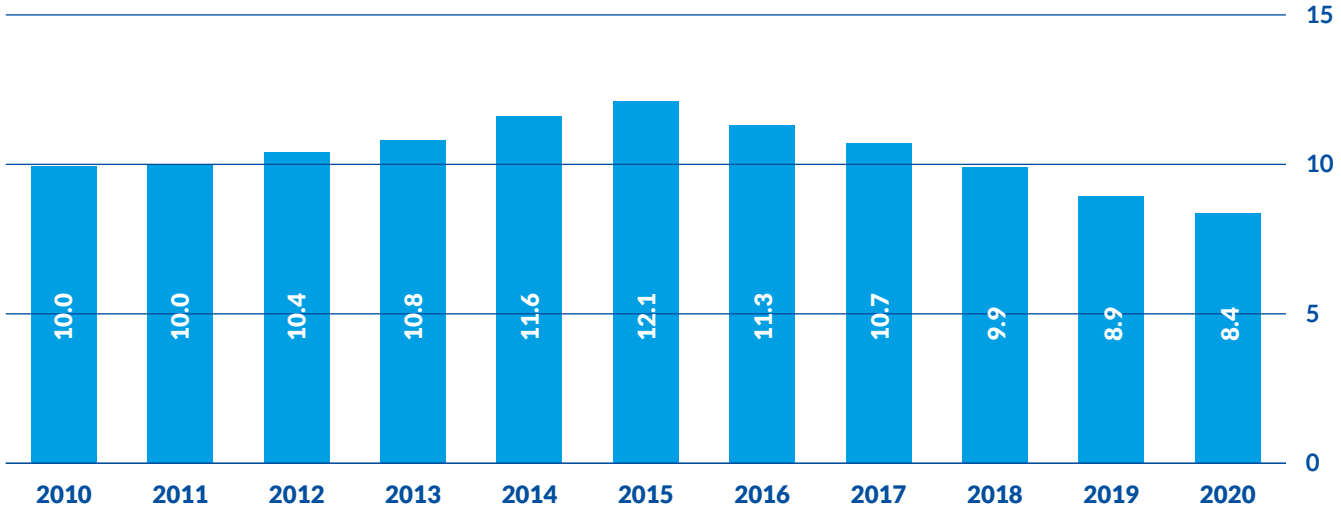
Overall, liquid cargo suffered the most from the pandemic, with a 23.4% decrease in transport volumes compared to 2019, which can be explained by the reduced transport volumes for coke and petroleum products (-24.3%). This market segment was strongly affected in many regions in Europe.

Dry cargo traffic remained rather stable, but had already sustained negative results in 2019, in particular coal transport, as a result of the shift away from coal as a source of electricity generation in Germany. In 2020, the downward trend observed for coal transport continued (-63.1%). This decrease seems to have been compensated by an increase in building material transport volumes (+16.4%), as well as secondary raw materials and waste (+38.4%). Overall, both dry and liquid cargo have, however, been following a decreasing trend since 2015.

The situation is more positive for container transport. Container transport increased by 8.9% and has been following an increasing trend, at a slow pace, since 2015.

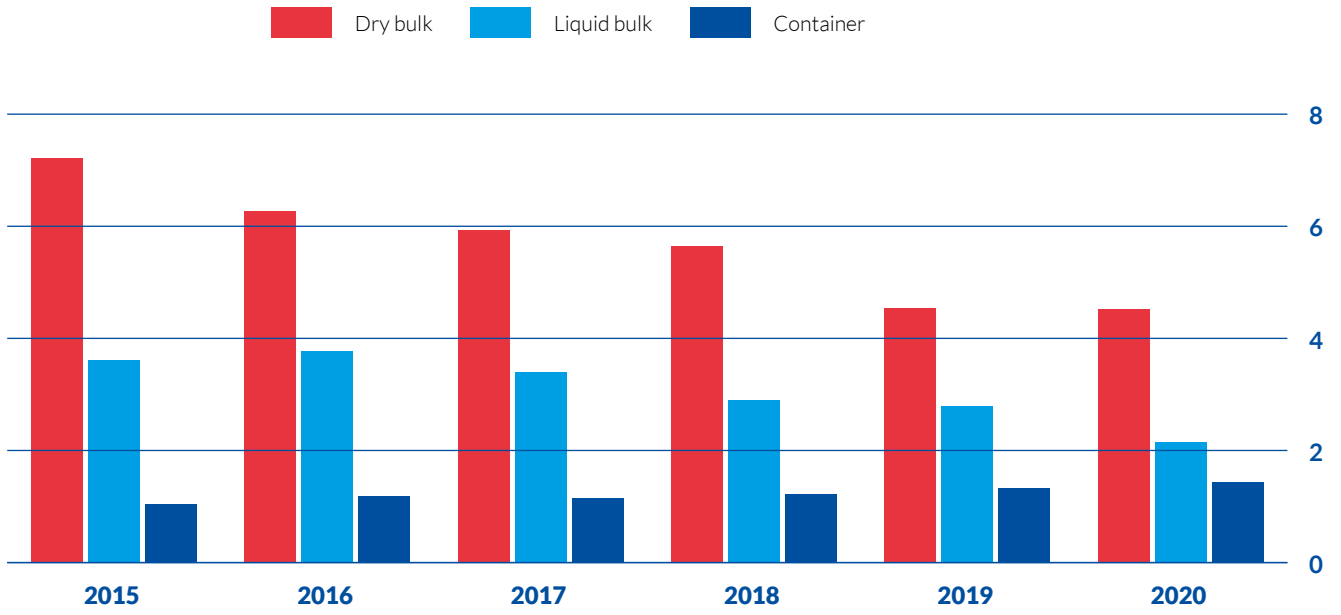
In 2020, hinterland traffic consisted of 92 million tonnes of transported goods. With a share of 50.7%, railway transport is ahead of truck transport with 40.3% and inland waterway transport with 9%.

FIGURE 6: **INLAND WATERWAY TRANSPORT IN THE SEAPORT OF HAMBURG** (IN MILLION TONNES)



Source: Statistical Office of Hamburg

FIGURE 7: **INLAND WATERWAY TRANSPORT IN THE SEAPORT OF HAMBURG PER CARGO SEGMENT** (IN MILLION TONNES) *



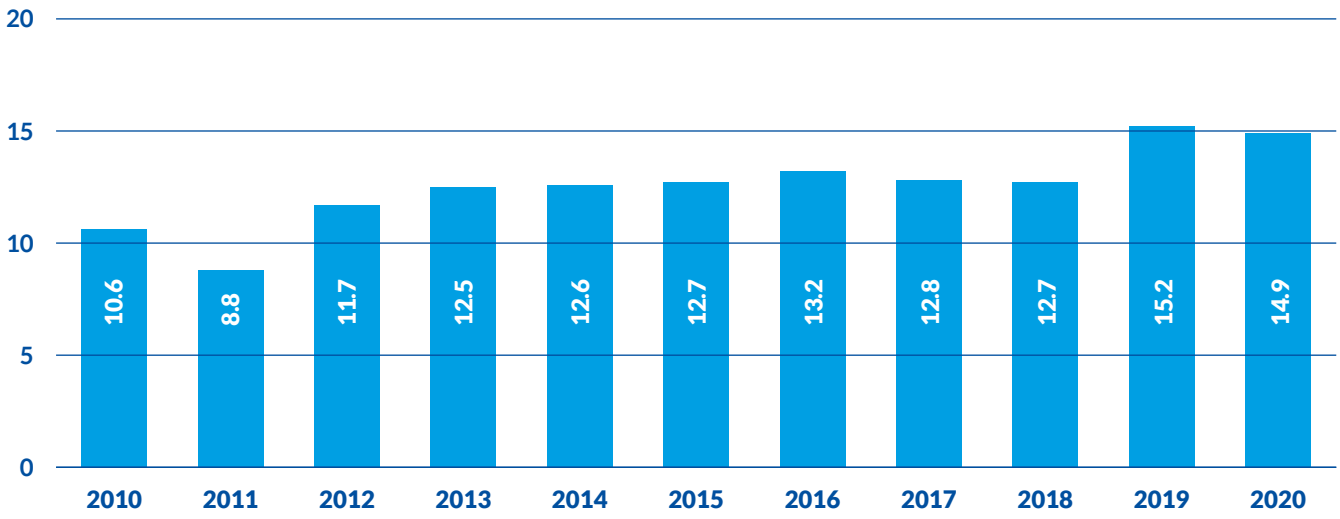
Source: Statistical Office of Hamburg
** General cargo is not taken into account in these calculations (in 2020, the volume transported for this cargo type amounted to 0.3 million tonnes).*

CONSTANŢA

In **Constanța**, 10,344 inland vessels called at the port in 2020 (10,395 in 2019). Inland waterway transport decreased by almost 2%, to reach 14.9 million tonnes.

Mainly dry cargo is transported in the port of Constanța, with a share above 90% of the total goods transported. Dry cargo volumes registered a slight increase compared to 2019 while liquid cargo registered a 27.3% decrease. Container, Ro/ro and general cargo amounted to 330 thousand tonnes in 2020, mostly attributed to general cargo. Indeed, container traffic in the port of Constanța is low and has sustained a constant decrease since 2010.

FIGURE 8: **INLAND WATERWAY TRANSPORT IN THE SEAPORT OF CONSTANŢA** (IN MILLION TONNES)



Sources: Port of Constanța / Romanian Statistical Office

Inland waterway freight transport decreased in most seaports and inland ports in 2020. The development was less severe in seaports, as the results for Rotterdam (-2%), the North Sea Port (-6.1%), Hamburg (-6.1%) and Constanţa (-2%) show. The port of Antwerp held IWT volumes even constant.

MAIN EUROPEAN
INLAND PORTS

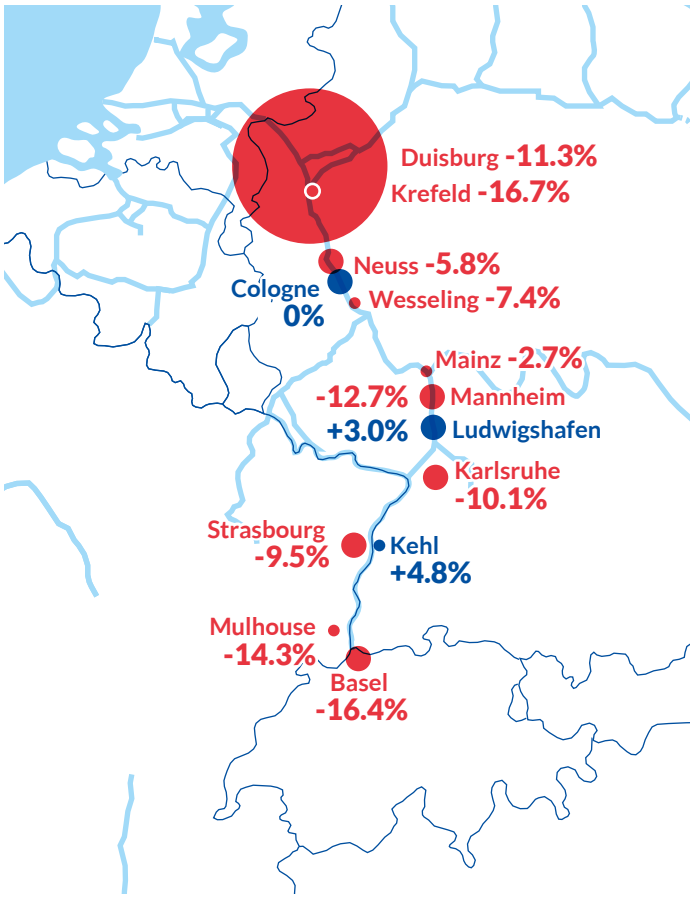
RHINE PORTS

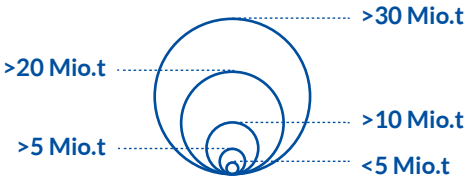
TABLE 1: **INLAND WATERWAY TRANSPORT IN MAJOR RHINE PORTS** (IN MILLION TONNES) **AND RATE OF CHANGE 2020/2019**

	2017	2018	2019	2020	2020/2019
Duisburg	52.2	48.1	47.8	42.4	-11.3%
Cologne	10.7	8.9	9.1	9.1	0%
Mannheim	9.7	7.5	7.9	6.9	-12.7%
Strasbourg	8.0	5.9	7.5	6.8	-9.5%
Neuss	8.0	7.6	6.9	6.5	-5.8%
Karlsruhe	7.2	6.4	6.9	6.2	-10.1%
Ludwigshafen	5.6	6.1	6.6	6.8	+3.0%
Basel	5.8	4.7	6.1	5.1	-16.4%
Mulhouse	4.8	4.4	4.9	4.2	-14.3%
Kehl	3.5	3.9	4.2	4.4	+4.8%
Mainz	2.9	3.2	3.7	3.6	-2.7%
Krefeld	3.4	3.3	3.6	3.0	-16.7%
Wesseling	2.6	2.0	2.7	2.5	-7.4%
Total	124.4	112.1	118.1	108.5	-8.0%

Sources: Destatis, Port de Strasbourg, Swiss Rhine ports, Port de Mulhouse. The "total" relates only to the ports mentioned in the table, not all Rhine ports.

TOTAL YEARLY WATERSIDE TRAFFIC (IN MILLION TONNES)





Negative rate of change in 2020 vs 2019

Positive rate of change in 2020 vs 2019

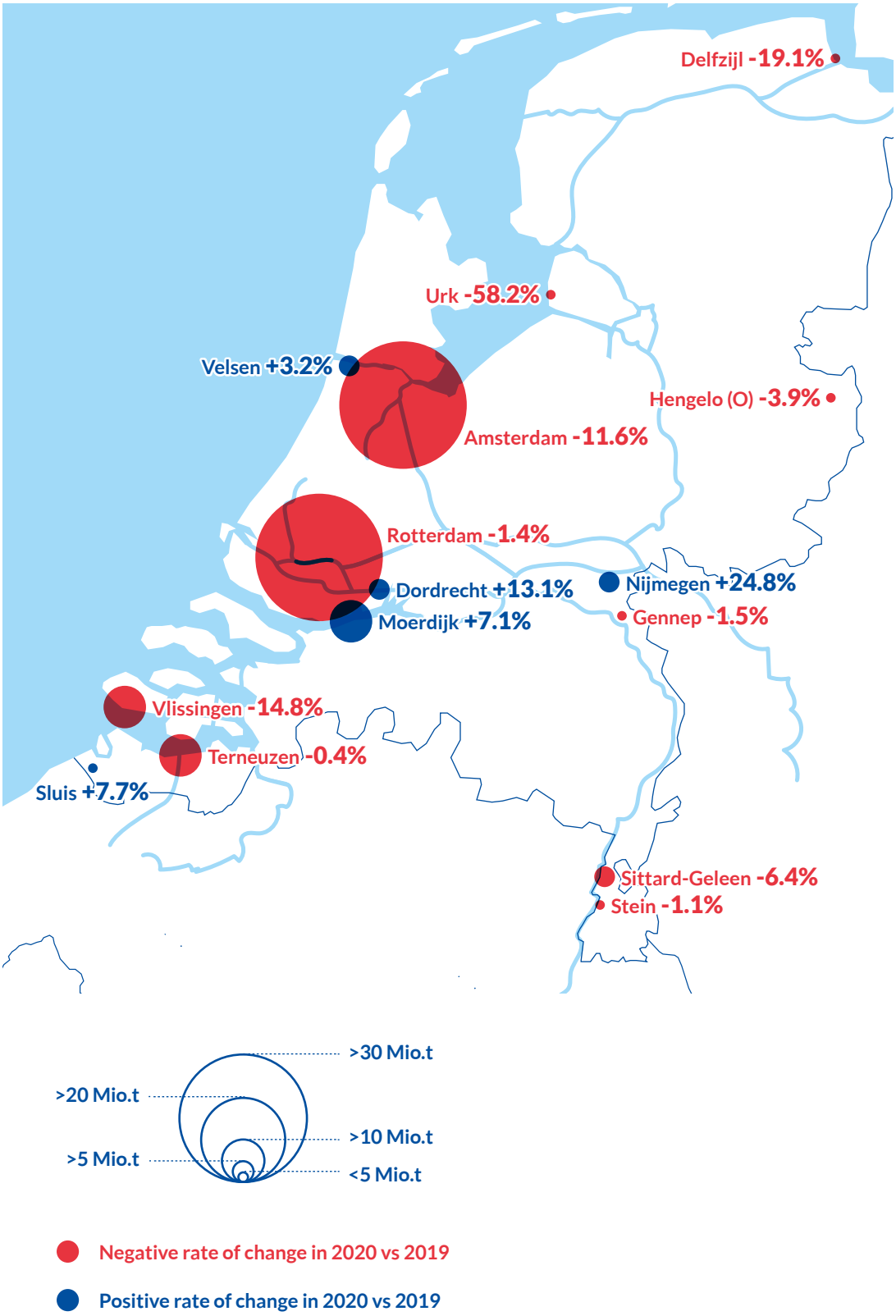
DUTCH PORTS

TABLE 2: **INLAND WATERWAY TRANSPORT IN MAJOR DUTCH PORTS** (IN MILLION TONNES) **AND RATE OF CHANGE 2020/2019**

	2017	2018	2019	2020	2020/2019
Rotterdam	159.2	152.8	152.8	150.6	-1.4%
Amsterdam	58.4	60.1	60.0	53.1	-11.6%
Vlissingen	13.4	15.3	19.9	17.0	-14.8%
Terneuzen	14.1	14.1	14.4	14.3	-0.4%
Moerdijk	9.5	10.2	10.2	10.9	+7.1%
Sittard-Geleen	4.2	6.3	6.8	6.4	-6.4%
Velsen	4.8	4.6	6.4	6.6	+3.2%
Urk	3.7	5.1	6.0	2.5	-58.2%
Dordrecht	4.7	5.3	5.7	6.4	+13.1%
Delfzijl	5.6	6.4	5.2	4.2	-19.1%
Nijmegen	2.4	2.8	4.1	5.1	+24.8%
Hengelo (O)	4.5	3.6	4.0	3.8	-3.9%
Gennep	3.5	3.7	3.2	3.2	-1.5%
Stein	3.6	3.6	3.1	3.1	-1.1%
Sluis	3.4	3.3	2.8	3.0	+7.7%

Source: CBS

TOTAL YEARLY WATERSIDE TRAFFIC (IN MILLION TONNES)



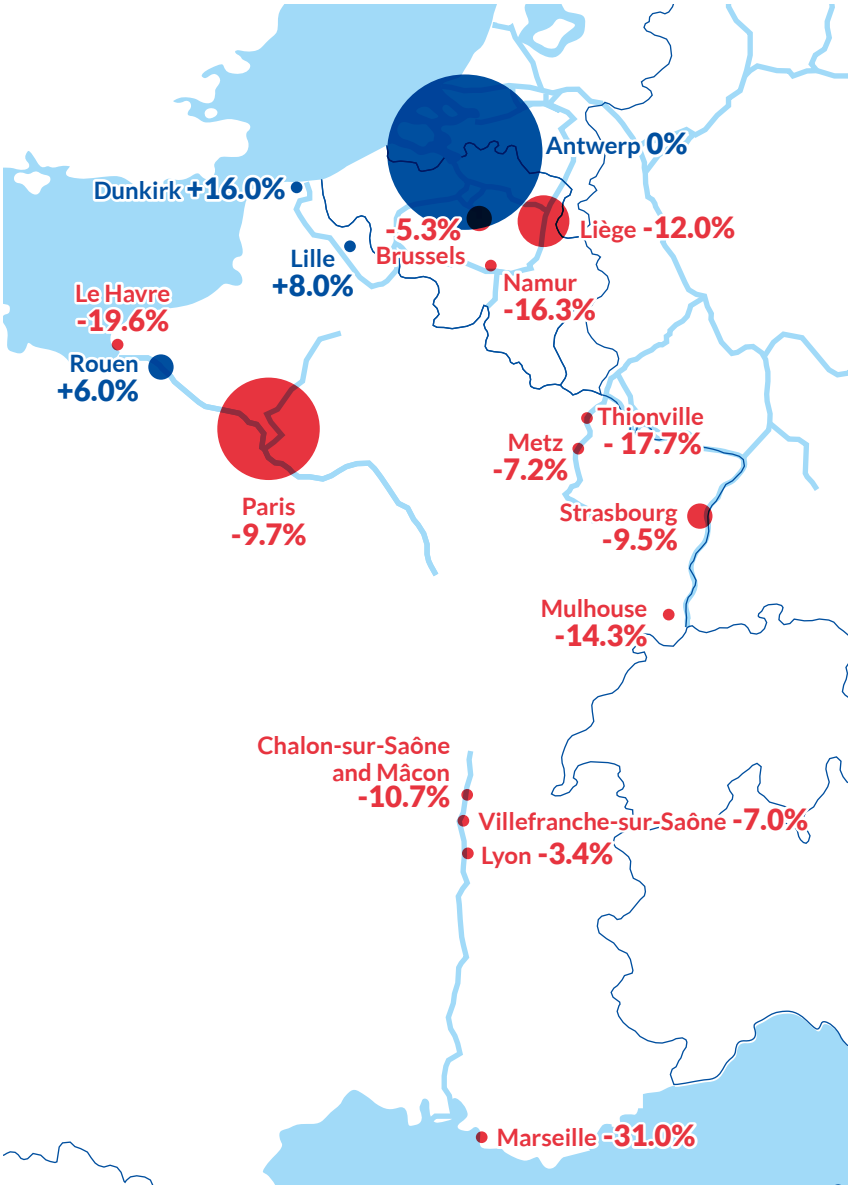
FRENCH AND BELGIAN PORTS

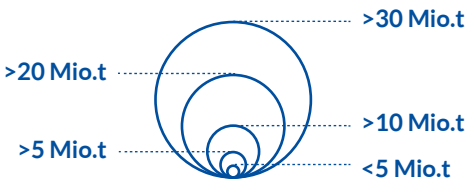
TABLE 3: **INLAND WATERWAY TRANSPORT IN MAJOR FRENCH AND BELGIAN PORTS** (IN MILLION TONNES) **AND RATE OF CHANGE 2020/2019**

	2018	2019	2020	2020/2019
Antwerp	99.3	101.3	101.0	0%
Paris	22.1	25.3	22.8	-9.7%
Liège	16.0	16.0	13.9	-12.0%
Strasbourg	5.9	7.5	6.8	-9.5%
Rouen	4.8	5.5	5.9	+6.0%
Brussels	5.2	5.2	4.9	-5.3%
Mulhouse	4.4	4.9	4.2	-14.3%
Namur	5.1	4.6	3.8	-16.3%
Le Havre	3.2	3.4	2.7	-19.6%
Marseille	2.5	2.8	2.0	-31.0%
Dunkirk	2.4	2.5	2.9	+16.0%
Metz	1.9	2.2	2.0	-7.2%
Lille	1.8	1.9	2.0	+8.0%
Lyon	1.4	1.1	1.0	-3.4%
Villefranche-sur-Saône	0.8	0.8	0.8	-7.0%
Chalon-sur-Saône and Mâcon	0.8	0.8	0.7	-10.7%
Thionville	0.6	0.7	0.6	- 17.7%
Total	178.2	186.5	178.0	-4.5%

Sources: Ministère de la Transition écologique, Voies Navigables de France, 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, Port de Dunkerque. The "total" relates only to the ports mentioned in the table, and not to all French and Belgian ports.

TOTAL YEARLY WATERSIDE TRAFFIC (IN MILLION TONNES)





Negative rate of change in 2020 vs 2019

Positive rate of change in 2020 vs 2019

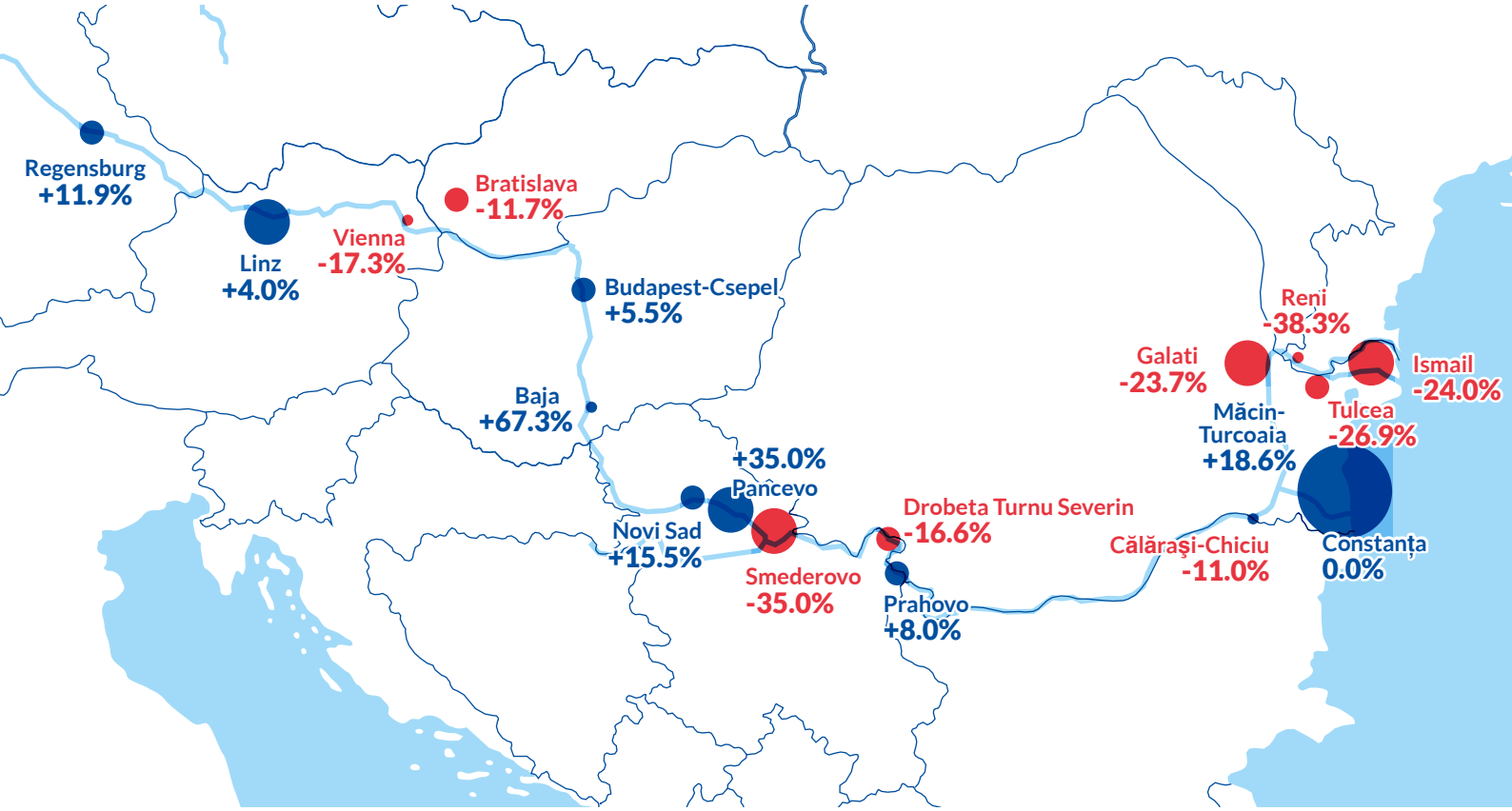
DANUBE PORTS

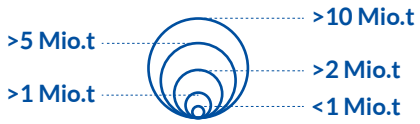
TABLE 4: **INLAND WATERWAY TRANSPORT IN MAJOR DANUBE PORTS** (IN MILLION TONNES) **AND RATE OF CHANGE 2020/2019**

	2017	2018	2019	2020	2020/2019
Constanţa	12.1	12.1	14.5	14.5	0%
Galati	6.3	6.4	5.9	4.5	-23.7%
Ismail	5.1	4.7	4.3	3.2	-24.0%
Smederovo	3.2	3.6	4.0	2.6	-35.0%
Linz	4.2	3.2	3.4	3.4	+4.0%
Bratislava	2.1	1.5	1.7	1.5	-11.7%
Tulcea	1.3	1.7	1.6	1.2	-26.9%
Pancevo	1.1	1.4	1.5	2.0	+35.0%
Novi Sad	1.2	1.0	1.4	1.6	+15.5%
Regensburg	1.5	1.1	1.3	1.5	+11.9%
Reni	1.1	1.3	1.3	0.8	-38.3%
Vienna	1.1	1.0	1.2	0.8	-17.3%
Drobeta Turnu Severin	1.2	1.1	1.2	1.0	-16.6%
Călăraşi-Chiciu	0.7	0.7	1.1	0.9	-11.0%
Prahovo	0.9	1.0	1.1	1.2	+8.0%
Budapest-Csepel	1.1	0.9	1.1	1.2	+5.5%
Măcin-Turcoaia	0.8	0.8	0.9	1.2	+18.6%
Baja	0.6	0.3	0.5	0.8	+67.3%
Total	45.6	43.8	48.0	43.9	-8.5%

Sources: Danube Commission market observation, Romanian Statistical Institute, Hungarian Statistical Office, Port Governance Agency of Serbia. The "total" relates only to the ports mentioned in the table and not all Danube ports.

TOTAL YEARLY WATERSIDE TRAFFIC (IN MILLION TONNES)





Negative rate of change in 2020 vs 2019

Positive rate of change in 2020 vs 2019

SAVA PORTS

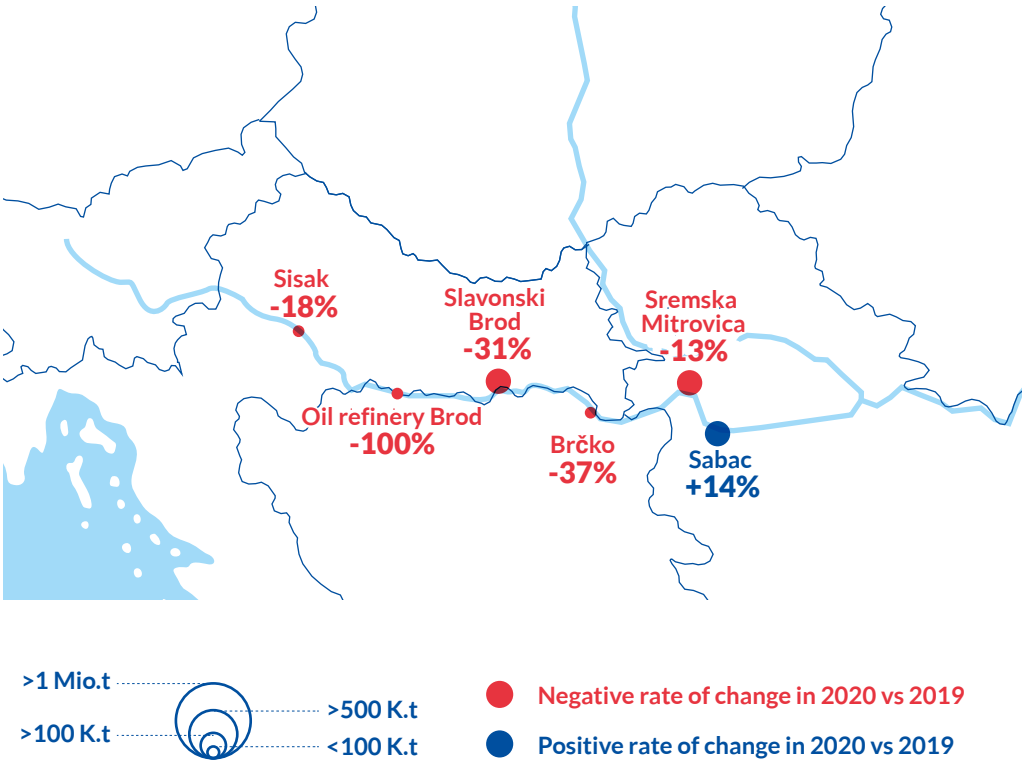
TABLE 5: **INLAND WATERWAY TRANSPORT IN MAJOR SAVA PORTS** (IN THOUSAND TONNES) **AND RATE OF CHANGE 2020/2019** *

	2017	2018	2019	2020	2020/2019
Other ports (Serbia)	-	682	949	2000	+111%
Sremska Mitrovica (Serbia)	189	234	560	486	-13%
Slavonski Brod (Croatia)	117	131	199	138	-31%
Sabac (Serbia)	170	149	149	170	+14%
Brčko (Bosnia and Herzegovina - BaH)	136	98	103	65	-37%
Sisak (Croatia)	60	66	67	55	-18%
Oil refinery Brod (BaH)	9.7	29	8.1	0	-100%
Total	682	1390	2035	2914	+43%

Source: Sava Commission

** In 2015, the port of Šamac in Bosnia and Herzegovina reported bankruptcy, therefore no transshipment of cargo has been recorded since then. Since 2018 and 2019, data for smaller transshipment places in Serbia started to be collected which explains the increasing amount of transshipped goods recorded in Serbia for those years.*

TOTAL YEARLY WATERSIDE TRAFFIC (IN THOUSAND TONNES)



05

CARGO FLEETS

- The fleet of inland vessels in Europe consists of almost 10,000 vessels registered in Rhine countries, 3,500 vessels registered in Danube countries and 2,300 vessels registered in other European countries.
- In 2020, 27 new dry cargo vessels and 54 new tanker vessels were added to the fleets in western Europe. The recovery in newbuilding activity continued for both dry cargo and tanker vessels.
- The tanker fleet is the youngest fleet segment in Rhine countries, with a share of 52% of all tanker vessels built in the 21st century, whereas this share amounts to 16% for dry cargo vessels and 29% for passenger vessels.

SIZE OF FLEETS
PER MACRO-REGION AND COUNTRY IN EUROPE

The fleet of inland vessels in Europe consists of almost 10,000 vessels registered in Rhine countries, 3,500 vessels registered in Danube countries and 2,300 vessels registered in other European countries.

TABLE 1: **SIZE OF FLEETS** (NUMBER OF INLAND VESSELS) **PER MACRO-REGION AND VESSEL TYPE IN EUROPE**

	Dry cargo vessels	Liquid cargo vessels	Push & tug boats	
RHINE FLEET	6,942	1,435	1,353	9,749
DANUBE FLEET	2,652	204	642	3,498
OTHER COUNTRIES*	1,561	26#	727	2,314
	11,155	1,665	2,722	15,542

Sources: 1) Rhine countries: VNF (France), CBS/Rijkswaterstaat (Netherlands), ITB (Belgium), Waterway Administration of Germany, National fleet register of Luxembourg, Swiss Waterway Administration. 2) Danube countries: Danube Commission. 3) Other countries: Eurostat [iww_eq_loadcap], [iww_eq_age], Czech Ministry of transport, Statistics Poland, Statistics Lithuania.
** Other countries = Poland, Czech Republic, Italy, United Kingdom, Finland, Lithuania*
 # comprises 9 tanker vessels in Poland, 1 in the Czech Republic and 16 in Lithuania, but an unknown number in the other countries.

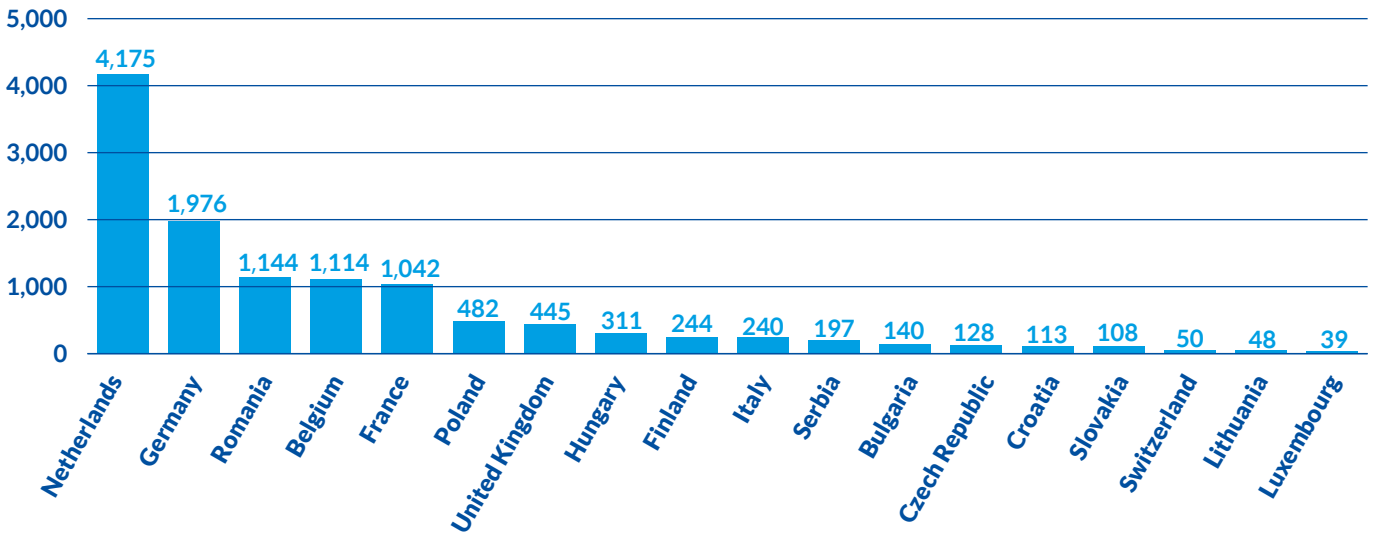
The following figures show the number of dry and liquid cargo vessels taken together (self-propelled vessels and barges) and the number of push and tugboats per country in Europe. The data are the latest available and refer to 2020 for the Netherlands, Belgium, France, Switzerland, Luxembourg, and to 2019 for all other countries, except for Italy (2018), the UK (2018) and Serbia (2017).

For Belgium and Luxembourg, Eurostat fleet data are not available, therefore national fleet data from waterway administrations and national fleet registers were used. National fleet data from waterway administrations were also taken for the Netherlands, as they seem to be the more reliable source.[14] For other countries (e.g. France, Germany, Czech Republic, Lithuania), national fleet data match exactly the Eurostat [iww_eq_loadcap] data.

[14] A comparison between national fleet data and Eurostat data for the Netherlands show that Eurostat figures are much higher, which is most likely due to inactive vessels inside the Eurostat database. The national fleet data for the Netherlands are provided by Rijkswaterstaat and the CBS and represent the active fleet (see part "Dry cargo fleet in Rhine countries").

For Danube countries and other countries in Europe, the Eurostat fleet database [iww_eq_loadcap] was used.

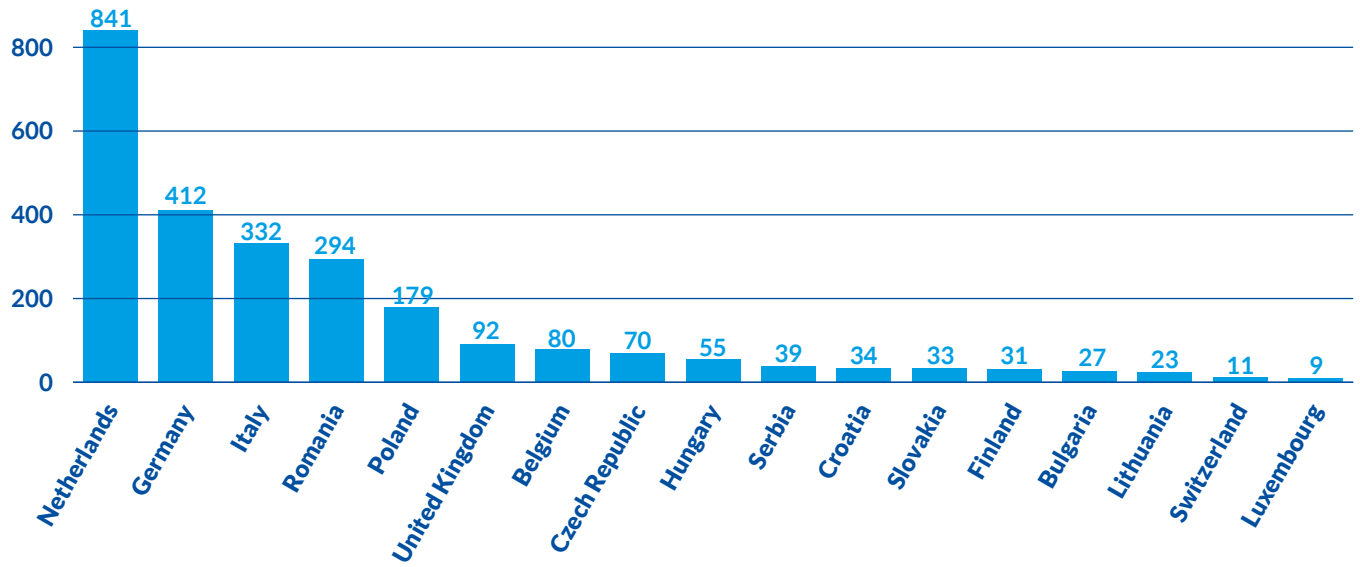
FIGURE 1: **NUMBER OF DRY AND LIQUID CARGO VESSELS PER COUNTRY IN EUROPE**



Sources: Eurostat [iww_eq_loadcap] and national sources for Rhine countries

The data for the number of push and tugboats per country were taken from the Eurostat fleet database, with the exception of Belgium and Luxembourg (for both countries, Eurostat data were not available, so national waterway administration data were used).

FIGURE 2: **NUMBER OF PUSH BOATS AND TUGBOATS PER COUNTRY IN EUROPE**



Sources: Eurostat [iww_eq_age] and ITB (Belgium), vessel register for Luxembourg

EVOLUTION
OF THE RHINE FLEET

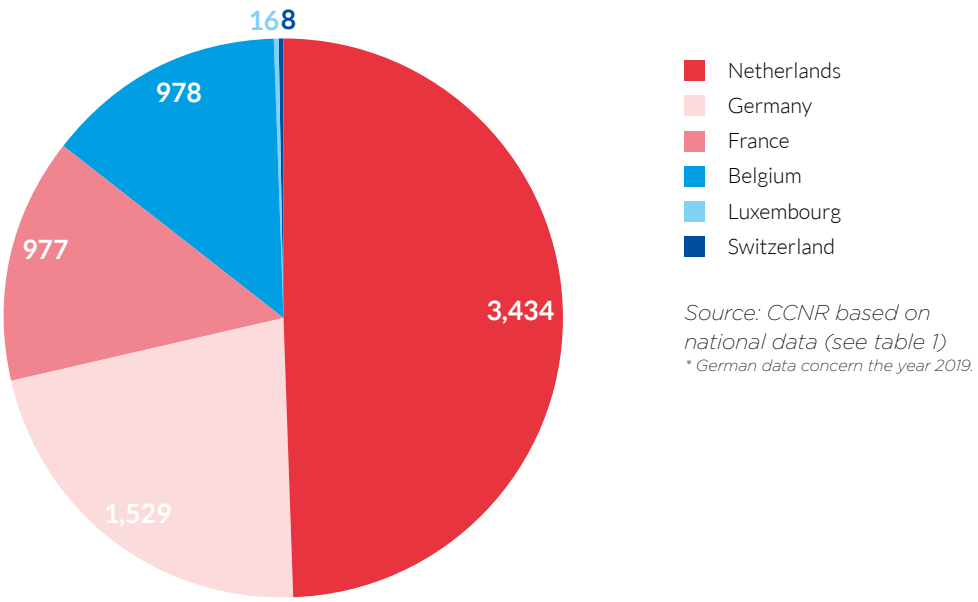
DRY CARGO FLEET IN RHINE COUNTRIES

Fleet data used for this part are entirely based on national fleet data from waterway administrations. The reason is that a distinction between dry and liquid cargo vessels is only available in national fleet databases and in the IVR database, but not in the Eurostat databases.

Around 50% of all dry cargo vessels in Rhine countries (self-propelled vessels and barges, without push and tugboats) are vessels registered in the Netherlands. Data used for the Dutch fleet contain the inland vessels that are registered in the Netherlands and which were active in this country in 2020.[15]

Fleet data for other Rhine countries concern also predominantly active vessels and are delivered by the Belgian, German, French, and Swiss Waterway Administration, as well as from the vessel register of Luxembourg. The total number of dry cargo vessels in Rhine countries was, according to these sources, 6,942 in 2020, compared to 7,012 in 2019.

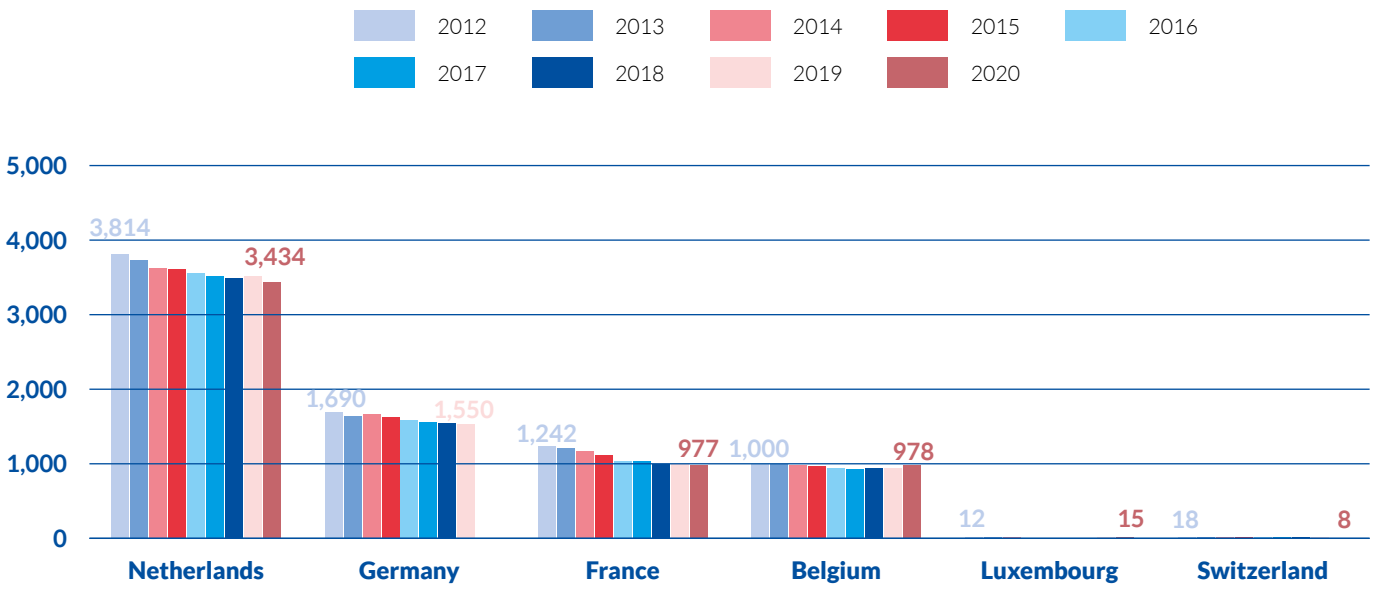
FIGURE 3: **NUMBER OF DRY CARGO VESSELS IN RHINE COUNTRIES FOR 2020 ***



Source: CCNR based on national data (see table 1)
** German data concern the year 2019.*

[15] *The Statistical Office of the Netherlands (CBS) receives raw data about the operative fleet in the Netherlands from the Waterway Administration (Rijkswaterstaat) and transmits them to the CCNR. These vessels are operative as they have passed measurement points in 2020 in the Netherlands.*

FIGURE 4: **NUMBER OF DRY CARGO VESSELS PER RHINE COUNTRY ***



Source: CCNR based on national data
** German fleet data were not yet available for 2020.*

The average loading capacity or deadweight of a vessel in the Rhine fleet was around 1,500 tonnes in 2020, compared to 1,090 tonnes in 2005. The total loading capacity of the fleet has remained rather constant since 2008 and amounted to 10.5 million tonnes in 2020.

Small vessels are mostly defined as vessels with a loading capacity of up to 1,500 tonnes. According to this definition, the Belgian, Dutch, French and German fleets were composed in 2020[16] as follows:

TABLE 2: **COMPOSITION OF DRY CARGO FLEET** (SELF-PROPELLED VESSELS AND BARGES) **PER RHINE COUNTRY**

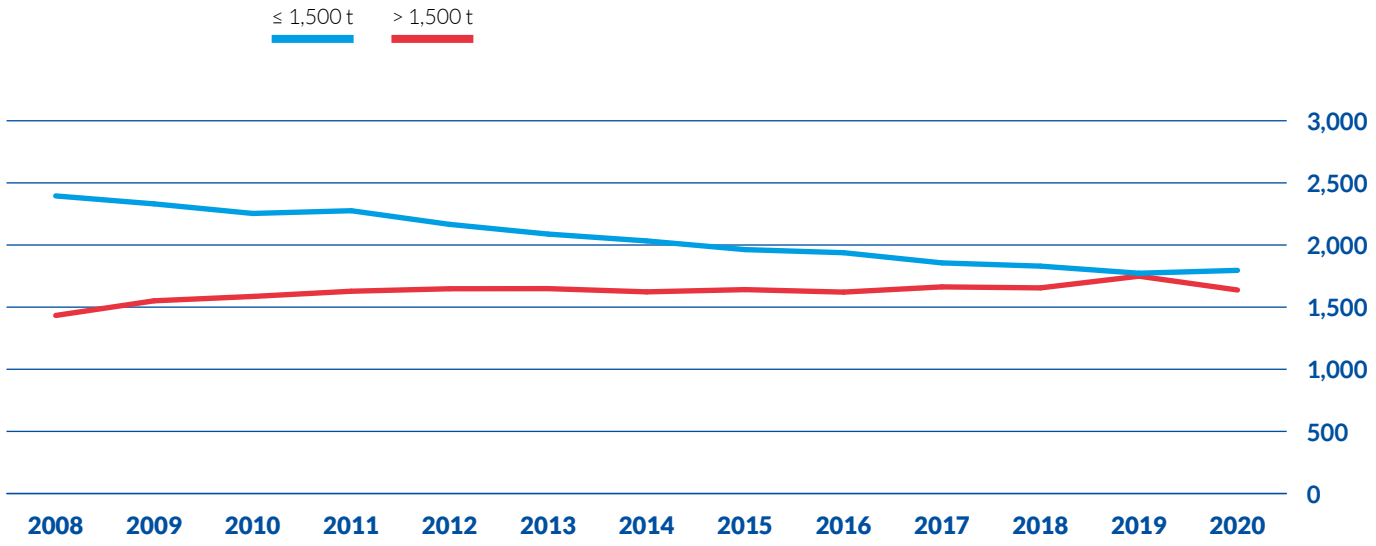
Fleet	Small vessels (≤ 1,500 t)	All dry cargo vessels	Share of small vessels
Dutch fleet	1,796	3,434	52%
German fleet *	1,097	1,525	72%
French fleet	761	977	78%
Belgian fleet	537	978	55%

Sources: CBS/Rijkswaterstaat, German Waterway Administration, ITB / Belgian Waterway Administration, VNF
** German data for 2019*

[16] *German data are for 2019.*

It is often cited that the number of small vessels in the inland navigation sector is decreasing. Long-term data confirm this hypothesis, as is shown in the next figure. Within the Dutch fleet, the number of vessels with a deadweight of up to 1,500 tonnes reduced from 2,395 in 2008 to 1,796 in 2020. This represents a reduction of 25%, which means that one out of four Dutch small vessels that were transporting cargo in 2008, were no longer active in 2020.

FIGURE 5: **NUMBER OF DRY CARGO VESSELS IN THE DUTCH FLEET PER DEADWEIGHT CLASS**



Sources: CBS based on Rijkswaterstaat, CCNR analysis

LIQUID CARGO FLEET IN RHINE COUNTRIES

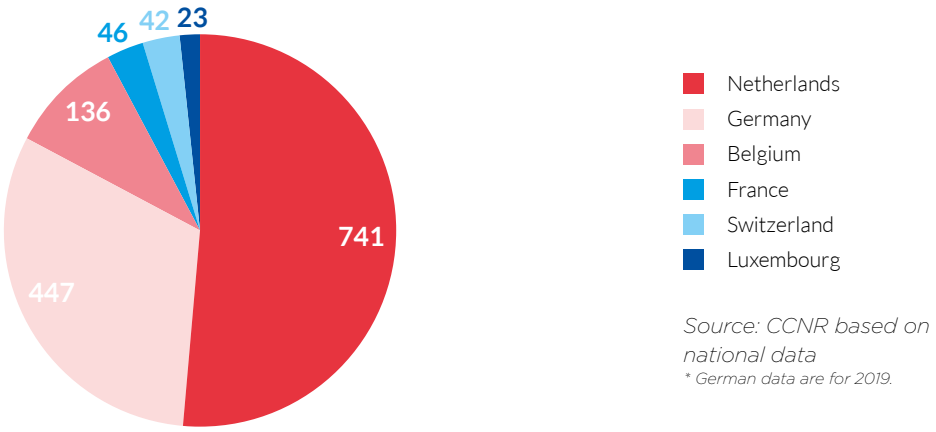
The share of the Dutch fleet within all liquid cargo vessels in Rhine countries is 52%. Switzerland and Luxembourg have relatively high numbers of tanker vessels.

The liquid cargo fleet can be regarded as a young fleet, compared to the dry cargo fleet.[17] In the Swiss fleet of tanker vessels, for example, 30 out of 42 vessels have been built since the year 2000 (share of 71%). In the Belgian tanker fleet, this is the case for 69% of all tanker vessels, and in the German fleet for 59% of all tanker vessels. The reason for this age structure is the transition from single hull to double hull vessels, which led to high investments in new vessels, and a phasing out of older vessels.

From a quantitative perspective, the total number of tanker vessels has decreased since 2012, as the number of vessels being phased out was higher than the number of new double hull vessels entering the market.

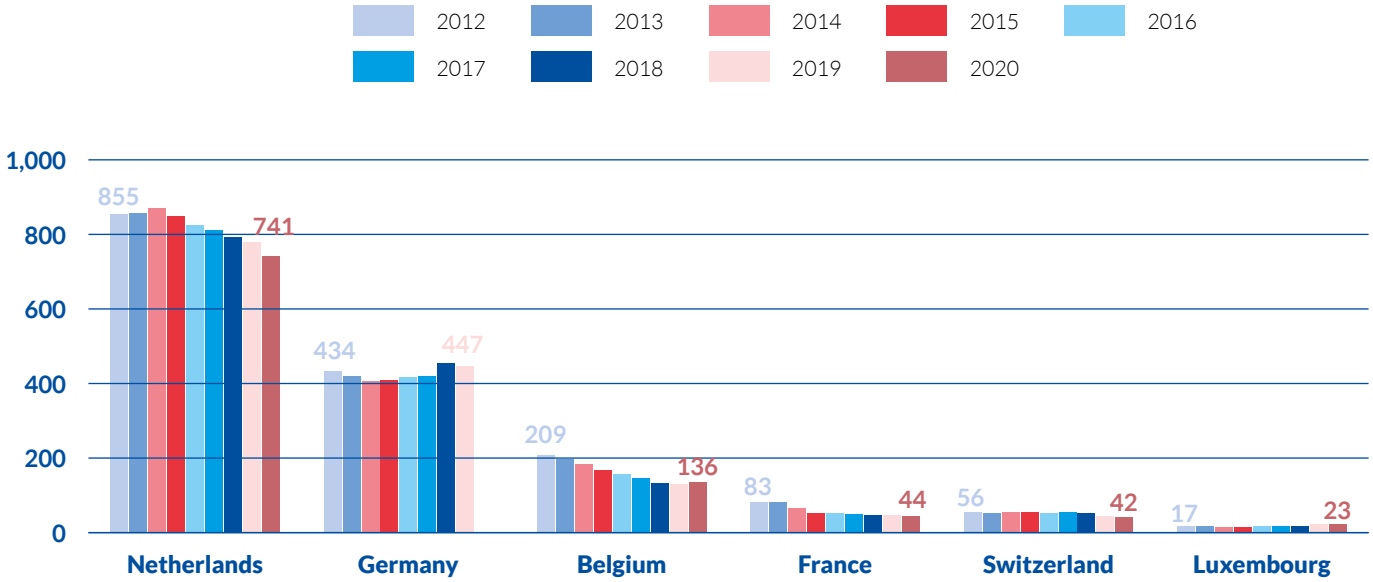
[17] *The shares are calculated based on the national waterway administration fleet data.*

FIGURE 6: **NUMBER OF LIQUID CARGO VESSELS IN RHINE COUNTRIES IN 2020 ***



Source: CCNR based on national data
** German data are for 2019.*

FIGURE 7: **NUMBER OF ALL LIQUID CARGO VESSELS PER RHINE COUNTRY ***



Source: CCNR based on national data
** German fleet data were not yet available for 2020.*

By January 2021, the total number of 1,433 liquid cargo vessels in Rhine countries comprised 1,199 ADN type tankers, according to the European Barge Inspection scheme EBIS.[18] Of these vessels, 1,170 were double hull tankers and 29 were single hull tankers. The difference between the total number of tanker vessels and the ADN type tankers is explained by the existence of liquid cargo vessels, which do not carry dangerous goods (e.g. vegetable oil tankers, cement tankers or ships which provide potable water for seagoing vessels in seaports).

The EBIS database also indicates that there were ten LNG dual fuel tanker barges sailing on European waterways at the beginning of 2021, compared to nine one year earlier.

[18] The European Barge Inspection Scheme (EBIS) has been developed by oil and chemical companies as part of their commitment to improving the safety of tanker barging operations.

II EVOLUTION
OF THE DANUBE FLEET AND THE CARGO FLEET IN OTHER EUROPEAN COUNTRIES

DRY CARGO FLEET IN THE DANUBE REGION

According to the statistics of the Danube Commission (with clarification based on surveys of shipping companies in the DC Member States), by the end of 2017,[19] there were around 400 push boats, 242 tugs, 409 self-propelled dry cargo vessels, and circa 2,100 dry cargo barges in the Danube fleet. More than 70% of the total transport volume is carried by pushed convoys, whose composition is set out in the table below, depending on the waterway class and shipping conditions.

TABLE 3: **TYPE OF DRY CARGO TRANSPORT ON THE DANUBE** (SHARE OF TOTAL TRANSPORT IN %)

Push boat + 7-9 pushed barges (lighters)	40-42%
Push boat + 6 lighters	20-23%
Push boat + 4 lighters	12-14%

Source: Danube Commission market observation

The total Danube fleet of dry cargo vessels has become smaller since 2005. However, from the year 2014 onwards, the decreasing trend came to a halt, and the fleet size has now stabilised. The Romanian dry cargo fleet is the largest in the Danube area with a share of around 48% of all dry cargo vessels. Its size is increasing.

[19] *There were no data available for later years for the Danube fleet, which would have allowed a distinction between dry cargo and liquid cargo vessels.*

LIQUID CARGO FLEET IN THE DANUBE REGION

According to the statistics of the Danube Commission (with clarification based on surveys of shipping companies in the DC Member States), by the end of 2017, there were 74 self-propelled tanker vessels and 128 tanker barges, with a total cargo capacity of around 0.22 million tonnes.[20]

CARGO FLEET IN OTHER EUROPEAN COUNTRIES

Eurostat offers statistics about the fleets of inland vessels in Poland, the Czech Republic, Finland and Lithuania. Data for Italy are influenced by two structural breaks. The latest available data for Italy (2018) indicate 240 self-propelled vessels, 164 barges, and 332 push boats and tugs.

In Poland the number of self-propelled vessels and barges decreased in recent years, from 607 in 2016 to 482 in 2019. The size of the Polish push and tugboat fleet has also reduced in recent years (2017: 219 push and tugboats, 2019: 179 push and tugboats).

[20] *The 2017 fleet data were the latest available from the Danube Commission.*

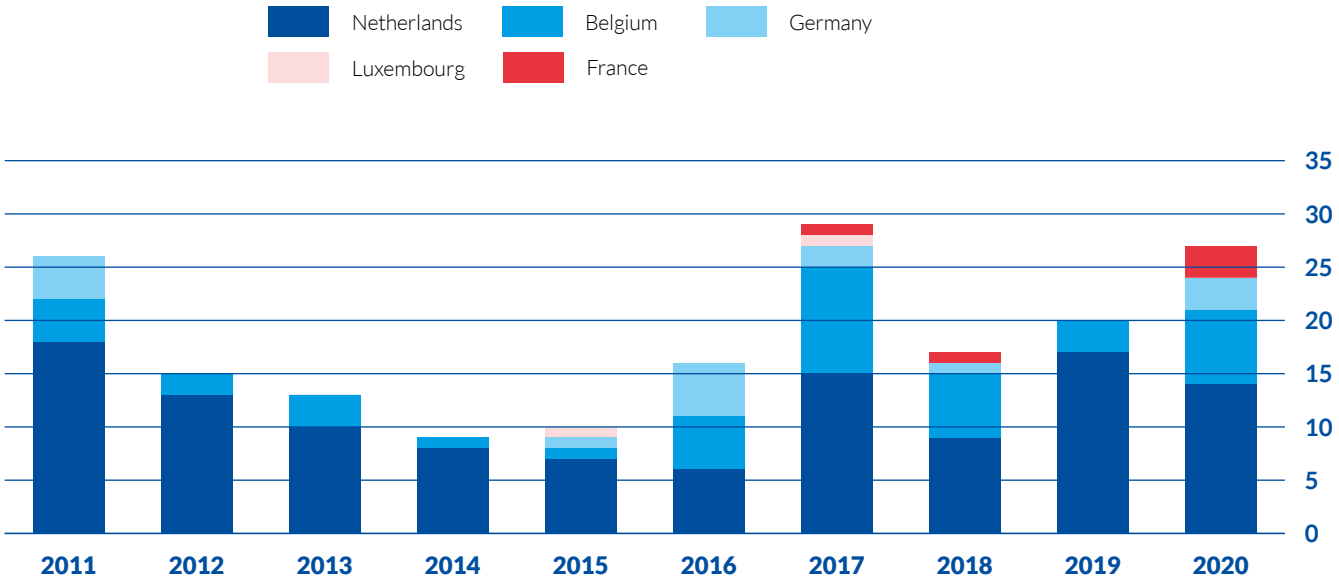
NEW VESSEL CONSTRUCTION

In 2020, **27** new dry cargo vessels and **54** new tanker vessels were added to the fleets in western Europe. The recovery in newbuilding activity continued for both dry cargo and tanker vessels.

In 2020, the demand for newly built vessels showed upward trends. Compared to the year 2019, the newbuilding rate for dry cargo vessels increased by seven units. The number of newly built tanker vessels increased by 14 units (40 in 2019; 54 in 2020). A strong increase in the newly built capacity of liquid cargo vessels can be noted.

The majority of the new dry cargo vessels entering the market in 2020 are registered in the Netherlands (14 out of 27), followed by Belgium with seven, and three each for Germany and France.

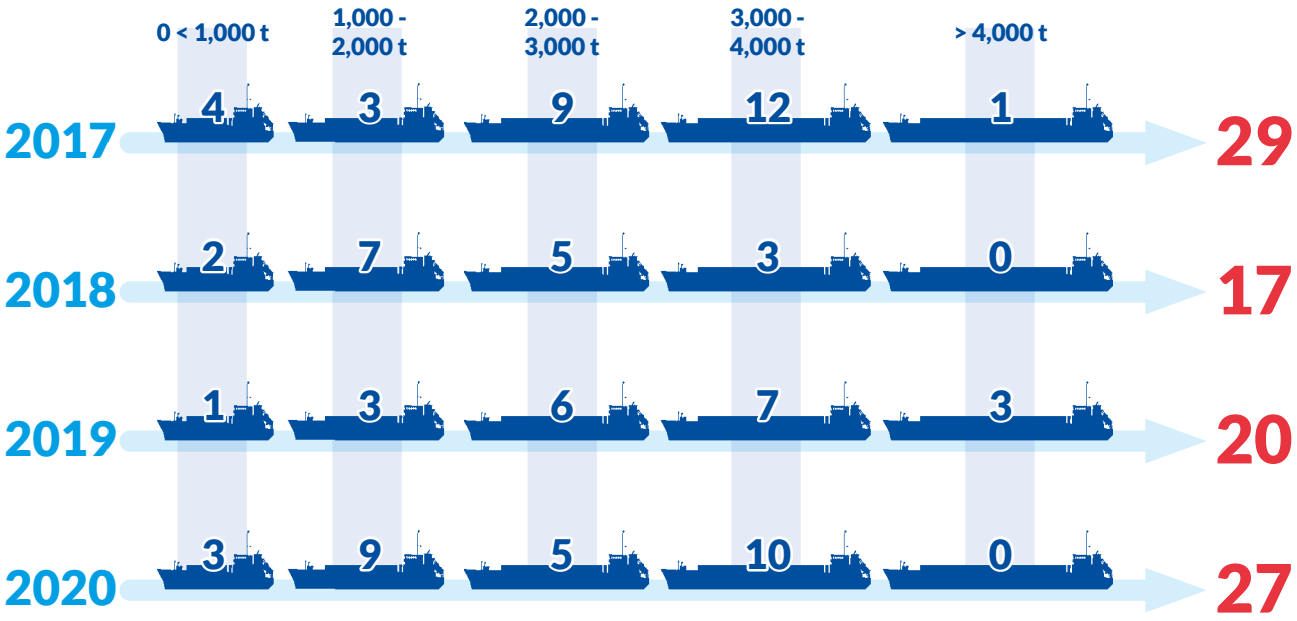
FIGURE 8: **NEW DRY CARGO VESSELS COMING ON THE MARKET PER COUNTRY OF REGISTER** (NUMBERS, 2011-2020)



Source: IVR

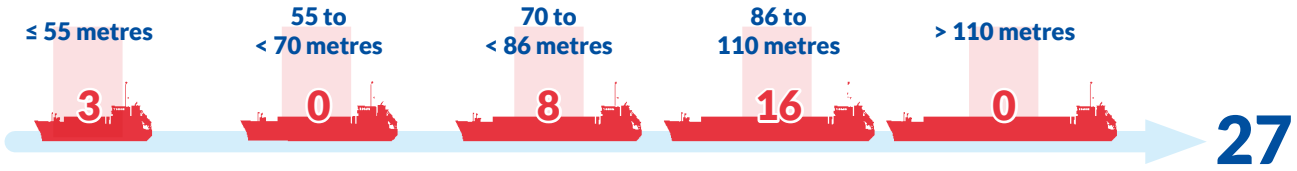
A high share of newly built dry cargo vessels had a loading capacity of over 3,000 tonnes. Indeed, 10 out of 27 vessels fall in the category of 3,000-4,000 tonnes. The average capacity of newly built dry cargo vessels amounts to 2,474 tonnes for 2020 whereas the value for 2019 equals 3,256 tonnes.

TABLE 4: **NEWLY BUILT DRY CARGO VESSELS ACCORDING TO LOADING CAPACITY**



Source: IVR. Note that for 2 newly built vessels the deadweight was partly estimated due to initially missing values.

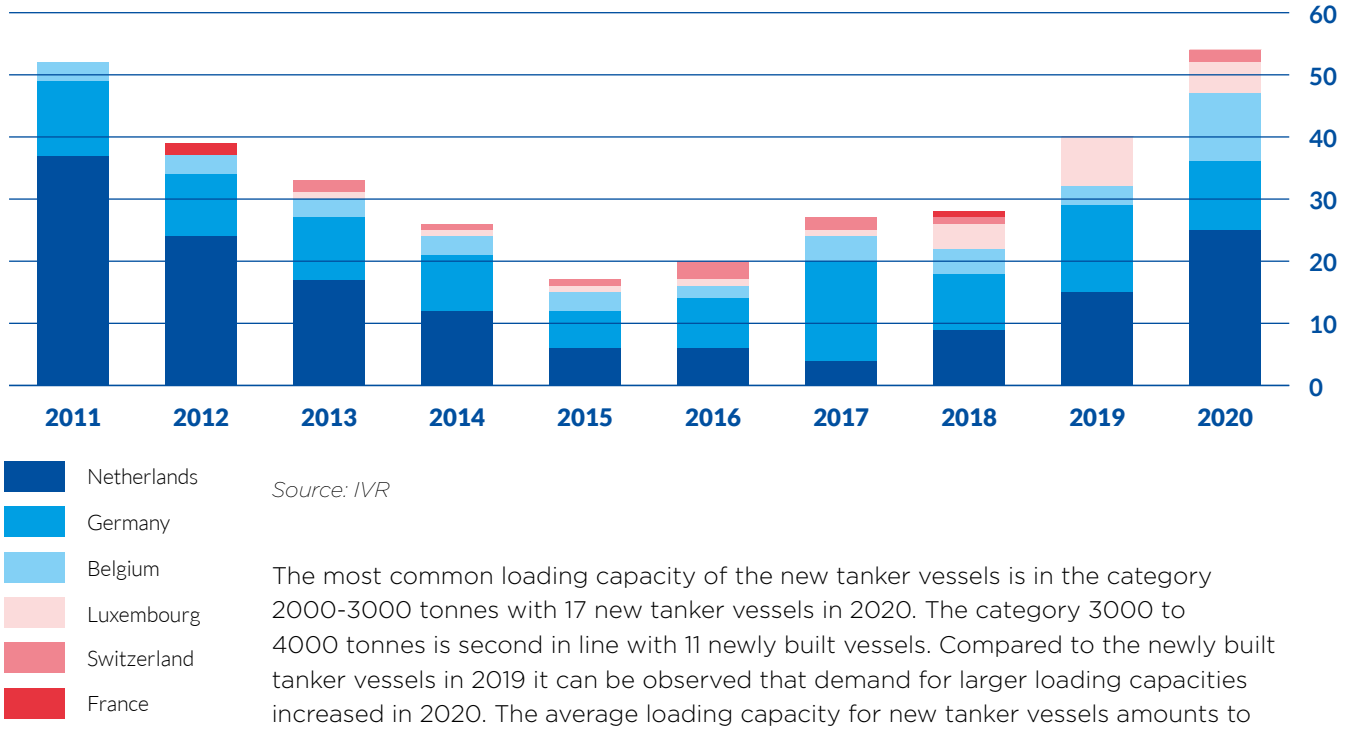
TABLE 5: **NEWLY BUILT DRY CARGO VESSELS IN 2020 BY LENGTH**



Sources: IVR, CCNR analysis

According to the IVR database, 54 new tanker vessels entered the market in 2020. In addition to the 25 new vessels registered in the Netherlands, 11 were registered in Germany, 11 in Belgium, 4 in Luxembourg and 2 in Switzerland.

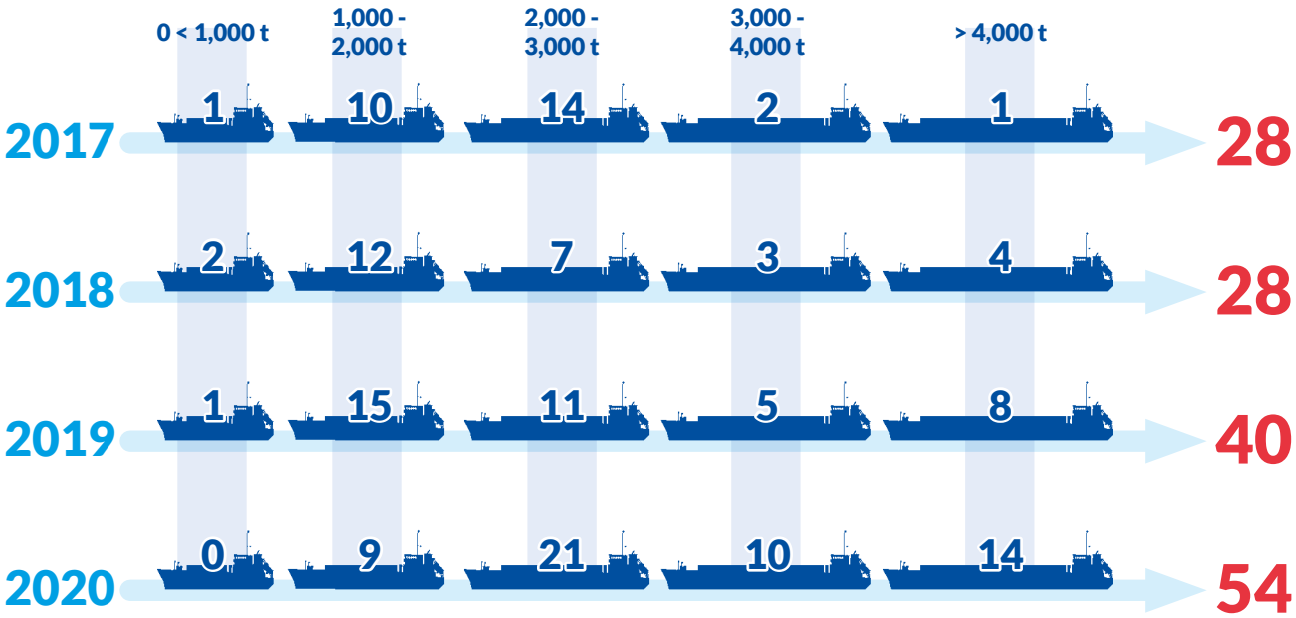
FIGURE 9: **NEW TANKER VESSELS COMING ON THE MARKET PER COUNTRY OF REGISTER** (NUMBERS, 2011-2020)



Source: IVR

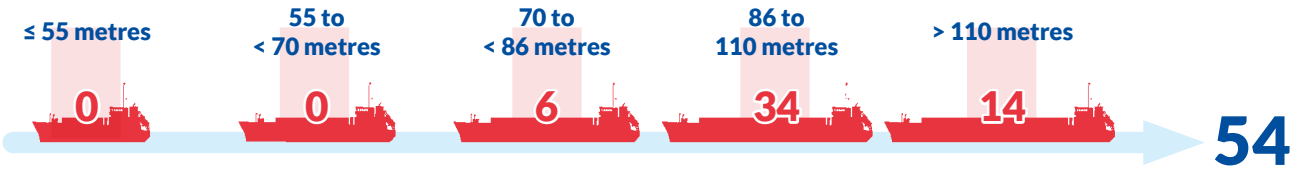
The most common loading capacity of the new tanker vessels is in the category 2000-3000 tonnes with 17 new tanker vessels in 2020. The category 3000 to 4000 tonnes is second in line with 11 newly built vessels. Compared to the newly built tanker vessels in 2019 it can be observed that demand for larger loading capacities increased in 2020. The average loading capacity for new tanker vessels amounts to 3,793 tonnes in 2020 and 3,103 tonnes in 2019.

TABLE 6: **NEWLY BUILT TANKER VESSELS ACCORDING TO LOADING CAPACITY**



Sources: IVR, CCNR analysis. Note that for 1 newly built vessel the deadweight was partly estimated due to an initially missing value.

TABLE 7: **NEWLY BUILT TANKER VESSELS IN 2020 BY LENGTH**

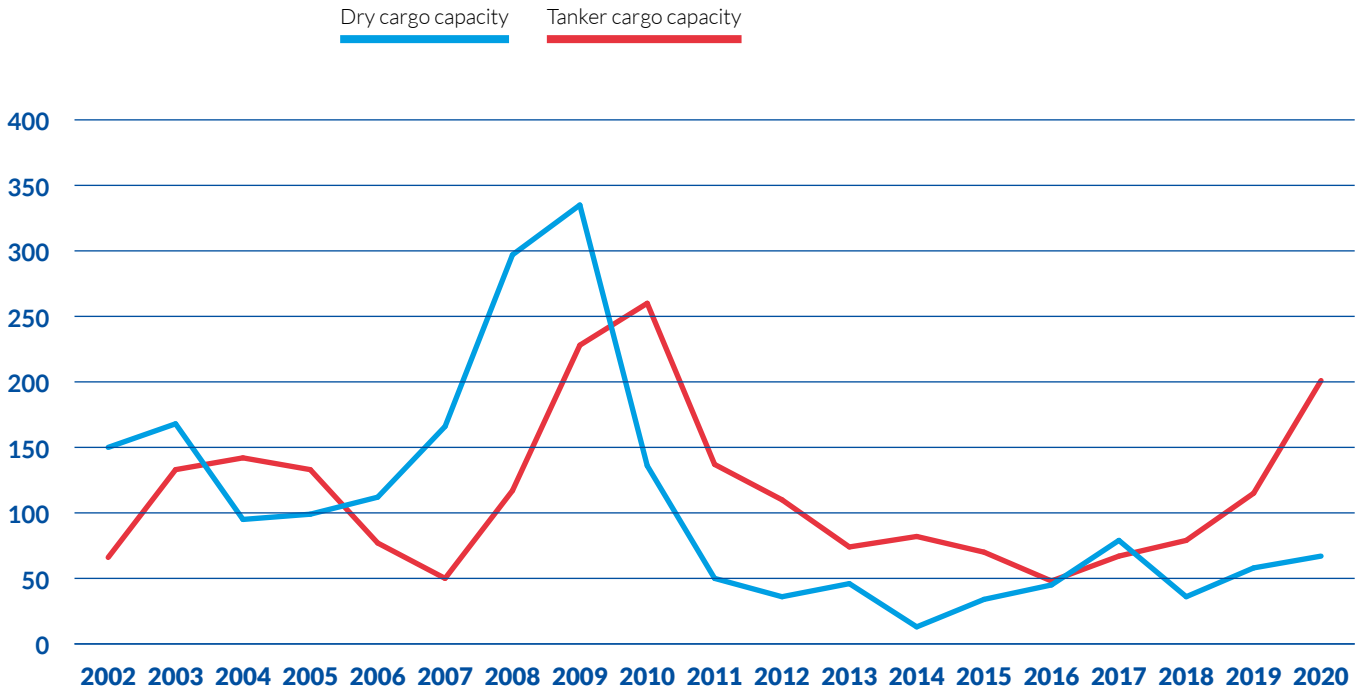


Sources: IVR, CCNR analysis

In the category of push and tugboats, only two new builds were registered in the Netherlands. One of them is the push boat PIETER VAN DER WEES and the second is the TENACIOUS.

Figure 10 illustrates the new loading capacity entering the market by year and by dry and liquid cargo vessels. After a long decline following the financial crisis, both dry and liquid new capacity show an increase in recent years. For the liquid cargo capacity, a greater increase in newbuilding activity is noted which can be explained by more favourable transport demand trends in the liquid cargo sector, compared to the dry cargo sector.

FIGURE 10: **NEW CAPACITY COMING ON THE MARKET FOR DRY AND LIQUID CARGO** (LOADING CAPACITY IN 1,000 TONNES)



Source: IVR

AGE STRUCTURE
OF THE RHINE FLEET (IVR[21])

The tanker fleet is the youngest fleet segment in Rhine countries, with a share of **52%** of all tanker vessels built in the 21st century, whereas this share amounts to 16% for dry cargo vessels and 29% for passenger vessels.

According to the IVR database, the Netherlands holds the largest share of the Rhine fleet in almost every vessel type category.

Push and tugboats

Push boats and tugs were, for the most part, constructed in the 20th century, with the Netherlands as a frontrunner. In the 21st century, the Netherlands alone registered 70 out of 102 new push and tugboats.

Around 69% (1,144 out of a total of 1,649[22]) of the entire push and tugboats of the Rhine fleet are registered in the Netherlands, followed by a share of 19% for Germany and 9% for Belgium.

Tanker vessels

Around 53% of the entire tanker fleet in Rhine countries are registered in the Netherlands, out of which 47% were built in the 20th century and the remaining 53% in the 21st century. It is noted that this share of 53% for the Dutch fleet matches almost exactly the share according to the national fleet databases, where the share of the Dutch fleet within all Rhine tanker vessels is 52%.

Germany as second in line accounts for 25% of the tanker vessels with approximately 45% built in the 20th century and 55% built in the 21st century (according to the national fleet database, this last-mentioned share is 59%).

Luxembourg, which holds around 5% of the tanker vessels, has built 80% of its fleet since the beginning of this century.

Thus, a relatively new tanker fleet in Rhine countries can be noted, with two peaks in newbuilding activity over the last 20 years (a first around the time of the financial crisis (2008-2009) and a second, smaller one, in the last years 2019/20).

[21] The database of IVR accounts for active, but also some inactive, vessels.
[22] This number of push and tugboats in Rhine countries is higher than the total number for push and tugboats in Rhine countries (see table 1), due to several inactive vessels in the IVR database.

Dry cargo

The dry cargo fleet remains the oldest one within all categories, with 84% of the fleet being built in the 20th century and 16% in the 21st century.

Of the dry cargo fleet 51% are registered in the Netherlands. Germany and Belgium account for 22% and 16%, respectively. These figures, based on the IVR database, match approximately the shares that emerge from national fleet databases, according to which 49% of the dry cargo fleet in Rhine countries are registered in the Netherlands, 22% in Germany, and 14% in Belgium.

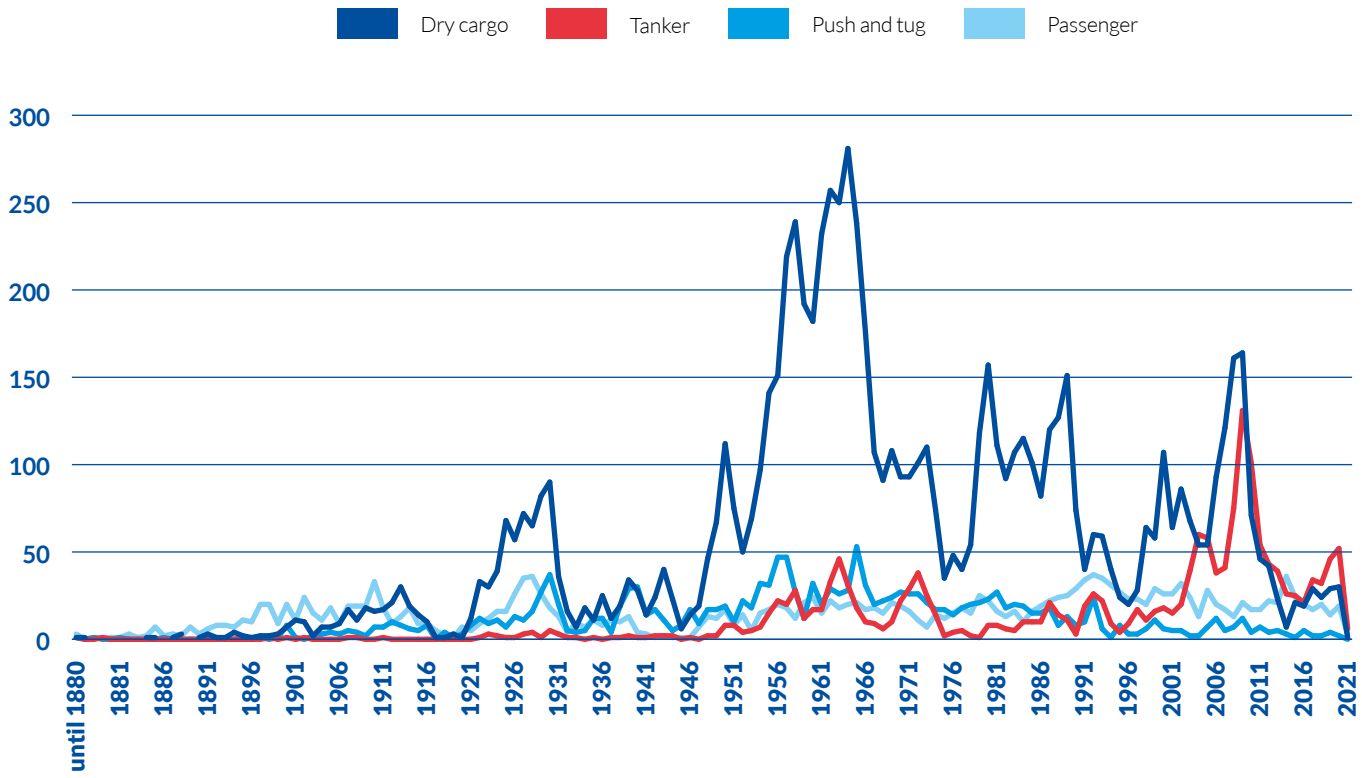
In France, 98% of the dry cargo vessels were constructed before the 21st century, making it the oldest fleet of all Rhine countries. In Switzerland and the Netherlands, the share adds up to 76%.

Passenger fleet

The total number of passenger vessels in Rhine countries amounts to 2,213 vessels, out of which 71% entered the market before 2000.

Frontrunners in this category remain the Netherlands and Germany with respectively 53% and 33% of all vessels. Switzerland is third with a share of 9%, representing around 200 passenger vessels.

FIGURE 11: **COMMISSIONING ACTIVITY FOR THE RHINE FLEET OVER TIME** (NUMBER OF INLAND VESSELS)



Sources: IVR, CCNR analysis. Furthermore, 60 dry cargo vessels, 50 passenger vessels, 30 push/tug vessels and 2 tank cargo vessels have an unknown year of construction.

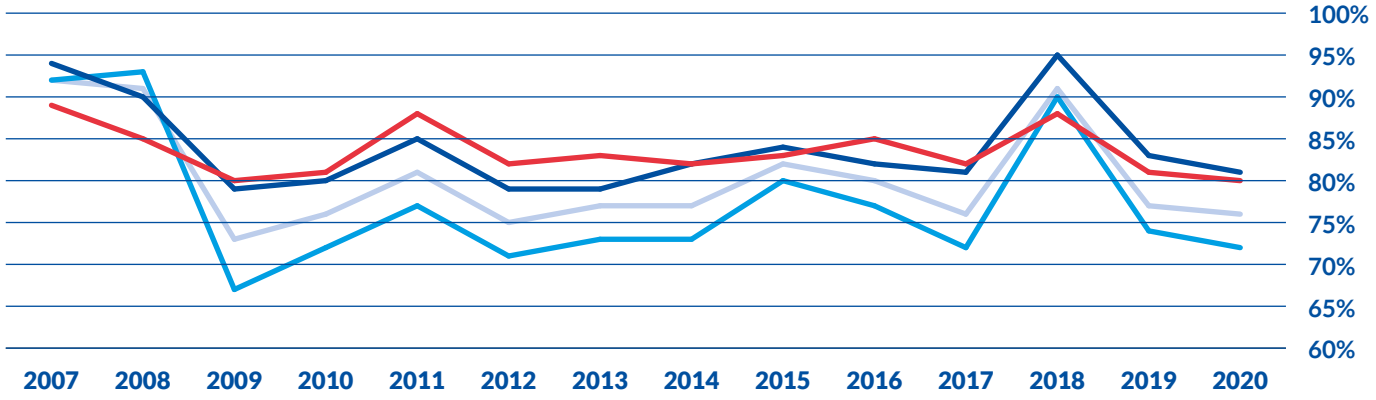
CAPACITY
MONITORING

The average utilisation rate of the fleet is calculated with a model that takes into account transport demand per goods segment in Rhine countries (the Netherlands, Germany, France, Belgium, Switzerland), the loading capacity of the fleet in Rhine countries (differentiated according to size categories) and water levels on the Rhine at the gauge stations of Maxau, Kaub, Cologne and Duisburg. The rate of capacity utilisation is defined as the ratio of the needed fleet capacity (derived fleet demand, based on transport demand) and the available fleet according to Rhine fleet statistics presented in this chapter.

DRY CARGO VESSELS

In 2020, the capacity utilisation rate of dry cargo vessels in western Europe decreased for vessels with a deadweight of 1,000 tonnes or more. This was related to the drop in demand as a result of the Covid crisis. The accompanying graph shows the development of capacity utilisation for the various fleet segments. For vessels with a deadweight of less than 1,000 tonnes, the degree of capacity utilisation remained on a higher level than for the other fleet segments.

FIGURE 12: **CAPACITY UTILISATION FOR THE DRY CARGO FLEET IN RHINE COUNTRIES** (PER FLEET SEGMENT)



Source: Panteia analysis based on data provided by CCNR

This can be explained by the fact that the number of small vessels is decreasing due to more stringent requirements for vessels and a lack of new construction. At the same time, small vessels occupy a relatively large market share within national inland waterway transport, which was least affected by the Covid crisis. In the Netherlands, the domestic or national cargo volume increased by half a percent (+ 1 million tonnes). In Belgium, the domestic volume increased by 7% (+2 million tonnes). This was offset by a decrease in Germany of -4% (-2 million tonnes) and in France (-15%, -5 million tonnes). Overall, therefore, domestic volumes decreased by about four million tonnes.

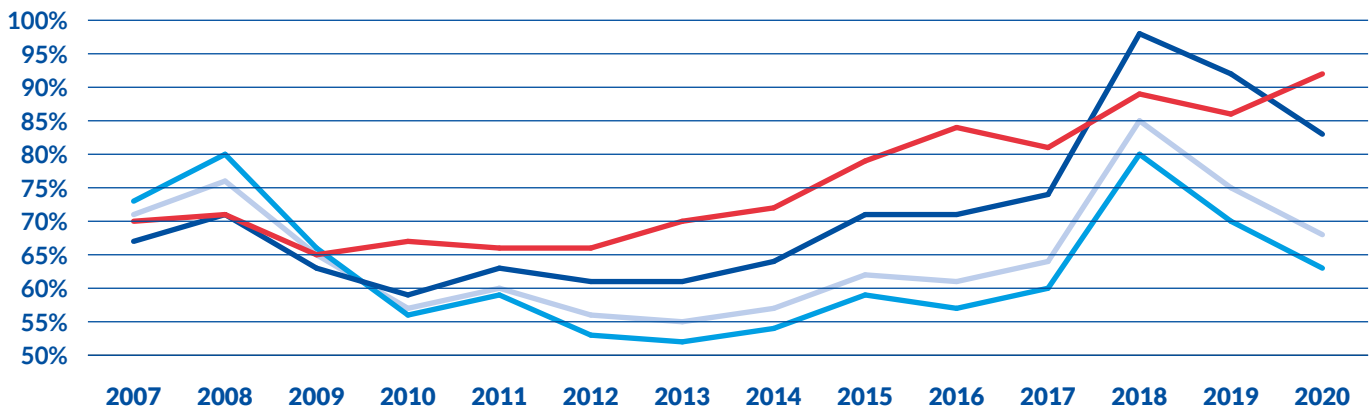
International transport – especially on the Rhine - was hit much harder. In the Netherlands, there was a 5% drop in international transport (or 10 million tonnes); in Germany, there was a loss of approximately 8% (-12 million tonnes). The decline was particularly noticeable in steel industries and affected both the supply of raw materials and the delivery of semi-finished products.

In view of the structural trends in the dry cargo sector, it can be concluded that there is still overcapacity. This overcapacity is particularly noticeable in the largest vessels category. According to the CCNR estimation, this concerns 200 ships larger than 2,000 tonnes.

LIQUID CARGO VESSELS

In 2020, the capacity utilisation rate fell sharply from 75% in 2019 down to 68%. The decrease took place for vessels larger than 1,000 tonnes; for smaller tanker vessels (share of 19% within the tanker fleet in Rhine countries), the use in specific market segments (cement tankers and edible oils) as well as the reduction of the number of vessels, are causing the utilisation rate to increase further.

FIGURE 13: **CAPACITY UTILISATION FOR THE LIQUID CARGO FLEET IN RHINE COUNTRIES** (PER FLEET SEGMENT)



Source: Panteia analysis based on data provided by CCNR

Larger vessels (> 1,000 tonnes) experienced a much lower utilisation rate due to Covid and the resulting drop in demand, particularly for motor fuels (paraffin, petrol and diesel). It should be noted that in the first months of the Covid crisis, there was still an increase in demand for tanker barging. Products that were refined in Germany and Switzerland had to be transported to the seaports due to a drop in demand in the national markets (less activity in road transport, therefore less fuel demand). Without this temporary peak demand, the decline in capacity utilisation would have been even greater. Another factor was that tanker barging in 2020 was helped by critical water conditions on the Upper Rhine, which meant that maximum fleet capacities could not be used. This supported the level of the demand/supply ratio and therefore increased the degree of fleet utilisation to some extent.

The drop in demand stood in contrast to an increase in carrying capacity. The loading capacity of the tanker fleet in western Europe grew by 2.6% in 2020 (compared to a reduction by 1.6% of dry cargo capacity). This growth took place almost exclusively in the segment of large vessels; the market segments smaller than 1,000 tonnes and between 1,000 and 2,000 tonnes saw a reduction in capacity.

For 2020, the overcapacity in the tanker barging sector is estimated to amount to 133 vessels. For 2021, in particular, a slightly increased demand due to relaxations in the Covid measures is expected, but this will not yet lead to a structural improvement in market conditions. In the longer term, overcapacity seems to be decreasing, but the energy transition will also require adjustments from tanker barging.

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06

COMPANIES, EMPLOYMENT, TURNOVER

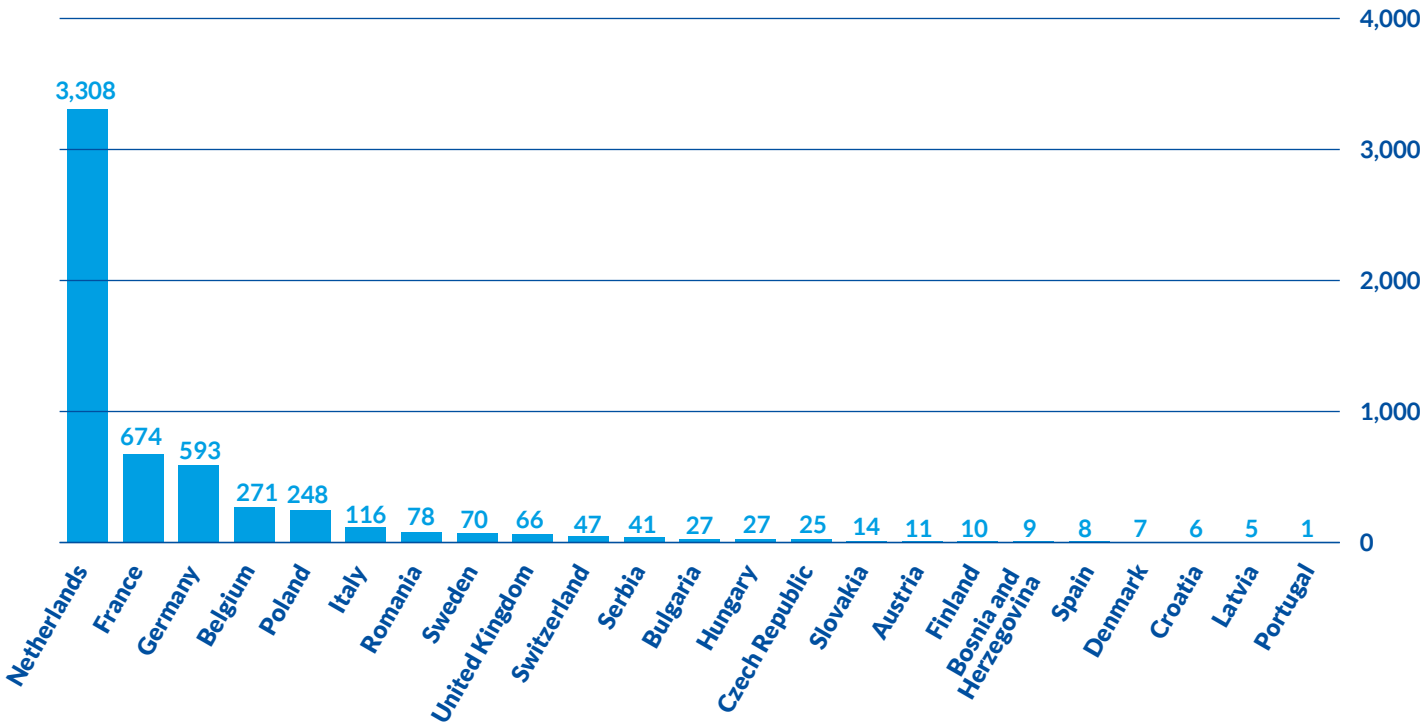
- **The Netherlands, Germany and France are the countries with the highest number of companies and the highest employment in inland waterway freight transport. For passenger transport, the leading positions are held by the Netherlands, Germany, Italy and Sweden.**
- **In 2018, 5,662 IWW freight transport companies were active in Europe (EU plus Serbia and Switzerland) and employed 22,902 people. In the same year, 4,028 IWW passenger transport companies, employing 23,000 people, were registered in Europe.**
- **Financial turnover in inland waterway freight transport is heavily concentrated on Rhine countries. Within passenger transport, turnover is more diversified from a geographical point of view. The Netherlands had the highest net turnover in freight transport, while Switzerland had the highest net turnover in passenger transport**

COMPANIES
AND EMPLOYMENT IN GOODS TRANSPORT

The Netherlands, Germany and France have the highest number of companies and the highest employment in inland waterway freight transport. For passenger transport, the leading positions are held by the Netherlands, Germany, Italy and Sweden.

According to Eurostat, in 2018,[23] 5,662 IWW freight transport companies were active in Europe (EU plus Bosnia-Herzegovina, Serbia and Switzerland). Of these, 86.4% were registered in Rhine countries (the Netherlands, Germany, Belgium, France, Switzerland). The countries with the highest number of companies are the four largest Rhine countries and Poland, which together account for 90% of all companies in Europe.

FIGURE 1: **NUMBER OF COMPANIES IN IWW GOODS TRANSPORT IN EUROPE ***

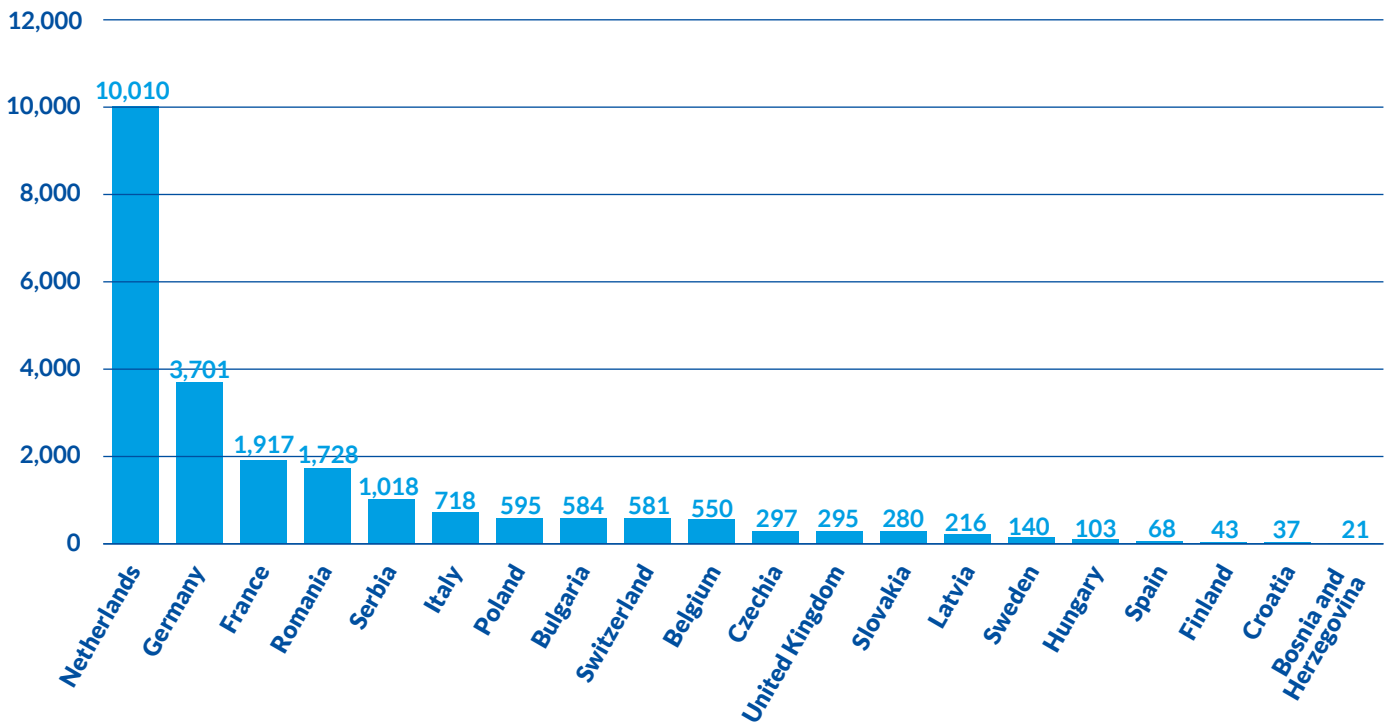


Sources: Eurostat [sbs_na_1a_se_r2] and Federal Statistical Office (CH)
** Data for 2018*

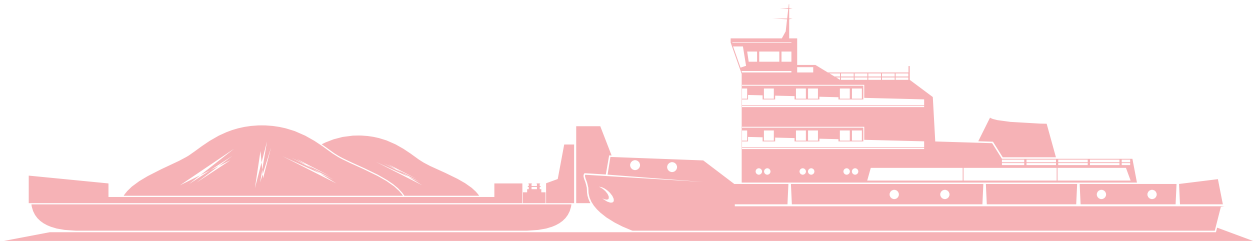
[23] *2018 was the most recent year for Eurostat statistics on companies.*

The number of employed persons include the self-employed, helping family members and employees. The total number of this variable stood at 22,902 in 2018.[24] Of these employed persons, 73% were working for companies in Rhine countries, 17% for companies in Danube countries and 10% for companies in countries outside the Rhine and Danube regions.

FIGURE 2: **NUMBER OF PERSONS EMPLOYED IN IWW GOODS TRANSPORT IN EUROPE ***



Source: Eurostat [sbs_na_1a_se_r2]
** Data for 2018*

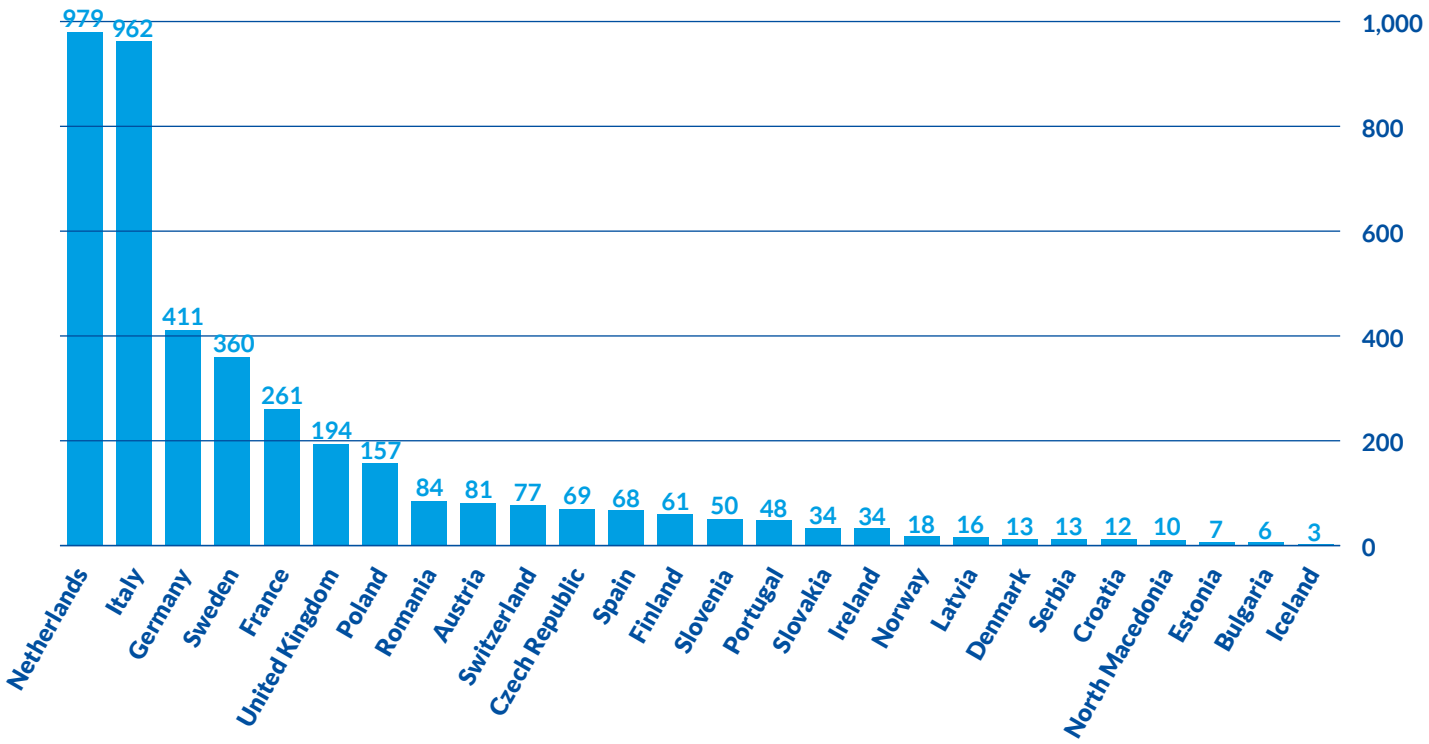


[24] *It should be noted that figures obtained from national institutions are often higher than the figures obtained from Eurostat. However, for cross-country comparisons, Eurostat is treated as the preferred source because data are harmonised across countries and are thus comparable.*

COMPANIES
AND EMPLOYMENT IN PASSENGER TRANSPORT

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 position of Italy is due both to the country's large number of lakes and the canal boats in Venice. The Netherlands has many day-trip vessels, ferries on rivers as well as large and small cruise vessels.

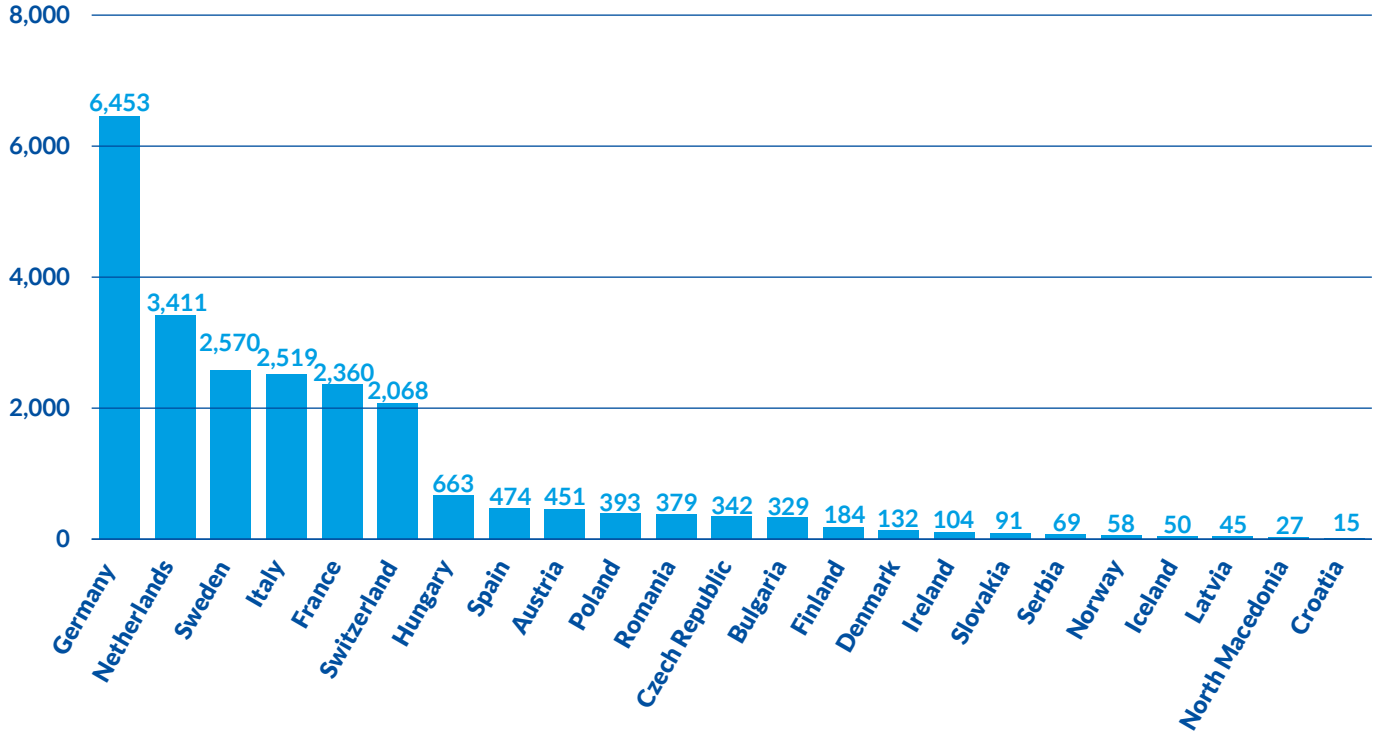
FIGURE 3: **NUMBER OF IWW PASSENGER TRANSPORT COMPANIES IN EUROPE** *



Sources: Eurostat [sbs_na_1a_se_r2] and Federal Statistical Office (CH)
** Data for 2018*

Germany is in the leading position regarding employment in passenger transport with more than 6,000 persons employed. The Netherlands follows with more than 3,000 persons, and afterwards, Sweden, Italy, Switzerland and France each have between 2,000 and 2,500 persons employed. The position of Sweden can be explained by the high number of lakes, canals and rivers in the country.

FIGURE 4: **NUMBER OF PERSONS EMPLOYED IN IWW PASSENGER TRANSPORT IN EUROPE**



Source: Eurostat [sbs_na_1a_se_r2]
** Data for 2018. Data for UK are missing.*

The total number of persons employed in European IWW passenger transport amounted to 23,187 in 2018 and was therefore higher than the employment in freight transport. Around 82% of all persons employed in EU inland waterway passenger transport are employed in Germany, the Netherlands, Sweden, Italy, France and Switzerland.

II TURNOVER

Financial turnover in inland waterway freight transport is heavily concentrated on Rhine countries. Within passenger transport, financial turnover is more diversified from a geographical point of view.

TURNOVER IN IWW FREIGHT TRANSPORT

Taking into account the Eurostat structural business statistics (SBS), the company statistics database of the Statistical Office of the Netherlands, and the database of the Swiss Tax Administration, it is possible to indicate the yearly financial net turnover of IWT freight transport in Rhine countries as follows:

TABLE 1: **NET TURNOVER IN IWW FREIGHT TRANSPORT IN RHINE COUNTRIES**

	Net turnover in billion Euro *
Dutch companies	3.359
German companies	1.493
French companies	0.397
Belgian companies	0.181
Swiss companies	0.156
Rhine countries	5.586

Sources: Eurostat [sbs_na_1a_se_r2], Centraal Bureau voor de Statistiek (NL) and Eidgenössische Steuerverwaltung (CH)
** Figures are for 2018 except for CH (2017). Value for NL is estimated, based on information from CBS that 92% of total turnover in IWT is freight transport turnover. Value for CH was converted into EUR with the average exchange rate in 2017 of EUR/CHF of 1.117.*[25]

IWW freight companies in Rhine countries generated 5.586 billion Euro in 2018. The turnover generated in Danube countries amounted to 290.9 million Euro in 2018, according to the Eurostat SBS database.

[25] *https://www.centralbank.ie/statistics/interest-rates-exchange-rates/exchange-rates*

TURNOVER IN IWW PASSENGER TRANSPORT

For passenger transport, Switzerland has the highest turnover in Europe with 884.2 million Euro in 2017.[26] This is followed by the United Kingdom (572.4 million Euro), Germany (518.4 million Euro), Italy (436.4 million Euro), Sweden (406.3 million Euro) and France (353.3 million Euro), all values being for 2018. With regard to the Netherlands, turnover can be estimated to equal 292 million Euro in 2018.[27]

All data on passenger transport turnover were taken from the Eurostat database on Structural Business Statistics (SBS), except for Switzerland (source: Swiss Tax Administration), and the Netherlands (source: Central Statistical Office CBS).

[26] Source: Eidgenössische Steuerverwaltung (Swiss Tax Administration). This is the most recent year for which the value is available.
[27] The CBS estimates that 8% of total IWT turnover in the Netherlands is passenger transport turnover.

RIVER CLOUD II
REGINA R

07

PASSENGER TRANSPORT

- In 2020, the European river cruise season was marked by the Covid pandemic, affecting to a great extent the river cruise industry, not only on the demand side but also on the fleet and supply side.
- Despite the crisis, the number of river cruise vessels in Europe reached 397, with 19 new vessels commissioned (the same number of new vessels as in 2019). A downward trend is however expected in the rate of new buildings in the coming years, thereby also affecting shipyards.
- As a direct consequence of the pandemic, the number of cruise vessel voyages decreased by 91% on the Danube, 82% on the Rhine and 70% on the Mosel in 2020.
- Similarly, the number of passengers on day-trip vessels in Europe decreased substantially. In Strasbourg a 79% reduction was observed in 2020.

FLEET
FOR RIVER CRUISES[28]

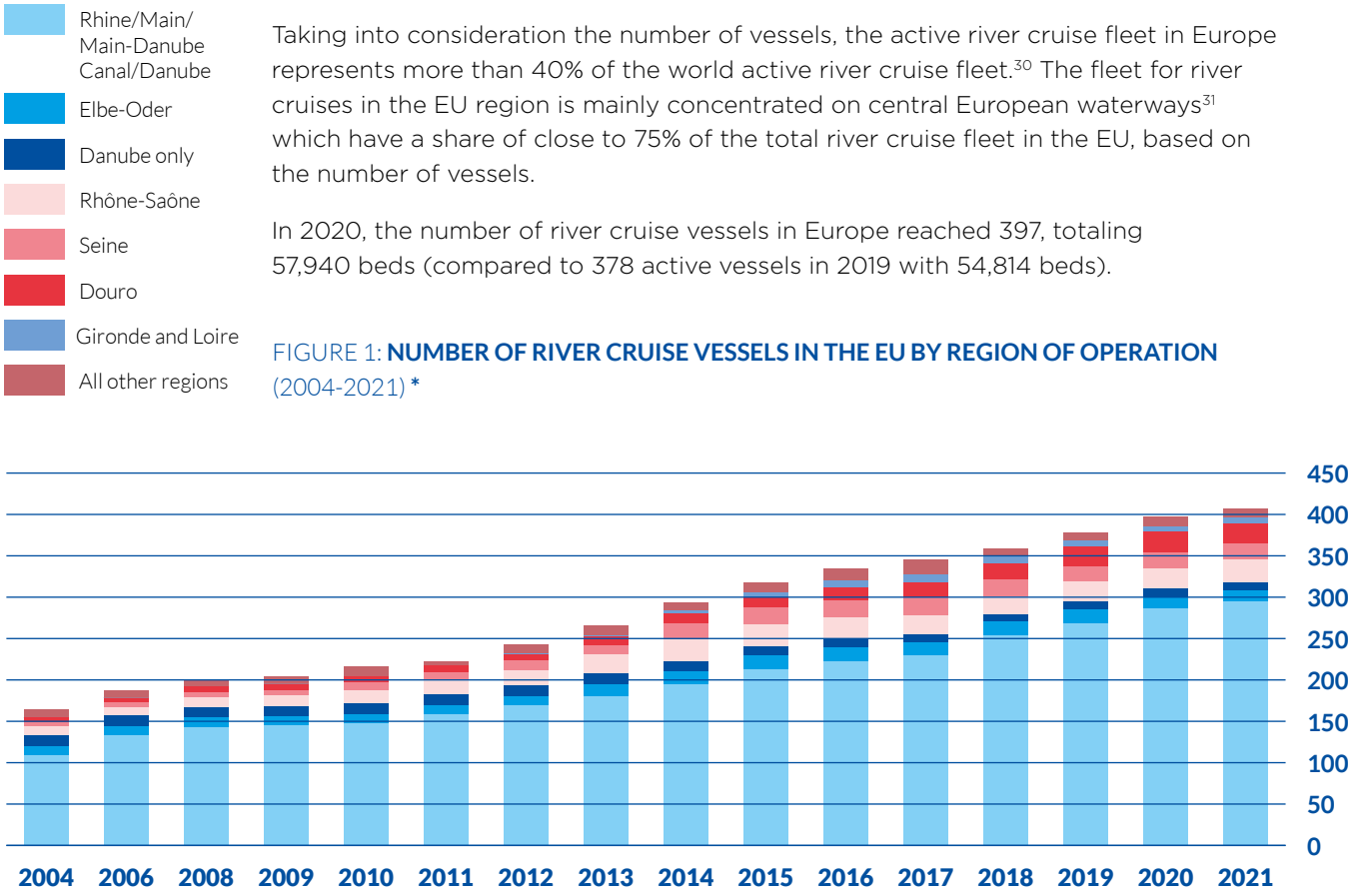
The river cruise season for 2020 was marked by the Covid pandemic, affecting to a great extent the river cruise industry, not only on the demand side but on the fleet or supply side as well. Indeed, many vessels have been "on hold" for an entire year, the oldest and less efficient vessels have even been sold by some operators. However, in the hope of a better season in 2021, newbuilding orders did not sustain many cancellations in 2020. A downward trend is expected in the rate of new buildings for river cruise vessels in the next years, thereby affecting shipyards.

In 2020, the EU region river cruise fleet remained the largest,[29] followed by the Nile and other African rivers. The European fleet has increased continuously since 2005. In nearly two decades, it grew by 150%, with the highest growth recorded between 2013 and 2015 (when Viking River Cruises heavily invested in new river cruise vessels). Today, both American and European passengers drive the growth of the European fleet, while the number of Chinese guests also grew fast before Covid.

Taking into consideration the number of vessels, the active river cruise fleet in Europe represents more than 40% of the world active river cruise fleet.[30] The fleet for river cruises in the EU region is mainly concentrated on central European waterways[31] which have a share of close to 75% of the total river cruise fleet in the EU, based on the number of vessels.

In 2020, the number of river cruise vessels in Europe reached 397, totaling 57,940 beds (compared to 378 active vessels in 2019 with 54,814 beds).

FIGURE 1: **NUMBER OF RIVER CRUISE VESSELS IN THE EU BY REGION OF OPERATION** (2004-2021) *



Source: Hader, A. (March 2021), The River Cruise Fleet
** 2021: based on order book as of March 2021*

[28] *Hader, A. (March 2021), The River Cruise Fleet*
[29] *The EU River cruise fleet, as it is defined in this report (cruise vessels with more than 39 beds), comprises the fleet in the EU and in Switzerland.*
[30] *Excluding seagoing river cruise vessels*
[31] *Rhine, Main, Main-Danube Canal, Danube, Elbe-Oder*

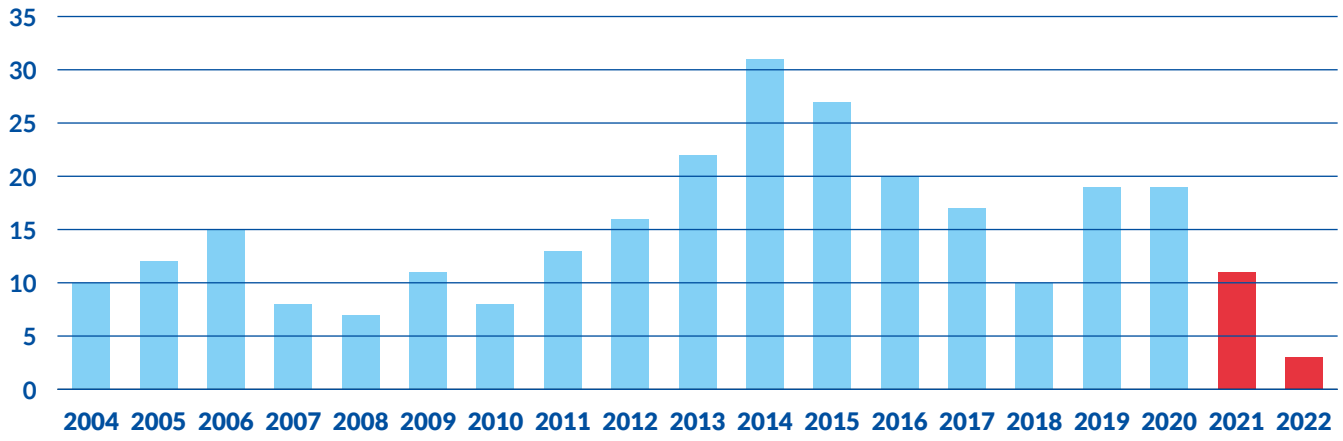
In the 2020 season, 19 new vessels were commissioned, as was the case in 2019. One older vessel (built in 1955) was withdrawn from the market as it was now out of service. Of these 19 new vessels, 12 joined the fleet operating on central European waterways, one joined the Danube, two joined the Douro and four joined the Seine. Seven of these new vessels are dedicated to the German speaking river cruising market, a greater number compared to the last years.

All the vessels planned for 2020 were ready, or in a late phase of building, when the Covid pandemic struck in March 2020. Some were commissioned on time, others with some delay. In the same period, several vessels had already been on order for delivery in 2021. It is difficult to provide a definite number of cancellations in 2021. However, it is observed that some delivery dates were postponed and that the number of new building contracts signed since 2020 is extremely small.

The 11 new buildings which will be joining the market in 2021 are expected to operate in the following regions: eight on central European waterways, two on the Danube, and one on the Rhône. In 2021, one more vessel will join the market after a long conversion phase and two vessels will be removed from the market as they went out of service.

The downward trend in new building orders is expected to continue in 2022 as only one new order, and one or two postponements, are currently recorded in order books. This is directly linked to the Covid pandemic. It is also very unlikely that any overseas travel operator will order new capacities in the near future. Indeed, while most companies survived the first Covid season, the year 2021 is likely to be decisive for many operators. The order book of most river cruise vessels builders is also empty as regards the near future.

FIGURE 2: **NEW RIVER CRUISE VESSELS FOR THE EUROPEAN MARKET 2004-2022** (NUMBER OF CRUISE VESSELS) *

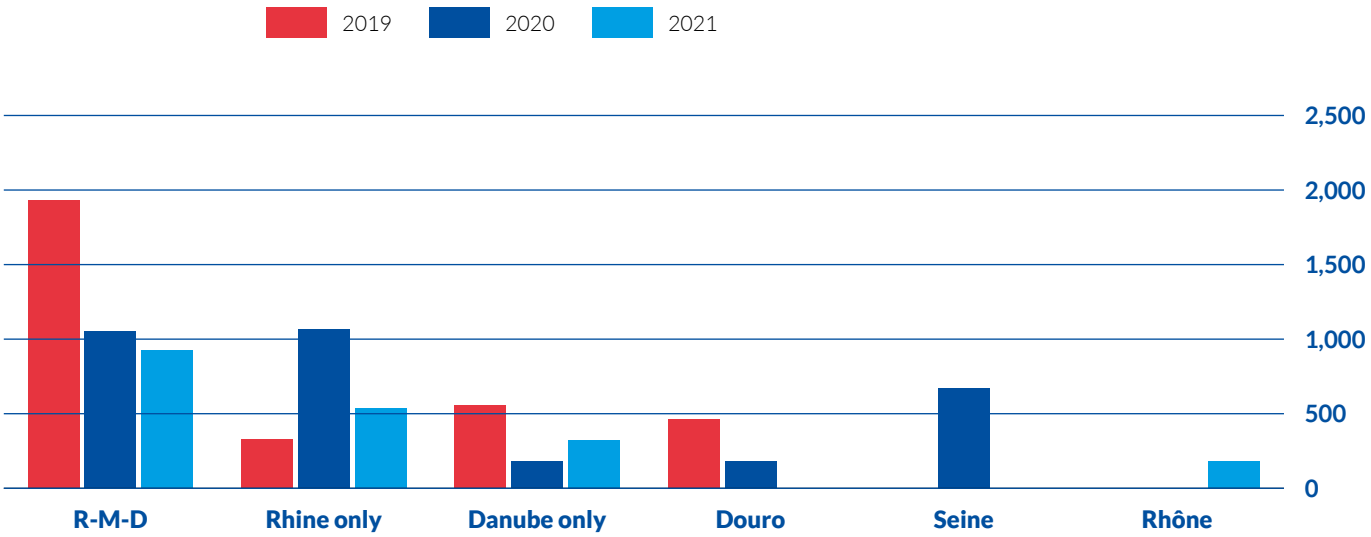


Source: Hader, A. (March 2021), The River Cruise Fleet
** 2021 and 2022: based on order books as of March 2021*

The 19 new vessels which joined the market in 2020 brought an additional capacity of 3,155 beds (compared to 3,131 beds in 2019) to the river cruise market in Europe. The net capacity increase was 5.6%. In 2021, the extra capacity is expected to reach nearly 2,000 beds for 11 new vessels joining the market.

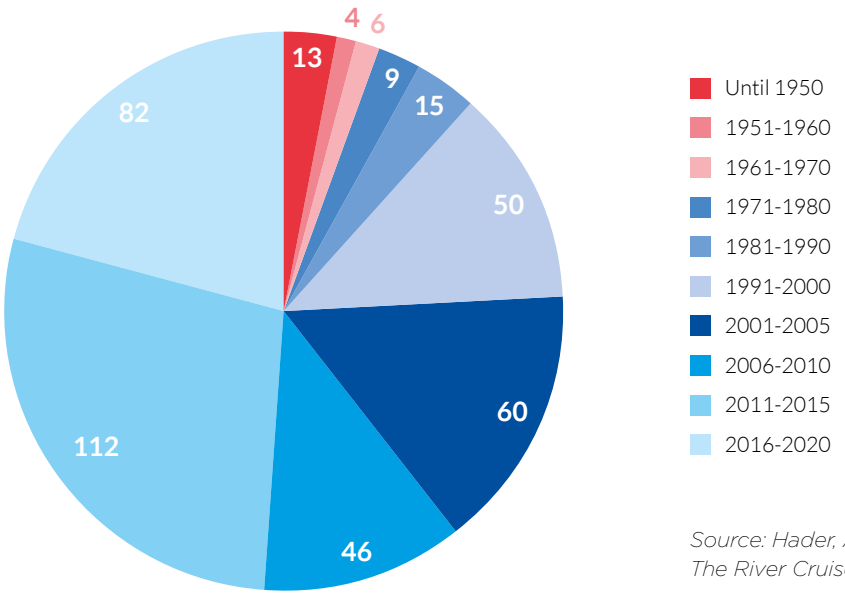
The average number of beds in 2020 in new river cruise vessels was 166, a number which is rising, after a decrease between 2014 and 2018. Indeed, seven large cruise vessels with a high passenger capacity (190 beds) came on the market in 2019, as well as three in 2020. Four such high passenger capacity cruise vessels are expected to operate in 2021.

FIGURE 3: **NEW CRUISE CAPACITIES IN 2019, 2020 AND 2021 PER REGION OF OPERATION** (NUMBER OF BEDS) *



Source: Hader, A. (March 2021), The River Cruise Fleet
** R-M-D= Rhine / Main / Main-Danube Canal / Danube. In 2019, 150 new beds on the Rhine are also the result of conversion of an existing vessel. 2021: based on order books as of March 2021.*

FIGURE 4: **NUMBER OF RIVER CRUISE VESSELS IN THE EU BY YEAR OF CONSTRUCTION**



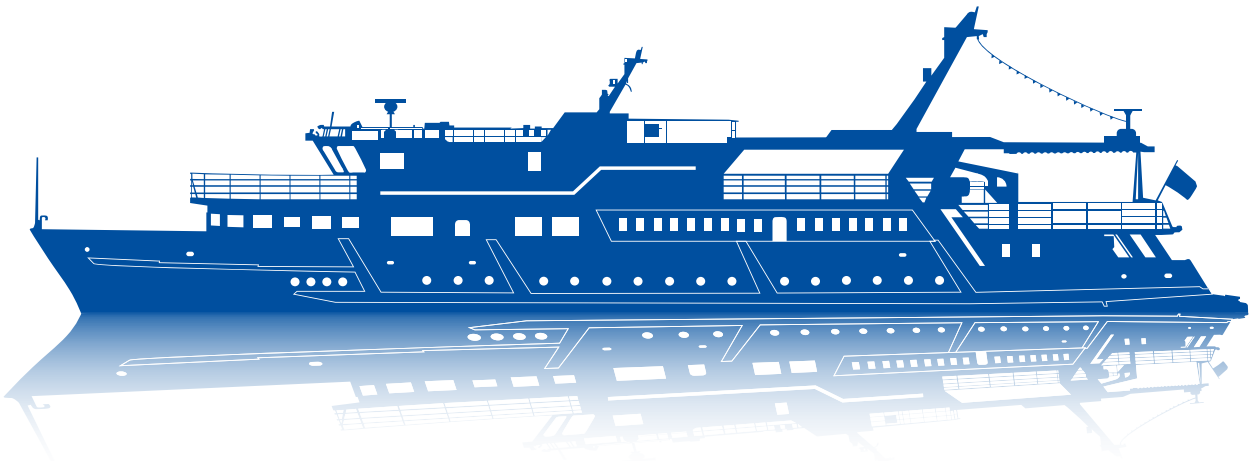
Source: Hader, A. (March 2021), The River Cruise Fleet

DEMAND
FOR RIVER CRUISES

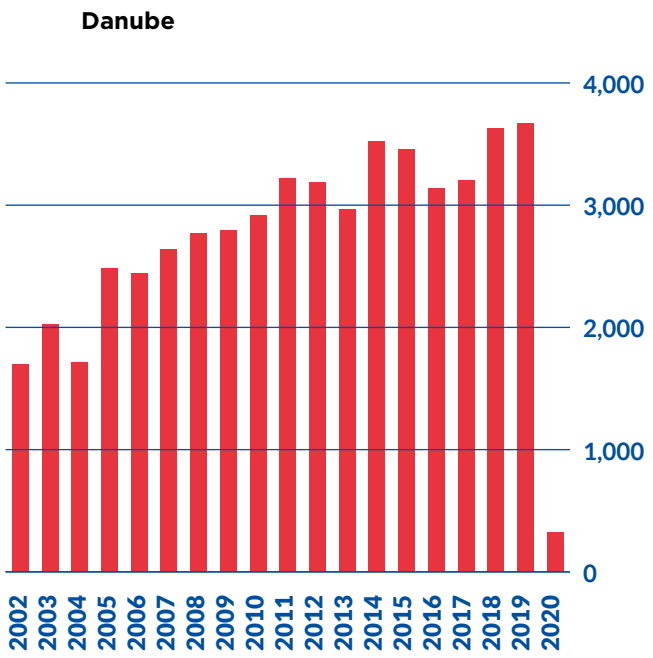
In 2020, the number of cruise vessels operating on Danube, Rhine and Mosel decreased by 91% (Danube), 82% (Rhine) and 70% (Mosel).

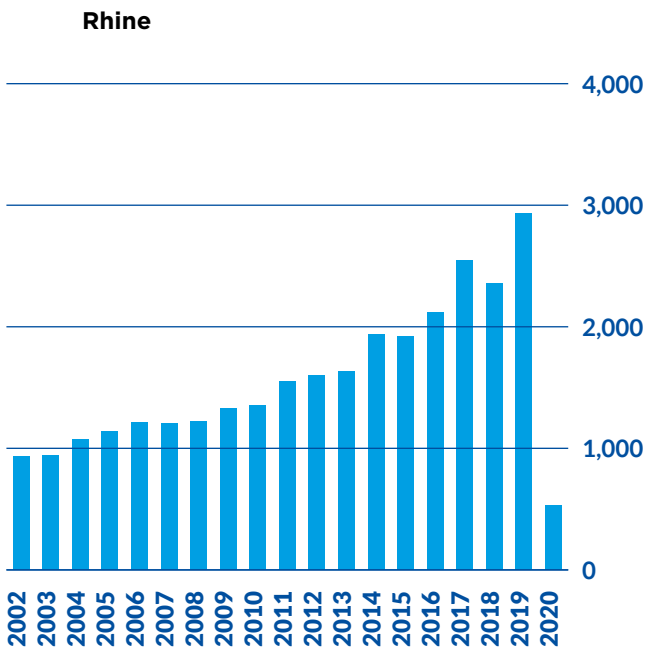
In 2020, 124,800 passengers enjoyed a river cruise voyage on European inland waterways. This figure represents a decrease of 93% compared to the 1.79 million passengers in 2019. Due to the strict travel restrictions, the once dominant share of US-American passengers (36.7% of 1.79 million in 2019) was crushed in 2020, and represented only 0.11% of the above-mentioned 124,800 passengers. The nationality with the highest share in 2020 were Germans, who represented 78% of all cruise passengers in 2020. Other nationalities were Swiss (6.4%) and Austrians (5.9%).

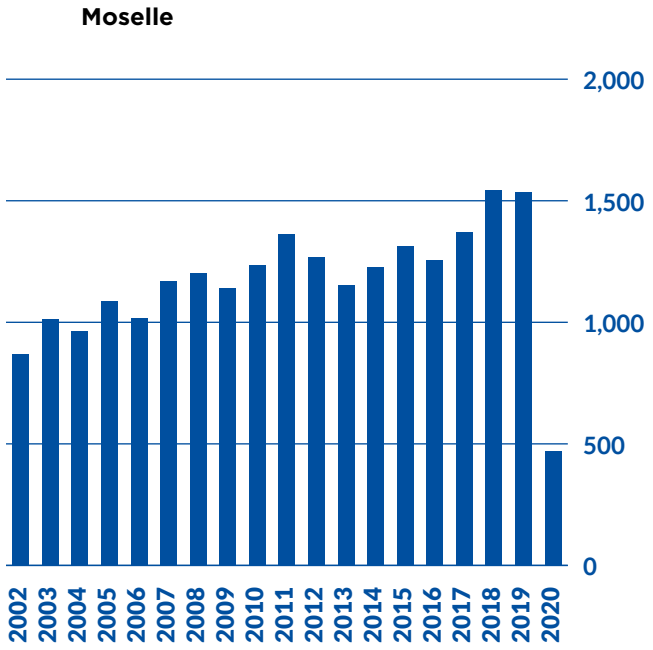
The yearly transit figures of river cruise vessels on the Rhine, Danube and Moselle show a tremendous decrease for 2020. Figures 5, 6 and 7 illustrate this somewhat disintegrating development at three locks: Iffezheim on the Upper Rhine, Jochenstein on the Upper Danube (German-Austrian border) and Koblenz on the Moselle.
The decrease amounts to -69.5% for the Moselle at the lock of Koblenz and to -81.8% for the Rhine at the lock of Iffezheim, compared to 2019. The backdrop for the Danube in 2020 adds up to -91% compared to the previous year.



FIGURES 5, 6 AND 7: **YEARLY NUMBER OF CRUISE SHIP TRANSITS ON DANUBE, RHINE AND MOSELLE**







Sources: German Waterway and Shipping Administration and Moselle Commission
** Rhine = Upper Rhine (lock of Iffezheim)*
Danube = Upper Danube at the Austrian-German border (lock of Jochenstein)
Moselle = lock of Koblenz

In the pre-pandemic era, cruise ship traffic followed a positive trend on all three rivers. But, due to strict lockdown measures imposed in early 2020, economic activity came to an almost complete standstill with only a minor resumption of activity occurring in the second half of the year 2020, during the lifting of lockdown measures.

The following tables show figures for vessel traffic and passenger numbers at the German-Austrian, Slovakian-Hungarian, and Hungarian-Croatian-Serbian borders.

The majority of Danube cruises are made up of short trips that last 5, 7 or 8 days on the routes Passau-Vienna-Bratislava-Budapest-Passau and Vienna-Bratislava-Budapest, as well as trips to and from Rhine and Main ports. The figures for Danube cruising are therefore highest between Vienna and Budapest. These traffic figures are acquired from the measurements at the Slovakian-Hungarian border (Gabčíkovo), which lies between these two cities.

Cruise vessel traffic from Passau to the Danube Delta, with a duration of 14, 15 or 16 days, are in general less frequent than the shorter trips between Passau or Vienna and Budapest. The numbers for these two-week-trips are obtained by the border point of Mohács in southern Hungary.

TABLE 1: **CRUISE VESSEL TRAFFIC ON THE GERMAN-AUSTRIAN BORDER** (LOCK OF JOCHENSTEIN) **AND NUMBER OF PASSENGERS**

Year	Number of vessel transits	Number of passengers
2015	3,456	473,800
2016	3,134	430,000
2017	3,204	414,153
2018	3,625	507,665
2019	3,668	512,500
2020	324	25,160

Sources: German Waterway and Shipping Administration and Danube Commission

TABLE 2: **CRUISE VESSEL TRAFFIC ON THE SLOVAKIAN-HUNGARIAN BORDER** (LOCK OF GABČÍKOVO) **AND NUMBER OF PASSENGERS**

Year	Number of vessel transits	Number of passengers
2015	3,702	534,000
2016	3,946	564,700
2017	4,210	595,500
2018	3,945	548,800
2019	5,141	720,800
2020	557	56,100

Source: Danube Commission

TABLE 3: **CRUISE VESSEL TRAFFIC ON THE HUNGARIAN-CROATIAN-SERBIAN BORDER** (MOHÁCS) **AND NUMBER OF PASSENGERS**

Year	Number of vessel transits	Number of passengers
2015	667	83,000
2016	693	86,900
2017	707	97,700
2018	754	103,600
2019	1,017	135,040
2020	58	5,141

Source: Danube Commission

Outlook for river cruises

Due to continuous travel restrictions, passengers from overseas regions are still expected not to travel to the EU in 2021 and operators have therefore adapted their offers, to propose more national routes for European guests. Many vessels that carry overseas tourists in normal times are also expected to remain laid-up in 2021.

The forecasts assume a possible resumption of operations in 2022. The operation of cruise shipping on European rivers will depend primarily on the pandemic situation. There are three possible scenarios for this:[32]

1) complete lifting of quarantine in all countries;

2) easing or maintaining quarantine measures only in some countries;

3) maintaining restrictions on passenger transport.

In the first scenario, cruises would take place and their number would be determined mainly by customer demand. Given the partial decline in income and the health and safety concerns of the clients (especially among the important client markets such as US-Americans), it is unlikely that demand would be high. The total number of tourists carried will also decrease significantly due to the implementation of health regulations on ships and possible restrictions on shore excursions. Scenarios 2 and 3 would make long distance trips quite difficult, if not impossible.

The pandemic has also affected other regions in the world. In the USA, it can be observed that operators are also adapting their river cruises to attract more national guests. In Southeast Asia, river operations also suffered from a lack of overseas tourists, with the exception of the Yangtze River, since life is more or less “back to normal” in China. The pause in fleet expansion due to the pandemic seems to also be over in China and several new ships are on order.

[32] *Source: market observation report of the Danube Commission 2020*

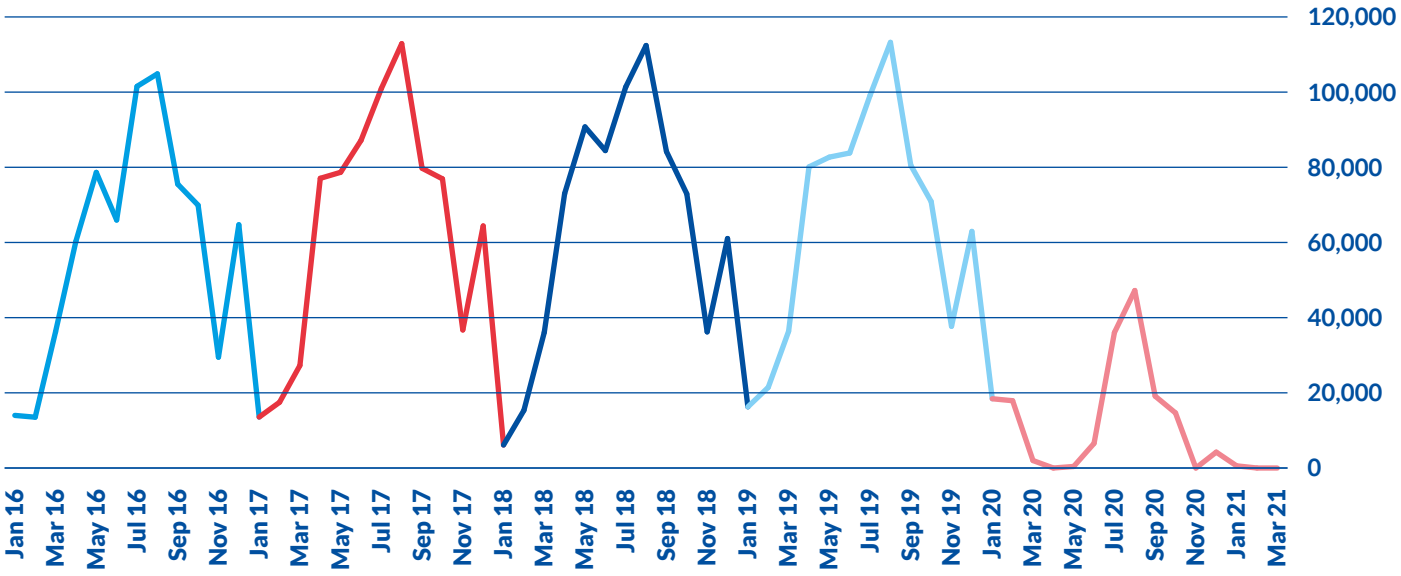
CASE STUDY

ABOUT DAY TRIP VESSEL TRAFFIC IN STRASBOURG

The number of passengers on day trip vessels in Strasbourg decreased by **79%** in 2020.

As a case study for this market segment, the day-trip vessels in Strasbourg (BATORAMA) are chosen. Monthly passenger numbers were taken from the database of the port of Strasbourg.

FIGURE 8: **NUMBER OF PASSENGERS ON DAY-TRIP VESSELS IN STRASBOURG** (BATORAMA)



Sources: Data from the Port Autonome de Strasbourg, CCNR analysis

The number of passengers increases as the summer season progresses and for the period considered reaches a peak in August, falling again in autumn. The downward movement regularly halts in December each year, due to the Christmas holidays, when tourists visit Strasbourg's Christmas market. The curve then reaches its absolute yearly minimum in January.

Between 2016 and 2019, strong seasonality is observed, and some annual year-on-year growth of passenger numbers on the BATORAMA day-trip vessels.

TABLE 4: **ANNUAL NUMBER OF PASSENGERS ON THE BATORAMA DAY-TRIP VESSELS AND YEAR-ON-YEAR RATE OF CHANGE**

Year	Number of passengers	Rate of change in %
2016	714,713	-
2017	772,852	+8.1
2018	773,888	+0.1
2019	785,144	+1.5
2020	166,535	-78.8

Sources: BATORAMA/Port de Strasbourg, CCNR analysis

The graph clearly shows the significant and severe effect of Covid on passenger numbers in 2020. Compared to the year 2019, the number of passengers dropped by almost 80%. In April and November 2020 (the crucial months of the first and second waves of contagion in Europe), no passengers were registered on the BATORAMA vessels. An upturn was observed in August 2020, but the numbers are evidently much smaller than in previous years.

In 2021, the pandemic will likely continue to impact day-trip cruises. Passenger numbers in the early months of 2021 remained extremely low, even taking into account the aforementioned seasonality. Future developments will inevitably be tied to the number of vaccinations and the possible easing of restrictions on the movement of people.

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08

OUTLOOK FOR INLAND WATERWAY FREIGHT TRANSPORT

- **Inland waterway transport in its present structure relies on traditional market segments, such as the steel segment, the agricultural and food segment and the chemical segment.**
- **For transport related to the steel and chemical industries, a recovery is foreseen in 2021 and 2022. For agricultural products, lower harvest results in 2021 are expected to dampen transport demand in 2021, and also partly in 2022.**
- **Container transport will be subjected to less favourable macroeconomic framework conditions in the mid and long-term, as the world trade of goods is expected to experience a structural slowdown, due to ongoing trends such as digitalisation, and the growth in the service sector.**

II SHORT-TERM OUTLOOK

Inland waterway transport in its present structure relies on traditional market segments, which form its quantitative basis. Examples are the steel segment, the agricultural and food segment as well as the chemical segment.

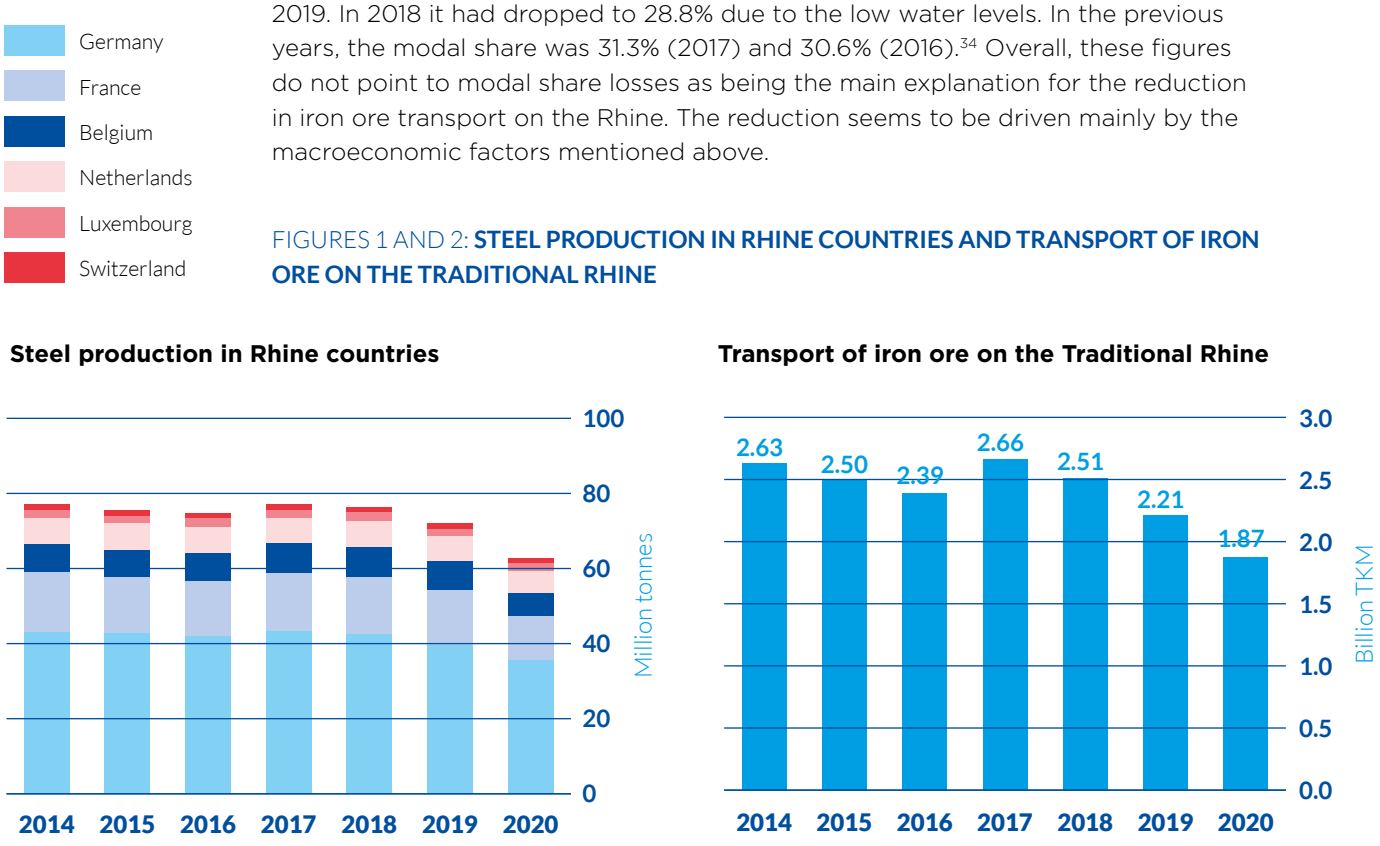
Iron ore and steel segment

On the Rhine, around 25% of all cargo transport is related to steel production (iron ore, scrap steel, coking coal, metals, metal products). On the Danube, this share is even higher and amounts to 45-55%, for the Middle Danube.[33]

Steel production in Rhine countries was quite stable in the time period 2014-2018, but decreased in 2019 and 2020, due to trade barriers and the downward trend in automobile production. This affected iron ore transport on the Rhine (see figures below).

According to the German Steel Federation (*Wirtschaftsvereinigung Stahl*) the modal share of IWT within the logistics of the German steel industry was 30.5% in 2019. In 2018 it had dropped to 28.8% due to the low water levels. In the previous years, the modal share was 31.3% (2017) and 30.6% (2016).[34] Overall, these figures do not point to modal share losses as being the main explanation for the reduction in iron ore transport on the Rhine. The reduction seems to be driven mainly by the macroeconomic factors mentioned above.

FIGURES 1 AND 2: **STEEL PRODUCTION IN RHINE COUNTRIES AND TRANSPORT OF IRON ORE ON THE TRADITIONAL RHINE**



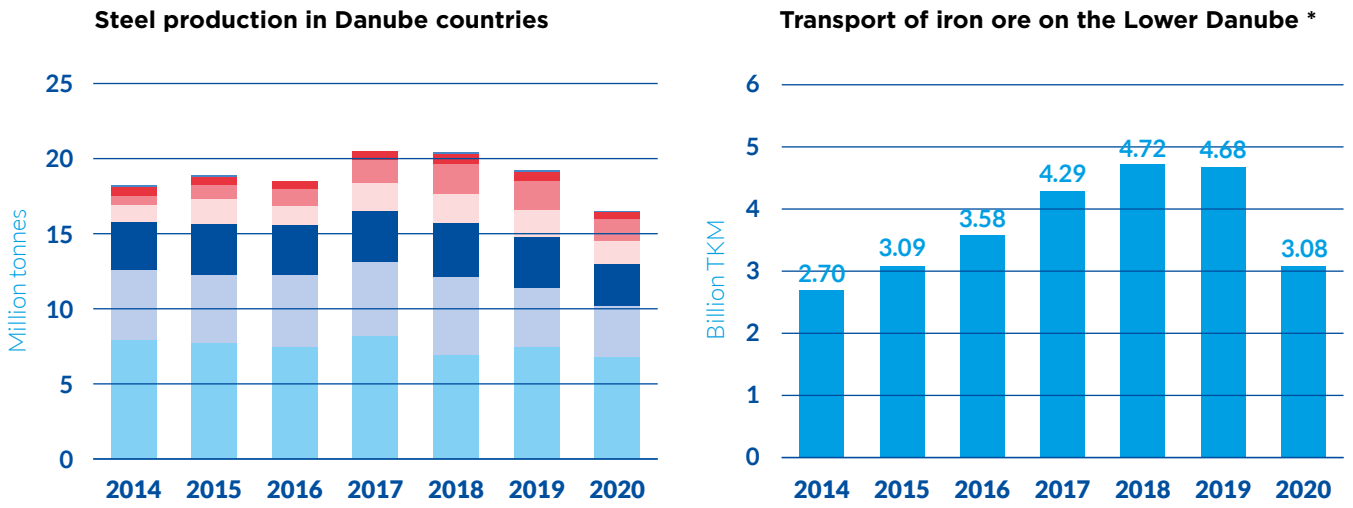
Sources: World Steel Association, Eurofer, Destatis, CCNR analysis

[33] *See: CCNR / EC (2021), Market Report 2014-2019, available at: https://www.ccr-zkr.org/files/documents/ompublicationssp/Market-report-2014-2019_Web.pdf*
[34] *Source: Wirtschaftsvereinigung Stahl*

Between 2014 and 2020, total steel production in Danube countries followed a similar trend as in Rhine countries. But in contrast to the Rhine region, iron ore transport increased. This can be explained by the fact that in the Danube countries where steel industry makes intensive use of inland waterway transport (Romania, Hungary and Serbia), steel production increased between 2014 and 2019: by 9% in Romania, by 54% in Hungary and by even 231% in Serbia.

Iron ore transport performance on the Lower Danube (Romania, Bulgaria) reflects not only the iron ore demand in Romania and Bulgaria, but also the demand for iron ore in Middle Danube countries such as Hungary and Serbia. The reason is that iron ore is transported upstream on the Danube, from the Black Sea region towards Hungary and Serbia. Parts of the transport performance for iron ore in Romania and Bulgaria are therefore directed towards the Middle Danube region.

FIGURES 3 AND 4: **STEEL PRODUCTION IN DANUBE COUNTRIES AND TRANSPORT OF IRON ORE ON THE LOWER DANUBE**



Sources: World Steel Association, Eurofer, Eurostat [IWW_GO_ATYGO]
** Lower Danube = Romania and Bulgaria. Data for Middle Danube countries were mostly missing.*

For transports related to the steel and the chemical industries, a recovery is foreseen in 2021 and 2022. For agricultural products, lower harvest results in 2021 are expected to dampen transport demand in 2021 and partly also in 2022.

Outlook for the steel segment

According to the European Steel Federation *Eurofer*, apparent steel consumption (steel demand) suffered considerably in 2020 due to the pandemic and saw a decrease of -11.1%. A rebound of +11.7% in 2021 is expected with a further growth in 2022 of a moderate +4.9%, reaching pre-pandemic levels. The increase lies in the enhancement of demand from steel using sectors.[35]

The World Steel Association, in its short-range outlook from April 2021, also foresees a recovery of steel production in the European Union in 2021, by +10.2% in 2021 and by 4.8% in 2022.[36]

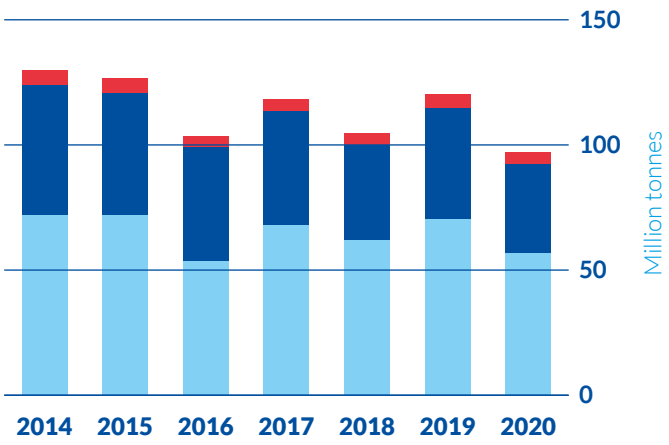
Agricultural and food products

Agricultural and food products have a share of around 9% in Rhine navigation and around 16% in Danube navigation. As was described in chapter 1, harvest results in Europe (and in the US) were rather low in 2020, which is also confirmed by Eurostat figures on grain harvest production. But agricultural transports in one specific year are partly determined by harvest results in the previous year. This explains the high transport performance in Danube countries.

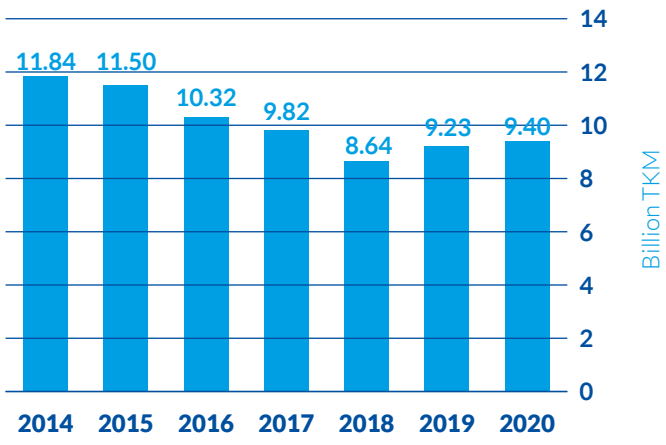
France
Germany
Netherlands, Belgium and Switzerland

FIGURES 5 AND 6: **GRAIN HARVEST PRODUCTION IN RHINE COUNTRIES AND TRANSPORT OF AGRICULTURAL PRODUCTS**

Grain harvest production in Rhine countries



Transport of agricultural products in Rhine countries

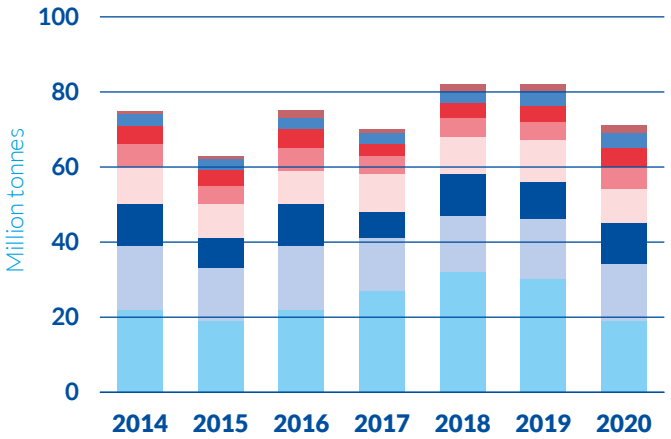


Source: Eurostat [APRO_CPSH1] and [IWW_GO_ATYGO]

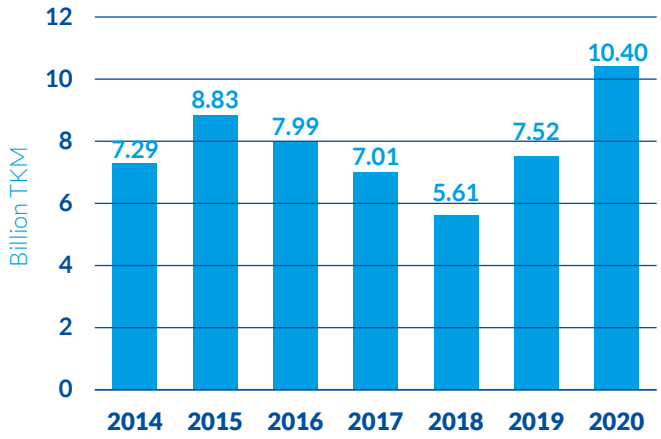
[35] *Source: Economic and steel market outlook 2021-2022. May 2021. Available at: https://www.eurofereu/publications/economic-market-outlook/economic-and-steel-market-outlook-2021-2022-second-quarter/ (last consulted 06.05.2021)*
[36] *Source: World Steel Association Short Range Outlook, April 2021. Available at: https://www.worldsteel.org/steel-by-topic/statistics/short-range-outlook.html (last consulted 06.05.2021)*

FIGURES 7 AND 8: **GRAIN HARVEST PRODUCTION IN DANUBE COUNTRIES AND TRANSPORT OF AGRICULTURAL PRODUCTS**

Grain harvest production in Danube countries



Transport of agricultural products in Danube countries



Source: Eurostat [APRO_CPSH1] and [IWW_GO_ATYGO]

Outlook for the agri-food segment

The transport of agricultural products is correlated with grain harvests. This is in particular visible for France, where long-term data for both variables can be expressed by a positive linear trend curve,[37] but it is also the case for other Rhine and Danube countries.

Due to the storage of harvest products, the production level in one specific year influences also the transport volume in the following year. The weak harvest result in 2020 will therefore have a negative impact on the transport of agricultural products in 2021.

Also, according to the Danube Commission market observation, forecasts for the market for cereals (wheat, barley, corn) indicate a trend decline in transport volumes in the 2020/2021 season, due to the severe impact of the drought in the spring and summer in the south-eastern Danube countries.

Chemicals

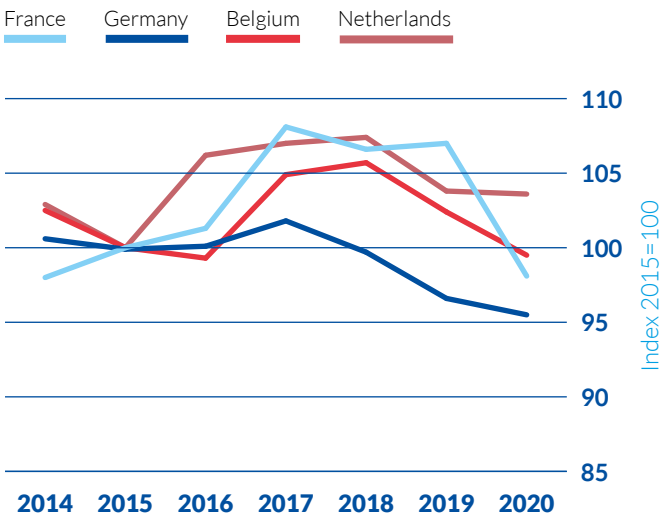
The share of chemicals within total goods transport on the Danube and the Rhine amounted to 10.8% and 11.8% respectively in the year 2019.

The transport performance for chemicals in Rhine countries has remained at more or less constant levels over the last five years, with only one significant drop in 2018 (low water effect). As far as the Danube countries are concerned, the volumes of chemicals transported along the Danube are smaller than on the Rhine. However, the performance follows a positive trend, with some fluctuations. In particular, from 2019 to 2020, a significant 39% increase can be seen in the transport of chemicals on the Danube.

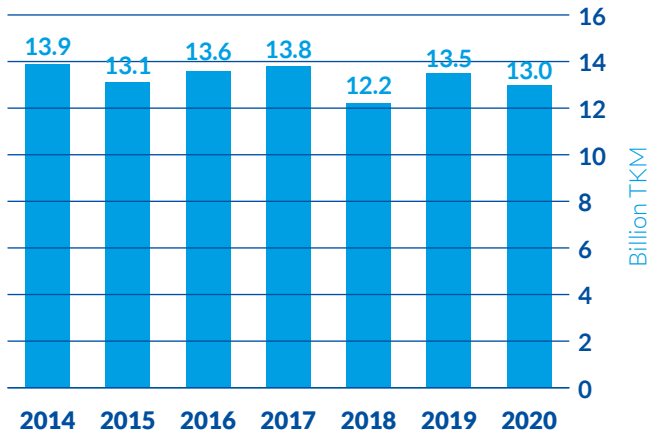
[37] *See EC/CCNR, Annual market observation report 2020, Outlook chapter*

FIGURES 9, 10, 11 AND 12: **INDEX OF CHEMICAL PRODUCTION IN RHINE AND DANUBE COUNTRIES AND TRANSPORT OF CHEMICAL PRODUCTS**

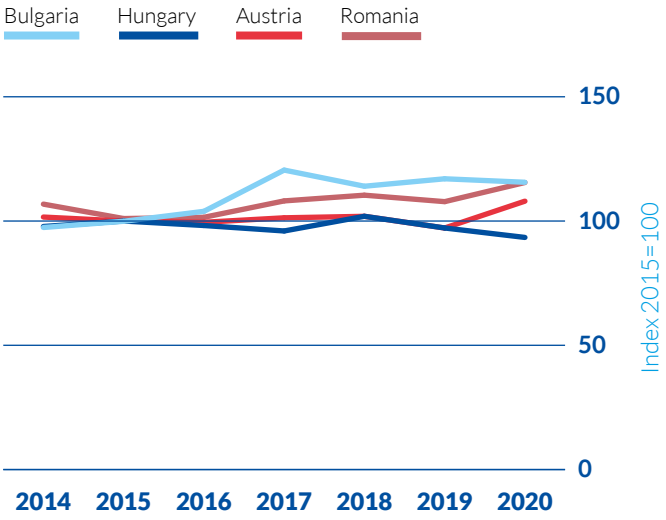
Index of chemical production in Rhine countries



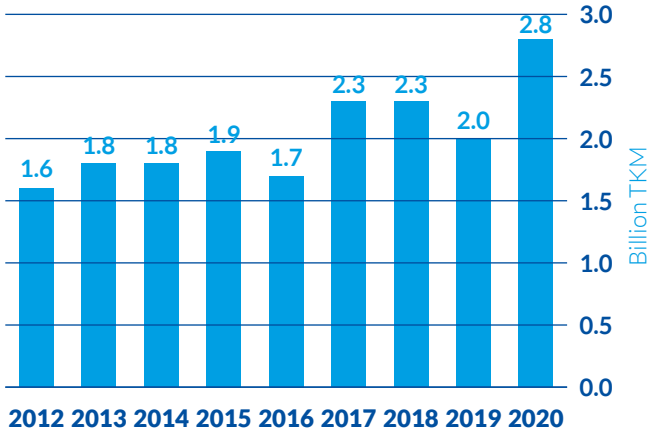
Transport of chemical products in Rhine countries



Index of chemical production in Danube countries



Transport of chemical products in Danube countries



Source: Eurostat [STS_INPR_A], [IWW_GO_ATYGO]
** Data for Bosnia-Herzegovina, Croatia, Serbia and Slovakia unavailable*

Outlook for the chemical segment

According to the CEFIC Economic Outlook 2021 for the European chemical industry,[38] the chemical industry's output is expected to grow by 3% in 2021 and by 2% in 2022. However, uncertainty reigns on the longer-term economic outlook given the pandemic and its ongoing impacts.

[38] *Available at: https://cefic.org/media-corner/newsroom/new-eu-chemicals-industry-data-reveals-green-shoots-of-recovery-but-long-term-outlook-remains-uncertain-and-stronger-eu-industrial-policy-is-needed-to-enable-large-scale-green-deal-investments (last consulted 06.05.2021)*

LONG-TERM OUTLOOK

TABLE 1: **TRADITIONAL CARGO SEGMENTS**

Segment	Potential	Most important driving factors	Long-term trend for IWT
Chemicals	++	High degree of innovation of the chemical industry in Europe	IWT remains the preferred transport mode for chemicals.
Containers	+	Reduction of growth rates in world trade of goods and related seaborne trade (due to growth in service sector and digitalisation)	Growth on long-distance routes continues but with lower rates, higher potential for urban container transport.
Sands, stones, building material	+	IWT is a preferred mode of transport for shipping companies, and growth in the construction sector will be positive in western Europe (WE).	Moderate growth on existing long-distance routes, urban areas have high potential.
Metals and metal products	0/+	Economic growth in emerging markets leads to more demand for steel.	Metals and steel transport can grow on a limited basis.
Mineral oil products	0/-	Mineral oil products are still needed as a fuel in the next decade, but a gradual decline is already underway.	Gradual decline in most regions but positive exceptions are possible.
Foodstuffs	WE*: 0/-	Decrease of livestock activities in western Europe due to nitrogen and other emissions, delocalisation of parts of these activities to eastern Europe (EE)	Decrease in foodstuff transport due to less livestock activity in WE. For EE, a more stable or even positive evolution is expected.
Iron ore	WE: - EE: +	WE) A certain saturation in steel demand and less iron ore intensity in steel production EE) Stronger growth potential in steel demand	Iron ore transport is expected to decrease in WE while it is thought to increase for a certain period in EE.

Segment	Potential	Most important driving factors	Long-term trend for IWT
Coal	**WE: -** **EE: 0/+**	Phasing out of coal in the energy sector and gradual decline of coal use in the steel industry	Decrease in coal transport in WE, at least stagnation in EE

Sources: CCNR, Royal HaskoningDHV
**WE = western Europe; EE = eastern Europe*

TABLE 2: **NEW CARGO SEGMENTS**

Segment	Potential	Most important driving factors	Long-term trend for IWT
Project cargo, heavy and oversize cargo	+	Energy transition (windmills), electricity demand (transformers), bottlenecks for transporting this type of cargo by other modes of transport	IWT benefits from its large space capacities for project cargo, heavy and oversized cargo, and its flexibility.
Recycling, circular economy	+	Industries in Europe must become more energy efficient and reduce emission-intensive production. Besides, the availability of base materials is limited in Europe, and the prices of base materials will increase on a global scale due to demand increase in emerging market economies.	IWT is already active in the transport of recycling material and is expected to increase this activity.
Biomass	+	Energy transition, need for more biofuel, compensation for reduction in foodstuff production	IWT has large capacities for transporting these materials.
Hydrogen, methanol, synthetic fuels	+	In the future energy system, these fuels can be important elements, possibly in combination with electricity and batteries.	Trend is still at the outset, transport possibly by pipeline or by containers on maritime ships and inland vessels (or by a combination of these modes). Large potential from 2030 onwards.

Sources: CCNR, Royal HaskoningDHV

STATISTICAL ANNEX

TABLE 1: **YEARLY TRANSPORT VOLUME ON THE TRADITIONAL RHINE BY CARGO SEGMENT** (IN MILLION TONNES)

	1	2	3	4	5	6	7
Year	Dry cargo	Liquid cargo	Container*	Container #	Unit cargo	Other cargo	Total**
2009	97.724	41.201	13.334	16.710	8.551	6.179	170.364
2010	114.615	44.947	16.008	20.031	10.298	6.209	196.100
2011	107.780	39.013	15.704	19.652	13.761	5.520	185.725
2012	108.048	41.740	14.707	18.653	14.865	4.827	188.133
2013	112.213	43.021	15.256	19.279	14.183	3.756	192.452
2014	111.622	42.281	15.838	20.152	14.499	3.759	192.313
2015	106.342	40.695	15.431	19.758	14.111	3.686	184.593
2016	106.194	41.877	16.062	20.475	13.556	3.792	185.894
2017	104.966	43.206	16.924	21.609	12.943	3.680	186.404
2018	93.840	39.584	14.736	18.951	8.757	3.103	164.235
2019	97.486	45.411	15.162	19.192	7.753	4.305	174.146
2020	87.678	42.591	14.955	18.819	6.952	3.611	159.651

Source: Destatis
** Weight of cargo in container*
 # Weight of cargo in container plus weight of loading unit (container box)
*** Total = 1+2+4+5+6*

TABLE 2: **YEARLY TRANSPORT VOLUME ON THE TRADITIONAL RHINE BY MAIN GOODS SEGMENTS** (IN MILLION TONNES)

	1	2	3	4	5	6	7
Year	Coal	Sands, stones, gravel	Iron ore	Agricultural and food products	Metals	Mineral oil products	Chemicals
2012	30.221	23.736	23.152	19.562	11.613	33.201	22.834
2013	33.766	25.280	24.608	22.262	10.621	30.919	20.807
2014	31.851	25.613	25.541	21.993	11.407	29.378	21.240

	1	2	3	4	5	6	7
Year	Coal	Sands, stones, gravel	Iron ore	Agricultural and food products	Metals	Mineral oil products	Chemicals
2015	30.453	23.994	25.993	20.603	11.138	28.681	19.883
2016	30.923	24.109	25.600	20.057	10.727	28.466	20.942
2017	28.150	25.510	25.520	17.320	11.340	29.000	21.450
2018	23.690	23.584	23.251	15.116	9.577	25.167	18.492
2019	22.430	28.650	21.611	15.690	9.306	29.958	20.070
2020	17.100	26.240	18.550	17.370	7.950	27.570	19.320

Source: CCNR analysis based on Destatis

TABLES 3 - 7: RHINE FLEET[39]

TABLE 3: **NUMBER OF DRY CARGO VESSELS** (SELF-PROPELLED VESSELS AND BARGES)

	1	2	3	4	5	6	7
Year	The Netherlands	Germany	France	Belgium	Luxembourg	Switzerland	Total
2012	3,814	1,690	1,242	1,000	12	18	7,776
2013	3,737	1,645	1,211	997	12	16	7,618
2014	3,626	1,665	1,163	983	13	14	7,464
2015	3,604	1,620	1,114	962	9	14	7,323
2016	3,559	1,585	1,037	935	7	13	7,136
2017	3,519	1,564	1,036	925	6	11	7,061
2018	3,485	1,545	993	940	8	10	6,981
2019	3,522	1,525	996	939	16	10	7,008
2020	3,434	n.d.	977	978	15	8	n.d.

[39] *Vessels registered in Rhine countries*

TABLE 4: **NUMBER OF LIQUID CARGO VESSELS** (SELF-PROPELLED VESSELS AND BARGES)

	1	2	3	4	5	6	7
Year	**The Netherlands**	**Germany**	**France**	**Belgium**	**Luxembourg**	**Switzerland**	**Total**
2012	855	434	83	209	56	17	1,654
2013	857	419	81	196	53	17	1,623
2014	871	406	67	184	56	16	1,600
2015	849	409	53	168	56	16	1,551
2016	824	418	51	158	51	18	1,520
2017	811	419	50	146	55	17	1,498
2018	794	455	48	133	51	17	1,498
2019	780	447	46	131	43	23	1,470
2020	741	n.d.	44	136	42	23	n.d.

TABLE 5: **NUMBER OF PUSH BOATS AND TUGBOATS**

	1	2	3	4	5	6	7
Year	**The Netherlands**	**Germany**	**France**	**Belgium**	**Luxembourg**	**Switzerland**	**Total**
2012	n.d.	423	n.d.	77	10	7	n.d.
2013	851	423	n.d.	78	10	6	n.d.
2014	833	413	n.d.	80	10	9	n.d.
2015	821	411	n.d.	76	9	8	n.d.
2016	820	416	n.d.	85	10	10	n.d.
2017	838	414	n.d.	78	10	9	n.d.
2018	806	418	n.d.	76	10	10	n.d.
2019	841	412	n.d.	72	10	11	n.d.
2020	n.d.	n.d.	n.d.	80	10	11	n.d.

TABLE 6: **RHINE DRY CARGO FLEET PER LOADING CAPACITY CATEGORY 2015-2020**

2015	The Netherlands	Germany	France	Belgium	Switzerland	Luxembourg	Total
< 1,000 t	1,346	757	789	385	3	7	3,287
1,000 t -2,000 t	971	589	170	275	4	2	2,011
2,000 t - 3,000 t	793	251	137	154	3	0	1,338
> 3,000 t	494	16	18	148	2	0	678
Total	3,604	1,613	1,114	962	12	9	7,314

2016	The Netherlands	Germany	France	Belgium	Switzerland	Luxembourg	Total
< 1,000 t	1,323	753	725	359	3	5	3,168
1,000 t -2,000 t	972	574	166	272	3	2	1,989
2,000 t - 3,000 t	772	233	126	155	5	0	1,291
> 3,000 t	492	20	20	148	2	0	682
Total	3,559	1,580	1,037	934	13	7	7,130

2017	The Netherlands	Germany	France	Belgium	Switzerland	Luxembourg	Total
< 1,000 t	1,257	747	710	341	3	6	3,064
1,000 t -2,000 t	956	565	173	267	3	2	1,966
2,000 t - 3,000 t	792	221	132	160	4	0	1,309
> 3,000 t	514	22	21	157	2	0	716
Total	3,519	1,555	1,036	925	12	8	7,055

2018	The Netherlands	Germany	France	Belgium	Switzerland	Luxembourg	Total
< 1,000 t	1,241	740	666	343	3	6	2,999
1,000 t -2,000 t	955	563	181	266	2	2	1,969
2,000 t - 3,000 t	773	219	126	164	3	0	1,285
> 3,000 t	516	23	20	167	2	0	728
Total	3,485	1,545	993	940	10	8	6,981

2019	The Netherlands	Germany	France	Belgium	Switzerland	Luxembourg	Total
< 1,000 t	1,183	736	657	330	3	6	2,915
1,000 t -2,000 t	961	540	187	270	2	6	1,966
2,000 t - 3,000 t	876	224	134	165	3	3	1,405
> 3,000 t	502	25	18	174	2	0	721
Total	3,522	1,525	996	939	10	15	7,007

2020	The Netherlands	Germany	France	Belgium	Switzerland	Luxembourg	Total
< 1,000 t	1,186	n.d.	618	337	2	6	n.d.
1,000 t -2,000 t	988	n.d.	195	276	3	6	n.d.
2,000 t - 3,000 t	775	n.d.	146	171	2	3	n.d.
> 3,000 t	485	n.d.	18	194	1	0	n.d.
Total	3,434	n.d.	977	978	8	15	n.d.

TABLE 7: **RHINE LIQUID CARGO FLEET PER LOADING CAPACITY CATEGORY 2015-2020**

2015	The Netherlands	Germany	Belgium	France	Switzerland	Luxembourg	Total
< 1,000 t	247	15	55	8	0	0	325
1,000 t -2,000 t	219	201	39	17	16	11	503
2,000 t - 3,000 t	156	132	36	25	25	2	376
> 3,000 t	227	15	38	3	14	3	300
Total	849	363	168	53	55	16	1,504

2016	The Netherlands	Germany	Belgium	France	Switzerland	Luxembourg	Total
< 1,000 t	236	22	46	9	0	0	313
1,000 t -2,000 t	206	201	35	14	10	12	478
2,000 t - 3,000 t	157	132	37	25	27	2	380
> 3,000 t	225	17	40	3	14	4	303
Total	824	372	158	51	51	18	1,474

2017	The Netherlands	Germany	Belgium	France	Switzerland	Luxembourg	Total
< 1,000 t	241	23	47	8	0	0	319
1,000 t -2,000 t	199	200	28	13	6	12	458
2,000 t - 3,000 t	151	134	30	27	35	2	379
> 3,000 t	220	18	38	2	14	4	296
Total	811	375	143	50	55	18	1,452

2018	The Netherlands	Germany	Belgium	France	Switzerland	Luxembourg	Total
< 1,000 t	238	51	38	9	2	0	338
1,000 t -2,000 t	189	201	29	14	6	13	452
2,000 t - 3,000 t	150	138	27	23	29	1	368
> 3,000 t	217	20	39	2	14	4	296
Total	794	410	133	48	51	18	1,454

2019	The Netherlands	Germany	Belgium	France	Switzerland	Luxembourg	Total
< 1,000 t	221	46	39	7	0	0	313
1,000 t -2,000 t	194	199	26	15	0	7	441
2,000 t - 3,000 t	143	140	24	22	29	2	360
> 3,000 t	222	19	42	2	14	3	302
Total	780	404	131	46	43	12	1,416

2020	The Netherlands	Germany	Belgium	France	Switzerland	Luxembourg	Total
< 1,000 t	174	n.d.	34	8	0	0	n.d.
1,000 t -2,000 t	186	n.d.	27	15	3	7	n.d.
2,000 t - 3,000 t	156	n.d.	24	19	27	2	n.d.
> 3,000 t	225	n.d.	51	2	12	3	n.d.
Total	741	n.d.	136	44	42	12	n.d.

Sources: CCNR analysis based on CBS/Rijkswaterstaat; WSV; ITB; VNF; Swiss Rhine ports, vessel register Luxembourg and Eurostat [iww_eq_age]. n.d. = currently no data available

GLOSSARY

ARA region: Amsterdam-Rotterdam-Antwerp

AVAILABLE OR POSSIBLE DRAUGHT OF A VESSEL: minimum navigation channel depth + (actual water level – equivalent water level) – under-keel clearance

AVERAGE UTILISATION RATE (OF A CARGO FLEET): relation between the needed tonnage (needed due to transport demand in a certain year) and the available tonnage in that same year, in percentage terms.

BN: Billion

CENTRAL EUROPEAN WATERWAYS: Rhine, Main, Main-Danube Canal, Danube, Elbe-Oder

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

DEADWEIGHT TONNAGE (DWT): it is the maximum loading capacity of a ship. Loading capacity includes cargo, fuel, fresh water, ballast water, provisions, passengers, and crew.

DRAUGHT OF A VESSEL: distance between the vessel's keel and the waterline of the vessel

EAST-WEST AXIS: west German Canals, Mittelland Canal, Berlin, Eastern Germany, Poland

EQUIVALENT WATER LEVEL (EWL): refers to a low water level under which, on a 30-year average, the water levels do not fall below more than 20 ice free days per year.

EU: European Union

EUROPE: European inland navigation in this report includes two countries not belonging to the 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)

IWT: Inland Waterways Transport

IWW: Inland Waterways

LOWER DANUBE: stretch of the Danube from the Iron Gates at the border between Serbia and Romania to Sulina at the Black Sea in Romania

LOWER RHINE: section of the Rhine which flows from Bonn, Germany, to the North Sea at Hoek van Holland, the Netherlands.

MIDDLE DANUBE: stretch of the Danube from Devín Gate at the border between Austria and Slovakia to the Iron Gates

MIDDLE RHINE: stretch of the Rhine between Bingen am Rhein and Bonn

MIO: Million

MODAL SPLIT SHARE: the percentage of inland waterway freight transport performance (in TKM) within total land-based transport performance. Land-based freight transport modes include road, rail and inland waterways.

NORTH SEA PORT: 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.

REAL GROSS DOMESTIC PRODUCT (Real GDP): an inflation-adjusted measure that reflects the value of all goods and services produced by an economy in a given year (expressed in base-year prices).

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

RHINE TRANSPORT DATA (DESTATIS): the calculation is based on information provided by the skippers to the ports. On arrival in a port, the skipper informs the port, which forwards the information to the relevant regional statistical office, which in turn forwards it to the central headquarters of the German Statistical Office in Wiesbaden. As far as the distance travelled is concerned, the port of origin and the port of destination for all transported goods are taken into account. In order to be able to specify the distance covered, the skippers have the possibility of indicating marked points or landmarks that they have passed on their journey. If one or more such landmarks are specified, Destatis determines the shortest route that takes these marked points into account. If no landmarks are specified, the shortest route in terms of kilometres is assumed.

RUHR AREA: a dense urban area in western Germany and the largest industrial area in western Europe

SMALL VESSELS: vessels with a loading capacity of up to 1,500 tonnes. According to an alternative definition, small vessels have a loading capacity of 650 tonnes or less.

STEEL DEMAND PER CAPITA: steel production plus imports minus exports, per capita

TEU: Twenty-foot Equivalent Unit

THE EUROPEAN BARGE INSPECTION SCHEME (EBIS): scheme developed by oil and chemical companies as part of their commitment to improving the safety of tanker barging operations.

THE EUROPEAN CRUISE FLEET: cruise vessels with more than 39 beds operating in the EU and Switzerland.

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

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

TURNOVER: sales volume net of sales taxes

UNDER-KEEL CLEARANCE: the distance between the lowest point on the ship's keel (or hull) and the highest point on the channel bottom beneath the ship. This is so to say the “security margin” under the keel.

UPPER DANUBE: section of the navigable Danube from Kelheim, Germany, to Devín Gate, at the border of Austria and Slovakia

UPPER RHINE: section of the navigable Rhine in the Upper Rhine Plain between Basel in Switzerland and Bingen in Germany

NATIONAL STATISTICAL 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	The Netherlands
Destatis	Statistisches Bundesamt	Federal Statistical Office of Germany	Germany
GUS	Główny Urząd Statystyczny	Statistics Poland	Poland
INSSE	Institutul National de Statistica	National Institute of Statistics	Romania
KSH/ HCSO	Központi Statisztikai Hivatal	Hungarian Central Statistical Office	Hungary
Lietuvos statistika	Lietuvos statistika	Statistics Lithuania	Lithuania
РзС	Републички завод за статистику Србије	Statistical Office of the Republic of Serbia	Serbia

BOOKS, JOURNAL ARTICLES AND STUDIES

Original Name	Country
CCNR / EC, Market Report 2014-2019 (2021), Main features and trends of the European Inland Waterway Transport sector: https://www.ccr-zkr.org/files/documents/ompublicationssp/Market-report-2014-2019_Web.pdf	Europe
CCNR / EC, Annual market observation report 2020, outlook chapter	Europe
CEFIC, Economic Outlook 2021 for the European chemical industry: https://cefic.org/media-corner/newsroom/new-eu-chemicals-industry-data-reveals-green-shoots-of-recovery-but-long-term-outlook-remains-uncertain-and-stronger-eu-industrial-policy-is-needed-to-enable-large-scale-green-deal-investments	Europe
Central Bank of Ireland: https://www.centralbank.ie/statistics/interest-rates-exchange-rates/exchange-rates	Ireland
Danube Commission, Market Observation reports	Europe
Eurofer, Economic and steel market outlook 2021-2022. May 2021: https://www.eurofer.eu/publications/economic-market-outlook/economic-and-steel-market-outlook-2021-2022-second-quarter/	Europe
Hader, A. (March 2021), The River Cruise Fleet	Europe
IMF, World Economic Outlook Database: - World Economic Outlook, October 2020: A Long and Difficult Ascent - Download WEO Data: April 2021 Edition	World
Moselle Commission (2021), report "Verkehrszahlen Mosel"	Europe
Port of Rotterdam Authority, annual report 2020: PDF - Quick Web Preview (portofrotterdam.com)	The Netherlands

Original Name	Country
SVS Aktuell, Dec. 2018/Jan. 2019, pages 7 and 8: http://www.svs-ch.ch/sites/default/files/svs-aktuell/winter_2018.pdf	Switzerland
The Financial Times: https://www.ft.com/content/0e9396cf-13b2-4034-ab09-c2366c264f91	US
World Steel Association Short Range Outlook, April 2021: https://www.worldsteel.org/steel-by-topic/statistics/short-range-outlook.html	World

OTHER SOURCES

Original Name	English Name	Country
Agencija za upravljanje lukama	Port Governance Agency of Serbia	Serbia
BATORAMA	BATORAMA	France
Bundesanstalt für Gewässerkunde (BfG)	German Federal Office for Hydrology	Germany
CCNR/ZKR/CCR	Central Commission for the Navigation of the Rhine (CCNR)	Europe
Corporation Inland Tanker Barge Owners (CITBO)	Corporation Inland Tanker Barge Owners (CITBO)	Belgium
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
European Commission	European Commission	EU
European Steel Association (Eurofer)	European Steel Association (Eurofer)	Europe
EUROSTAT	EUROSTAT	EU
International Monetary Fund (IMF)	International Monetary Fund (IMF)	World
International Sava River Basin Commission	International Sava River Basin Commission	Europe
ITB – Institut pour le Transport par Batellerie/ Instituut voor het Transport langs de Binnenwateren	Institute for transport by skippers	Belgium
Internationale Vereniging voor de behartiging van de gemeenschappelijke belangen van de binnenvaart en de verzekering en voor het houden van het register van binnenschepen in Europa (IVR)	International Association for the representation of the mutual interests of the inland shipping and the insurance and for keeping the register of inland vessels in Europe (IVR)	The Netherlands

Original Name	English Name	Country
Land Niederösterreich	Federal State of Lower Austria	Austria
Ministère de la transition écologique	Ministry for Ecological Transition	France
Ministerstvo dopravy České republiky	Ministry of Transport of the Czech Republic	Czech Republic
Moselle Commission	Moselle Commission	Europe
National fleet data	National fleet data	Europe
National fleet register of Luxembourg	National fleet register of Luxembourg	Luxembourg
Organisation for Economic Co-operation and Development (OECD)	Organisation for Economic Co-operation and Development (OECD)	World
Office fédéral des transports (OFT)	Federal Office of Transport (FOT)	Switzerland
Panteia	Panteia	The Netherlands
PJK International (Insights Global)	PJK International (Insights Global)	The Netherlands
Ports mentioned in the report	Ports mentioned in the report	Europe
Rijkswaterstaat	Ministry of Infrastructure and Water Management	The Netherlands
Royal HaskoningDHV	Royal HaskoningDHV	The Netherlands
Statistikamt Nord	Statistical Office for Hamburg and Schleswig-Holstein	Germany
SeaConsult	SeaConsult	Germany
Voies Navigables de France (VNF)	Navigable Waterways of France	France
Wasserstraßen-und Schifffahrtsverwaltung des Bundes (WSV)	German Waterway and Shipping Administration	Germany
Wirtschaftsvereinigung Stahl	German Steel Federation	Germany
World Steel Association	World Steel Association	World

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