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2025

INLAND NAVIGATION IN EUROPE
MARKET OBSERVATION

CCNR
CENTRAL COMMISSION
FOR THE NAVIGATION OF THE RHINE

European Commission

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October 2025

II FOREWORD

Lucia Luijten
Secretary General
Central Commission for the Navigation of the Rhine (CCNR)

The Central Commission for the Navigation of the Rhine (CCNR) is pleased to present the 2025 edition of its Annual Market Observation report, produced once again in close collaboration with the European Commission.

Inland navigation faced another challenging year in 2024, as the sector continued to navigate the complex aftermath of geopolitical tensions and a fragile economic environment. While global inflation eased and trade volumes showed tentative signs of improvement - GDP growth reached an estimated +3.3% in 2024 - new economic shocks, notably disruptions in the Red Sea, weaker industrial activity, and low consumer demand slowed down growth in transport volumes. Moreover, U.S. announcements in late 2024 regarding a possible introduction of new tariffs generated uncertainty and reduced business confidence, also contributing to the slowdown in growth. Although container traffic showed early signs of recovery, other market segments such as sand, stones and gravel remained under pressure, and coal transport followed its declining trend. Steel production rebounded modestly, but the recovery of related transport demand remains uncertain.

Amid this difficult environment, inland waterway transport showed some signs of growth demonstrating its resilience. Investments in new vessels - particularly in the liquid cargo segment - continued, with a noticeable trend toward larger vessel capacities. However, newbuilding activity slowed down overall in 2024, especially in the dry cargo sector, reflecting weaker demand. Despite these setbacks, the fleet is adapting to long-term structural shifts, including the green transition, with growing interest in alternative propulsion technologies.

Passenger transport, particularly river cruising, recorded solid growth in 2024 both in terms of the number of passengers and sales. This growth was supported by an increase in the newbuilding activity, which after a slow period since the pandemic, is expected to accelerate in the coming years. Meanwhile, data on employment and company activity showed diverging trends between freight and passenger transport, with the latter continuing its post-pandemic recovery.

This year's report retains its comprehensive approach, analysing freight and passenger transport on inland waterways; transport infrastructure investment and maintenance; freight rates and operating conditions; commodity prices; fleet development; employment; and an outlook on the main inland navigation market segments. As in previous years, we complement short-term analysis with long-term forecasts in collaboration with Oxford Economics, offering a broader view of expected developments across market segments in both Rhine and Danube countries.

In this context, I would like to thank all our partners who have contributed valuable data and insights - the Corporation Inland Tanker Barge Owners (CITBO), the Danube, Moselle and Sava Commissions, professional organisations such as the European Barge Union (EBU) and the European Skippers' Organisation (ESO). Their support is instrumental in ensuring the accuracy and relevance of this report.

I would also like to express our gratitude to the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD), the European Commission, Rijkswaterstaat, the IVR, Mr Arnulf Hader, Eurostat, Destatis and other national statistical offices, ports and national waterway administrations, for their invaluable contributions to the data and analysis presented here.

It is our hope that the 2025 Annual Market Observation will continue to serve as a trusted resource for decision-makers, industry stakeholders, and professionals across the inland navigation sector. The CCNR remains committed to strengthening the sector's role in a sustainable, efficient and resilient European transport system.

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Inland waterway transport is fundamental to Europe's sustainable transport system, significantly reducing congestion, greenhouse gas and noise emissions, while enhancing connectivity across the continent. It is a great pleasure for me to introduce this year's European Inland Navigation Market Observation report, which offers, as always, invaluable insights into the evolving inland waterway market and emerging trends in Europe.

In recognising the strategic importance of inland waterway transport, the EU has progressively developed a comprehensive and supportive policy framework to ensure its full potential is unlocked. Nevertheless, external pressures increasingly challenge its further development.

Geopolitical tensions expose our transport system to new security threats and impact our economy. The inland waterway sector is no exception, and is increasingly vulnerable to cyber-attacks, hybrid warfare and destabilisation actions that risk undermining the attractiveness and use of our inland waterway network. In this shifting geopolitical landscape, ensuring that the inland waterway network is not only well-prepared but also resilient, is imperative. If this is done correctly, the sector will help make our European transport network more resilient.

The increasingly visible effects of climate change also underline the importance of climate adaptation. Prolonged periods of low water levels disrupt logistics chains and diminish the overall performance and competitiveness of the sector.

Despite these growing challenges, inland waterways remain a reliable and sustainable backbone of our transport system. Greater innovation and digitalisation, combined with more modern infrastructure and climate adaptation, can strengthen the resilience and efficiency of inland navigation, allowing it to continue delivering the irrefutable and long-term benefits that have long defined this mode of transport. Having quality data will also help us to understand market dynamics and to steer future policy developments.

This joint report by the Central Commission for the Navigation of the Rhine (CCNR) and the European Commission is further evidence of the continued and fruitful collaboration between both institutions, together with other actors in the sector. This cooperation will help us to continue upgrading inland waterway transport. I would like to congratulate the CCNR for another valuable report. The observations presented will help foster innovation, resilience, and competitiveness within the inland waterway transport sector.

Magda Kopczyńska
Director-General of DG MOVE
European Commission

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II EXECUTIVE SUMMARY

The year 2024 was marked by a modest and uneven recovery in global trade and inland waterway transport (IWT). After a turbulent 2023, inflation eased in many advanced economies, and growth began to pick up again, which helped stabilise consumer prices and logistics costs, especially in energy and transport services. However, high operational costs, particularly personnel costs, continued to pressure freight operators and influence pricing dynamics. IWT continued to face difficulties, especially from weak industrial output, changing trade patterns, and shifting demand for key commodities. Yet, as supply chains began to stabilise and private consumption recovered, certain market segments started to regain their stability. At the global level, trade volumes saw an increase in 2024, expanding by approximately +3.3%. No strong rebound is expected in the short term, as trade continues to be shaped by persistent geopolitical tensions, the fragmentation of global supply chains, and the rise of protectionist measures such as new U.S. tariffs. Moreover, the growing trend of "friendshoring" - trade between politically aligned countries - has further disrupted traditional trade flows.

In 2024, 473.3 million tonnes of goods were transported on EU-27 waterways (+1.0% compared to 2023) and the IWT transport performance reached 121.6 billion TKM (+4.5%). In terms of inland navigation for Europe (EU-27 plus Switzerland, Serbia and the Republic of Moldova), freight transport performance increased by +4.3% compared to 2023, reaching 126.0 billion TKM.

Freight transport on the Rhine (from Basel to the North Sea) reached 284.5 million tonnes in 2024, a modest +2.6% increase compared to 2023 (276.5 million tonnes), with container transport recording a +2.0% increase in tonnes. The Traditional Rhine saw growth of +2.3%, while the Lower Rhine in the Netherlands rose by +3.0%. This partial recovery is attributed to declining inflation and wage indexation, which boosted private consumption. Key product segments such as mineral oil products (+5.5%), chemicals (+6.7%), metals (+3.4%), and agribulk/food products (+6.8%) contributed to this growth. However, coal (-13.3%) and iron ore (-0.1%) transport volumes declined due to reduced coal and steel demand and ongoing decarbonisation policies. On the Upper and Middle Danube, transport volumes increased overall in 2024. The Lower Danube region, in particular the two canals connecting the Danube to the Black Sea, recorded a strong decrease in goods transport. The main reason for this decline lies in a shift from grain shipments (wheat, corn, barley) from the Ukrainian Danube ports back to the Ukrainian seaports of Odessa, Pivdennyi and Chornomorsk which have resumed some of their activities.

European inland ports reflected these broader trends. Most major Rhine ports witnessed an increase, while others, including Mannheim (-8.4%) and Mainz (-2.3%) experienced a decline in handling volumes. The overall picture is more heterogenous in main German, Dutch, French and Belgian inland ports. A recovery is also observed for IWW cargo handling in main seaports, with a +0.7% increase recorded at the Port of Rotterdam, reaching 141.9 million tonnes. This recovery is more pronounced at the Port of Antwerp-Bruges, indicating +4.7% in 2024, reaching 102.5 million tonnes. However, container transport remained stable between 2023 and 2024 (+0.5%) and still remained below pre-2021 levels. In the Port of Constanța, the decrease in IWT traffic recorded (reaching 17.2 million tonnes, -20.9% compared to 2023) is mainly attributed to the resumption of activities at the port of Odessa (Ukraine) at the end of 2023, leading to less traffic transiting through the port of Constanța.

In absolute values, the volumes for 2024 in the Port of Constanța still remain the second highest ever recorded.

Freight rates in 2024 remained above pre-pandemic levels but were generally lower than in 2023. Liquid cargo rates stabilised due to high operational costs, especially personnel costs. According to Statistics Netherlands (CBS), average freight rates across all market segments fell by -6.0% compared to 2023, following a sharper drop of -11.8% the year before. Freight rates remained relatively resilient due to limited net growth in vessel capacity and rising personnel costs, particularly driven by a shortage of skilled workers.

The European inland fleet numbered 13,392 vessels, with 9,160 based in Rhine countries and 3,324 in Danube countries. The dry cargo fleet in Rhine countries continued its decline in vessel numbers, with 6,381 vessels registered in 2024 (-2%), but recorded an increase (+2%) in loading capacity (10.0 million tonnes). The liquid cargo fleet saw a small increase in units (+1%, 1,453) and growth in total loading capacity (+3%, 3.7 million tonnes), reflecting the shift towards larger tankers. Newbuilding activity slowed down, especially for dry cargo, where the number of new vessels dropped from 34 in 2023 to 13 in 2024. Tanker new buildings totalled 38, reflecting also a decrease from the 49 new vessels in 2023. The weak development of transport demand in recent years, especially for dry cargo transport on the Rhine, can be considered as one main reason for the decrease in the newbuilding activity.

In 2024, the European river cruise sector experienced renewed growth, where both passenger numbers and sales have been rising. During the 2024 season, 1.39 million passengers (+14.0% compared to 2023) travelled on European rivers in cabin vessels and generated €3.54 billion in gross ticket sales. North American travellers dominated the market, making up 41% of passengers. The active river cruise fleet remained stable at 408 vessels. While seven new river cruise vessels entered the market in 2024, seven were also withdrawn. The sector also saw 18 older vessels repurposed as floating hotels, primarily due to rising demand in refugee accommodation amid the continuing war in Ukraine.

Company and employment data showed diverging trends. In 2023, there were 5,462 active IWW freight transport companies in Europe, with around 87% registered in Rhine countries - especially concentrated in the Netherlands. Despite this, the number of freight transport companies continued to decline, falling by -9% since 2011. In contrast, passenger transport companies have increased by +40% since 2011, reaching a total of 4,659 companies active in 2023. Employment trends mirror these patterns: the development of freight transport employment has remained slightly negative between 2010 and 2022, totalling 22,844 employed persons in 2022, largely concentrated in Rhine countries. Meanwhile, passenger transport employment recovered after the Covid-19 pandemic, reaching 23,945 persons in 2023.

In the short term, IWT in Rhine and Danube countries exhibits mixed trends. Steel and iron ore transport remains significant despite a decline in steel production, with a slow recovery expected around 2025 which should be driven by construction and automotive demand. Agricultural transport should be stable or slightly below average in Europe, while global growth is projected. The chemical sector is expected to struggle with high energy costs and trade uncertainties, limiting recovery and causing fluctuating transport volumes. Container transport shows tentative signs of recovery after several challenging years, but faces ongoing risks from geopolitical tensions and tariff changes.

Over the coming decades, inland waterway transport demand in the Rhine and Danube regions is foreseen to align closely with evolving economic sectors and energy transition. Agricultural production is expected to grow moderately in the Rhine countries, whereas more varied results are expected in the Danube countries. Coal transport will face a sharp decline due to decarbonisation efforts, while the transport of containers and chemical products might show growth supported by industrial policies such as the EU Green Deal. Construction materials transport is expected to grow steadily.
In the Danube region, petroleum products and coking coal production might decline widely due to energy shifts, except for notable growth in Bulgaria and Slovakia. Steel and iron ore production trends are expected to diverge, with a possible decline in many Rhine countries but significant growth in Danube countries such as Hungary, Serbia and Slovakia.

Looking ahead, inland navigation enters 2025 with cautious optimism. Freight segments such as chemicals and containers have shown signs of stabilisation and the passenger market continues its expansion. Nevertheless, IWT still faces significant challenges, including economic uncertainties, the ongoing energy transition with its impact on commodity demand and persistent geopolitical tensions. In addition, the 2025 macroeconomic context is expected to remain difficult. The 2025 Annual Market Observation report offers a comprehensive overview of these dynamics, grounded in detailed data and supported by long-term forecasts.


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MACROECONOMIC CONTEXT AND OUTLOOK

- According to the European Commission, economic growth in the European Union reached +1.0% in 2024. Growth in private consumption was a decisive factor here. Private consumption was fuelled by solid increases in disposable income, as nominal wages recovered the purchasing power lost to surging inflation. The GDP forecast for the EU for 2025 points to a growth rate of +1.1%, and +1.5% for 2026. A reduction in EU-US trade tensions, along with renewed momentum in trade negotiations with other countries and regions, would support EU growth.
- Global trade saw a modest recovery in 2024, expanding by +3.3%, yet remained below pre-pandemic levels. New geopolitical tensions and changing trade patterns, such as the shift towards "friendshoring," have added uncertainty to supply chains. In Europe, container traffic briefly recovered, but persistent disruptions in the Red Sea and new protectionist measures continued to pressure maritime routes and costs.
- Commodity markets largely stabilised, with oil and gas prices falling and offering some relief to inland waterway transport (IWT), while agriculture and metal markets showed volatility due to weather events and ongoing geopolitical tensions. Despite these mixed developments, Rhine and Danube navigation saw signs of recovery in 2024. Still, the sector faces challenges such as rising operating costs and falling demand in key areas like coal and construction.

Economic overview

This chapter draws on recent analyses from the International Monetary Fund (IMF) *World Economic Outlook*, the IMF *Regional Economic Outlook – Europe*, the Organisation for Economic Co-operation and Development (OECD) *Economic Outlook*, the United Nations Conference on Trade and Development (UNCTAD) *Global Trade Update of December 2024* and the *Spring 2025 Economic Forecast* of the European Commission (EC) to outline the macroeconomic context and its implications for inland waterway transport.

The global economy in 2024 presented a mixed picture, balancing signs of stabilisation with new emerging challenges. After two years of elevated inflation and geopolitical disruptions, inflation finally started to fall in many countries, providing some relief to households and allowing policymakers to adjust some of the policies. Labour markets, although still under pressure, started to ease slightly, and wage growth slowed in several advanced economies[1]. Nevertheless, new economic shocks - especially the anticipation of potential new U.S. tariffs in late 2024 - revived uncertainty in trade and financial markets, causing volatility and weakening economic confidence. As a result, investor confidence declined, and economic growth slowed across many regions.

According to the IMF and the OECD, global GDP growth reached +3.3% in 2024. While this is a solid performance given recent challenges, it still falls short when compared to the pre-pandemic trend of around +3.8%. For 2025, the global growth rate is expected to slow down to +2.8%, as higher interest rates, limited government expenditure, and the ongoing trade tensions remain a challenge. A modest rebound to +3.0% is projected in 2026, but that path remains uncertain and depends on how key risks such as persistent inflation, renewed geopolitical tensions, and policy uncertainty play out.

According to the EC, economic growth in the European Union reached +1.0% in 2024. Growth in private consumption was hereby a decisive factor. Private consumption was fuelled by solid increases in disposable income, as nominal wages recovered the purchasing power lost to surging inflation. The GDP forecast for the EU for 2025 points to a growth rate of +1.1%, and +1.5% for 2026. A reduction in EU-US trade tensions, along with renewed momentum in trade negotiations with other countries and regions, could support EU growth.

Tight labour markets and improving productivity are set to drive further wage growth. After increasing by +5.3% in 2024, growth in nominal compensation per employee is expected to slow down to +3.9% in 2025 and +3.0% in 2026. On all counts, in 2025, real wages in the EU should fully recover the purchasing power losses accrued since mid-2021. The wage growth, combined with the decelerating inflation, supports a further increase in household gross disposable income.

The reduction in inflation varied across countries. While headline inflation fell in most advanced economies and moved closer to the European Central Bank (ECB) targets, core inflation, particularly in the services sector, remained high due to strong wage pressures. This has made it harder for central banks to fully move away from the tightening monetary cycles of 2022–2023. At the same time, many governments face rising debt service costs (covering debt repayment costs and the interests linked to the debt itself) and reduced fiscal flexibility, as a consequence of higher interest rates and significant public borrowing during the pandemic and subsequent crises.

[1] *The economic classification in the World Economic Outlook (WEO) divides the world into two major groups - advanced economies and emerging market: 41 countries are included in the category "advanced economies", the main ones being the US, Germany, France, Italy, Spain, Japan, the UK and Canada. This category also includes the sub-category "Euro Area". The full list is accessible via this link: https://www.imf.org/en/Publications/WEO/weo-database/2023/April/groups-and-aggregates#ae*

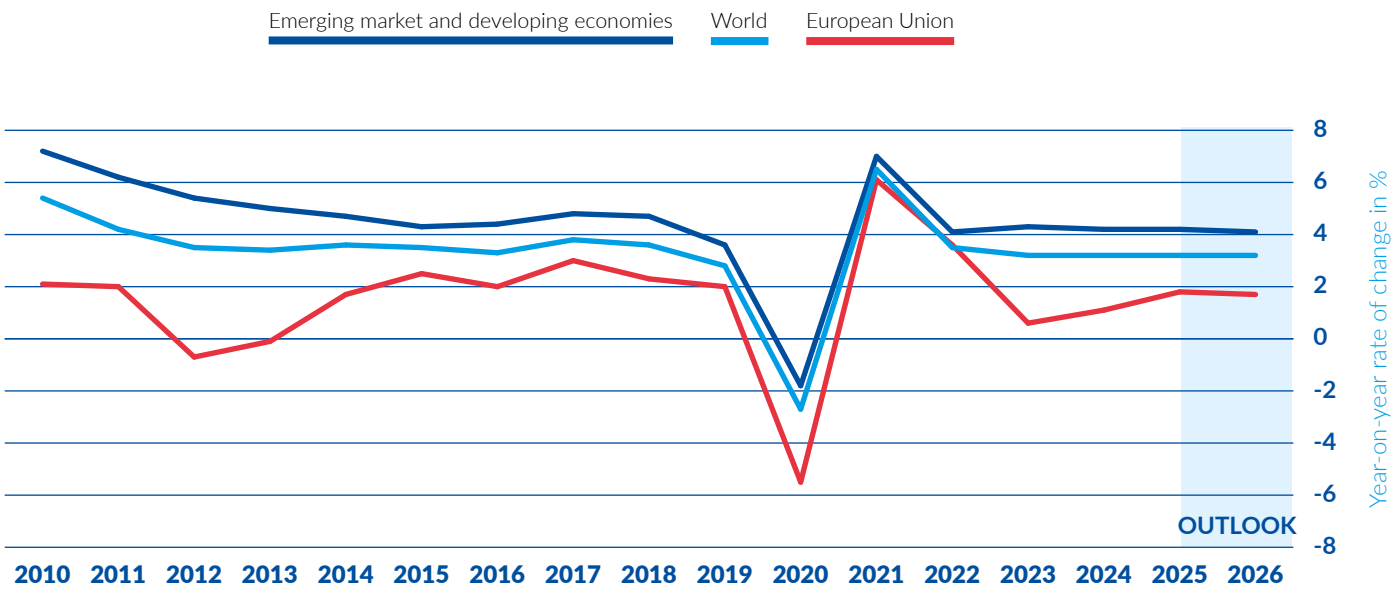
According to the EC, the inflation rate in the EU in 2024 was 2.6%. The forecast for 2025 points to 2.3%, and for 2026 a rate of 1.9% is foreseen. There are two main factors which exert a downward pressure on EU inflation. One main factor is significantly lower energy commodity prices, and a second factor is the appreciation of the euro, which makes imports of goods less expensive for EU consumers. However, an escalation of trade tensions between the EU and the US could depress GDP and rekindle inflationary pressures.

The recovery path differs significantly across regions. The United States exceeded expectations in 2024, supported by strong consumer spending and investment, especially in the technology and transport sectors. However, signs of moderation emerged towards the end of the year, as consumption slowed and business confidence was affected by the uncertainty related to the announcement of new tariffs. In contrast, the euro area showed a more fragile and uneven recovery, with modest growth driven largely by the services sector, while industrial production and private investment remained weak. Countries which have large manufacturing sectors, for example, Germany and Austria, were particularly affected by weak external demand, particularly from China. Meanwhile, China's economy struggled with internal imbalances, including weak domestic consumption, despite attempts to stimulate growth through public investment. In contrast, India and several ASEAN[2] countries recorded stronger growth, supported by demographic trends, consumption, and investment in infrastructure.

Looking at the bigger picture, productivity growth has remained weak in most regions in 2024. Only a few advanced economies - notably the United States - managed to maintain productivity growth, supported by a flexible labour market and higher capital investment. In other regions, however, long-term growth continues to be constrained by slow innovation, ageing populations and a general reluctance to invest. In summary, while 2024 marked a phase of relative stabilisation, the global economy entered 2025 still facing significant vulnerabilities which suggest that economic recovery will remain slow, uneven, and highly sensitive to future shocks.

[2] *Association of Southeast Asian Nations*

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



Source: IMF World Economic Outlook Database, Outlook from April 2025

Trade

The recovery of global trade in 2024 was modest and uneven. After a difficult year 2023, marked by shipping disruptions and weak demand, trade volumes began to increase in the first half of the year. This rebound was largely driven by a stronger demand for US goods and an increase in technology exports from several Asian economies, such as China and the ASEAN-5. But this recovery was hindered by new geopolitical disruptions, changes in supply chains and the continuation of protectionist trade measures.

According to the UNCTAD *Global Trade Update of December 2024*, global trade expanded by around +3.3% in 2024, a slower pace than the pre-pandemic average of +4.9%, and forecasts for 2025 remain similarly modest. EU exports are expected to grow by a modest +0.7% in 2025 and +2.1% in 2026. The pace of recovery has been uneven across different regions and industries. While e-commerce and air freight saw relatively strong growth, traditional goods shipping and industrial cargo flows were more limited, highlighting the challenges some sectors still face.

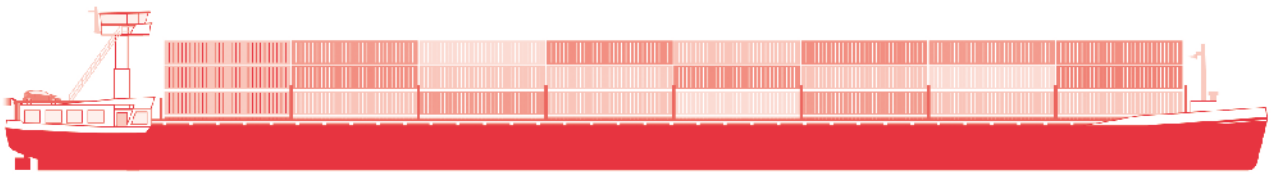
One of the key trends of 2024 was the further fragmentation of global trade. More countries are focusing on trading with allies or politically aligned partners, a shift known as “friendshoring.” This was especially clear in the growing divide between the USA and China, with both countries reducing trade with each other, bringing key industries back home, and imposing stricter rules on sensitive exports and investments[3]. As a result, businesses are facing more uncertainty, disrupted investment plans, and global supply chains are becoming more vulnerable to sudden policy changes. In the case of Europe, it faced several shocks in 2024.

[3] *Economist Impact. Trade in Transition 2024 – United States. Available at: https://impact.economist.com/projects/trade-in-transition/country-united-states*

Following the disruption in Red Sea shipping lanes in late 2023, many maritime routes shifted southward around the Cape of Good Hope, increasing delivery times and costs. While container throughput in European ports rebounded in early 2024, this recovery may prove temporary. It coincides with both altered shipping routes and early signs of economic improvement, but the underlying fragility of global trade flows and regional geopolitical tensions persist. Figure 2 illustrates how successive crises since 2000 have impacted trade flows and shows that no major increase in trade volume is expected in the near future.

FIGURE 2: **PERCENTAGE CHANGE IN VOLUME OF IMPORTS AND EXPORTS**

Source: IMF World Economic Outlook Database, Outlook from April 2025



Commodity prices

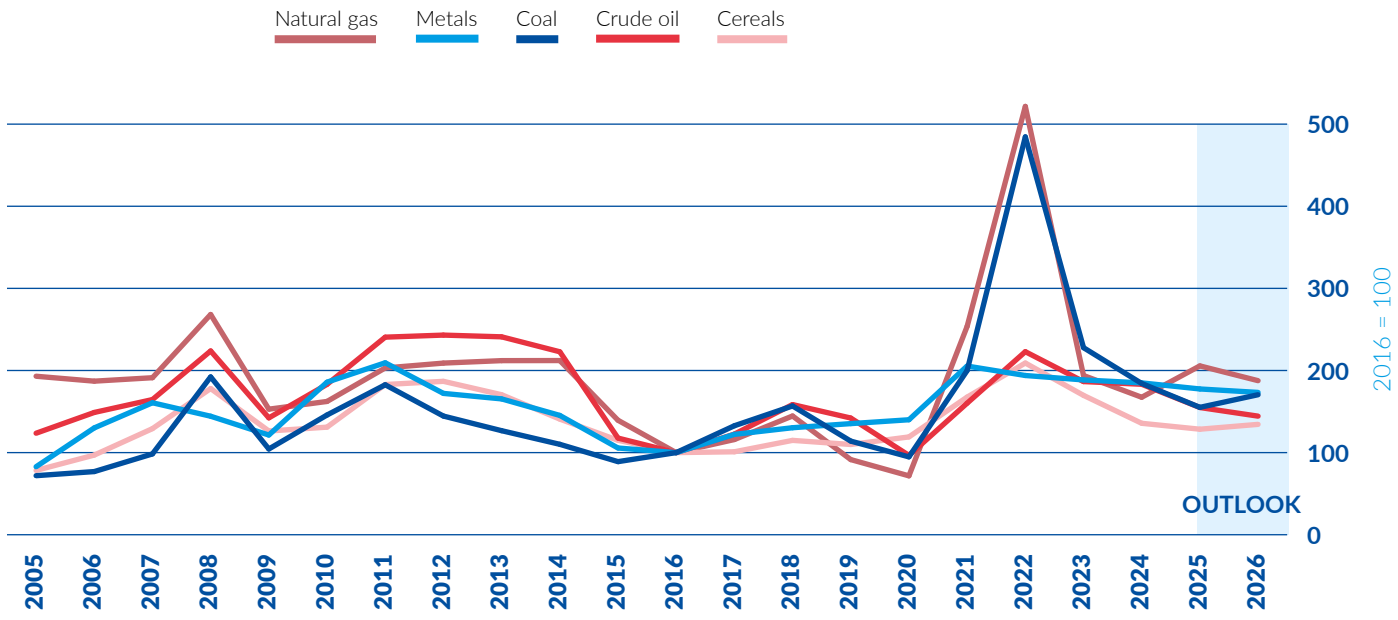
In 2024, commodity markets continued to stabilise after the significant disruptions and price volatility that marked the years 2021 and 2022. While the pace of change varied across sectors, a general normalisation trend brought greater predictability to many markets. For IWT, particularly along the Rhine and Danube corridors, this shift offered a mixed but overall positive outlook.

Crude oil

Crude oil prices saw a notable decline between August 2024 and March 2025, dropping by -9.7%. According to the IMF's latest projections, prices are expected to continue falling, averaging $66.9 per barrel in 2025, down from $79.17 in 2024, and decreasing further to $62.4 in 2026[4]. Several factors are behind this trend. On the supply side, there has been strong production growth in countries outside of OPEC+, and earlier supply cuts are slowly being reversed. Together, these factors have pushed oil prices down. At the same time, geopolitical risks - such as sanctions on Russian oil - have had only a limited impact on overall global supply.

Demand side factors have also played a role, particularly weaker consumption in key markets such as China, where the growing adoption of electric vehicles is starting to reduce oil demand. With supply expected to outpace demand, at least until end 2026, the IMF characterises the market outlook as mostly negative. For industries like inland waterway transport, which rely heavily on fuel, this ongoing decline in oil prices offers some relief. After the intense volatility of recent years, the current oil market environment is offering more stability and predictability for industries that highly depend on energy.

FIGURE 3: **COMMODITY PRICE INDICES** (2016 = 100)



Source: IMF World Economic Outlook Database, Outlook from April 2025

[4] *IMF. World Economic Outlook 2025: A Critical Juncture amid Policy Shifts. Available at: https://www.imf.org/en/Publications/WEO/Issues/2025/04/22/world-economic-outlook-april-2025*

Gas and coal

Between August 2024 and March 2025, natural gas prices reversed after six months experiencing price increases. As oil prices started to decline, natural gas prices moved in the same direction. However, prices still saw a rise in Europe, particularly at the Title Transfer Facility (TTF)[5] trading hub, where prices went up by +7.7%. While this was above the historical average, it remained below the peak in 2022. The rise in prices was caused by various supply disruptions. For instance, in January 2025, gas supplies from Russia to Europe through Ukraine were stopped, lifting prices upwards. Meanwhile, in the USA, Henry Hub (used as the reference for spot and future natural gas prices for the north American market) prices doubled due to a combination of severe weather and increased demand for gas exports. However, in Asia, prices for liquefied natural gas (LNG) remained largely stable due to weak demand from China.

After the USA tariff announcement on 2 April 2025, gas prices began to decline as concerns about the future demand for energy emerged. This outlook carries certain risks, as shifts in geopolitical factors and changes in global energy demand could affect prices, though the overall trend suggests lower prices over the coming years[6].

Agricultural commodities and foodstuff

Agricultural commodity prices increased between August 2024 and March 2025, mainly due to unfavourable weather conditions that affected crop production in several regions including Brazil, India and other parts of Asia. The IMF's food and beverages price index increased by +3.6% during this period, with beverage prices - especially coffee - driving much of the increase. Coffee prices surged by +33.8%, reaching record levels in February. In contrast, rice prices dropped by -26% thanks to improved growing conditions in India and other parts of Asia. Cereal prices rose only slightly - by +0.6% - as fears around wheat and corn yields began to ease. Additionally, new trade restrictions introduced in April 2025 had mixed impacts on agricultural prices: prices for crops that are sensitive to income changes and global trade, such as coffee and soybeans, declined sharply, while staple grains like wheat and corn remained more stable. Looking ahead, agricultural markets face risks in both directions, with potential price increases from trade disruptions and extreme weather, and possible declines if harvests are stronger than expected.

Metals

The IMF's metals price index increased by +11.2% between August 2024 and March 2025. This growth was largely due to higher prices for key metals such as gold, aluminium, and copper. Aluminium and copper saw the most significant increases among base metals, with prices increasing by +12.7% and +8.4% respectively due to supply disruptions and strong demand, partly driven by buyers rushing purchases ahead of expected tariffs. However, this trend shifted sharply in early April 2025 when escalating trade tensions triggered a broad decline in industrial metal prices. Market forecasts now suggest that prices for aluminium, copper, and iron ore are expected to fall by the end of 2026. On the other hand, gold prices have remained strong and even reached new records - close to $3,000 per ounce - as investors turn to it as a safe option during times of global tension and economic uncertainty.

[5] The Title Transfer Facility, more commonly known as TTF, is a virtual trading point for natural gas in the Netherlands. This trading point provides a facility for a number of traders in the Netherlands to trade futures, physical and exchange trades.
[6] However, there is a potential effect of the Israel-Iran war on the gas supply from Qatar. Due to the war, there is a small chance of closure of the strait of Hormuz, which would have an impact on the supply of gas and the gas price.

Economic sentiment - Consumer confidence

Consumer confidence provides an indication of developments in households' consumption and savings. An indicator above 100 in the Economic Sentiment Indicator (ESI) signals a boost in consumers' confidence in the future economic situation and points to consumers being more inclined to spend money. Values below 100 indicate a pessimistic attitude towards future developments in the economy, possibly resulting in a tendency to save more and consume less. Consumer confidence has an impact on the transport of containers, with high consumer confidence leading to more container transport.

In 2024 the ESI remained below its long-term average, reflecting low economic sentiment across the EU. Specifically, in April 2025, the ESI declined by 1.4 points in both the EU and the euro area, reaching 94.4 and 93.6 respectively. This downward trend suggests that consumers are cautious about the economic outlook, potentially leading to reduced spending and investment. The decline in sentiment is attributed to various factors, including geopolitical uncertainties and concerns over future economic developments.

Main consequences for Rhine and Danube navigation in brief

In 2024 and early 2025, Rhine and Danube navigation showed signs of recovery after the sharp declines of the previous two years. Despite ongoing geopolitical tensions and structural shifts in global trade, transport volumes picked up slightly, supported by declining inflation. The inland waterway sector also faced persistent challenges from high operating costs, a weak construction sector, and declining coal transport due to a coal phase-out, notably in Germany. Commodity markets showed greater stability overall, with falling crude oil prices offering some relief to fuel-intensive transport modes such as inland navigation. However, persistent volatility in gas and agricultural prices, together with a recent drop in metal prices triggered by new trade tensions, continue to pose risks for cargo demand. There is an effect of gas prices on transport demand in inland navigation due to the impact of gas prices on chemical production. Lower gas prices lead to an improvement of the competitive position of the European chemical industry. This triggers more transport of chemicals.

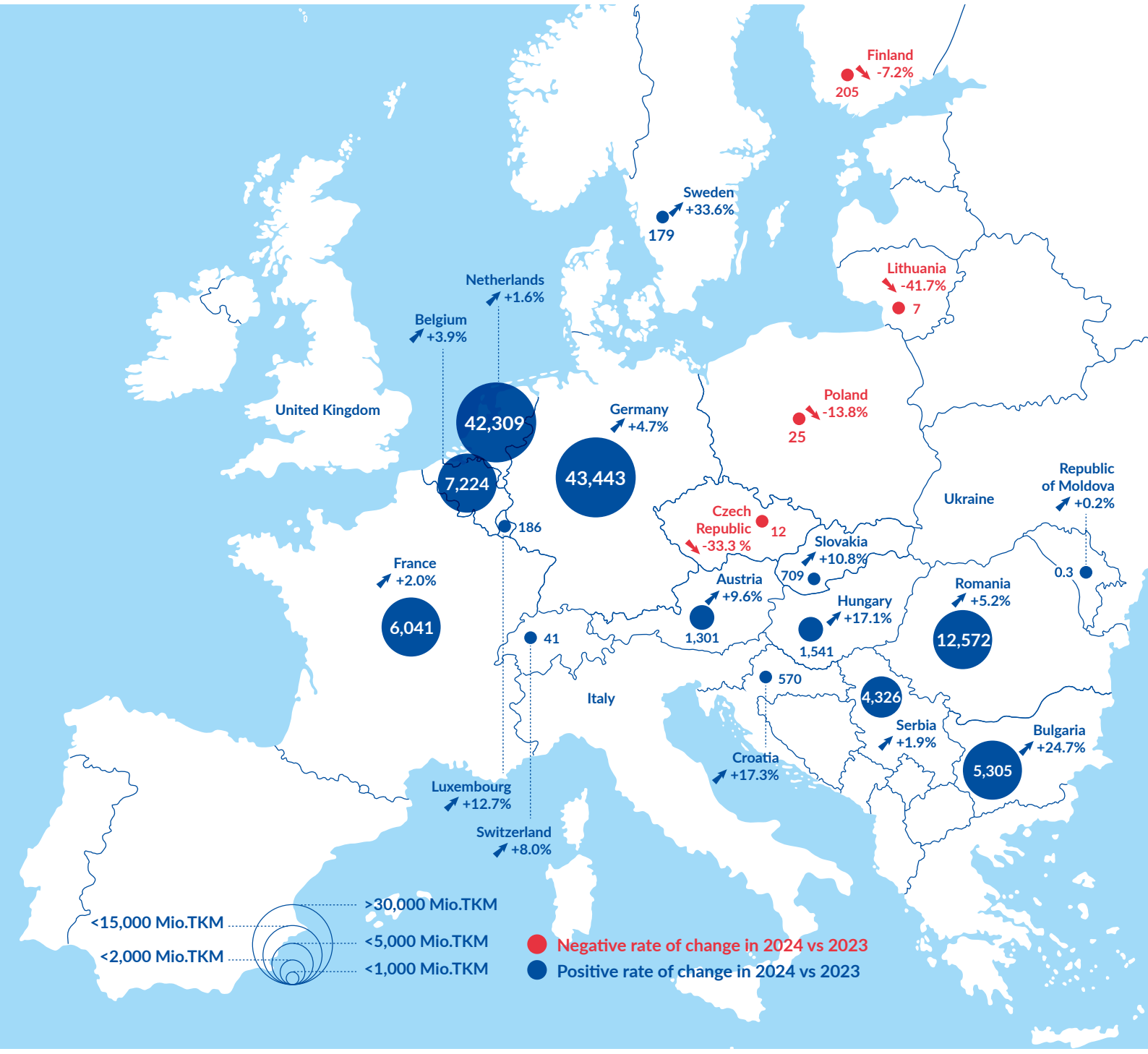
02

FREIGHT TRANSPORT ON INLAND WATERWAYS

- In 2024, 473.3 million tonnes of goods were transported on EU-27 waterways (+1.0% compared to 2023) and the IWT transport performance reached 121.6 billion TKM (+4.5%). In terms of inland navigation for Europe (EU-27 plus Switzerland, Serbia and the Republic of Moldova), freight transport performance increased by +4.3% compared to 2023, reaching 126.0 billion TKM.
- Cargo transport on the entire Rhine (from Basel to the North Sea) amounted to 284.5 million tonnes in 2024, compared to 276.5 million tonnes in 2023 and 292.3 million tonnes in 2022; the result in 2024 was 2.6 % higher than in 2023, even though the overall trend remains downward orientated. The strongest growth was registered for agribulk and food products (+6.8%) and for chemicals (+6.7%). Negative growth rates were observed, particularly for coal (-13.3%) and for sands, stones and gravel (-1.8%). Container transport on the Rhine grew by +2.0% compared to 2023, but its level is still well below the values in the years 2016-2021.
- On the Upper and Middle Danube, transport volumes increased overall in 2024. The Lower Danube region, in particular the two canals connecting the Danube to the Black Sea, recorded a strong decrease in goods transport. The main reason for this decline lies in a shift from grain shipments (wheat, corn, barley) from the Ukrainian Danube ports back to the Ukrainian seaports of Odessa, Pivdennyi and Chornomorsk which have resumed some of their activities.

II TRANSPORT IN EUROPE
AND BY COUNTRY

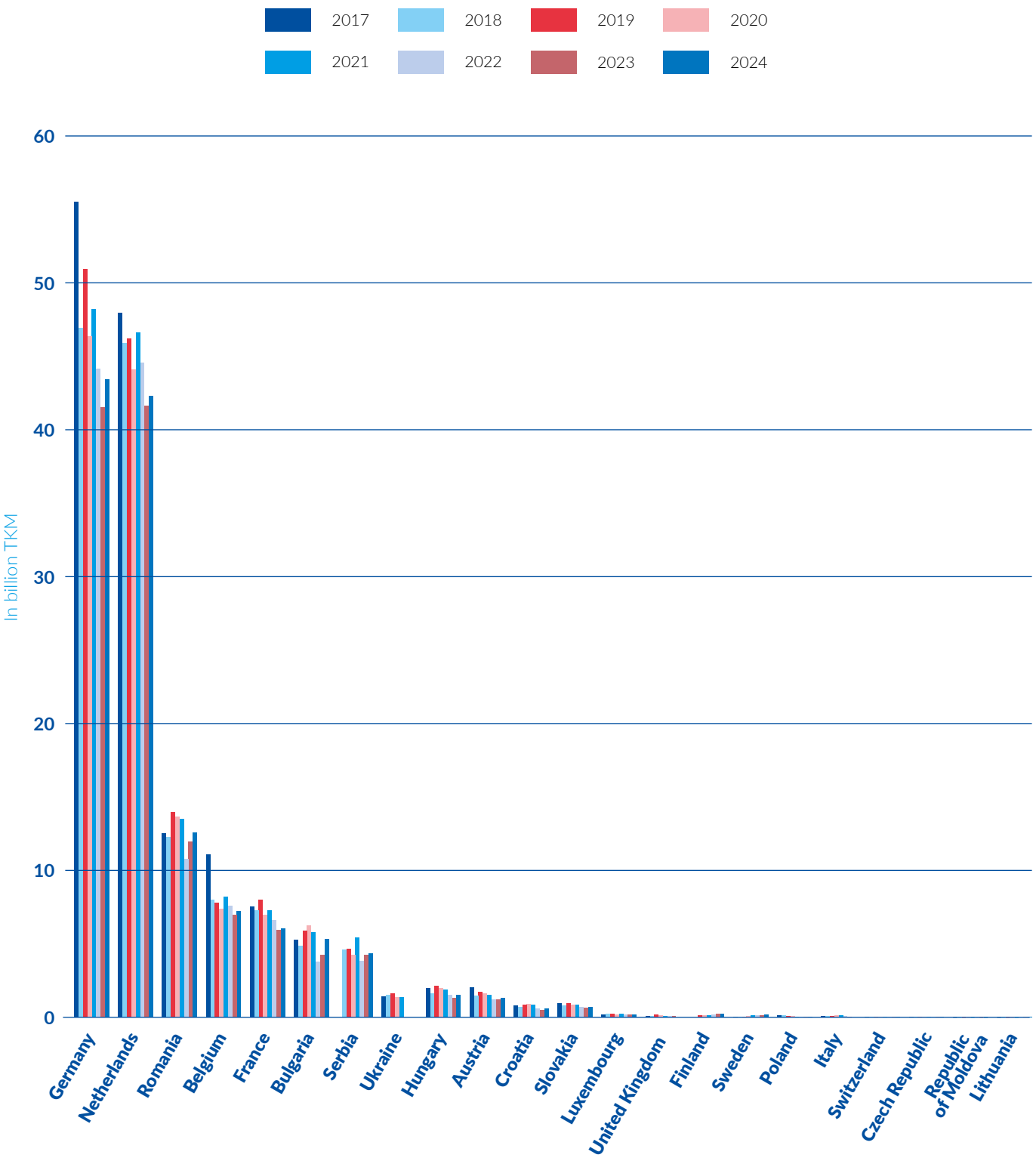
TRANSPORT PERFORMANCE IN IWT ON THE NATIONAL TERRITORY OF EACH COUNTRY IN EUROPE – COMPARISON BETWEEN 2023 AND 2024 (IN MILLION TKM) *



Sources: Eurostat [iww_go_atygo] and [iww_go_qnave], OECD (Switzerland and the Republic of Moldova), UK Department for Transport

** The share of IWT performance in Europe in 2024 for Italy and the UK is not available. For Ukraine, data are only available until 2021.*

FIGURE 1: **IWT TRANSPORT PERFORMANCE BETWEEN 2017 AND 2024 IN MAIN EUROPEAN IWT COUNTRIES** (IN BILLION TKM) *



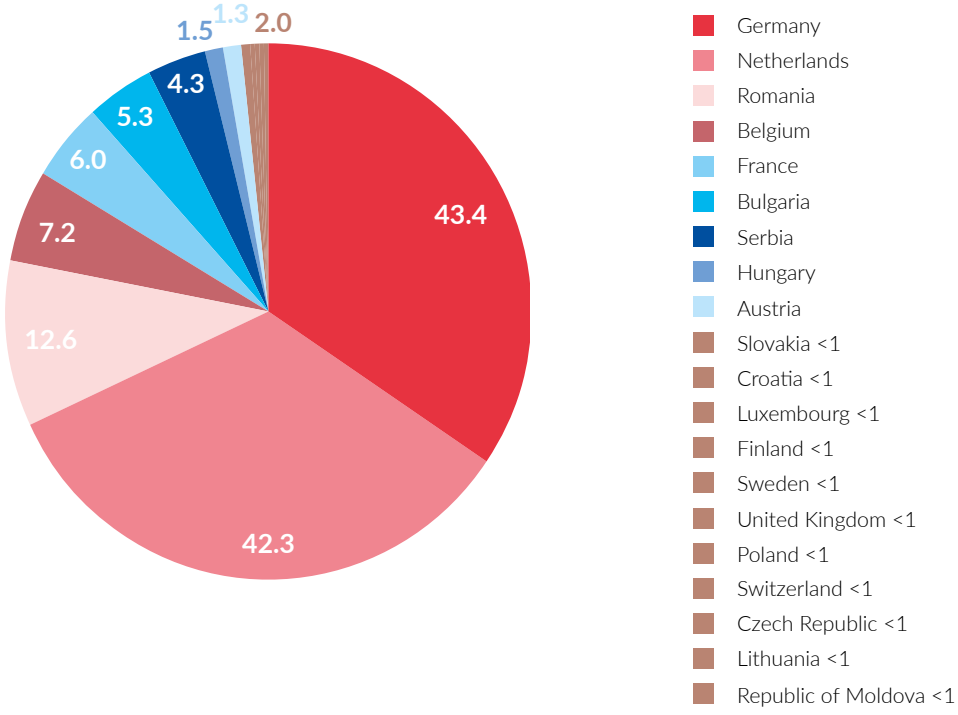
Sources: Eurostat [iww_go_atygo] (for most countries) and [iww_go_qnave] (Serbia), OECD (Switzerland, Ukraine and the Republic of Moldova), UK Department for Transport (UK)

** The values for Italy (2024), Finland (2017, 2018), the United Kingdom (2024) and Serbia (2017) are not available. For Ukraine, data are only available until 2021. The Danube Commission reported a decrease of -45.7% in terms of waterside cargo handled in Ukrainian ports in 2024 compared to 2023. The reason is the reopening of the export route by sea for Ukrainian grain.*

Note: for the UK, IWT is defined as non-seagoing traffic which takes place entirely within inland waters and river-sea transport (seagoing vessels navigating partly at sea and on inland waterways). In this figure, for the sake of consistency with the methodology used by Eurostat, only the transport performance related to the traffic taking place wholly within inland waters is reported (amounting to 71 million TKM in 2023). However, it is worth noting that most of IWT in the UK consists of river-sea transport (amounting to almost 1.3 billion TKM in 2023). Overall, the IWT performance in the UK is reported to reach almost 1.4 billion TKM in 2023.

In 2024, in terms of inland navigation for Europe (EU-27 plus Switzerland, Serbia and Republic of Moldova, and excluding Ukraine), freight transport performance increased by +4.3% compared to 2023, reaching 126.0 billion TKM. Rhine countries (Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland) accounted for 78.8% of total inland waterway transport performance in the EU-27, plus Switzerland, Serbia and the Republic of Moldova. The share for Danube countries was 20.9% (excluding Ukraine).

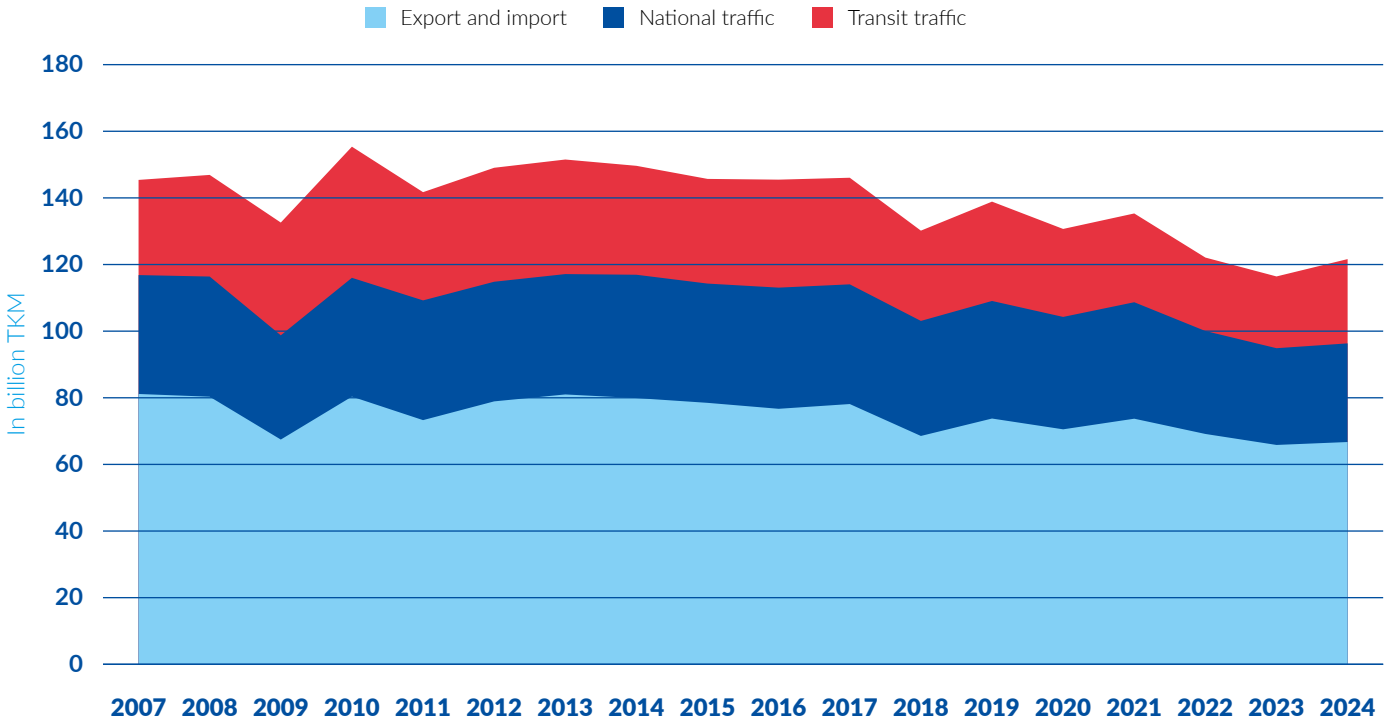
FIGURE 2: **INLAND WATERWAY TRANSPORT PERFORMANCE IN EUROPEAN COUNTRIES IN 2024** (IN BILLION TKM) *



Sources: Eurostat [iww_go_atygo] (for most countries) and [iww_go_qnave] (Serbia), OECD (Switzerland and the Republic of Moldova)
** Data for Ukraine, the UK and Italy were not available for 2024.*

In 2024, 473.3 million tonnes of goods were transported on EU-27 waterways (+1.0% compared to 2023). From the total inland waterway transport performance in the EU-27 in 2024, which amounted to around 121.62 billion TKM, an increase of +4.5% compared to 2023 (EU-27 only), 75.7% 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 20.8% and export and import traffic had a share of 27.9% and 27.0%, respectively.

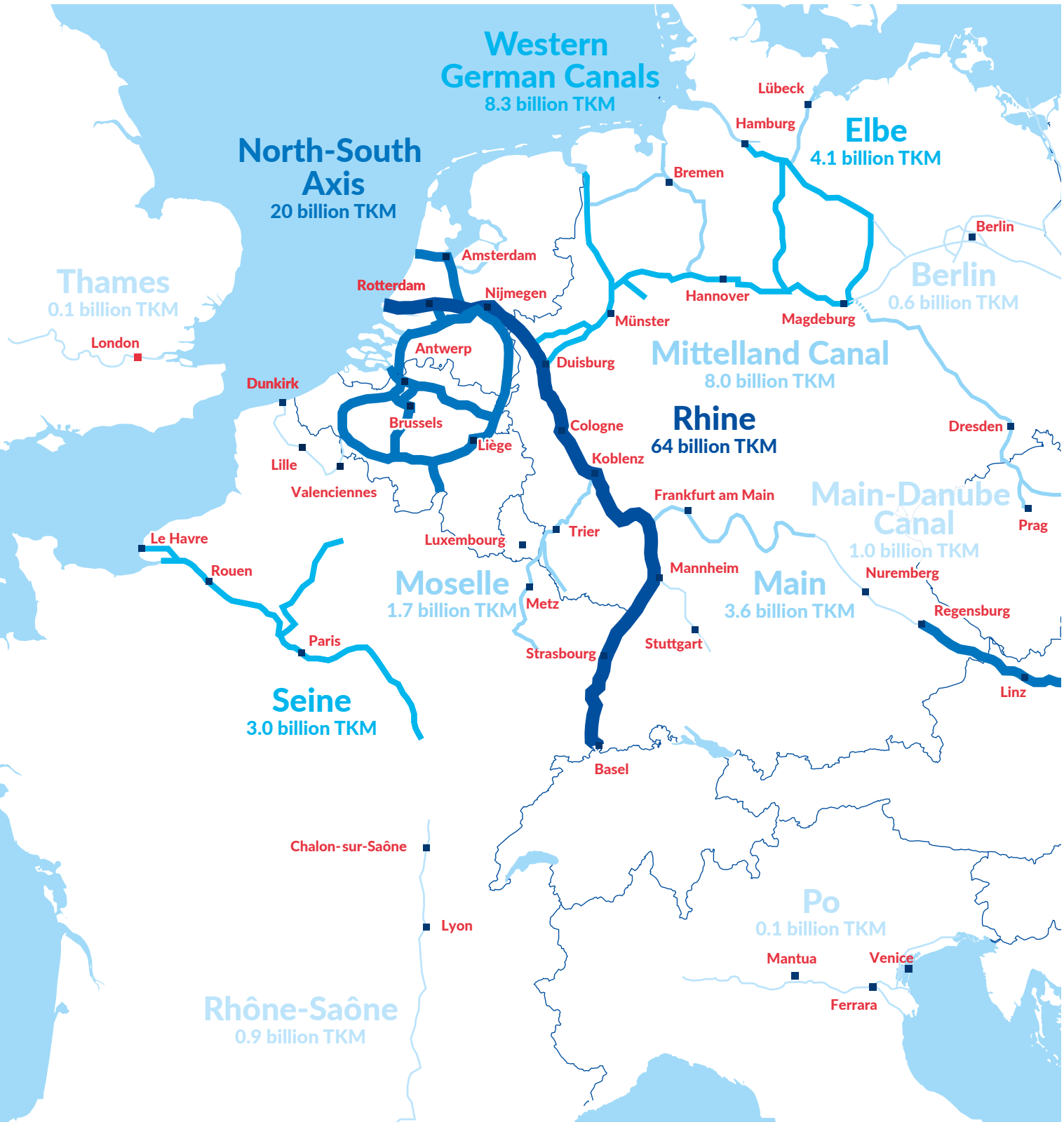
FIGURE 3: **YEARLY INLAND WATERWAY TRANSPORT PERFORMANCE IN THE EU-27 (IN BILLION TKM) ***



Source: Eurostat [iww_go_atygo]
** EU-27 according to member countries in 2024*

TRANSPORT

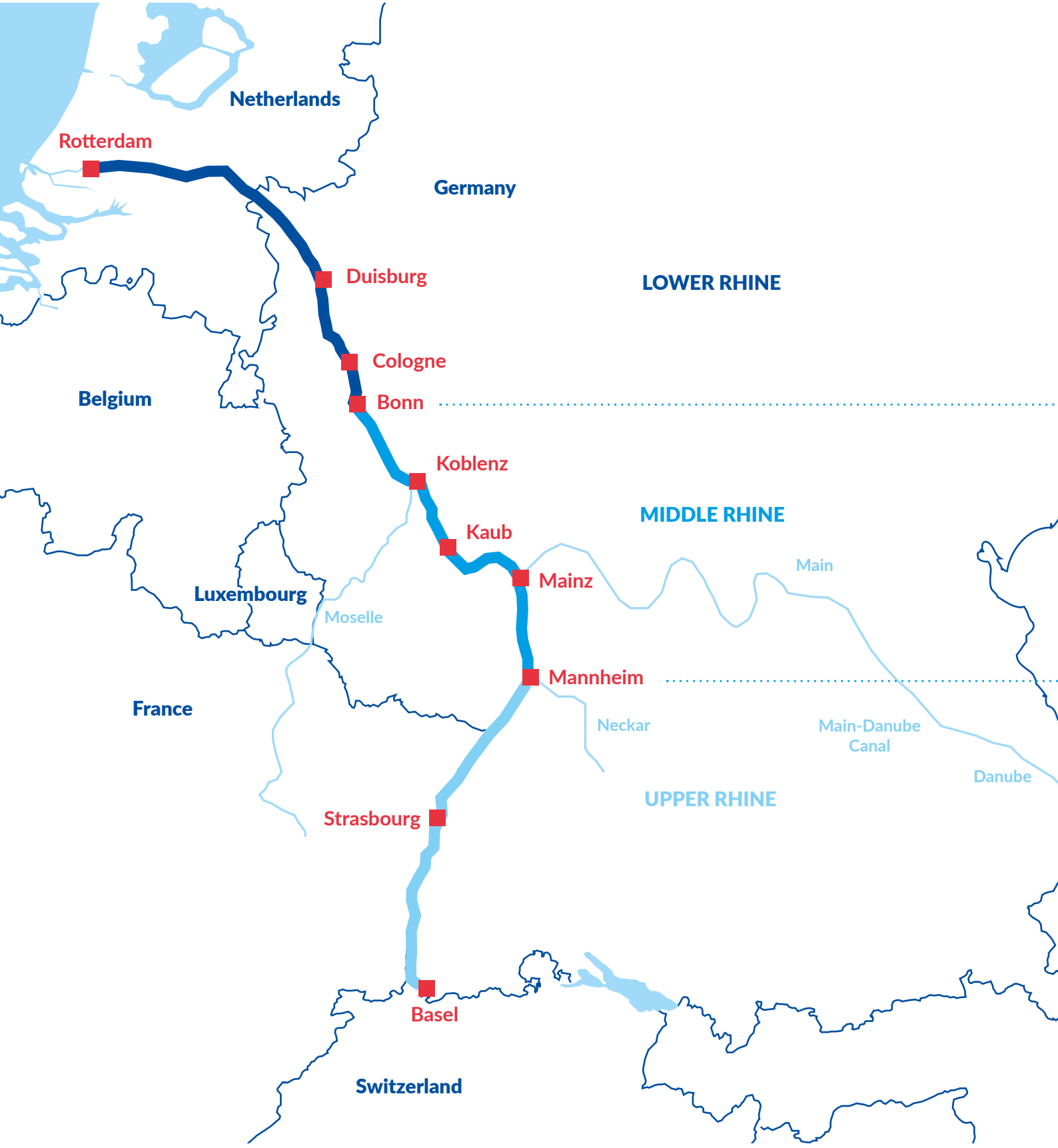
PERFORMANCE BY MAIN EUROPEAN RIVER BASINS



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

Sources: Figures for the Po are from 2022, figures for the Thames are from 2023, the others are from 2024. CCNR analysis based on Destatis, VNF, Eurostat [iww_go_atygo], UK Department for Transport.

RHINE BASIN


Netherlands
Rotterdam
Germany
Duisburg
LOWER RHINE
Cologne
Belgium
Bonn
Koblenz
MIDDLE RHINE
Kaub
Main
Mainz
Luxembourg
Moselle
Mannheim
France
Neckar
Main-Danube Canal
Danube
UPPER RHINE
Strasbourg
Basel
Switzerland

Transport volume and transport performance on the entire Rhine (from Basel to the North Sea)

Previously, this chapter focused solely on volumes transported along the Traditional Rhine, namely the Rhine from Basel to the German-Dutch border. From now onwards, reporting includes transport volumes on the entire Rhine from Basel to the North Sea. In addition, in 2024, more refined data provided by the VNF on the parts of the Upper Rhine regarding traffic between French Rhine ports, and between Swiss and French Rhine ports, were incorporated for the years 2014 onwards[7]. When calculating the total volume of goods transported on the entire Rhine, all steps were taken to avoid duplication in counting.

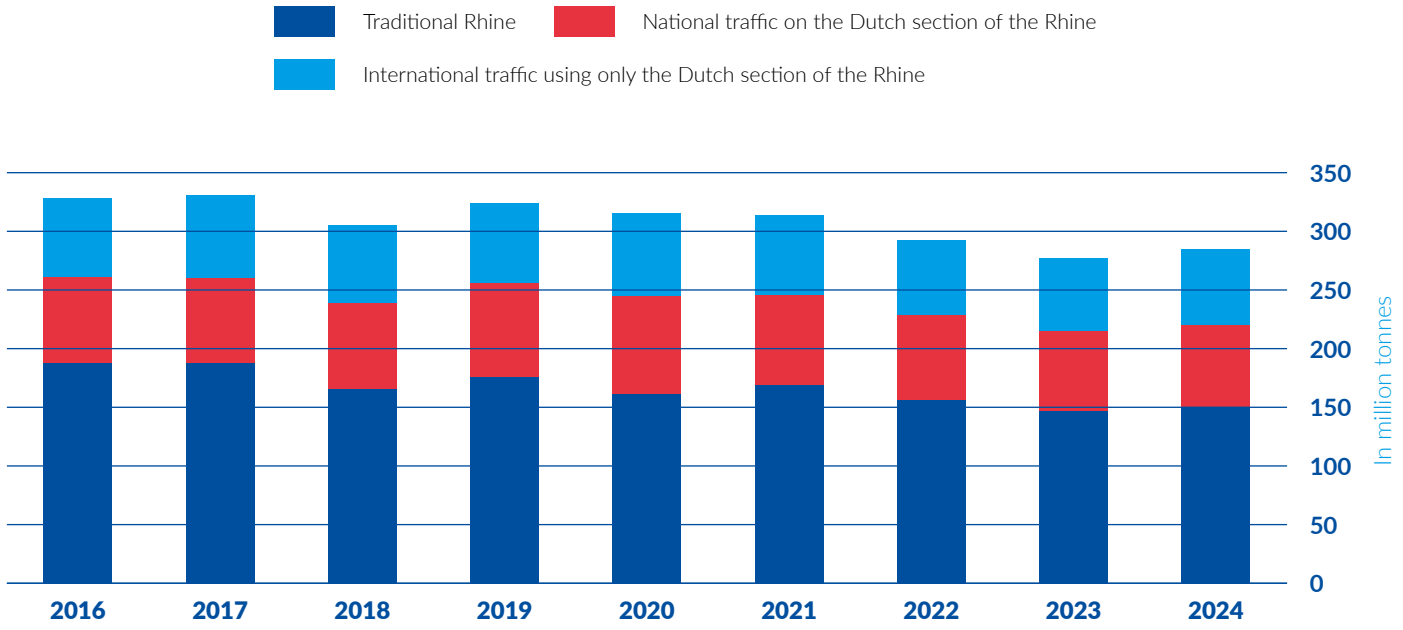
Cargo transport on the entire Rhine (from Basel to the North Sea) amounted to 284.5 million tonnes in 2024, compared to 276.5 million tonnes in 2023 and 292.3 in 2022. The result in 2024 was 2.6% higher than in 2023, even though the overall trends remain downward orientated.

- The Traditional Rhine (from Basel to the German-Dutch border) amounted to 150.1 million tonnes in 2024, compared to 146.7 million tonnes in 2023 and 156.2 million tonnes in 2022; the result in 2024 was 2.3% above the result of 2023.
- The Lower Rhine in the Netherlands (from the German-Dutch border to the North Sea, including the link to Antwerp via the Rhine-Scheldt link[8]) amounted to 234.0 million tonnes, compared to 227.2 million tonnes in 2023 and 237.8 million tonnes in 2022; the result in 2024 was 3.0% above the result of 2023.

When calculating the total volume of goods transported on the entire Rhine, all steps were taken to avoid the double counting of volumes transported on both stretches. This is why the volumes on these two stretches cannot simply be added together, as certain volumes are transported on both stretches.

[7] In 2024, 23.4% of all inland waterway transport in France took place on the French Rhine.
[8] Waterway sections considered: Waal, Hollands Diep, Boven Merwede, Oude Maas, Dordtsche Kil, Beneden Merwede, Lek, Nieuwe Maas, Noord, Nieuwe Merwede, Nieuwe Waterweg, Amsterdam-Rijnkanaal, Rijn-Schelde-Verbinding, Hartelkanaal, IJssel.

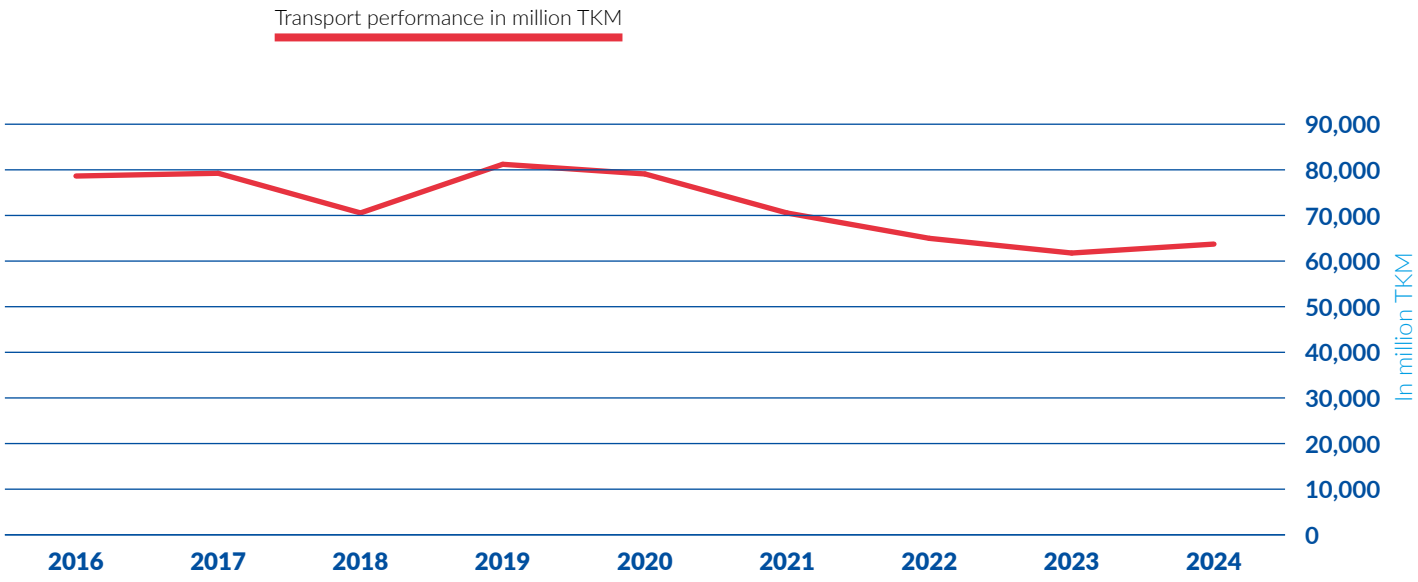
FIGURE 4: **FREIGHT TRANSPORT VOLUME** (IN MILLION TONNES) **ON THE ENTIRE RHINE ***



Sources: CCNR analysis based on Destatis, VNF (data for the Traditional Rhine) and Rijkswaterstaat (data for the Lower Rhine in the Netherlands)

** In earlier reports, only the volumes transported on the Traditional Rhine, namely the Rhine from Basel to the German-Dutch border, were reported on. Now, data also cover transport volumes on the entire Rhine from Basel to the North Sea (including link to Antwerp via the Rhine-Scheldt link). Note that the traditional Rhine data capture all cargo transport on the Rhine in Germany as well as more refined data for the parts of the Upper Rhine reflecting traffic between French Rhine ports and between Swiss and French Rhine ports. Note that the latter represent less than 1% of all transport volumes on the entire Rhine.*

FIGURE 5: **TRANSPORT PERFORMANCE** (IN MILLION TKM) **ON THE ENTIRE RHINE**



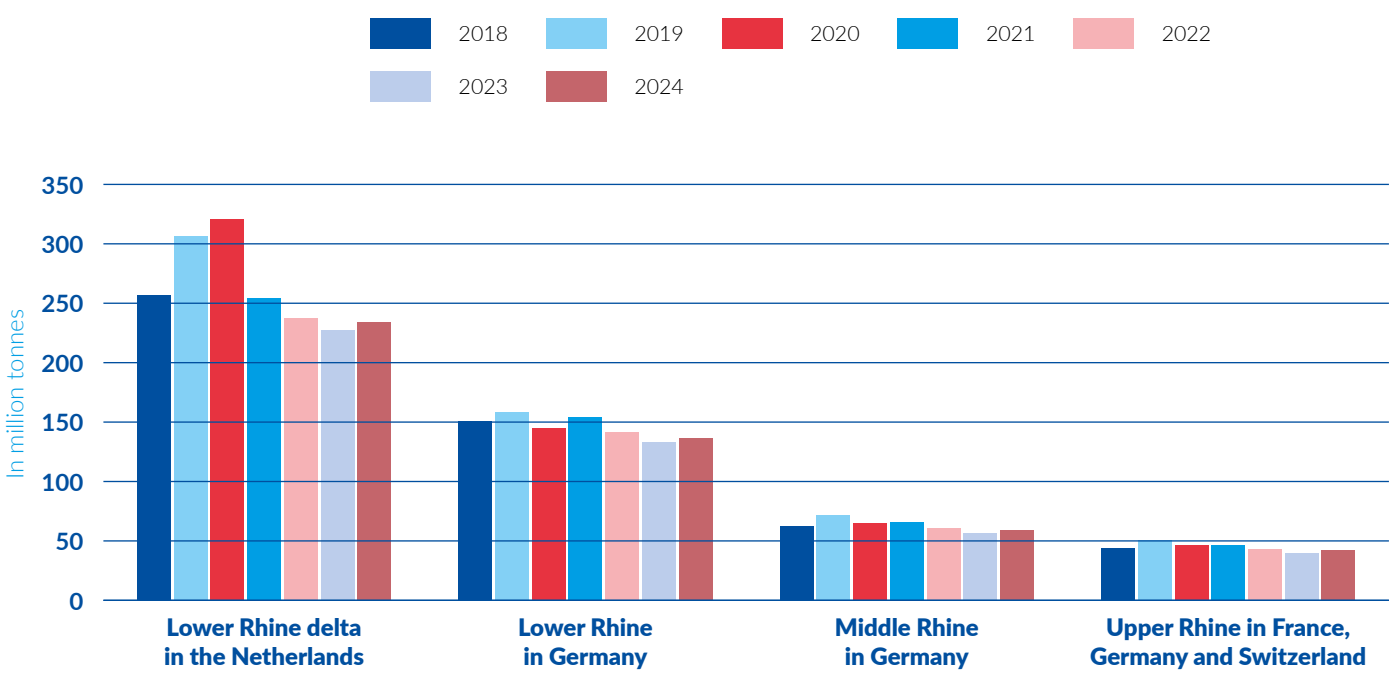
Sources: CCNR analysis based on Destatis, VNF (data for the Traditional Rhine) and Rijkswaterstaat (data for the Lower Rhine in the Netherlands)

Transport activity at different Rhine stretches, on Rhine affluents and on canals linked to the Rhine

In terms of geographical structure, transport demand is higher on the Lower Rhine compared to the Middle and Upper Rhine, as illustrated in figure 6. This higher transport demand on the Lower Rhine can be explained for several reasons:

- Dense delta network in the Netherlands and inter-port traffic (Rotterdam, Antwerp, Amsterdam, North Sea Port) connecting important petroleum and chemical industrial hubs as well as a high number of container terminals.
- Inter-port traffic between Rotterdam, Antwerp and Amsterdam, Flushing, Gent. This inter-port traffic connects important industrial clusters and container hubs.
- Important steel and petroleum industrial hub in the Lower Rhine region in Germany.
- High fairway depths on the Lower Rhine.

FIGURE 6: **FREIGHT TRANSPORT ON THE DIFFERENT STRETCHES OF THE RHINE** (IN MILLION TONNES) *



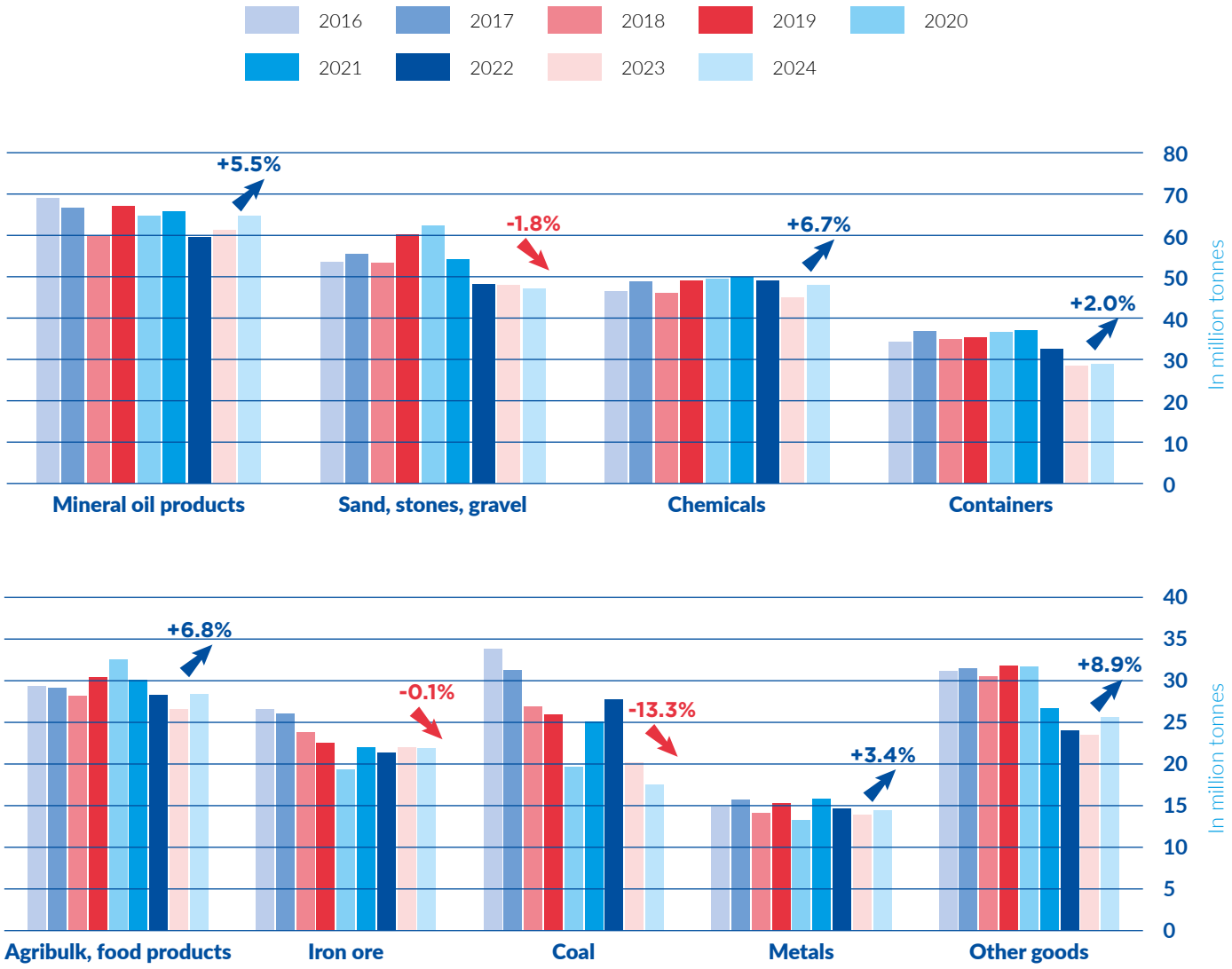
Sources: CCNR analysis based on Destatis (Lower, Middle and Upper Rhine in Germany), VNF (Upper Rhine in France and Switzerland) and Rijkswaterstaat (Lower Rhine delta in the Netherlands)

** To avoid double counting, the volumes on the different Rhine stretches cannot be added together, as certain volumes are present on several Rhine stretches.*

Rhine transport by cargo segment

In terms of global cargo transport volumes for the entire Rhine, the segments of mineral oil products, chemicals and sand, stones, gravel, were the top three contributors in 2022, 2023 and 2024.

FIGURE 7: **CARGO TRANSPORT ON THE ENTIRE RHINE * BY TYPE OF GOODS** (IN MILLION TONNES) **



Sources: CCNR analysis based on Destatis, VNF and Rijkswaterstaat
** Entire Rhine = Rhine from Rheinfelden (CH) to the North-Sea (including link to Antwerp via the Rhine-Scheldt link)*
*** For containers: net-weight of goods in containers*

Overall, in the year 2024, transport of goods on the entire Rhine was positively affected by factors such as a recovery of aggregate demand due to declining inflation and an indexation of wages. Both trends stimulated private consumption. The Russian war of aggression against Ukraine and other geopolitical conflicts were still felt, but the impact of these factors was less pronounced than in earlier years.

Liquid bulk showed a transport demand growth of +5.5% for mineral oil products and +6.7% for chemicals. Within the transport of mineral oil products, a structural shift is observed. The transport to the hinterland is stagnating or declining over the long term, due to less demand, while transport towards the ARA ports[9] is increasing. The reason for this increase is an imbalance between refinery production of fuels and fuel demand in western Europe. Due to the long-term decrease in fuel demand, refinery output is more and more orientated towards exports to overseas destinations

[9] *ARA = Amsterdam, Rotterdam, Antwerp*

via ARA seaports. Indeed, for the refineries in the Dutch and German Rhine region, an increase in transport towards ARA ports can be noticed. From the ARA ports, fuels are exported to overseas destinations.

The transport of chemical products showed a limited recovery compared to the weak year of 2023. However, the level of transport demand in 2024 was still 3% below the multi-annual average of the period 2019-2021 (pre-Ukrainian war period). This difference in transport demand is nonetheless rather small, when compared to the development of chemical production. Indeed, the level of chemical production in Germany in 2024 was -16% lower than the average German chemical production in 2019-2021[10]. For the Netherlands, another important producing country for chemicals, the difference was of -13% and -7% for Belgium. The chemical industry continues to suffer from high energy prices and a deteriorating competitiveness.

The largest dry cargo segment is the transport of sand, stones, gravel and construction material. This segment has shown a rather low level over the last two years (see figure 7). One main reason is the weak development of the construction activity in most Rhine countries. According to Eurostat figures[11], the output of the entire construction sector in Germany was -8.8% lower in 2024 compared to 2020 and since 2020, a negative linear trend has been observed. The trend in France has also been negative and in Belgium, the average production has also been weaker in recent years. Only in the Netherlands has a positive trend in construction activity between 2015 and 2024 been observed (increase of +42% between 2015 and 2024).

Maritime statistics are representative of world trade, as 75% of all world trade is carried out by seaborne trade[12]. From this perspective, it is important to refer to the maritime container transport in the Port of Rotterdam, which showed a +2.5% increase in 2024 compared to 2023 (based on tonnes)[13]. The main reasons for this are higher consumer incomes due to lower inflation and wage indexation. This increase was the first in three years when maritime container transport followed a decreasing trend. The reason for the drop in container throughput before 2024 was the Russian war of aggression against Ukraine, which caused an increase in European energy prices, reducing purchasing power, and consequently, consumption. This drop in volume came to an end in 2024. The main growth drivers were consumer goods and food products. Similarly, barge transport of containers on the Rhine registered a growth rate of +2.0% in 2024, after two years of decreasing container transport.

In order to evaluate the influencing factors for container transport on the Rhine, two calculations are made. The first one compares the development of maritime container transport in the ports of Rotterdam and Antwerp with the development of container transport on the Rhine (both series are based on tonnes) since 2019 (Index Container transport). The second calculation establishes the year-on-year growth rate of maritime container transport in Rotterdam and Antwerp and the year-on-year growth rate of container transport on the Rhine.

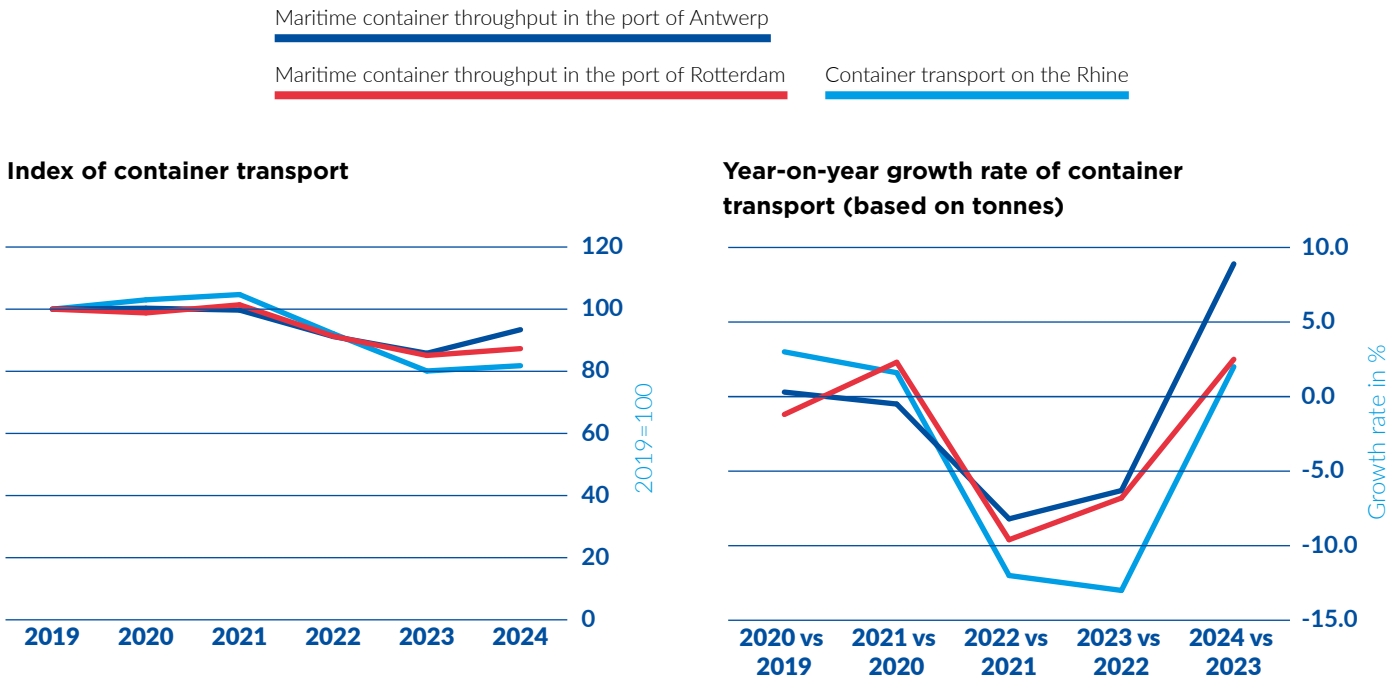
Looking at the two charts, it is clear that both diagrammes illustrate that Rhine container transport is, to a large extent, dependent upon maritime container throughput in Rotterdam and Antwerp. However, in 2022 and 2023, a certain divergence between the two variables occurred. This can be seen in both graphs. In the left graph, the index of container transport on the Rhine dropped below the

[10] Source: Eurostat [sts_inpr_q]: Manufacture of chemicals and chemical production, quarterly series
[11] Source: Eurostat [sts_copr_a]: Production in construction, annual data
[12] Source: Verschuur, J., Koks, E.E. & Hall, J.W. Ports' criticality in international trade and global supply-chains. Nat Commun 13, 4351 (2022): https://doi.org/10.1038/s41467-022-32070-0
[13] Source: Port of Rotterdam

index of container transport in the ports of Rotterdam and Antwerp in the years 2023 and 2024. In the right graph, the growth rate of container transport on the Rhine dropped below the growth rate of container transport in the two maritime ports. This divergence can be attributed to the low water period in 2022, which played an important role both in 2022 and in 2023. In 2023, despite normal water levels, a divergence could be observed, due to a loss of market shares of the Rhine within container transport. An additional reason for the drop in container transport on the Rhine in 2022 was the impact of Germany's economic downturn which certainly also contributed to this negative growth rate. In 2024, the growth rates of container transport on the Rhine caught up again to a large extent in the two maritime ports.

Altogether, the two diagrammes show a combined influence of, on the one hand, maritime container throughput in the seaports of Rotterdam and Antwerp, and on the other hand, water level conditions on the performance of barge transport of containers on the Rhine.

FIGURE 8: **COMPARISON BETWEEN CONTAINER TRANSPORT ON THE RHINE AND MARITIME CONTAINER THROUGHPUT IN THE PORT OF ROTTERDAM AND IN THE PORT OF ANTWERP**



Sources: CCNR calculation based on Destatis, Rijkswaterstaat, Port of Antwerp and Port of Rotterdam data

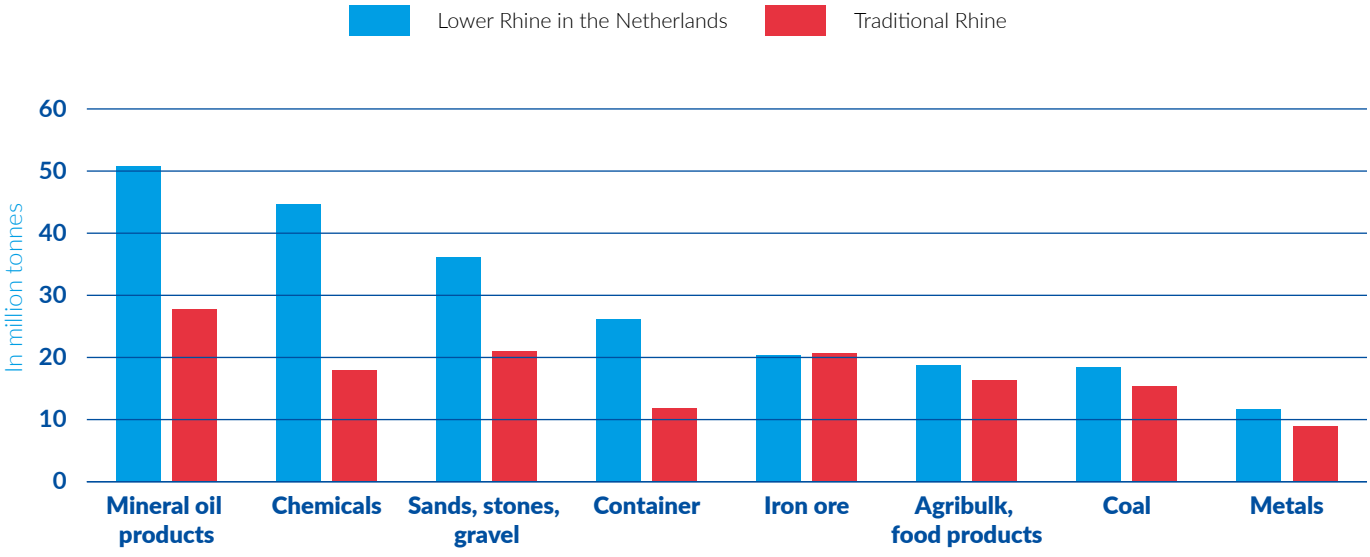
The transport of agribulk and food products showed a strong growth rate with an increase of +6.8%, despite rather weak harvest results in France and Germany. The development of this product category is less predictable, as weak harvest results can be compensated by more imports of grain.

While the transport of iron ore stagnated, the transport of metals showed a growth rate of +3.4%. Overall, both product categories show neither an increasing nor a decreasing trend over time, but a stable development. With high tariffs imposed by the United States on steel products, there is a risk of a decrease in European steel production in the near future.

It can also be observed that there was no boom in coal transport in 2024, unlike in 2021 and 2022. The reason was the drop in demand for coal in the energy sector. The decline in coal transport is the main factor of contraction in dry cargo shipping. In 2016, the share of coal transport still represented 10.3% of total Rhine transport, and by 2024, the share of coal had dropped down to 6.2%. The decrease in coal demand is currently mainly in the energy sector, but in the future a decrease is also expected in the steel industry, where coking coal is still used for producing steel. Both in Germany and in France, governments have granted substantial subsidies to enable the transition to steel production using hydrogen, which will also reduce coal demand further[14].

An analysis of cargo segments split between the Lower Rhine in the Netherlands and the Traditional Rhine enables a better understanding of the dynamics regarding transport of goods per type of products along the Rhine. The amount of chemicals transported on the Lower Rhine in the Netherlands is far greater than on the Traditional Rhine. Container transport, as well as transport of sand, stones and gravel are also more intense on the Lower Rhine in the Netherlands. For commodities and final products of the steel industry, agribulk as well as coal for the energy sector, the volumes on the Traditional Rhine and on the Lower Rhine in the Netherlands are rather similar.

FIGURE 9: **CARGO TRANSPORT ON THE RHINE BY TYPE OF GOODS – SPLIT BETWEEN THE LOWER RHINE IN THE NETHERLANDS AND THE TRADITIONAL RHINE IN 2024** (IN MILLION TONNES) *****



Sources: CCNR analysis based on Destatis, VNF and Rijkswaterstaat

** Traditional Rhine = Rhine from Rheinfelden (CH) to the German-Dutch border; Lower Rhine in the Netherlands = Rhine from the German-Dutch border to the North Sea (including link to Antwerp via the Rhine-Scheldt link)*

[14] *See: Handelsblatt (2024), Sieben Milliarden Euro für grünen Stahl – und das ist erst der Anfang (article from 25.01.2024, last consulted on 01.04.2025)*

Along with the overall cargo transport on the Rhine, cargo transport and vessel movements are registered at specific measurement points (locks or border points). The relevant volumes represent the transport activity only at these points and do not represent total Rhine transport. However, this approach reveals existing differences in transport activity between different Rhine stretches, for example between the Lower and the Upper Rhine.

TABLE 1: **MEASUREMENT POINTS FOR FREIGHT TRANSPORT IN THE RHINE BASIN**

Rhine stretch or affluent	Measurement point	Name	Volume of transport (in million tonnes)			Number of passing cargo vessels		
			2022	2023	2024	2022	2023	2024
Lower Rhine	Border DE/NL	Emmerich	124.9	117.9	119.0	105,886	105,809	104,561
Upper Rhine	Border DE/FR	Iffezheim	16.3	16.0	18.0	21,537	19,325	18,600
Wesel-Datteln Canal	Junction with Rhine	Wesel-Friedrichsfeld	17.9	16.2	13.5	16,520	15,255	16,193
Rhein-Herne Canal	Junction with Rhine	Duisburg-Meiderich	12.4	10.7	8.9	15,400	11,079	10,621
Main	Junction with Rhine	Mainz-Kostheim	11.1	11.5	12.1	14,309	13,707	12,575
Moselle	Junction with Rhine	Koblenz	8.6	7.7	8.7	5,373	4,505	4,638
Neckar	Junction with Rhine	Mannheim-Feudenheim	4.5	3.9	4.4	5,484	4,463	4,561

Sources: German Waterways and Shipping Administration (WSV), Moselle Commission, Destatis

In 2024, transport on the Moselle (at the lock of Koblenz) was 13.5% higher than in 2023. Large goods segments which registered a strong growth were iron ore and scrap metals (+33.9%), agribulk (+7.0%), as well as sands, stones and gravel (+23.3%). Transport on the Moselle increased also at the lock of Apach, which is located on the border between France, Luxembourg and Germany. Transported volumes were 8.8% higher in 2024 than in 2023. In Apach, transport increased in particular for coal (+60.5%), iron and steel (+19.8%), fertilizers (+55.5%). and sands, stones, gravel (+9.4%). Although transport of goods on the Moselle experienced an overall recovery, there was a strong decline in container transport, which suffered a decrease of -48.1% at the lock of Koblenz. The reason for this sharp decline is a modal shift from waterway to rail transport for container transport. This results from one major shipper deciding to transport furniture in containers by rail which had previously been transported by waterway on the Moselle.

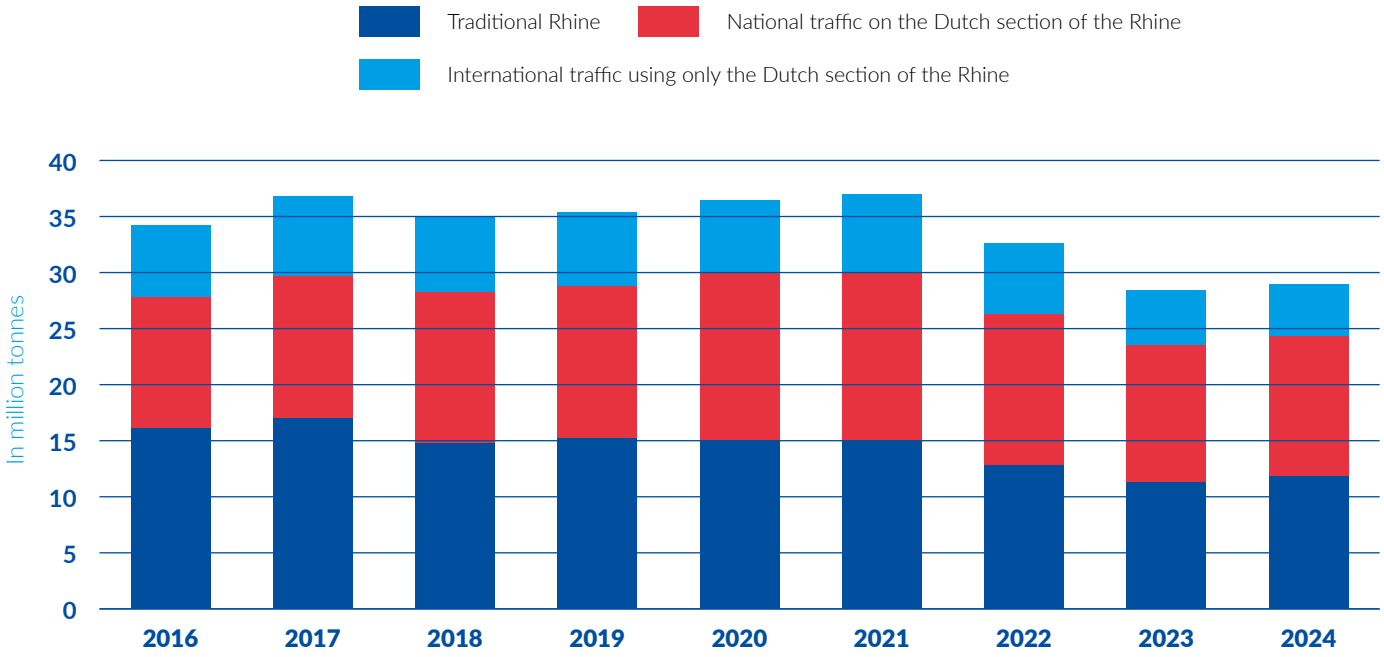
Container transport on the Rhine

Based on the calculations made in this chapter, container transport on the Rhine is impacted by a combination of influencing factors. One important factor is maritime container throughput in the seaports (in particular Rotterdam and Antwerp), and the second influencing factor is the effect of low waters.

Measured in million tonnes, the result for container transport on the entire Rhine (from Basel to the North Sea) in 2024 was 2.0% higher than in the year 2023 (+4.1% for the Traditional Rhine and +0.7% for the Lower Rhine in the Netherlands).

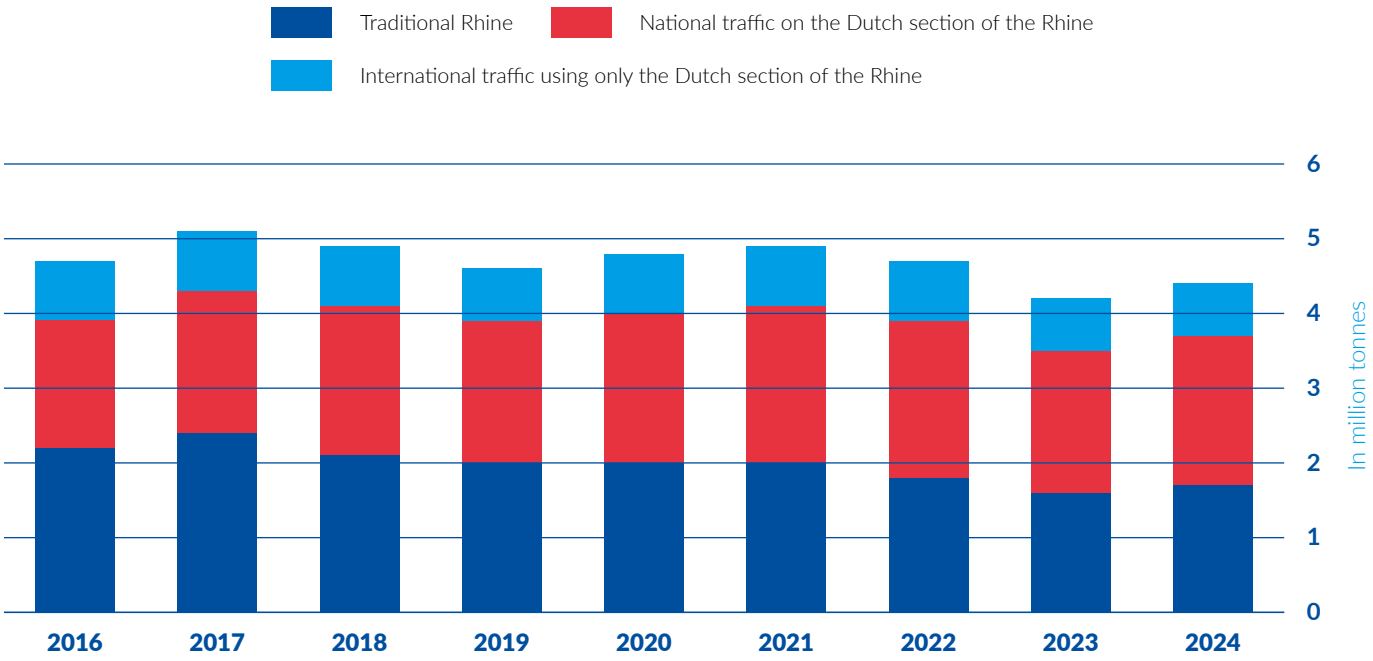
In the TEU unit, the rate of increase was +3.8% for the entire Rhine (+4.2% for the Traditional Rhine and +3.6% for the Lower Rhine in the Netherlands).

FIGURE 10: **CONTAINER TRANSPORT ON THE TRADITIONAL RHINE AND THE LOWER RHINE IN THE NETHERLANDS** (IN MILLION TONNES, NET WEIGHT OF GOODS IN CONTAINERS)**, 2016-2024 ***



Sources: CCNR analysis based on Destatis, VNF and Rijkswaterstaat
** Traditional Rhine = Rhine from Rheinfelden (CH) to the German-Dutch border: Dutch section of the Rhine = Rhine from the German-Dutch border to the North Sea (including link to Antwerp via the Rhine-Scheldt link)*
Note that the Traditional Rhine data capture all cargo transport on the Rhine in Germany, as well as more refined data for the parts of the Upper Rhine, which reflect traffic between French Rhine ports and between Swiss and French Rhine ports.

FIGURE 11: **CONTAINER TRANSPORT ON THE TRADITIONAL RHINE AND THE LOWER RHINE IN THE NETHERLANDS** (IN MILLION TEU)**, 2016-2024 ***



Sources: CCNR analysis based on Destatis, VNF (only for the period 2020-2024) and Rijkswaterstaat

** Traditional Rhine = Rhine from Rheinfelden (CH) to the German-Dutch border; Dutch section of the Rhine = Rhine from the German-Dutch border to the North Sea (including link to Antwerp via the Rhine-Scheldt link)*

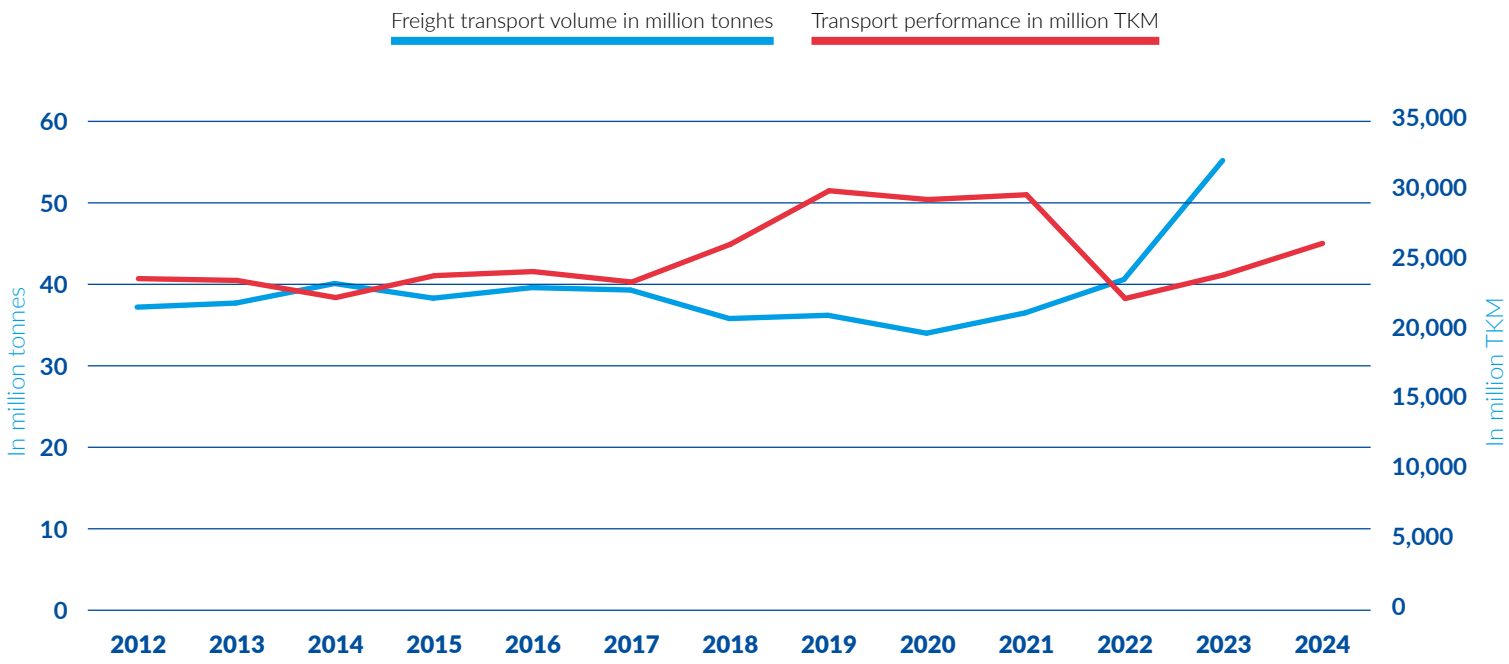
DANUBE BASIN

Transport volume and transport performance on the Danube

Cargo transport on the entire navigable Danube between Kelheim (Germany) and the Black Sea via the Danube-Black Sea Canal and the Sulina Canal has been increasing since 2020 to reach 55.2 million tonnes in 2023[15], an increase of +36.1% compared to 2022. This increase was mainly driven by the exceptional growth in IWT volumes recorded in Ukraine, especially exports via Ukrainian Danube ports.

Transport performance on the Danube (EU Danube countries plus Serbia) reached 26,32 billion TKM in 2024, an increase of +9.4% compared to 2023.

FIGURE 12: **FREIGHT TRANSPORT VOLUME** (IN MILLION TONNES) **AND TRANSPORT PERFORMANCE** (IN MILLION TKM) **ON THE DANUBE** *



Sources: for transport volumes - viadonau, Annual reports on Danube navigation; for transport performance - Eurostat [iww_go_atygo] and [iww_go_qnave] (Serbia)
** Transport performance in IWT in all EU Danube countries.*

In the year 2024, the Russian war of aggression against Ukraine continued to have an influence on goods and passenger transport on the Danube. In 2024, a series of Russian airstrikes also targeted the Ukrainian harbour infrastructure on the Danube. As a result of these attacks, infrastructure objects, granaries, warehouses, administrative buildings and residential properties were destroyed in Ukrainian ports on the Danube. Russia's aggressive actions on the Danube posed direct security threats not only to the Ukrainian Danube port infrastructure, but to all shipping traffic on the lower Danube, including the safety of vessel crews and personnel.

[15] *Source: viadonau, several annual reports available at: https://www.viadonau.org/newsroom/publikationen/broschueren (last consulted on 28.08.2025)*

During the year 2024, the Danube Commission continued its active work to maximise support for the export of Ukrainian agricultural products and the import of goods required by Ukraine as part of the EU-Ukraine Danube Solidarity Lanes initiative, adopted in May 2022 to support the European Union's solidarity measures with Ukraine. In 2024, a total of 8.3 million tonnes of grain, soybeans, rapeseed, sunflower seeds and oil were exported via the Ukrainian Danube ports. In addition, other goods such as iron ore and imports of petroleum products were also handled via these ports.

Danube transport at specific measurement points

The waterway administrations register data at certain borders or measurement points which are described in the following table.

TABLE 2: **MEASUREMENT POINTS FOR DANUBE FREIGHT TRANSPORT**

Danube stretch or affluent	Measurement point	Name	Volume of transport (in million tonnes)		
			2022	2023	2024
Upper Danube	Border Germany/ Austria	Lock of Jochenstein	2.2	2.1	2.6
Upper Danube	Border Slovakia/ Hungary	Lock of Gabčíkovo	4.3	4.0	4.5
Middle Danube	Border Hungary/ Croatia/Serbia	Mohács	4.0	3.4	4.0
Danube-Black Sea Canal	No specific point, total volumes on the canal are taken into account	Canal authority CAN[16]	17.3	23.4	18.0
Sulina Canal	No specific point, total volumes on the canal are taken into account	Waterway Administration AFDJ[17]	10.6	16.4	9.9

Source: Danube Commission market observation reports

In 2024, there was a rather sharp decline in transport on the two canals flowing to the Black Sea. The reason for this decline is the increase in the volume of grain shipments (wheat, corn, barley) through the 'Ukrainian Grain Corridor' formed in autumn 2023 on the basis of the Ukrainian seaports of Odessa, Pivdennyi and Chornomorsk (the ports of "Greater Odessa"). At the same time, the role of Ukrainian Danube ports is not diminishing and is seen as an additional route to support the transport of Ukrainian agricultural exports. Accordingly, ensuring the sustainable operation of the ports of the Ukrainian Danube cluster is a priority.

For the Upper Danube at the lock of Gabčíkovo, 45% of all cargo was transported in pushed convoys. For the Middle Danube at Mohács, the share of pushed convoys within total transport was 68%.

[16] *https://www.acn.ro/index.php/de/*
[17] *https://www.afdj.ro/en*

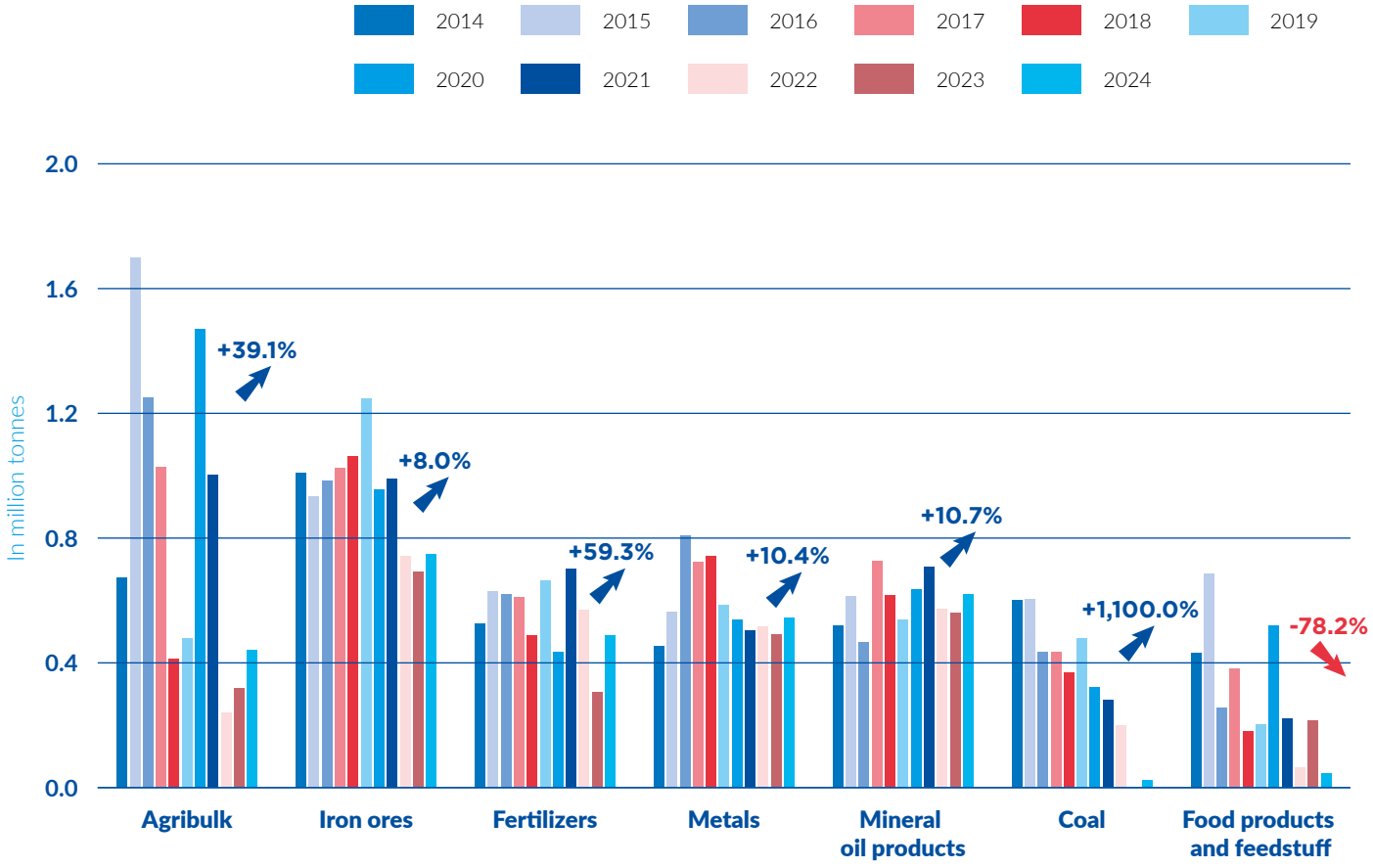
At the border between Slovakia and Hungary, transport demand in 2024 was characterised by stable figures for the upstream transport of iron ore and the downstream transport of metals. In addition, there was an increase in the upstream transport of grain, foodstuff and animal fodder and in the downstream transport of mineral oil products. Overall, transport demand at this border point was 14% higher in 2024 than in 2023.

At the border between Hungary, Croatia and Serbia, cargo transport was characterised by stable figures for the upstream transport of iron ore and the downstream transport of metals. Furthermore, there was an increase in the downstream transport of grain and mineral oil products. Fertilizer transport increased both for the upstream and the downstream direction. For the downstream transport of food products and foodstuff, a strong decrease was registered. Altogether, cargo transport at the Middle Danube increased by +20% in 2024.

Danube transport by cargo segment

The following figure illustrates the development of cargo transport by goods segment on the Middle Danube.

FIGURE 13: **GOODS TRANSPORT ON THE MIDDLE DANUBE** (IN MILLION TONNES) *



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

CONTAINER TRANSPORT
PER COUNTRY IN EUROPE

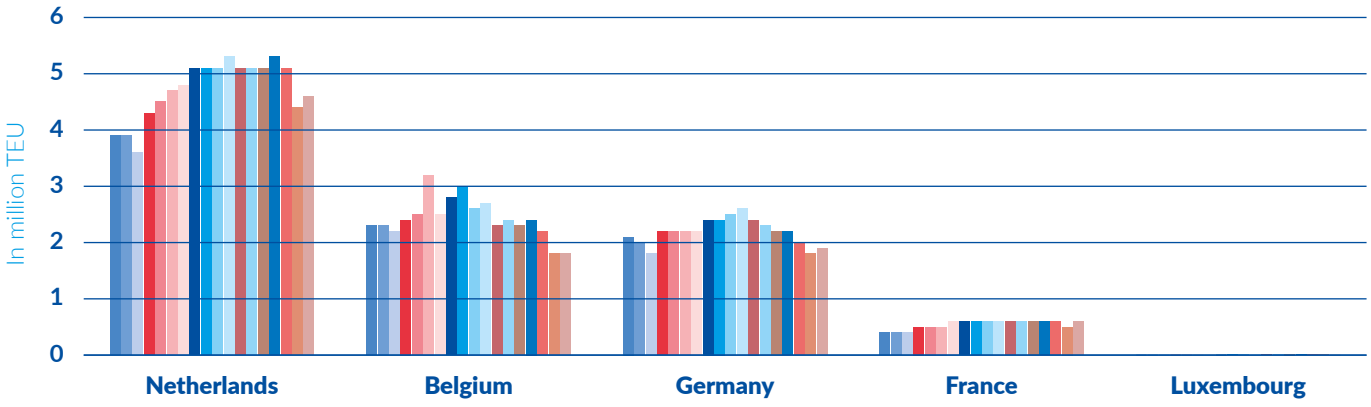
THE WHOLE EUROPEAN AND GEOGRAPHICAL STRUCTURE

In 2024, with 11.3 billion TKM (+2.5%), more than 5.7 million TEU (+3.6%) and almost 47 million tonnes of cargo in containers (+2.7%), container transport on EU inland waterways (EU-27) represented 9.3% of the total IWW transport performance of approximately 121.6 billion TKM in the EU. Moreover, 99.3% of the container transport performance (TKM) took place in Rhine countries (the Netherlands, Belgium, Germany, France, Switzerland, Luxembourg). Container transport on the Danube accounted for 0.5% and container transport in Sweden accounted for 0.2%.

RHINE COUNTRIES

In 2024, container transport measured in million TEU increased by +3.6% in the Netherlands, by +3.2% in Germany and by +5.5% in France, while it regressed by -0.5% in Belgium. In the Netherlands, 41.0 million tonnes of cargo were transported in containers (+3.4%), making this country the frontrunner in inland waterway container transport in Europe.

FIGURE 14: **IWW CONTAINER TRANSPORT PER RHINE COUNTRY** (IN MILLION TEU) *



Source: Eurostat [iww_go_actygo]
** In Luxembourg, 9,995; 10,750 and 8,518 TEU were recorded for 2022, 2023 and 2024 respectively.*

DANUBE COUNTRIES

The two Danube countries with the highest container transport are currently Romania and Hungary. In 2024, 2,229 TEU (-37.2%) were transported on Hungarian inland waterways. In Romania, container transport amounted to 20,515 TEU in 2024 (-40.7%). Considering the weight of cargo, container transport on Hungarian waterways represented 5,000 tonnes in 2024 (-37.5%). In Romania, 237,000 tonnes of cargo were transported in containers (-50.1%). These values illustrate the immense gap in relation to Rhine countries.

FOCUS ON THE SITUATION IN THE RED SEA: IMPACTS FOR THE WORLD TRADE[18, 19, 20]

Since the beginning of 2024, the security situation in the Red Sea has led to the diversion of a very large part of the world's fleet, particularly maritime container ships, via the Cape of Good Hope in southern Africa to avoid the Suez Canal. Its revenues plunged by -60% last year, representing a loss of $7 billion for the Egyptian government.

One year after the arrival of international and European naval forces in the region to protect shipping, traffic remained 60-70% below its pre-November 2023 level. In the first 11 months of 2024, 174 container ships crossed the Red Sea, compared with 606 in the same period of 2023. In addition to this, capacity measured in TEUs fell by -91%.

Longer sailing distances resulted in a year-on-year increase of around +16% in the number of twenty-foot equivalent units (TEU-miles). The greatest increase in tonne-miles due to the Red Sea situation has been for container ships (+12%), car carriers (+6.7%) and oil product carriers (+4.6%). This put upward pressure on freight and charter rates.

The attacks on navigation in the Red Sea caused an increase in transit times as the diversion via southern Africa added 10 days to the Far East-Europe voyage and a total of 20 days for a round trip. As a consequence, the average delays of container ships worsened from five days in November 2023 to six days in January 2024. This impacted negatively the reliability of ship schedules which decreased from 62% in November 2023 to 52% in January 2024.

Additional costs related to disrupted navigation in the Red Sea must also be highlighted and are of different kinds:

- for shipping companies, such as fuel or insurance costs,
- for shippers, with an increase of +130% of global container shipping freight rates between November 2023 and March 2024,
- for states, the costs of which relate to naval protection operations,
- for the environment as the diversion of ships via South Africa increased GHG (greenhouse gas) emissions.

[18] *https://www.ft.com/content/dd3d3f55-0119-46fb-93b6-418e696ab893*
[19] *https://www.itf-oecd.org/sites/default/files/repositories/red-sea-crisis-impacts-global-shipping.pdf*
[20] *https://www.actu-transport-logistique.fr/journal-de-la-marine-marchande/shipping/cessez-le-feu-israel-hamas-quelles-consequences-pour-le-conteneur-962605.php*

Given the talks on ceasefire between Israel and the Hamas in 2025, there is hope that the stability of the region could be reached again. This would lead to an increase of traffic in the Suez Canal.

In this case, in the short term, supply chains, particularly from Asia to Europe, should shorten considerably. However, this would lead to temporary port and hinterland congestion problems in Europe as more goods than usual would arrive at the same time, some having taken the long route around Africa and others now taking the usual shortcut via the Suez Canal.

Nevertheless, inconclusive talks for a ceasefire would again raise fears that Yemen's Houthi militant group could renew its threat against commercial ships crossing the Red Sea. In addition to this, the US president's tariff threats on several trading partners reignited fears of trade wars and global economic decline that could hit shipowners' earnings. Finally, the conflict between Iran and Israel could lead to disruptions in maritime shipping routes and world trade.

The effects of President Trump's trade policy to apply tariffs of a minimum of 10% on imports from China and of 25% on goods from Mexico and Canada, from summer 2025 onwards, could indeed have significant impacts on the world trade economy.

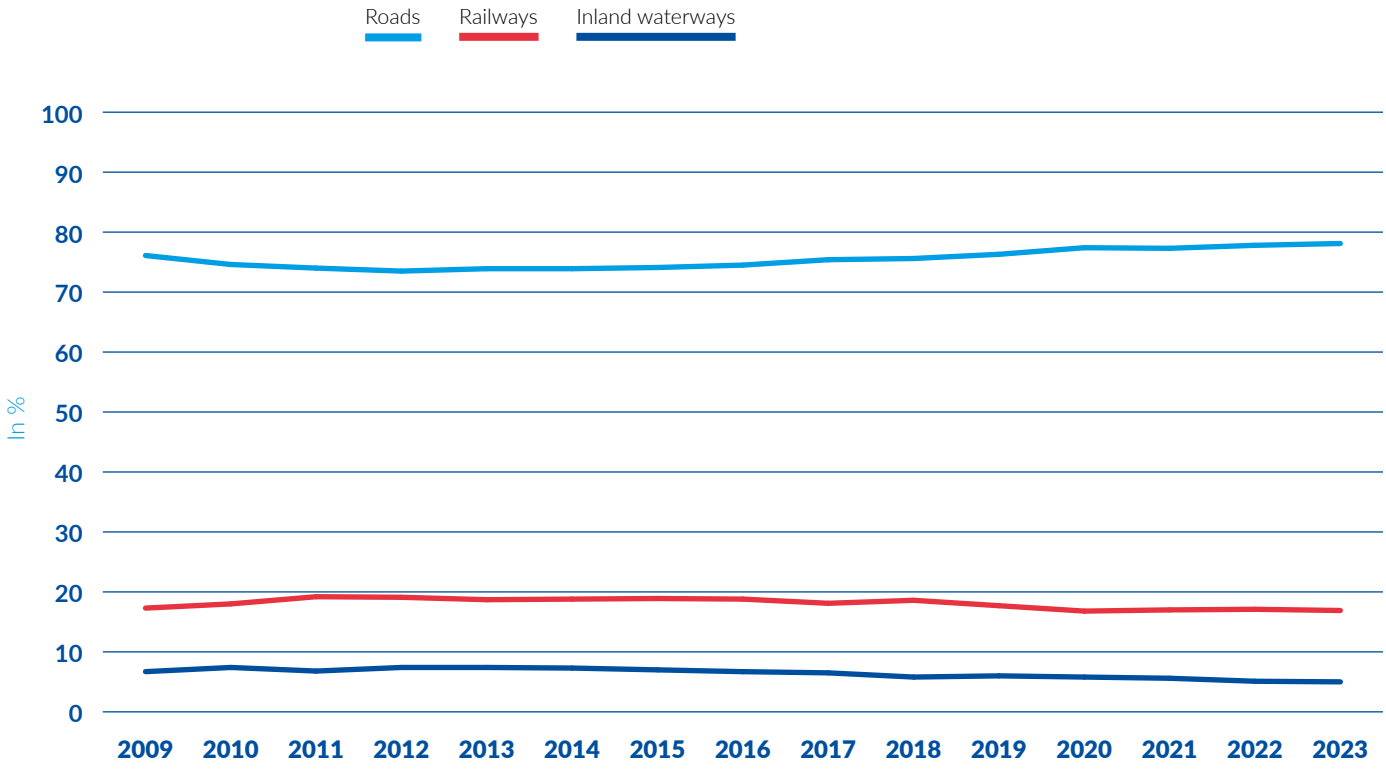
Analysts thus predict an increase in average US tariffs of almost +8% by the end of 2026, which should lead to a significant fall in the US share of trade from 21% to 18%. Within this contraction in US trade with the rest of the world, China is likely to lose up to 83% of its sales.

As a result, there could be a potential of 8-12% reduction in transpacific trade flows, translating into a -1.7% fall in world container trade.

As container transport in IWT is closely tied to the dynamics of global trade, disruptions in the Red Sea could continue to exert indirect pressure on IWT, with impacts that could potentially extend into 2025.

INLAND NAVIGATION
AND OTHER MODES OF TRANSPORT

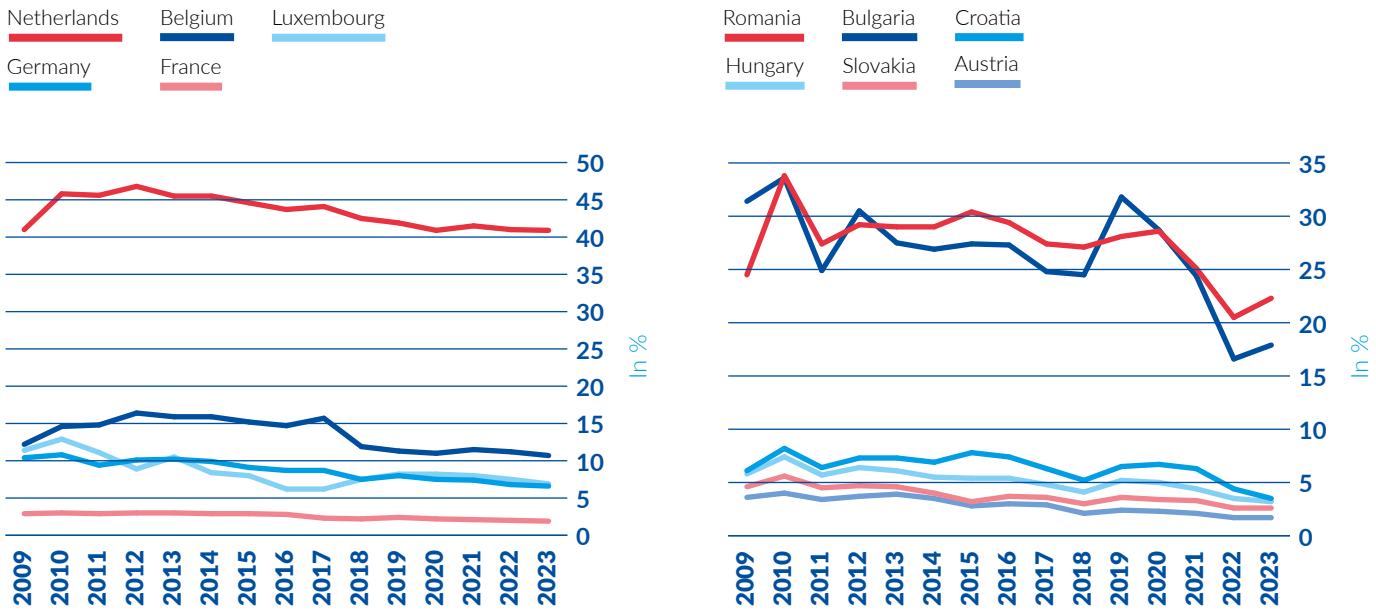
FIGURE 15: **MODAL SPLIT SHARE OF INLAND TRANSPORT MODES IN THE EU-27** (IN %) **2009-2023**



Source: Eurostat [tran_hv_frmod]

Over the last decade, modal split shares have overall decreased slightly for IWT and rail at the level of the EU-27, while those of road transport have slightly increased. IWT lost 2.4 percentage points in the last 10 years, reaching 5.0% in 2023, its lowest level since 2005. It is well behind road transport (78.1% in 2023, +4.2 percentage points in the last 10 years) and rail transport (16.9%, -1.8 percentage points in the last 10 years). As many EU countries do not have inland waterways, the overall modal split of IWT at the EU level should not be used as a performance indicator for the success of inland waterway transport in the EU. It is best to look at modal split figures per country.

FIGURES 16 AND 17: **IWW MODAL SPLIT EVOLUTION IN RHINE AND DANUBE COUNTRIES** (IN %, BASED ON TONNE-KILOMETRES) *



Source: Eurostat [tran_hv_frmod]
** Share of inland waterway transport performance in total (IWT + Road + Rail) transport performance*

Modal split shares of inland waterway transport (IWT) in main IWT countries have decreased in the last decade. In the Netherlands, the modal split share of IWT increased up until 2012, reaching a peak at 46.8%. This decreased in the following years, reaching 40.9% in 2023. This decline also took place in Germany, as the IWT modal share fell below the 7.0% mark (6.6%) for the second consecutive year. It is the lowest modal split share ever recorded for inland waterway transport since 2005[21]. The same observation is true for Belgium, Luxembourg and France. Within Danube countries, Romania and Bulgaria enjoyed record high IWT modal shares. However, after a first decrease in 2021, both sustained another strong decrease in their IWT modal shares in 2022 reaching 20.5% (-4.6 percentage points lost to road) and 16.6% (-7.8 percentage points lost to both road and rail), respectively. The IWT modal share for these two countries returned to growth figures with IWT gaining 1.8 percentage points in Romania between 2022 and 2023, and 1.3 percentage points in Bulgaria. In the four other Danube countries, IWT modal split is either decreasing or stagnating. In all the countries analysed, the IWT modal split share decreased compared to 10 years ago (-4.6 percentage points for the Netherlands, -5.2 for Belgium, -6.7 for Romania and -9.6 for Hungary).

[21] *2005 being the earliest date available on the Eurostat database.*

03

NATIONAL INVESTMENTS IN IWT INFRASTRUCTURE

- Infrastructure represents a basic need for reliable inland waterway transport. Yearly data for infrastructure maintenance spending, as well as infrastructure investments, are reported for Rhine and Danube countries.
- In Rhine countries, given their dense waterway networks, the highest level of investment spending can be observed in Germany and the Netherlands. In Danube and Central European countries, maintenance spendings have steadily increased over time in Serbia, Austria, Bulgaria, Poland and the Czech Republic. The country with the highest IWT modal share in the Danube region is Romania, which can explain the high level of investment spendings over time.
- The data presented allow for an analysis per country but do not allow the comparison of trends in maintenance and investment spendings between different countries. For instance, maintenance spending can vary greatly between countries due to the length and nature of the waterway as well as the number of constructions per waterway.

II INTRODUCTION

In order to ensure a year-round navigability, the state of the inland navigation transport network must enable efficient, reliable and safe navigation for users by ensuring minimum waterway parameters and levels of service (Good Navigation Status). To achieve this goal, IWT infrastructure needs to be constructed, maintained, and upgraded through investments within a coherent corridor vision. It must also consider the growing demand for fast, reliable, high-quality, seamless movement of goods and persons. In this regard, monitoring national investments in IWT infrastructure is essential. The performance of each country in ensuring such a good navigation status is not considered in the scope of this chapter.

Maintenance, rehabilitation, and regeneration are key actions towards inland navigation reliability and performance. Any financial support ensuring more efficient maintenance, rehabilitation and regeneration activities positively impact infrastructure. However, it should be borne in mind that these are long-running activities, part of an investment life cycle approach[22].

Infrastructure spending can be broken down into two main categories: investment and maintenance spending.

Maintenance spending focuses on already existing infrastructure and its upkeep. Maintenance spending, such as that related to dredging campaigns to maintain guaranteed navigable channel depth, is however, as of today, not eligible for EU co-funding in the context of the Connecting Europe Facility II programme (CEF II). Today, it is the responsibility of Member States to maintain their inland navigation networks which is crucial for the development of the sector. Nevertheless, it is important to note that maintenance spending can vary greatly from one country to another, depending on:

- the length of the navigable waterway,
- its nature (free-flowing or not) and,
- the number of constructions on this waterway (locks and dams generally represent the most important expenditure items).

Investment spending embraces a new output in new projects such as the enlargement or upgrading of waterways. Such investments are eligible for co-funding at EU level, for instance via CEF II. In legal understanding, an investment must undergo an environmental impact assessment whereas maintenance spending is usually not tied to such legal requirements. Maintenance measures taken by waterway authorities might, however, require environmental permits. Investments in port infrastructure are not within the scope of this chapter.

[22] *Draft recommendations for the development of common, harmonised guidelines/standards for Good Navigation Status*

SHORTCOMINGS
RELATING TO DATA COLLECTION ON INFRASTRUCTURE SPENDING

It is not possible to compare data between countries, as there are some important shortcomings to be discussed to allow for reasonable conclusions. Such shortcomings arise from differing methodologies of data collection and the definitions behind these, but also from differences regarding the types of waterways present in the countries. For example, countries with a high share of free-flowing rivers need a higher amount of maintenance activities than countries with a lower share in this regard. On the other hand, rivers which count numerous locks require high investment and lock maintenance spending.

Regarding differing methodologies, infrastructure maintenance equipment can be included in one country under infrastructure maintenance spending, but might not be included as such in another country. This could also partly explain possible discrepancies that may exist between one data source and another. Due to these different methodologies and different types of waterways, it is more advantageous to shed light on the trend for each country. In addition, the differentiation between investment spending and maintenance spending is sometimes not available.

Another important aspect lies in the competent authorities for data collection. In most parts of the Rhine and Danube countries it is the waterway administrations that are responsible.

Last but not least, it should be mentioned that depending on the inland water CEMT[23] class, the entity responsible for managing infrastructure investment might vary, for instance, it could either be the national authority or the regional authorities. The infrastructure spending related to inland waterways that are under the responsibility of regional authorities, generally regional waterways of CEMT class III or below, might therefore not be reported in the national infrastructure spending data. For those countries that count numerous regional navigable waterways of CEMT class III or below, it is likely that the total amount of infrastructure spending reported in this chapter is underestimated. This would be the case for the Netherlands and Poland.

These observations call for improving the data collection process, perhaps through the development of harmonised criteria for reporting such infrastructure spending investments at European level.

[23] *European Conference of Ministers of Transport (CEMT)*

OVERVIEW
PER COUNTRY

RHINE COUNTRIES

For the Rhine countries, relevant data regarding infrastructure maintenance and investment spending can be retrieved from the OECD. Due to the shortcomings explained in the above section, no country comparisons shall be made. This data serves to carry out a country trend analysis in the two given indicator variables (maintenance and investments spendings). It should be noted that data for Switzerland overall and for infrastructure maintenance spending in Germany, is not available in the OECD database.

The OECD database encompasses both land and waterside infrastructures. Indeed, it is based on the OECD definition of inland waterway infrastructure (and related costs) which includes both landside and waterway-related components: "Infrastructure includes land, channels and permanent way constructions, buildings, navigation locks, mooring equipment, toll collection installations, as well as immovable fixtures, fittings and installations connected with them (signalisation, telecommunications, etc.) as opposed to IWT vessels"[24].

Regarding infrastructure maintenance spending in Germany, national data on maintenance spending in waterway transport do not, in most cases, distinguish between inland and maritime waterways, which makes an analysis quite impossible.

Overall, it can be observed that investment spending, as well as maintenance spending in Rhine countries, have increased over time, with the highest level of investment spendings being in Germany and the Netherlands. This can certainly be explained by the dense waterway networks and important inland waterway transport activity observed in both countries.

[24] *https://data-explorer.oecd.org/vis?lc=en&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_INFRINV%40DF_INFRINV&df[ag]=OECD.ITF&df[vs]=1.0&pd=%2C&dq=.A....&to[TIME_PERIOD]=false&fs[0]=Topic%2C1%7CEnergy%23NRG%23%7CTransport%23NRG_TRA%23&pg=0&fc=Topic&bp=true&snb=14*

TABLE 1: **INLAND WATERWAY INFRASTRUCTURE MAINTENANCE SPENDING** (IN MILLION EURO)

Year / Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Belgium	71.0	66.0	27.0	82.0	103.0	87.5	60.0	61.0	55.0	94.0	66.0	91.0
France	224.8[25]	226.9	224.5	226.5	220.8	232.0	233.4	252.6	291.4	332.6	354.9	359.1
Germany	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Luxembourg	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.1	n.a	n.a	n.a
Netherlands	346.5	266.9	291.9	317.3	398.4	419.7	411.1	463.7	480.9	577.7	635.2	589.5
Switzerland	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a

Source: OECD

TABLE 2: **INLAND WATERWAY INFRASTRUCTURE INVESTMENT** (IN MILLION EURO)

Year / Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Belgium	152.0	167.0	103.0	291.0	225.0	237.5	197.0	197.0	249.0	562.0	n.a	n.a
France	236.0	224.4	180.0	164.1	192.3	35.1	226.3	163.0	306.6	349.5	381.0	667.4
Germany	885.0	865.0	865.0	830.0	880.0	815.0	860.0	1,100.0	1,315.0	1,180.0	1,370.0	1,220.0
Luxembourg	0.7	0.1	0.3	0.0	0.1	0.0	0.1	0.1	0.1	n.a	n.a	n.a
Netherlands	470.6	558.6	589.7	578.7	357.9	511.0	430.5	532.7	555.7	826.2	810.3	734.3
Switzerland	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a

Source: OECD

[25] *Time series break*

DANUBE COUNTRIES, CZECH REPUBLIC AND POLAND

For the Danube countries, Czech Republic and Poland, relevant data regarding infrastructure maintenance and investment spending in general can also be retrieved from the OECD database.

According to this database, maintenance spendings are particularly high in Serbia, a country where such spendings have increased over time. Such spendings have also steadily increased in Austria, Bulgaria, Poland and the Czech Republic. As to the other Danube countries, levels of maintenance spendings remained rather stable over time.

Regarding investment spendings, the country with the highest IWT modal share is Romania, which can explain the high level of investments in this category over time, even though such investments have apparently decreased since 2010 with no data available since 2019. This is partly due to the fact that in recent years the Romanian waterway authorities have invested much in equipment to improve their maintenance activities rather than large river engineering measures. In Serbia, such investments have also increased since 2010 but decreased in 2023 for the first time, after a major hydraulic engineering project was finalised which resolved six major bottlenecks.
In the Czech Republic, investments levels have fluctuated over time to reach a peak in 2019 and 2020. They have decreased since then. Investment spendings have increased in Poland since 2020.

TABLE 3: **INLAND WATERWAY INFRASTRUCTURE MAINTENANCE SPENDING** (IN MILLION EURO)

Year / Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Austria	12.0	17.0	19.0	14.0	12.0	13.0	12.0	13.0	13.0	14.0	14.0	16.0
Serbia	17.6	16.5	17.3	29.8	28.7	32.9	35.3	43.3	32.6	30.5	40.6	54.8
Slovakia	3.0	4.0	9.0	3.7	0.3	7.1	1.8	n.a	2.0	2.0	3.0	3.0
Republic of Moldova	n.a	n.a	n.a	0.1	0.1	0.1	0.1	n.a	n.a	n.a	n.a	n.a
Hungary	0.8	0.8	1.3	1.4	2.7	2.2	2.1	2.2	2.0	1.8	2.5	2.1
Bulgaria	1.0	1.0	1.0	1.0	1.3	1.4	3.4	3.6	3.6	3.1	2.6	4.6
Croatia	1.2	1.2	2.1	1.6	1.4	2.0	2.1	1.9	3.0	2.0	1.0	2.0
Czech Republic	2.9	4.6	4.5	7.5	6.2	6.5	7.5	12.2	5.3	3.9	6.2	7.3
Poland	7.6	21.0	5.5	n.a	n.a	n.a	n.a	9.8	9.5	9.6	10.9	13.9

Source: OECD

TABLE 4: **INLAND WATERWAY INFRASTRUCTURE INVESTMENT** (IN MILLION EURO)

Year / Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Austria	3.0	11.0	10.0	2.0	2.0	3.0	3.0	4.5	3.7	4.3	7.0	5.0
Serbia	24.7	15.5	17.7	22.3	40.7	34.3	45.9	49.1	47.2	50.6	55.2	39.4
Slovakia	1.0	1.0	0.0	0.1	0.1	1.1	1.5	n.a	1.1	0.0	1.0	1.0
Republic of Moldova	0.2	0.1	0.1	0.1	0.1	0.1	0.1	n.a	n.a	n.a	n.a	n.a
Hungary	0.01	0.1	0.02	0.0	10.3	0.2	1.1	0.9	3.1	1.1	0.0	0.2
Bulgaria	0.0	0.0	0.5	1.3	0.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0
Croatia	3.3	1.7	4.1	6.0	3.0	2.0	3.0	3.0	7.0	3.0	10.0	10.0
Romania	279.5	268.1	314.1	505.9	236.9	105.1	189.7	n.a	n.a	n.a	n.a	n.a
Czech Republic	17.2	7.2	9.6	15.1	9.8	7.2	2.8	51.1	55.5	30.2	24.1	20.7
Poland	0.2	n.a	61.2	n.a	n.a	n.a	n.a	56.1	39.2	64.4	86.7	83.2

Source: OECD

In addition to the OECD data, more detailed data stemming from the FRMMP monitoring/GNS reporting[26] is also available. The FRMMP/GNS reporting is solely focused on waterway-related infrastructure; expenditures for land-side infrastructure such as mooring places, tow paths, etc. are not included. The reporting concerns the following spending types: maintenance dredging, fairway surveying and marking, water level gauges, maintenance of locks (in Romania), water level information and forecasts, information on fairway depths, marking plans, meteorological information and other needs. Structural infrastructure investments (e.g. river engineering) are not reported in the framework of the FRMMP/GNS monitoring, as the focus is on rehabilitation and maintenance activities only. Yet, investments in rehabilitation and maintenance equipment such as dredging vessels are monitored as they increase the technical capacities of the waterway authorities. Discrepancies between the OECD and the FRMMP/GNS reporting data therefore exist mainly because of differences in the methodology, scope and definition. The FRMMP/GNS reporting data provides a more detailed distribution according to need areas and a more complete picture of the amount of money dedicated to different rehabilitation and maintenance tasks. For Austria, for example, there is a large discrepancy between the values reported in the two different databases, as OECD data includes also expenditures for the maintenance of tow paths, etc. This example confirms that data regarding infrastructure spending should be interpreted with caution.

[26] *FRMMP stands for "Fairway Rehabilitation and Maintenance Master Plan" which was adopted in 2014 and updated in 2022. It was agreed among the Danube riparian states that its implementation status should be monitored by so-called "National Action Plans". As part of the FAIRway Danube II project, the National Action Plans were transformed to Reports on additional GNS parameters for all countries involved in the project (Austria, Slovakia, Hungary, Croatia, Romania and Bulgaria). Germany, Serbia, Bosnia and Herzegovina as well as Moldova and Ukraine contribute data on a voluntary basis in the framework of their engagement in Priority Area 1a of the EUSDR in the form of the previous National Action Plans.*

Table 5 captures the secured infrastructure maintenance expenditure[27] in inland waterways for the period 2017 to 2024 for Danube countries. The difference between free-flowing and not free-flowing river stretches such as in the Upper Danube region can explain why certain need areas require more expenditures than others. For instance, the Iron Gates located at the Serbian/Romanian border affect the upstream river section where maintenance measures are less frequent due to the impoundment.

TABLE 5: **NATIONAL ACTION PLANS IN DANUBE COUNTRIES – INFRASTRUCTURE MAINTENANCE SPENDING** (IN MILLION EURO)

Year / Country	2017	2018	2019	2020	2021	2022	2023	2024	Rate of change 2023/2024
Austria	4.5	5.2	4.6	4.8	n.a	n.a	5.4	7.1	+31.5%
Bulgaria	0.4	2.4	2.9	2.9	n.a	n.a	3.3	3.0	-9.1%
Romania	15.3	13.5	13.2	16.0	n.a	n.a	13.6	22.0	+61.8%
Hungary	n.a	0. 9	0.2	n.a	n.a	n.a	0.5	0.4	-20.0%
Croatia	0.5	1.1	1.1	1.1	n.a	n.a	5.9	2.6	-55.9%
Slovakia	2.6	2.3	1.8	2.6	n.a	n.a	4.0	3.1	-16.1%
Serbia	n.a	0.4	n.a	n.a	n.a	n.a	n.a	13.5	n.a
Bosnia and Herzegovina	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.1	n.a
Moldova	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Ukraine	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
German Danube	1.7	1.9	3.3	n.a	n.a	n.a	n.a	3.9	n.a

Source: National Action Plans and Reports on GNS, last update spring 2025
Missing values are tied to absence of reporting by the countries.

[27] *Secured infrastructure investment refers to the amount received/spent.*


787.48

04

WATER LEVELS AND FREIGHT RATES

- Different methodologies indicate good navigation conditions for the year 2024. This was particularly the case for the Rhine, where no single low water day was observed in 2024 at the different Rhine gauge stations.
- For the Upper and Middle Danube, navigating conditions were also favourable, while they were more critical on the Lower Danube in Romania and Bulgaria.
- Although there were no low water periods in 2024 in western Europe, the level of freight rates for different cargo types remained rather high, as can be seen from a comparison with freight rates in earlier years. Freight rates were especially higher than the levels before the low water periods of 2022.
- Reasons for high freight rates can be found in the upward pressure for operating costs, due to the shortage of personnel, which leads to rising personnel costs.

WATER LEVELS,
AVAILABLE DRAUGHTS AND NAVIGATION CONDITIONS

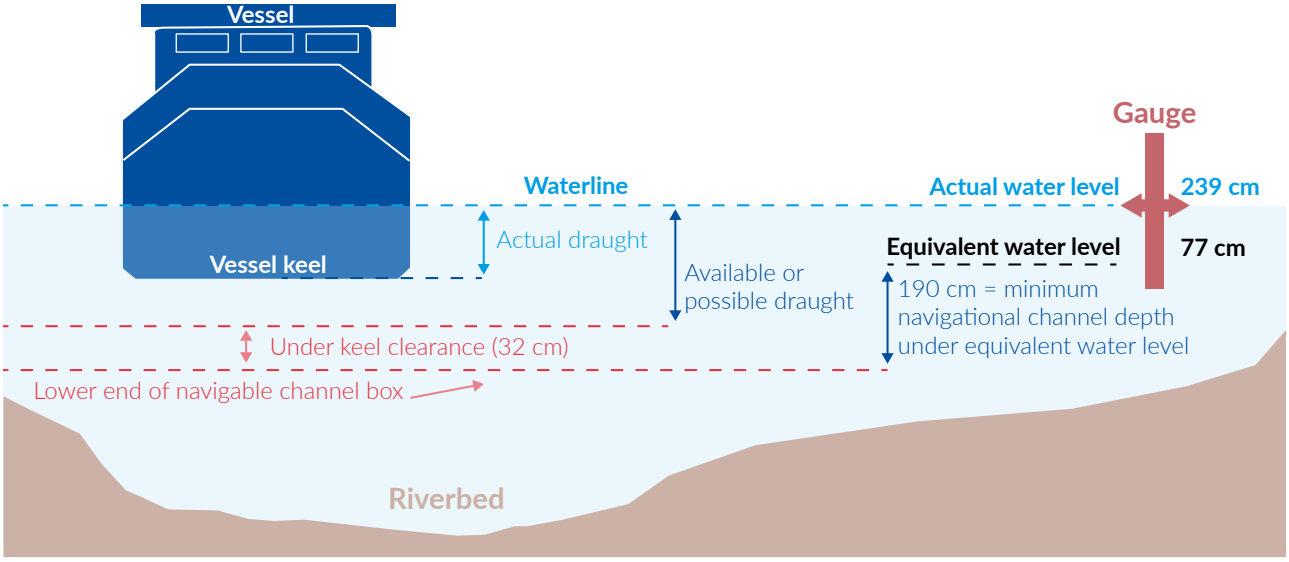
The overall performance of inland waterway transport is linked to - among other factors - water levels, which determine the amount of cargo that a vessel can load and transport under safe navigation conditions. High water depths and the resulting high load factors lead to lower fuel consumption per unit of output. Indeed, on the one hand, the more water there is under the keel, the lower the required power and the lower the fuel consumption, on the other hand, the less water there is under the keel, the faster the required power and the fuel consumption increase.

Although the reduction of the load factor during a low water period could be compensated by putting more vessels into operation, there are obvious limitations to this[28]. In addition, other reasons besides vessel availability play an important role. For instance, higher costs during such periods lead to some operators delaying the transport of some of their cargo, especially the less urgent or less profitable ones. In addition, some clients also look for other modal alternatives where available. An example is the low water period experienced in both autumn 2018 and summer 2022 on the Rhine. These two periods inflicted a reduction of the entire cargo transport. Hence, the lower load factors per vessel could not be compensated for by putting more vessels into operation.

The amount of cargo that a vessel can load at a certain water level is determined by the available draught, as can be seen in the next figure.

[28] The fleet of inland vessels is limited in size. It is also not possible to keep a large number of vessels 'on hold', as this would incur fixed costs (insurance, maintenance, etc.), while there would be no revenue at all from the particular vessel.

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



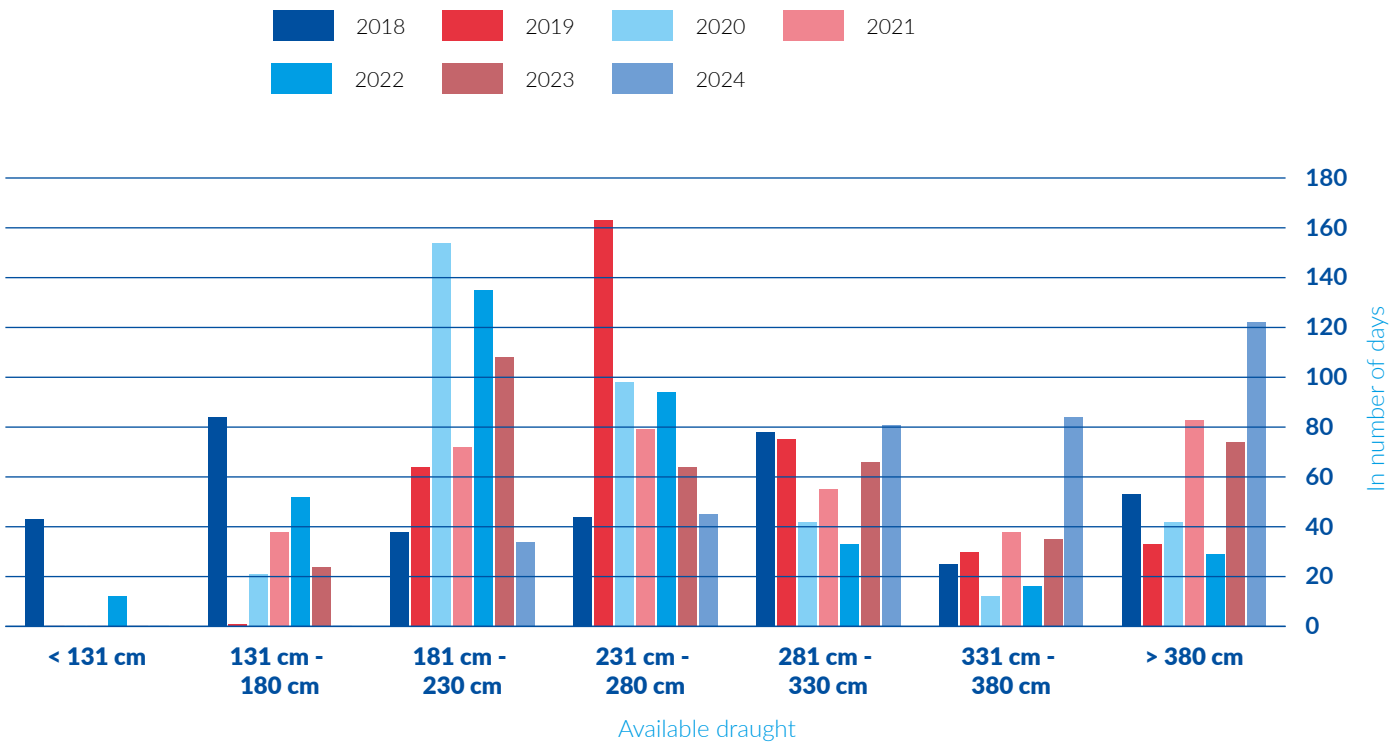
Source: CCNR based on the German Federal Institute for Hydrology (BfG) (2015)
** The distances in this drawing are not at scale. In this illustration, the date chosen to determine the available or possible draught is 3 September 2020, when the actual water level was 239 cm on average. For a sailing vessel, the actual draught also contains the squat effect. The latter results from hydrodynamic effects and leads to a higher draught compared to a vessel at rest. The squat effect is stronger the less water present under the keel, and the faster the vessel is sailing.*

One way of observing hydraulicity and navigating conditions is to calculate available draught figures based on water levels. The available draught is the depth by which a vessel can sink into the water under safe conditions. This depth is calculated based on water levels and parameters such as the equivalent water level and the minimum navigational channel depth[29].

The following figure shows the number of days during which a certain available draught was present for the gauge station of Kaub. It shows that the year 2024 was characterised by good navigating conditions as the number of days during which the available draught was low was smaller than in previous years. For example, in 2024, there were 0 days at the gauge station Kaub when the available draught was in the interval between 131 cm and 180 cm. In 2018, this category counted 84 days, 52 days in 2022 and 24 days in 2023.

[29] *The waterway administrations recommend calculating the available draught on the basis of the actual water level and certain waterway parameters (shown in the drawing).*
Actual water level
- Equivalent water level
+ Minimum navigational channel depth
= Actual fairway depth
- Under keel clearance
= Available or possible draught of vessel

FIGURE 2: **NUMBER OF DAYS PER YEAR FOR AVAILABLE DRAUGHT INTERVALS AT KAUB**



Sources: CCNR calculation based on data from the German Federal Waterways and Shipping Administration (WSV), provided by the German Federal Institute of Hydrology (BfG)

In addition to low water, high-water episodes can take place on the Rhine. In this case, if the water rises above a given level, navigation can be banned.

Such high-water episodes are not unusual, and the sector is accustomed to such occasional navigation bans. It is however important to note that the impact of such high-water episodes on IWT volumes cannot be compared with the impact of low water periods, which are much more severe. There are several reasons for this:

- Low water periods may last longer than high-water periods. Low waters may indeed last one or two months which is never the case for high water episodes which usually last a few days.
- Before reaching critical low water levels, the navigable channel depth for the vessels is progressively decreasing, thereby reducing the loading capacity of vessels already at the start of low water periods. However, in the case of high waters and before a navigation ban is issued, the navigable channel depth is very high (at least until closure) and vessels can operate with full load.

NUMBER OF CRITICAL
LOW WATER DAYS FOR RHINE AND DANUBE GAUGE STATIONS

RHINE GAUGE STATIONS

Another method for assessing the quality of navigating conditions over an entire year is based on the concept of counting the number of days when water levels are below a certain reference low water level, known as Equivalent Water Level (EWL) for the free-flowing sections of the Rhine and Low Navigable Water Level (LNWL) for the Danube. If water levels drop below this reference low water level, this indicates a critically low navigation situation.

The EWL is determined by the Central Commission for the Navigation of the Rhine (CCNR) for several gauge stations along the Rhine. The values are adapted every ten years, to take account of natural and anthropogenic changes.

The equivalent water level 2012 came into force in 2014 and remained valid until the end of 2022. A new equivalent water level was introduced on 1 January 2023 (known as EWL 2022) and will be applicable until the end of 2031.

Although the equivalent water level is measured in centimetres, the starting point of its determination is a flow concept. Indeed, equivalent flow values (indicated in the unit m^3/s) measured against the benchmark levels are recalculated every ten years as flows within a 100-year time series. The equivalent flow values are then used to recalculate the corresponding equivalent water level (EWL) values against the benchmark levels every ten years. The EWL consequently includes the following definition: “The equivalent water level (EWL) is the water level occurring along the Rhine at an equivalent water flow falling below the long-term average for 20 days [per year] without ice”.

TABLE 1: **HYDRAULIC PARAMETERS FOR IMPORTANT RHINE GAUGE STATIONS ***

Gauge station	Guaranteed navigation channel depth	Equivalent water level 2022
Tiel (Waal, NL)	280 cm	255 cm
Nijmegen (Waal, NL)	280 cm	516 cm
IJsselkop (Nederrijn, NL)	280 cm	683 cm
Lobith (Lower Rhine, NL)	280 cm	733 cm
Emmerich (Lower Rhine, DE)	280 cm	74 cm
Duisburg-Ruhrort (Lower Rhine, DE)	280 cm	227 cm
Cologne (Lower Rhine, DE)	250 cm	139 cm
Kaub (Middle Rhine, DE)	190 cm	77 cm
Oestrich (Middle Rhine, DE)	190 cm	92 cm
Maxau (Upper Rhine, DE)	210 cm	372 cm
Basel (Upper Rhine, CH)	300 cm	501 cm

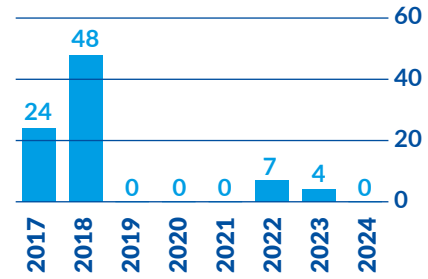
Sources: German Federal Waterways and Shipping Administration (WSV), Rijkswaterstaat
** Waal and Nederrijn are two branches of the Rhine delta in the Netherlands.*

For these 11 Rhine gauges, daily water level data were collected and analysed.

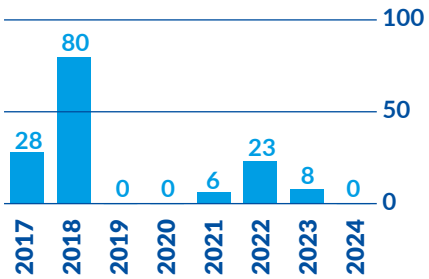
The following figures show the number of days below the equivalent water level for the above-mentioned gauge stations.

NUMBER OF DAYS BELOW THE EQUIVALENT WATER LEVEL (EWL)

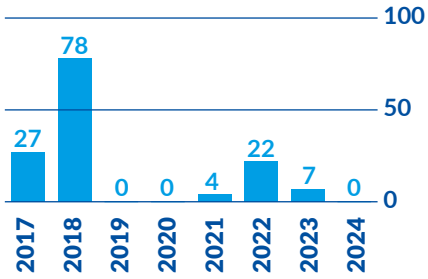
Basel



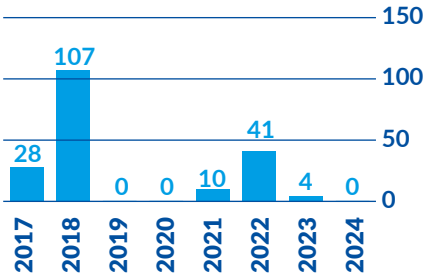
Maxau



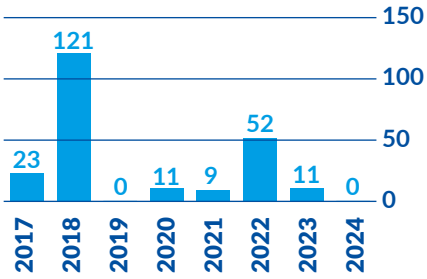
Oestrich



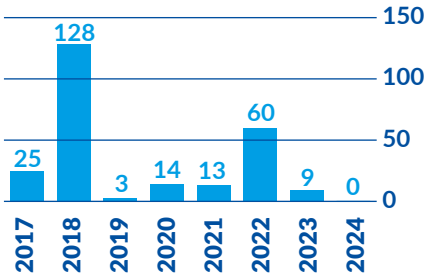
Kaub



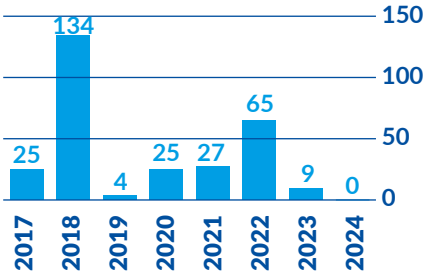
Cologne



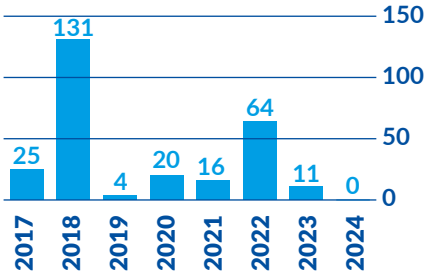
Duisburg-Ruhrort



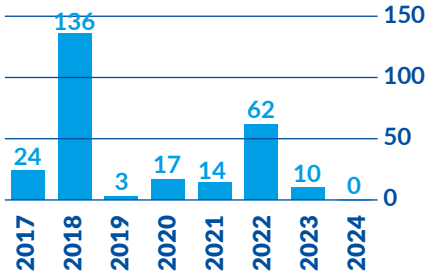
Emmerich



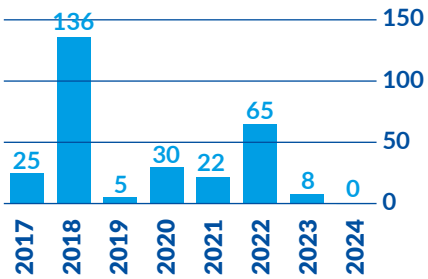
Lobith



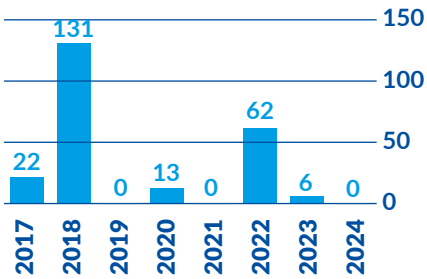
Nijmegen



IJsselkop



Tiel



Sources: CCNR calculation based on data from the German Federal Waterways and Shipping Administration (WSV), provided by the German Federal Institute of Hydrology (BfG), and from Rijkswaterstaat

Between 2015 and 2024, the two years with the highest number of low water days were 2018 and 2022. In the year 2024, water level conditions were overall positive, as the number of days below the equivalent water level was 0 for all Rhine gauge stations considered.

Despite the favourable navigating conditions in 2023 and 2024, the continued efforts to strengthen the resilience and reliability of IWT to low water periods remain necessary. Indeed, under the influence of climate change, longer periods of drought and more extreme events are expected.

Regarding high waters, navigation was stopped for a few days at some specific sections of the Rhine at the beginning of June 2024. This high-water episode was mainly present on the Upper and on the Middle Rhine, but not on the Lower Rhine. An analysis of transport development in June 2024 does not indicate that transport was affected negatively in this period by high waters. One main reason was that the high-water phenomenon was rather short-lasting which meant that possible cargo losses could be made up within one month.

DANUBE GAUGE STATIONS

The reference low water level of the Danube is known as 'Low Navigable Water Level (LNWL)'. It is defined as the water level exceeded on 94.0% of days in a year (i.e. on 343 days) during ice-free periods over a reference of several decades[30].

Based on this definition, the number of days below the Low Navigable Water Level (LNWL) can be calculated for the Danube.

TABLE 2: **HYDRAULIC PARAMETERS FOR IMPORTANT DANUBE GAUGE STATIONS**

Gauge station	Minimum draught in cargo transport endeavoured by waterway administration	Low navigable water level
Pfelling (DE)	250 cm	290 cm
Hofkirchen (DE)	250 cm	207 cm
Kienstock (AUT)	250 cm	161 cm
Wildungsmauer (AUT)	250 cm	155 cm
Devin (SK)	250 cm	144 cm
Budapest (HU)	250 cm	102 cm
Bezdan (RS)	250 cm	-10 cm
Calafat (RO)	250 cm	-5 cm
Calarasi (RO)	250 cm	-32 cm
Lom (BG)	250 cm	144 cm
Silistra (BG)	250 cm	80 cm

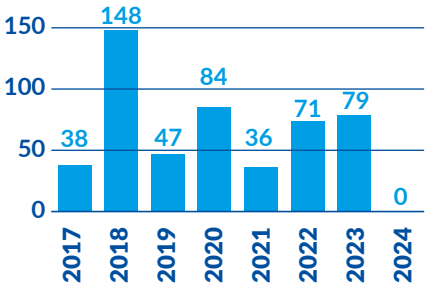
Source: Danube Commission

[30] *Source: viadonau*

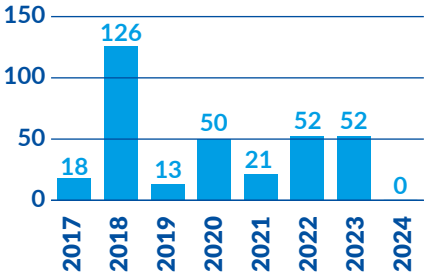
For 11 important gauge stations on the Danube, daily water level data were collected and analysed by the Danube Commission. The figures below show the number of days per year on which the actual water levels fell below the Low Navigable Water Level.

NUMBER OF DAYS BELOW THE LOW NAVIGABLE WATER LEVEL (LWL)

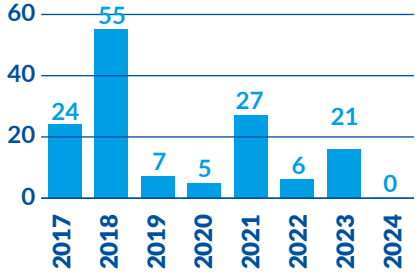
Pfelling, Upper Danube (DE)



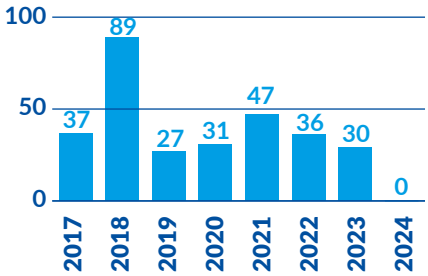
Hofkirchen, Upper Danube (DE)



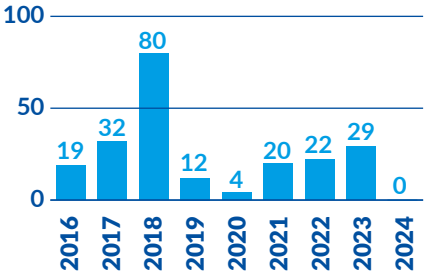
Kienstock, Upper Danube (AT)



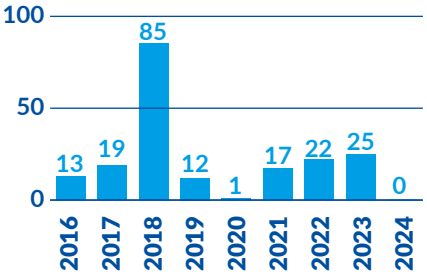
Wildungsmauer, Upper Danube (AT)



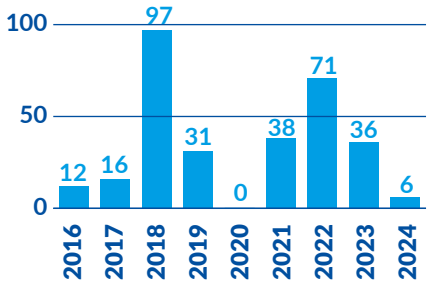
Devin, Upper Danube (SK)



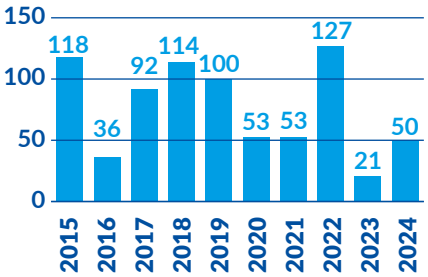
Budapest, Middle Danube (HU)



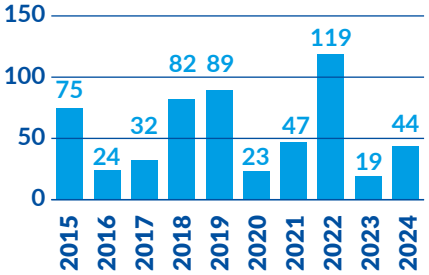
Bezdan, Middle Danube (RS)



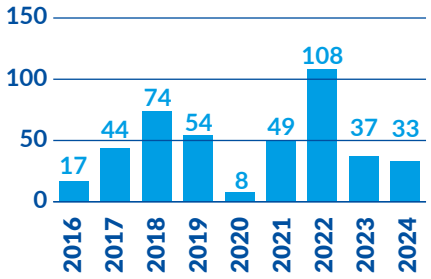
Calafat, Lower Danube (RO)



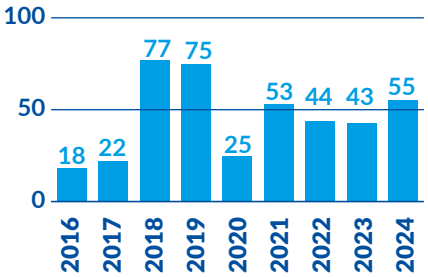
Calarasi, Lower Danube (RO)



Lom (BG), Lower Danube



Silistra (BG), Lower Danube



Sources: CCNR calculation based on data from the German Federal Waterways and Shipping Administration (WSV), provided by the German Federal Institute of Hydrology (BfG), data from the Federal State of Lower Austria and the Danube Commission

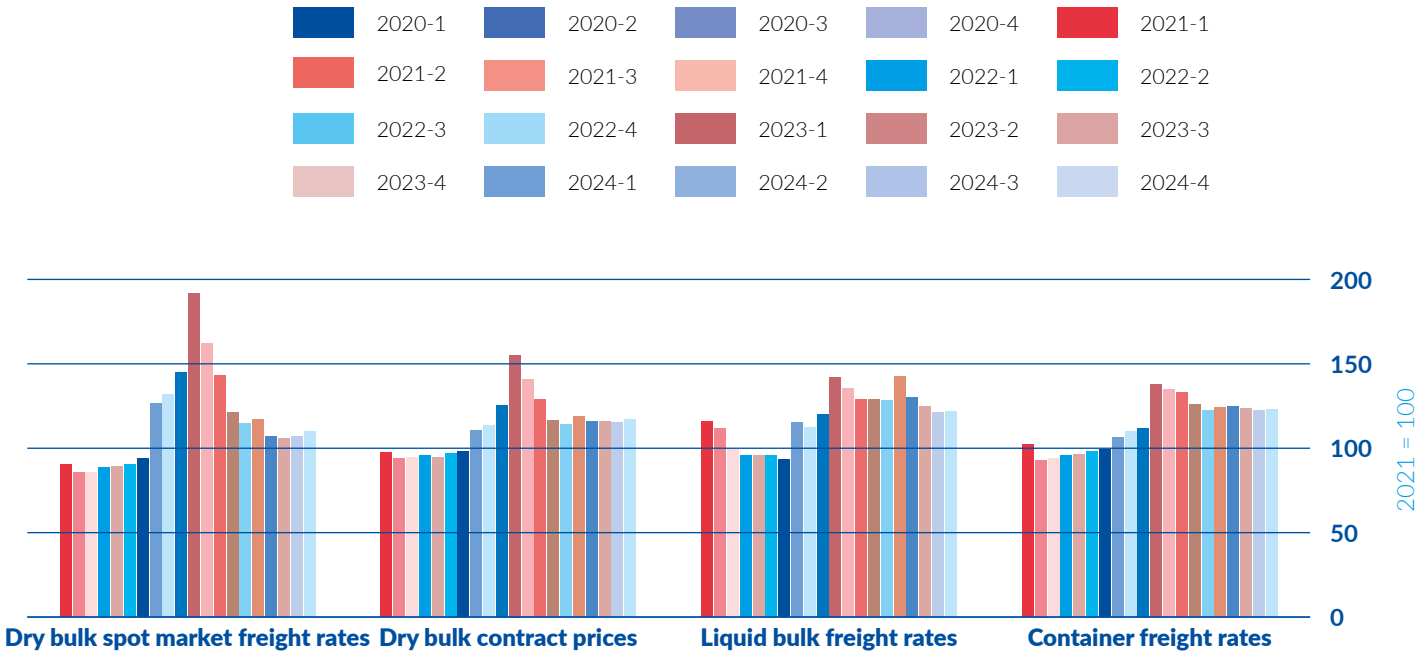
FREIGHT RATES
IN THE RHINE REGION

CBS FREIGHT RATE INDEX FOR THE RHINE REGION

Statistics Netherlands (CBS) collects freight rate data from a panel of Dutch IWT companies. The price levels are based on fixed routes for which questionnaires are sent out twice a quarter. They comprise the sailing costs including fuel and low water surcharges and exclude cargo handling costs. Overall, a gradual and steady increase is observed for freight rates, which temporarily spiked in 2022/23 due to low water occurrence.

The freight rate data show a reduction after the high points that were reached in the low water year of 2022. However, despite water levels in 2023 and 2024 returning to normality, freight rates did not return to the level of the years 2020 and 2021. In the long term, this could lead to a loss of market shares for inland navigation. Despite the contraction in cargo volume, freight rates have still been maintained reasonably well. One reason for this is that net vessel capacity overall is barely growing (see chapter 6). A second reason is that costs in inland navigation are rising. This is in particular the case for personnel costs which are being driven up by the scarcity of personnel. Rates for boatmasters, for instance, have risen sharply.

FIGURE 3: **CBS FREIGHT RATE INDICES PER QUARTER** (2021 = 100) *



Source: CBS (Binnenvaartdiensten; prijsindex), Table 85817 2021=100

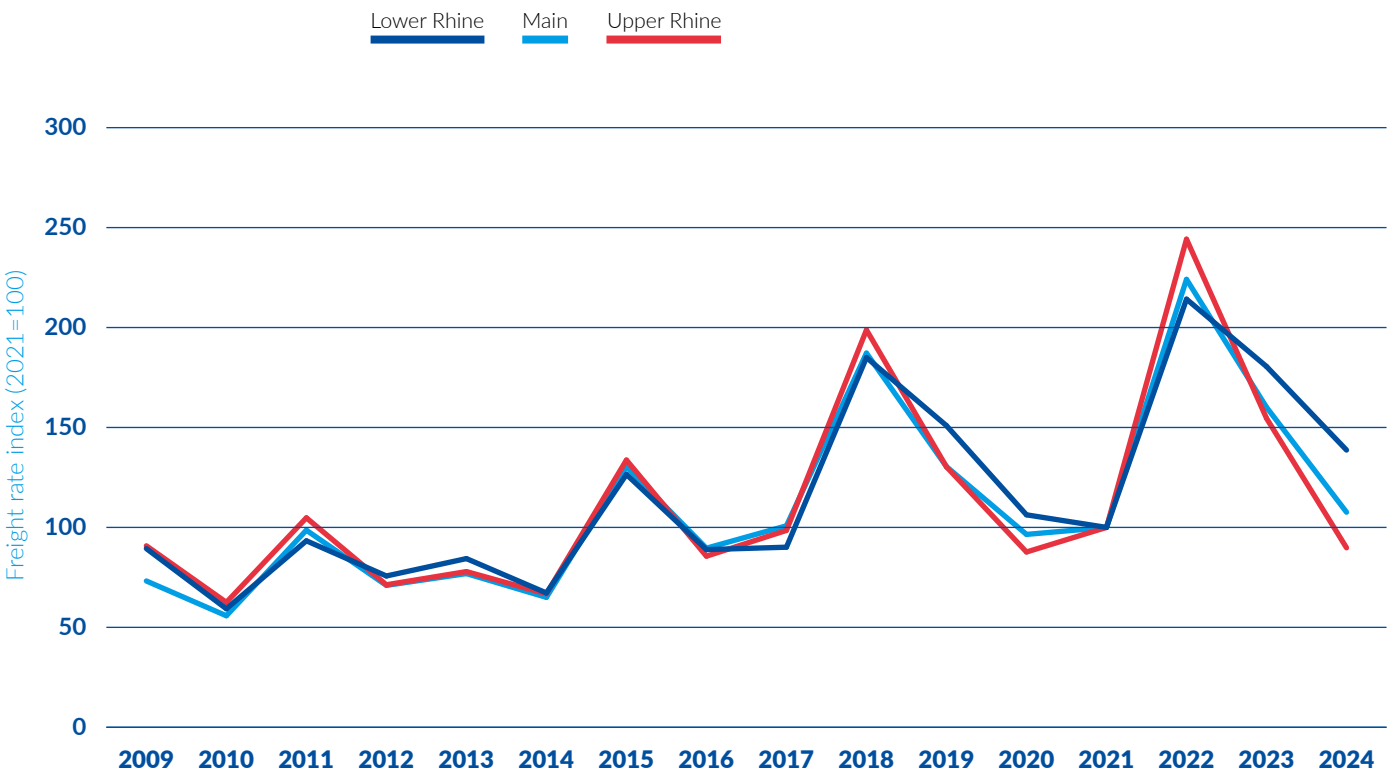
** The prices of established routes are observed twice a quarter and include fuel and low water surcharges but exclude loading and unloading. The time of observation is in the middle and at the end of the quarter. All prices are nominal prices.*

LIQUID CARGO FREIGHT RATES IN THE RHINE REGION

Figure 4 illustrates the liquid cargo spot market freight rate index for gasoil for ARA-Rhine transport (yearly averages). To some extent, the series follows a rising trend. The low water periods, which occurred in 2011, 2015, 2018 and 2022, are clearly visible as positive peaks. In 2024, freight rates were at an average level but much lower than in 2023. The overall rising trend could be due to high operational costs in inland navigation. This is especially due to personnel costs which are rising, due to the scarcity of personnel.

The observed trends are almost identical for the three different geographical entities shown – two stretches of the Rhine (Lower Rhine, Upper Rhine) and the Main affluent.

FIGURE 4: **INSIGHTS GLOBAL FREIGHT RATE INDEX FOR LIQUID CARGO TRANSPORT IN THE ARA-RHINE AREA** (2021 = 100)



Sources: CCNR calculation based on Insights Global

CITBO LIQUID CARGO
FREIGHT RATE INDEX FOR THE FARAG REGION

Geography of the CITBO transport activity and product segment structure

For the liquid cargo transport within the extended ARA region, between Amsterdam, Antwerp, Flushing, Ghent, Rotterdam and Terneuzen, a dataset on spot market freight rates provided by the tanker barge cooperation CITBO[31] was analysed. The shares of the different product groups within cargo transported were as follows:

- **Gasoil and components:** share of 37% in 2024 (41% in 2023 and 38% in 2022)
- **Gasoline and components:** share of 37% in 2024 (37% in 2023 and 29% in 2022)
- **Biodiesel:** share of 13% in 2024 (18% in 2023 and 26% in 2022)
- **Chemicals:** share of 4% in 2024 (2% in 2023 and 6% in 2022)
- **Heavy products:** share of 8% in 2024 (0.2% in 2023 and 1% in 2022)

Of all liquid cargo transport in 2024, the four ports with the highest shares are represented as follows:

- in loaded cargo, volumes handled in these ports accounted for 84% and,
- in unloaded cargo, volumes handled in these ports accounted for 70%.

Port of loading	Cargo volume - share in %	Port of unloading	Cargo volume - share in %
Rotterdam	34% in 2024 (in 2023: 28%)	Rotterdam	25% in 2024 (in 2023: 21%)
Antwerp	33% in 2024 (in 2023: 34%)	Antwerp	22% in 2024 (in 2023: 14%)
Amsterdam	10% in 2024 (in 2023: 8%)	Amsterdam	18% in 2024 (in 2023: 18%)
Flushing	7% in 2024 (in 2023: 5%)	Flushing	5% in 2024 (in 2023: 0%)
All other ports	16% in 2024 (in 2023: 25%)	All other ports	30% in 2024 (37% in 2023)

Around 2/3 of all cargo loading takes place in the two ports of Rotterdam and Antwerp. Together with the Port of Amsterdam, the share of loaded volumes in these three ports accounts for more than 3/4 (77%) of all liquid cargo transported by CITBO members. These figures reflect a rather high concentration of loaded volumes on the ARA ports.

[31] *https://citbo.com/*

Compared to the figures for loading the vessels, the figures for unloading the cargo show a somewhat greater geographical diversity. In 2024, the two ports of Rotterdam and Antwerp accounted for a share of 47% of all cargo unloaded, and the three ARA ports together accounted for 65% (approximately 2/3). This higher geographical diversity reflects the delivery of mineral oil products to a range of depots and customers in different western European regions. Around 11% of all cargo unloading takes place in ports outside Belgium and the Netherlands. For cargo loading, this share is only 4%.

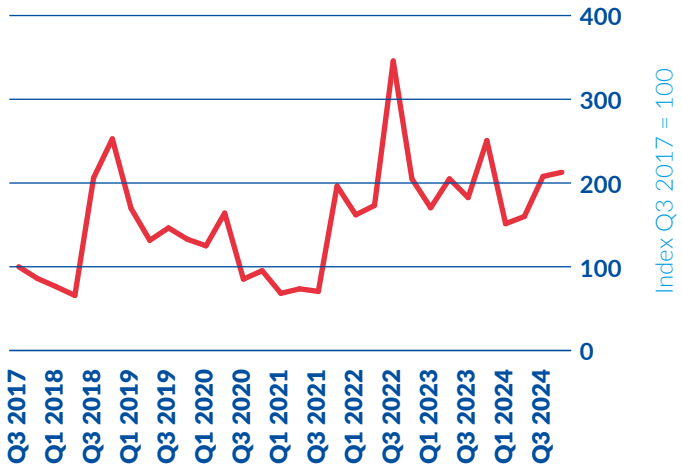
Results of the calculation of freight rate indices (spot market data)

A freight rate index was calculated for the four main different product segments[32]. From these indices, it can be observed that low waters (in 2018 and 2022) had a strong influence on freight rates for all product segments. In 2023 and 2024, freight rates mainly followed a downward trend. In the case of biodiesel and chemicals, this downward trend reached a more or less typical level which was similar to the levels reached between the two low water periods of 2018 and 2022. For gasoil and components, and for gasoline and components, the freight rate level was still higher than before the low water period of 2022.

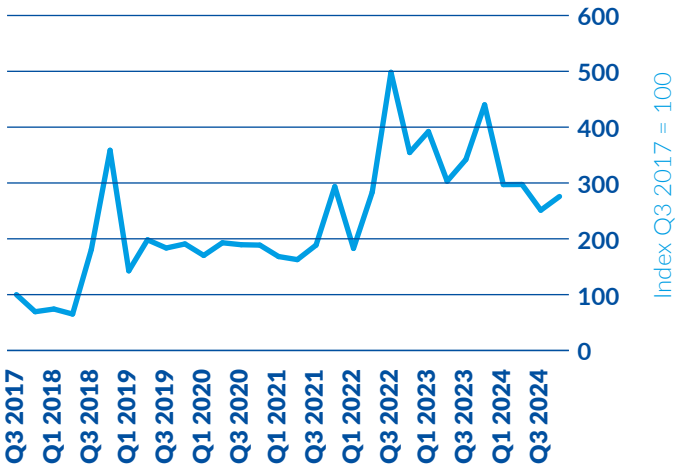
[32] Thus, the absolute spot market freight rate data (given in Euro per tonnes) were transformed into index figures with base period Q3 2017 = 100. For heavy and other products, no index could be calculated due to missing values in several financial quarters.

FIGURES 5, 6, 7 AND 8: **CITBO FREIGHT RATE INDEX FOR LIQUID CARGO SEGMENTS**
(INDEX Q3 2017 = 100)

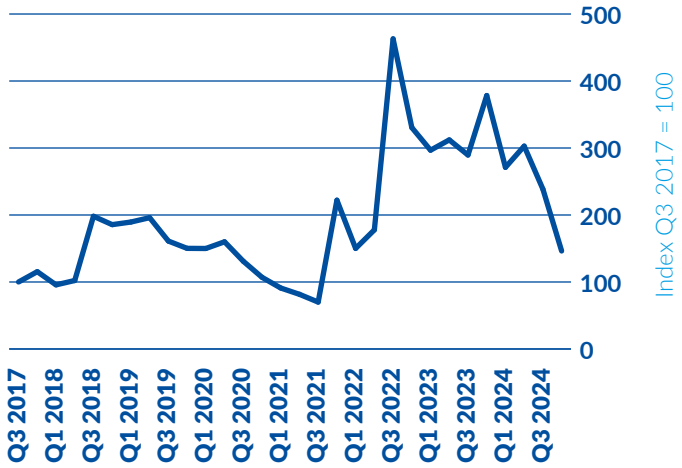
Gasoil and components



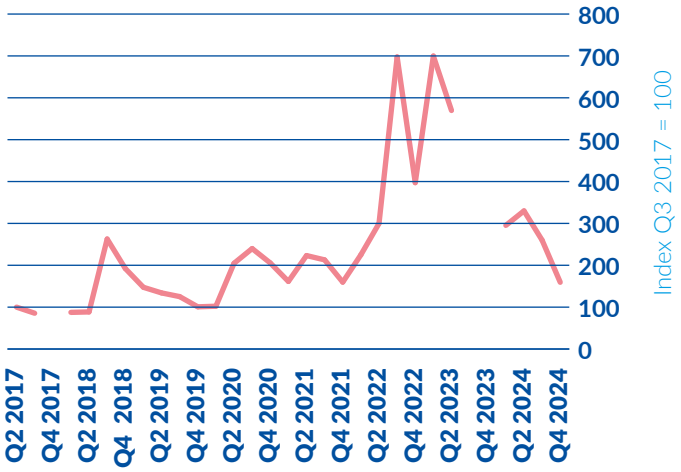
Gasoline and components



Biodiesel



Chemicals



Sources: CCNR analysis based on spot market data provided by CITBO

Other influencing factors for CITBO freight rates

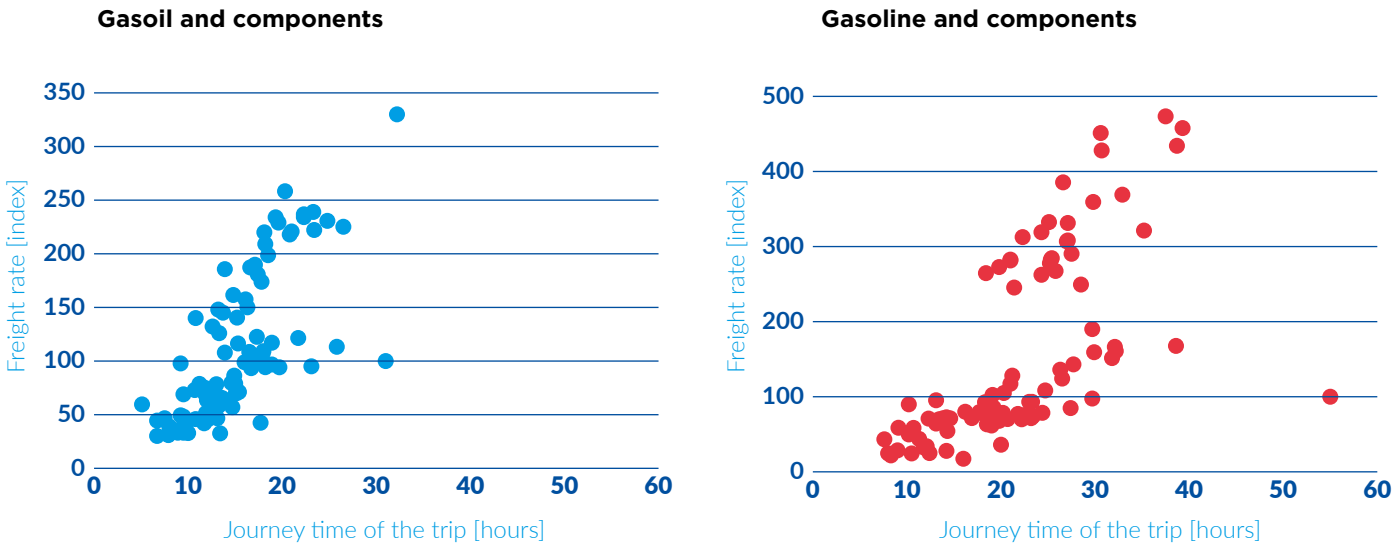
Low water periods are an important influencing factor for the level of freight rates, as has been seen previously. Other influencing factors exist:

- The transport demand which is linked to industry production and the overall economic situation.
- The supply/demand relationship. The supply is hereby measured by the available fleet while demand is measured by transport demand.
- Operational costs, which can increase due to higher fuel costs or higher personnel costs.

- The journey time of a trip is another factor that influences costs. A longer journey time leads to higher costs, thereby contributing to higher transport prices.

With an average of 28 hours per trip, biodiesel had the longest journey time in 2024. The second longest journey time was observed for gasoline and components (25 hours). Chemicals followed, ranking third (20 hours), and gasoil and components ranked fourth (18 hours). The following figure shows the correlation between journey time and the freight rate index for gasoil and components as well as for gasoline and components.

FIGURE 9: **RELATIONSHIP BETWEEN JOURNEY TIME OF A TRIP AND FREIGHT RATE INDEX VALUE** (INDEX Q3 2017 = 100) *



Sources: CCNR analysis based on spot market data provided by CITBO
** The dots in the graphs represent the combination of average journey time and average freight rate index for certain months between July 2017 and December 2024.*

Additional influencing factors for freight rates exist. Overall, it can be observed that chemicals have the highest spot market freight rates in absolute terms (€/tonne), followed by gasoline and its components, biodiesel and gasoil and components. The high freight rate levels for chemical transport cannot be explained by journey times, as these are rather short for chemicals (see above). The high freight rates can be attributed primarily to the relatively expensive vessels for chemical transport, often with stainless steel tanks, as well as the high safety standards and high cleaning costs. The significant demand on the shippers' side to transport their chemicals by IWW also leads to higher freight rate levels for chemical products within the CITBO database.

CITBO time charter rates

As well as the spot market rates, the CITBO data also contain time charter data. These data allow the calculation of an index of average time charter rates, based on the rental prices of vessels per day. The quarterly index of average rental prices per day is shown in the following graph. All product segments are taken into account. The index shows an increase at the end of 2022 due to the low water period. In 2023, time charter rates were lower than in 2022, but remained at a higher level than before the 2022 low water period. In 2024, the average time charter rates were higher than in 2023, but lower than in 2022.

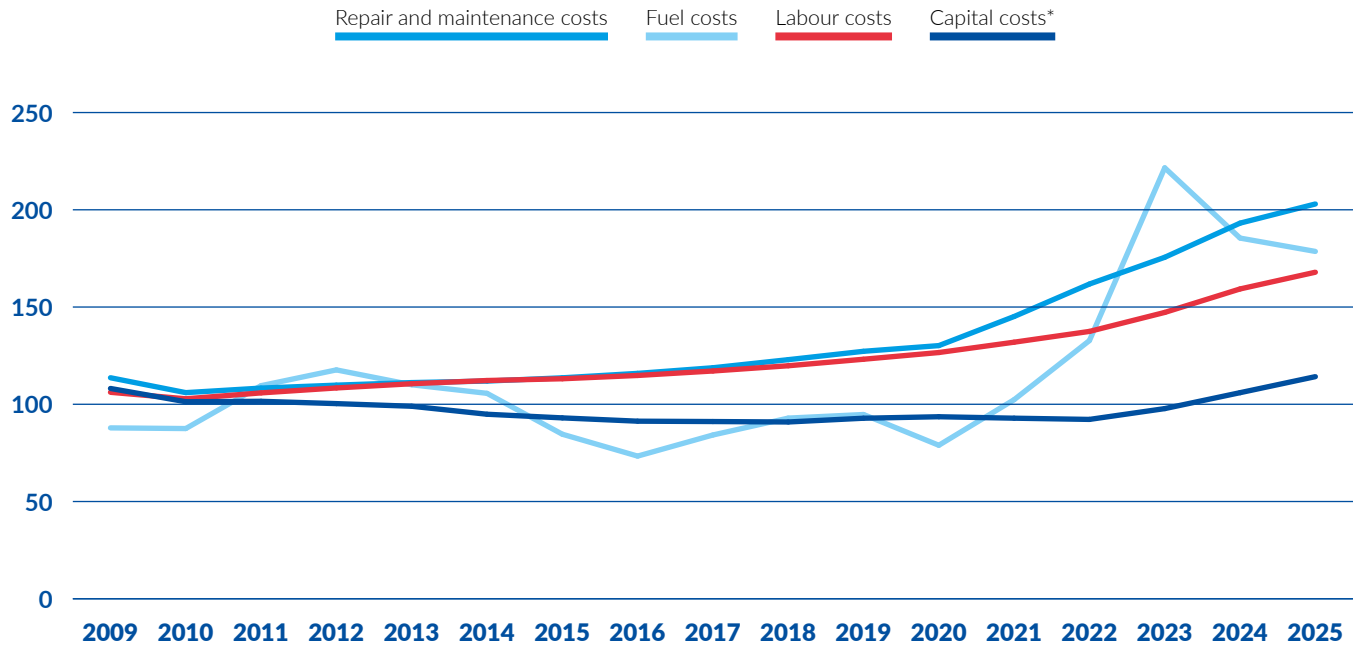
FIGURE 10: **CITBO TIME CHARTER RATES** (INDEX Q2 2017 = 100)

Sources: CCNR analysis based on CITBO data

DEVELOPMENT
OF COSTS IN INLAND NAVIGATION

Based on an annual report by the Dutch research company Panteia on the cost development in inland navigation, an increase can be seen in 2024 for all cost components except fuel costs, which decreased. In recent years, it can be observed that labour costs and repair/maintenance costs have been the main upward drivers of inland navigation costs. Regarding fuel costs, they reached a peak during the energy crisis (2022-2023) and are now declining, even though they remain at a much higher level than before the energy crisis.

FIGURE 11: **DEVELOPMENT OF COSTS IN INLAND NAVIGATION PER YEAR** (2009-2025; INDEX 2008 = 100)



Sources: Rijkswaterstaat based on Panteia reports "Kostenontwikkeling binnenvaart"
** Capital costs include interest rates, insured value of the vessels, insurance and other costs.*

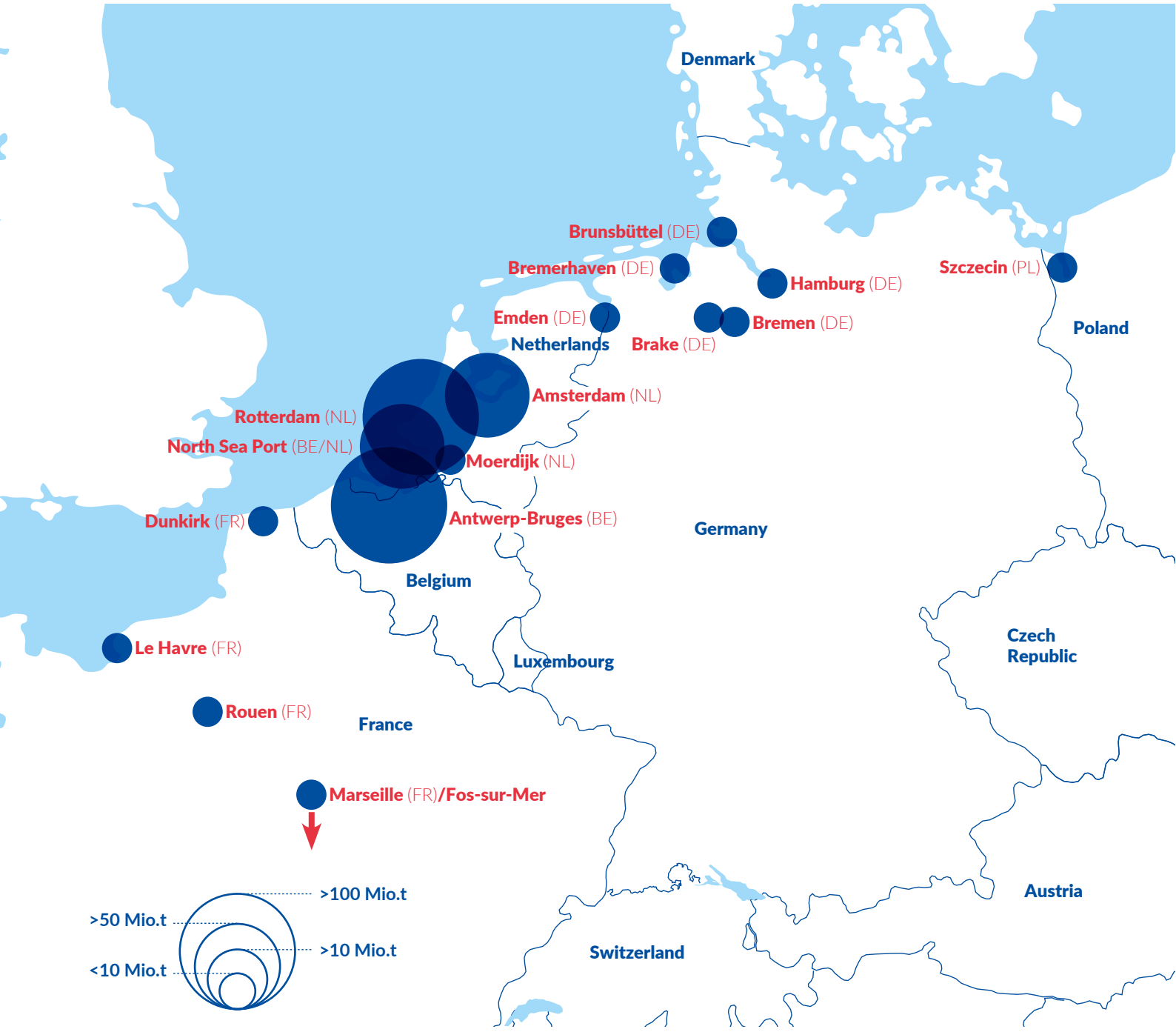

LINZ AG HAFEN
KOCKS
CONTAINERTERM
MAERSK
MAERSK
MAERSK
MAERSK
MAERSK
UASC

05

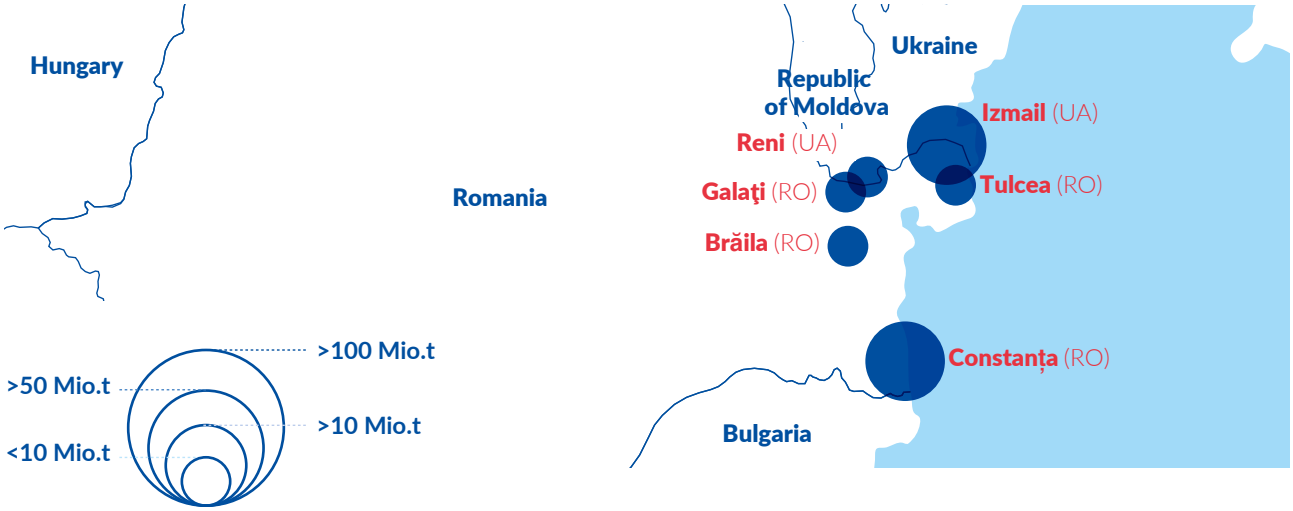
INLAND WATERWAY CARGO HANDLING IN PORTS

- The year 2024 continued to be influenced by geopolitical and economic challenges which led to uncertainties in global markets.
- Yet, these challenges did not have the same impact on the main European seaports. IWT traffic in the Ports of Rotterdam, Antwerp and North Sea Port increased in 2024, showing a certain recovery compared to the previous two years. In the Port of Constanţa, although IWT traffic remains very high, the resumption of activities at the Port of Odessa (Ukraine) at the end of 2023, led to a decrease in Constanţa due to less grain traffic being handled in the port. IWT traffic at the Port of Hamburg continued its declining trend and suffered from the economic challenges that are observed in Germany together with infrastructure issues in the nearby inland waterway network of Hamburg.
- As far as the European inland ports are concerned, there were discrepancies in the way these ports were impacted by the general geopolitical and macroeconomic context as illustrated by the diverging results.
- The international situation is foreseen to remain volatile in the near future and could also have a significant impact on the forthcoming 2025 results of the European inland and seaports.

MAIN EUROPEAN SEAPORTS



Sources: Ports' statistics, Destatis, CBS, Eurostat [iww_go_aport] and Danube Commission
Data are from 2024. For Szczecin, data are for 2023.



Source: Romanian national Institute of Statistics

ROTTERDAM

In 2024, 91,356 inland vessels called at the Port of Rotterdam (89,175 in 2023).

The volumes of inland waterway cargo handling at the Port of Rotterdam increased by +0.7% to 141.9 million tonnes in 2024 (compared to 140.9 million tonnes in 2023). Apart from the dry bulk segment which experienced a -3.2% decline, the other types of cargo increased. The main reason behind the decrease for the dry bulk segment is the sharp decline in coal volumes over several quarterly financial periods. Indeed, coal-fired power plants are increasingly losing ground as an energy source in the German and Dutch energy mix, while renewable energies have a rising share.

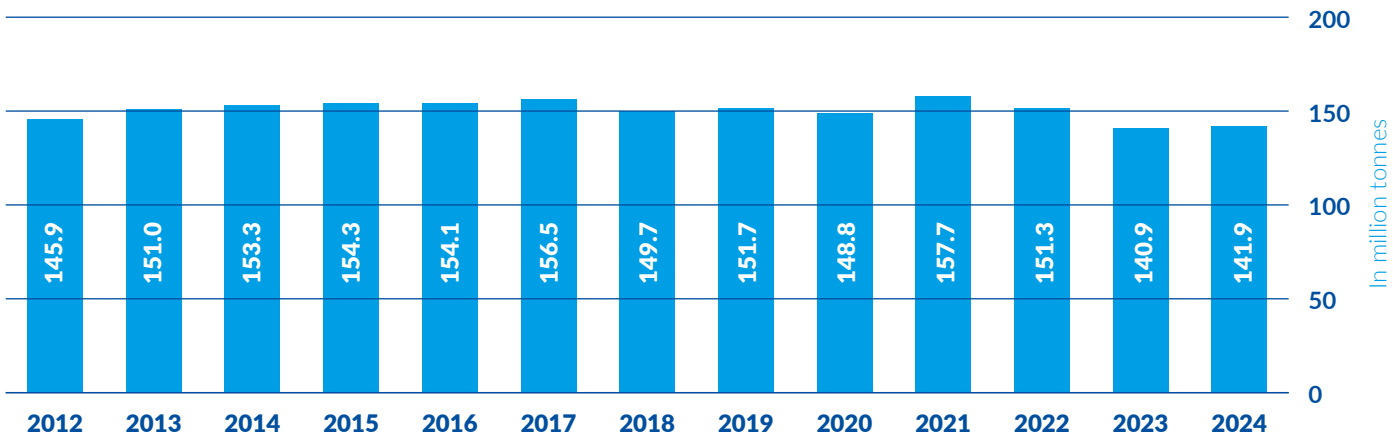
Increased European consumption, wage indexation and declining inflation in 2024 led to higher disposable income and increased demand for consumer goods and food. This can explain the good results for containers in 2024 compared to the previous year (+5.4%).

The increase of the liquid bulk segment is closely linked to the growth in the transport of mineral oil products towards the ARA ports which can explain the positive results of this segment in the Port of Rotterdam[33].

The IWW modal split within total throughput in 2023 was 35.7% at the Port of Rotterdam (behind pipeline (37.6%) and ahead of road (19.9%) and rail (6.8%)). The IWW modal split share within container transport to and from the hinterland was 30.5% (behind road (59.2%) and ahead of rail (10.3%))[34].

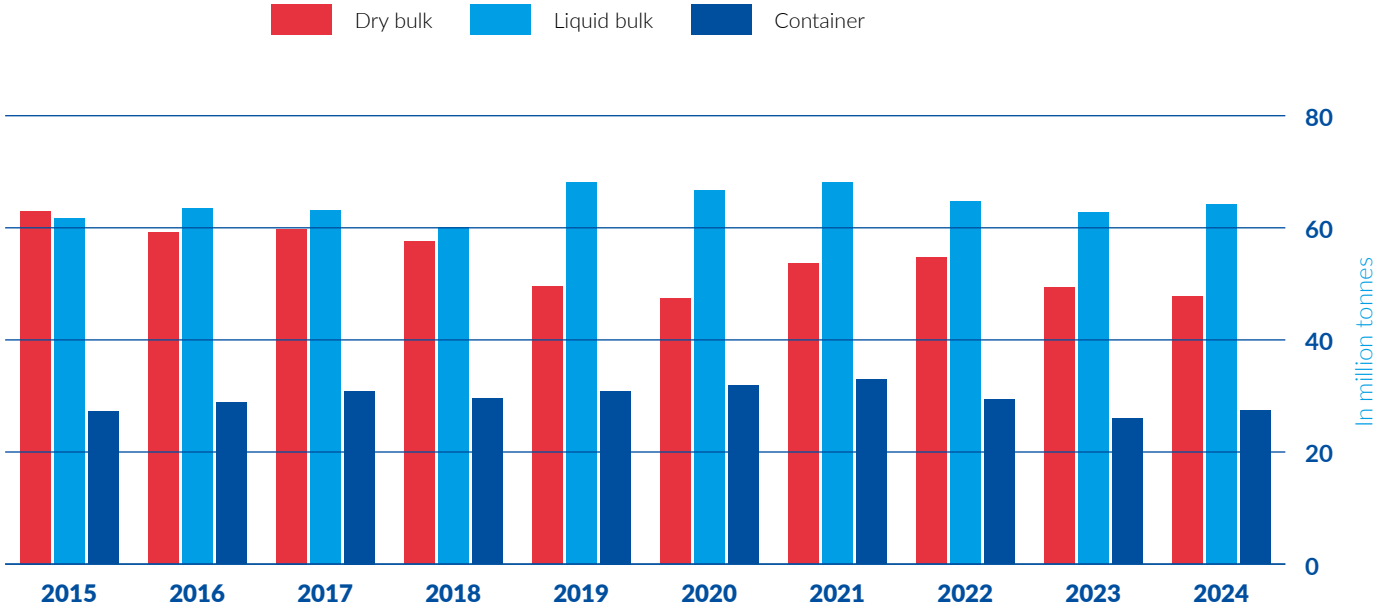
[33] As explained in chapter 2, the reason for the increase of transport of mineral oil products in the ARA region is an imbalance between refinery production of fuels and fuel demand in western Europe. Due to the long-term decrease in fuel demand, refinery output is more and more orientated towards an export to overseas destinations, via ARA seaports. Indeed, for the refineries in the Dutch and German Rhine region, increasing transport towards ARA ports can be noticed. From the ARA ports, fuels are exported to overseas destinations.
[34] Data for 2024 were not available.

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



Source: CBS

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



Source: CBS
** General cargo is not taken into account in these calculations. In 2024, the volume transported for general cargo amounted to 2.5 million tonnes.*

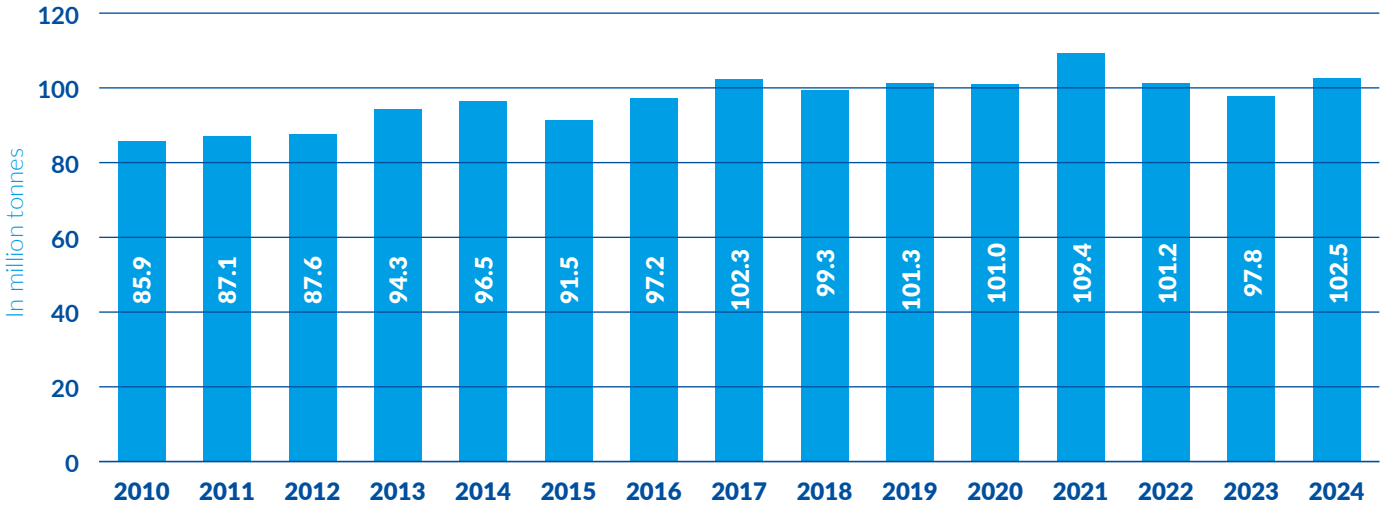
ANTWERP-BRUGES

The ports of Antwerp and Zeebrugge have been operating under the name 'Port of Antwerp-Bruges' since April 2022. Most of IWW cargo handling at the port takes place on the Antwerp site. In 2024, the number of vessels calling at the port increased to 57,454 (compared to 55,605 in 2023).

Liquid bulk is the most important cargo type (approximately 60%), followed by containers (approximately 20%) and dry bulk (approximately 15%). Despite geopolitical tensions and economic uncertainties, the IWW cargo handling increased in 2024 (+4.7% compared to 2023) reaching a volume of 102.5 million tonnes (compared to 97.8 in 2023). This result was driven by an increase in the transport of liquid bulk (+5.9%), both for petroleum products and transport of chemicals, despite a difficult year for the European chemicals sector. While sectors such as construction and automotive were under pressure from high energy and raw material prices, as well as low demand, dry bulk also increased (+5.1%). This increase was mainly driven by transhipment of agricultural products, foodstuffs, fertilizers, crude minerals and building materials. Iron, steel, ores and scrap remained rather stable. Those increases were sufficiently robust to offset the decrease observed for solid mineral fuels (coal) which, on the other hand, almost halved in 2024 compared to the levels of 2023 and the previous two years. As to container transport, it remained stable between 2023 and 2024 (+0.5%) but is still well below its 2021 level (-27.7%).

The IWW modal split within total maritime throughput (excluding industrial traffic[35]) in 2024 was 51% at the Port of Antwerp (49% in 2022), the highest share since 2019. The IWW modal split share within container transport to and from the hinterland was 33.9% in 2024, ahead of rail (6.9%) and behind road (59.2%).

FIGURE 3: **INLAND WATERWAY CARGO HANDLING IN THE SEAPORT OF ANTWERP-BRUGES** (IN MILLION TONNES) *

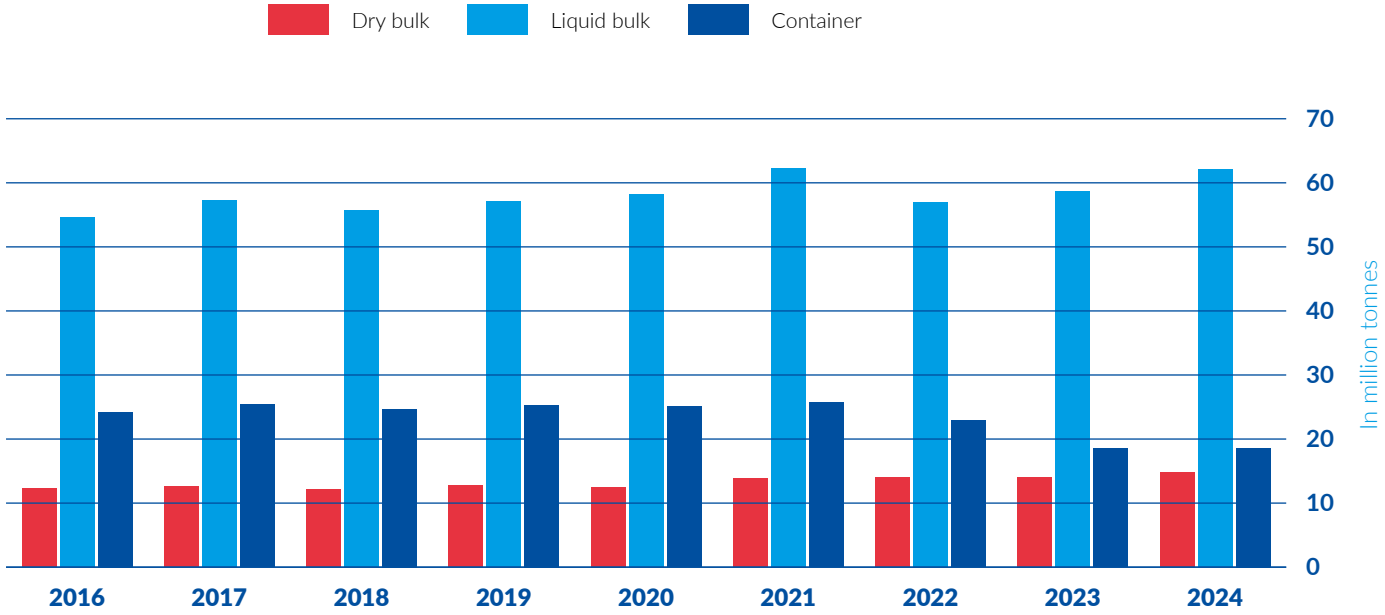


Source: Port of Antwerp-Bruges

** From 2021 onwards, figures for inland waterway cargo handling at the Port of Antwerp and Zeebrugge appear under the name "Port of Antwerp-Bruges".*

[35] *Industrial traffic refers to the traffic taking place directly between the industries located in the port area (such as BASF, AIR LIQUIDE, EUROCHEM...) and the hinterland.*

FIGURE 4: **INLAND WATERWAY CARGO HANDLING IN THE SEAPORT OF ANTWERP-BRUGES PER TYPE OF CARGO** (IN MILLION TONNES) *



Source: Port of Antwerp-Bruges
** Ro/ro, general and not assigned goods are not taken into account in these calculations (in 2024, the volume transported for these three cargo types amounted to 7.0 million tonnes mostly attributed to general goods).*
From 2021 onwards, figures for inland waterway cargo handling at the Port of Antwerp and Zeebrugge appear under the name "Port of Antwerp-Bruges".

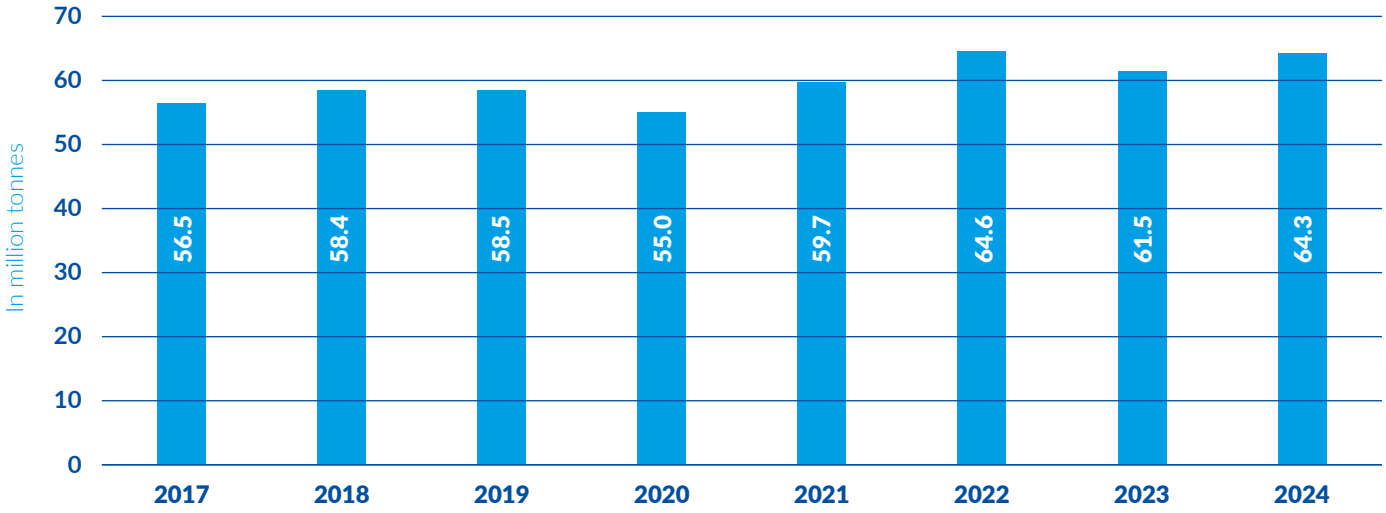
NORTH SEA PORT

In 2024, 38,242 inland vessels called in at North Sea Port (Ghent, Terneuzen, Flushing), compared to 37,752 in 2023.

Despite the current economic and geopolitical developments, inland waterway transhipment rose in 2024 by +4.5% compared to 2023, reaching 64.3 million tonnes. Seaborne cargo transhipment also increased, but to a more limited extent (+0.7%). Both liquid bulk (+6.6% compared to 2023) and dry bulk (+5.3%) increased, driven respectively by transhipment of liquid petroleum products and chemicals on the one hand and animal feeds, building materials and crude minerals on the other. Regarding building material, this increase can be explained by a slight decrease in the maritime transport of this cargo product, which was partly compensated (only to a small extent) by inland navigation. Container transport decreased by -15.2% compared to 2023, which had witnessed an increase of +36.8% and remains at levels higher than in 2021 and 2022. Both imports (+4.4%) and exports (+4.5%) increased.

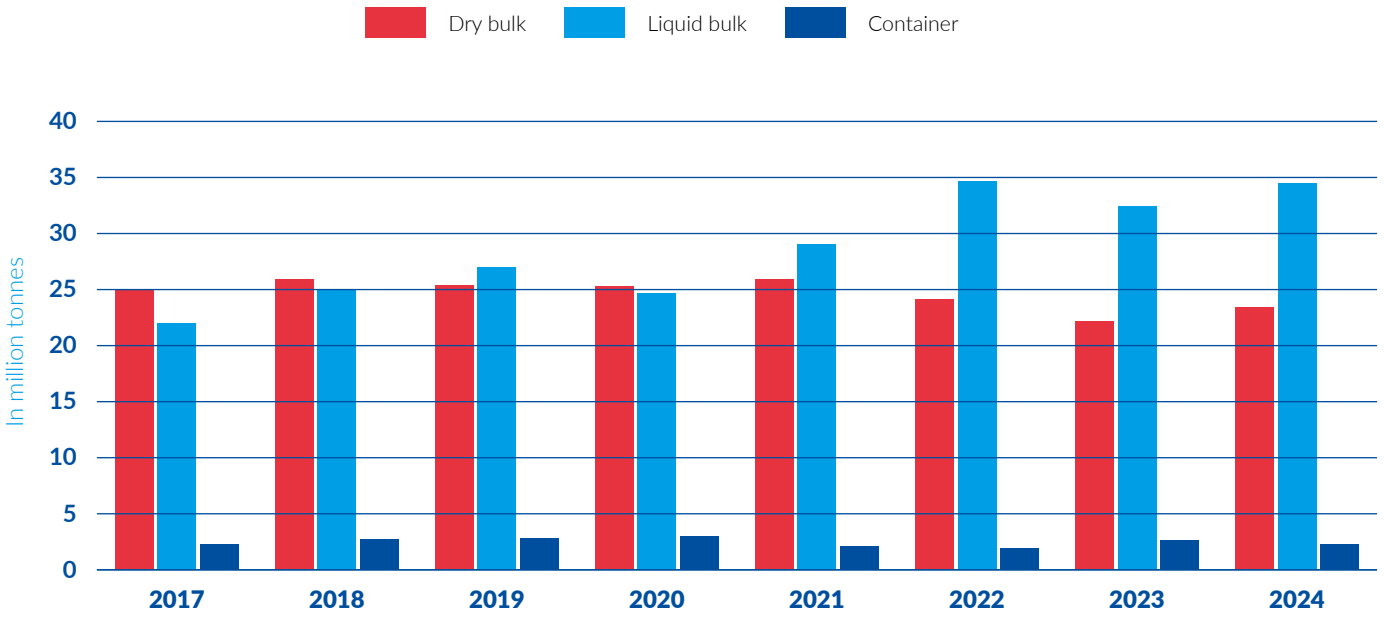
As for the modal split within hinterland transport (2023), inland navigation ranks first with a share of 58.3% (2 percentage points lost to road) followed by road (30.6%), rail (9.1%) and transhipment or feeder traffic (1.9%).

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



Source: North Sea Port

FIGURE 6: **INLAND WATERWAY CARGO HANDLING IN THE NORTH SEA PORT PER TYPE OF CARGO** (IN MILLION TONNES) *



Source: North Sea Port

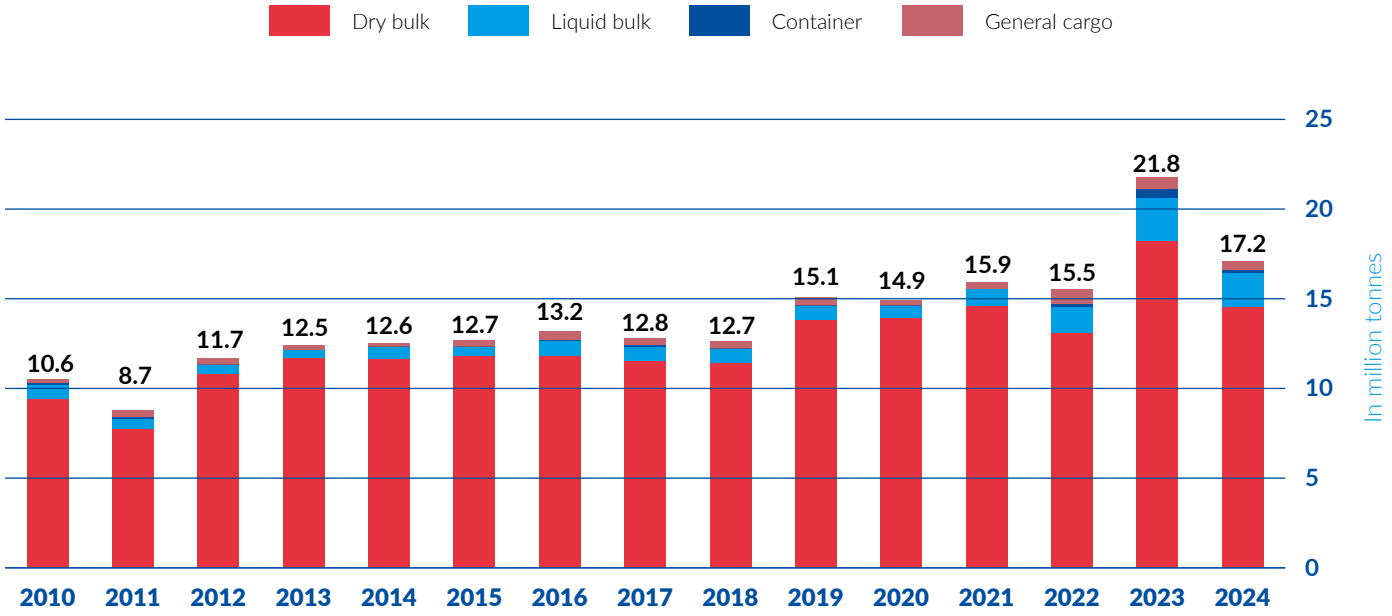
** Ro/ro and conventional cargo are not taken into account in these calculations (in 2024, the volume transported for these two cargo types amounted to 0.1 million tonnes and 4.0 million tonnes respectively).*

CONSTANŢA

In Constanța, 11,085 inland vessels called at the port in 2024 (14,614 in 2023). Compared to 2023, which was an exceptional year for both maritime traffic and IWW traffic at the Port of Constanța due to the port's intensive contribution to EU solidarity lanes, both indicators decreased in 2024. Even if IWW traffic decreased by -20.9% compared to 2023, amounting to 17.2 million tonnes, such volumes remain the second highest volumes ever recorded. This decrease is mainly attributed to the resumption of activities at the port of Odessa (Ukraine) at the end of 2023, leading to less transit traffic going through the port of Constanța. Indeed, Constanța had become the largest alternative export route since the start of the Russian full-scale invasion and war of aggression against Ukraine. With activities resuming in Odessa, part of the traffic was simply no longer diverted to Constanța as an alternative route.

Regarding IWT, mainly dry cargo is handled at the Port of Constanța, with a share of almost 85% of the total IWT cargo volume handled. Dry cargo volumes registered a -20.0% decrease compared to 2023. Liquid cargo volumes also decreased by -20.5%. Container transport and general cargo also decreased and remain small compared to liquid, dry bulk and general cargo. IWT traffic mainly consists of transit traffic and cabotage.

FIGURE 7: **INLAND WATERWAY CARGO HANDLING IN THE SEAPORT OF CONSTANŢA PER TYPE OF CARGO** (IN MILLION TONNES)



Source: Port of Constanța

HAMBURG

The year 2024 continued to be influenced by both the Russian war of aggression against Ukraine and the conflicts in the Middle East[36]. These geopolitical and economic challenges took their toll on international trade, leading to uncertainties in global markets. Moreover, in Germany, economic output declined by -0.2% and industrial production experienced a drop of -4.5% in comparison with 2023.

These elements, together with infrastructure issues in the nearby inland waterway network of Hamburg (i.e. Elbe-Lateral Canal) and the bridge collapse in Dresden, which have both hindered proper IWT navigation over several months, have had a considerable impact on IWT at the Port of Hamburg. Indeed, IWT cargo handling dropped by -14.4% in 2024 (6.0 million tonnes) compared to 2023 (7.0 million tonnes), both exports (-16.1%) and imports (-13.2%) having suffered a decrease.

Containers and dry cargo volumes decreased by -19.7% and -11.6% respectively between 2023 and 2024. The continuous decline of the containers category since 2021 has been partly driven by the general difficult macroeconomic context which also continued impacting many other European ports in 2024[37]. Another reason for this decline was that rail transport gained ground in hinterland traffic at the Port of Hamburg, holding a 50.2% share of container transport to and from the hinterland, ahead of road (48.2%) and IWT (1.6%).

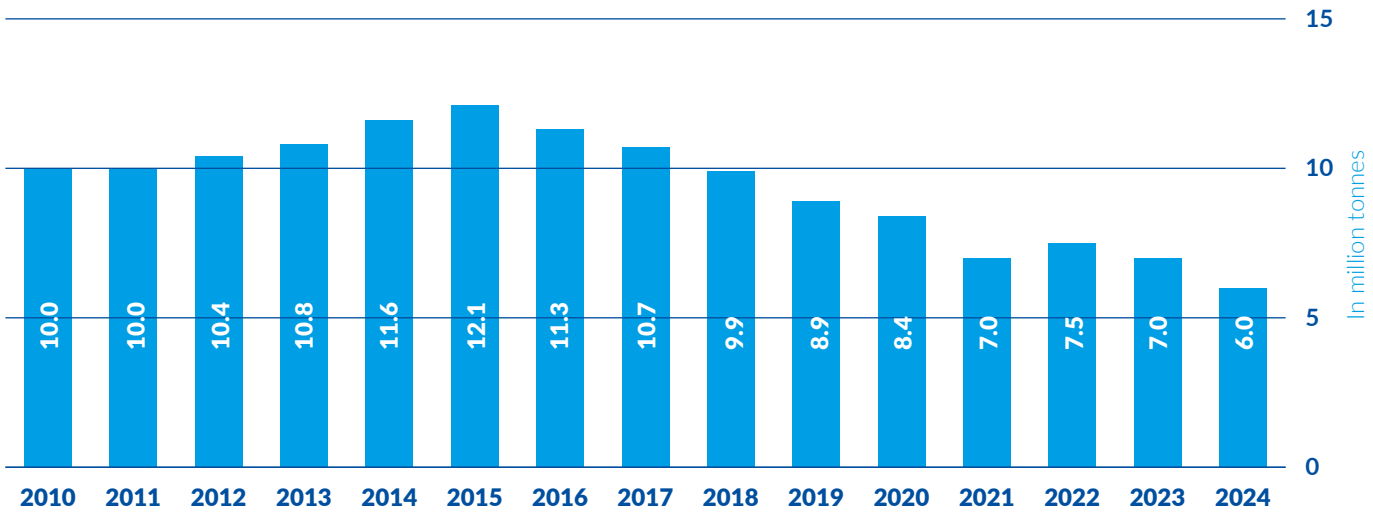
Among dry cargo, the segments of agricultural products (-35.7%) and sands/stones (-22%) both experienced a strong decrease. The coal segment again experienced a decline (-14.7%), although less important than in the previous year. Apart from the geopolitical issues mentioned above, this decline can also be attributed to the continued shift of Germany towards sustainable electricity production. By contrast, the metal segment experienced an increase of +15.8%.

Concerning liquid cargo, despite the good results of the chemical products' segment (+14.8%), volumes declined by -16.5% between 2023 and 2024 and were mainly driven by the decline of mineral oil products, in the context of decarbonisation challenges.

With regard to the outlook, at national level, the +0.0% growth forecast for the German economy could impact the general throughput figures at the port. In addition, the international situation is foreseen to remain volatile in the near future and could also have a significant impact on the forthcoming 2025 results.

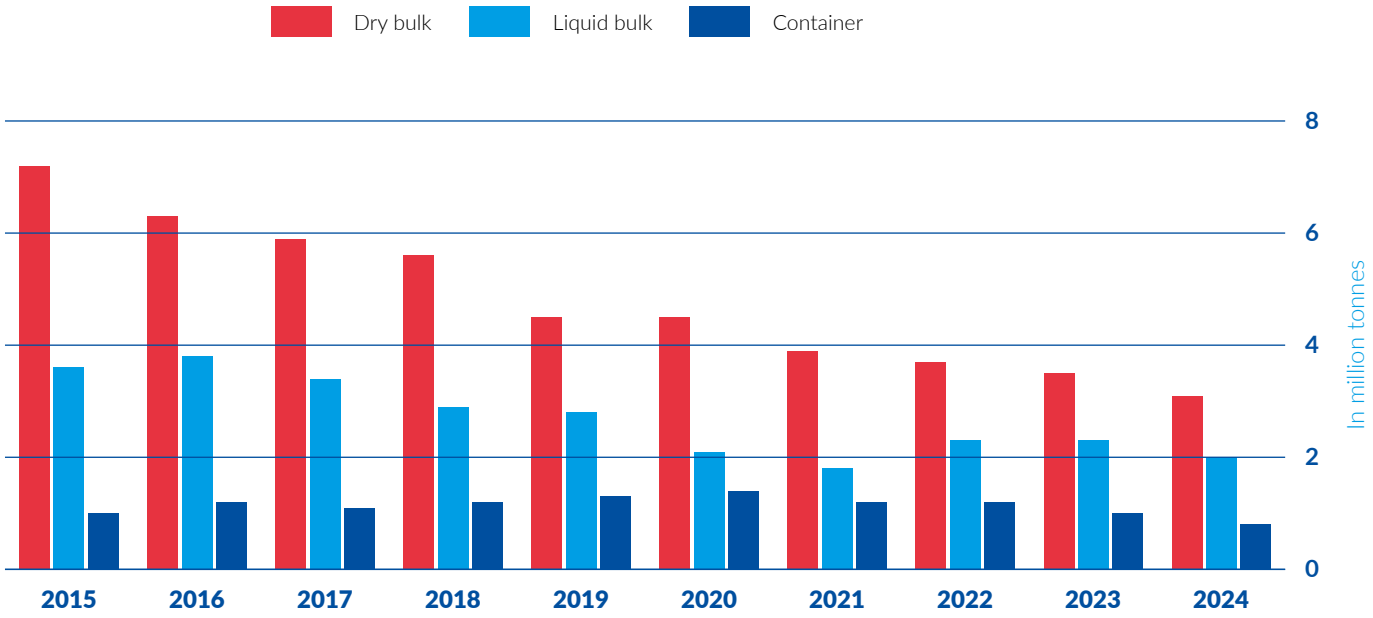
[36] See explanation of the consequences of the Red Sea crisis in chapter 2
[37] It is interesting to note that, contrary to IWT, maritime container throughput increased in 2024 (+0.9%).

FIGURE 8: **INLAND WATERWAY CARGO HANDLING IN THE SEAPORT OF HAMBURG** (IN MILLION TONNES)



Source: Statistical Office of Hamburg and Schleswig-Holstein

FIGURE 9: **INLAND WATERWAY CARGO HANDLING IN THE SEAPORT OF HAMBURG PER TYPE OF CARGO** (IN MILLION TONNES) *



Source: Statistical Office of Hamburg and Schleswig-Holstein

** General cargo is not taken into account in these calculations (in 2024, the volume transported for this cargo type amounted to almost 0.2 million tonnes).*


TERMINAL BURCHARDKAI
TERMINAL BURCHARDKAI
TERMINAL BURCHARDKAI
TERMINAL BURCHARDKAI
TERMINAL BURCHARDKAI
TERMINAL BURCHARDKAI
EVERGREEN
EVER ACME
SINGAPORE
NVO
transport

MAIN EUROPEAN INLAND AND SEAPORTS[38]

TRADITIONAL RHINE PORTS

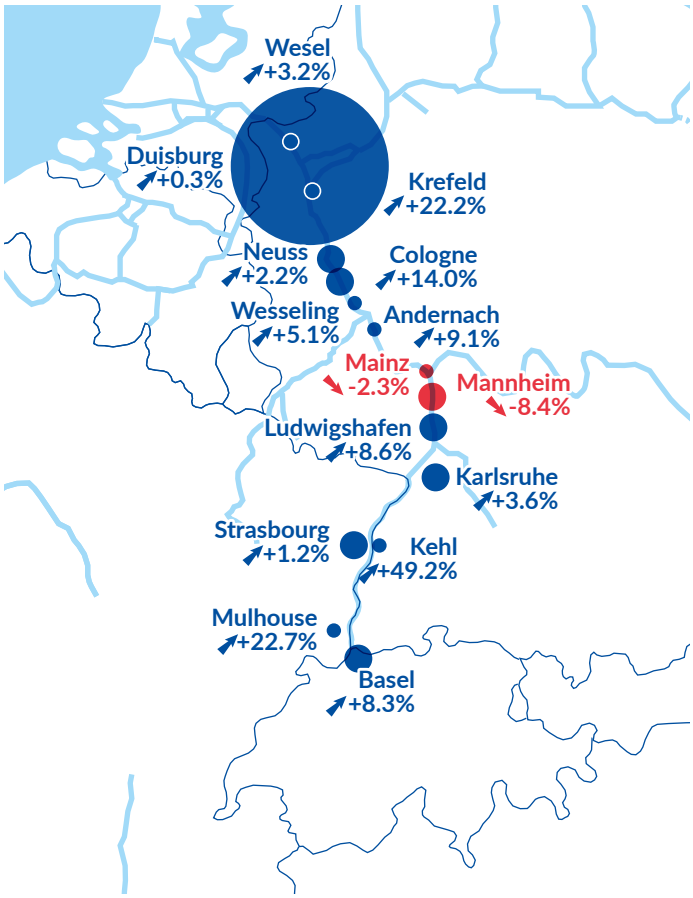
TABLE 1: **INLAND WATERWAY CARGO HANDLING IN MAJOR TRADITIONAL RHINE PORTS** (IN MILLION TONNES) **AND RATE OF CHANGE 2024/2023 ***

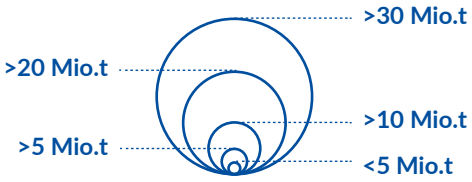
	2021	2022	2023	2024	2024/2023
Duisburg (DE)	44.9	41.9	41.5	41.6	+0.3%
Cologne (DE)	9.8	8.2	7.7	8.8	+14.0%
Karlsruhe (DE)	6.4	6.8	6.4	6.6	+3.6%
Strasbourg (FR)	6.9	6.4	6.2	6.2	+1.2%
Mannheim (DE)	7.3	7.6	6.3	5.8	-8.4%
Neuss (DE)	6.6	5.6	5.5	5.7	+2.2%
Ludwigshafen (DE)	6.9	5.6	5.0	5.5	+8.6%
Basel (CH)	5.4	4.6	4.9	5.4	+8.3%
Kehl (DE)	4.4	3.2	2.7	4.0	+49.2%
Mulhouse (FR)	4.1	3.6	3.2	3.9	+22.7%
Krefeld (DE)	3.4	3.1	2.7	3.3	+22.2%
Mainz (DE)	3.1	3.5	3.3	3.2	-2.3%
Andernach (DE)	2.7	2.3	2.2	2.4	+9.1%
Wesseling (DE)	2.1	1.9	1.8	1.9	+5.1%
Wesel (DE)	2.1	2.1	1.8	1.9	+3.2%
Total	**116.3**	**106.5**	**101.4**	**106.3**	**+4.8%**

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.
** Data on German ports are based on the geographical approach, which means that all cargo turnover within a city is taken into account, and not only the cargo handled in a specific port.*

[38] *Selected according to their relevance to IWT*

TOTAL YEARLY WATERSIDE TRAFFIC (IN MILLION TONNES)





Negative rate of change in 2024 vs 2023

Positive rate of change in 2024 vs 2023

PORTS IN GERMANY OUTSIDE THE RHINE *

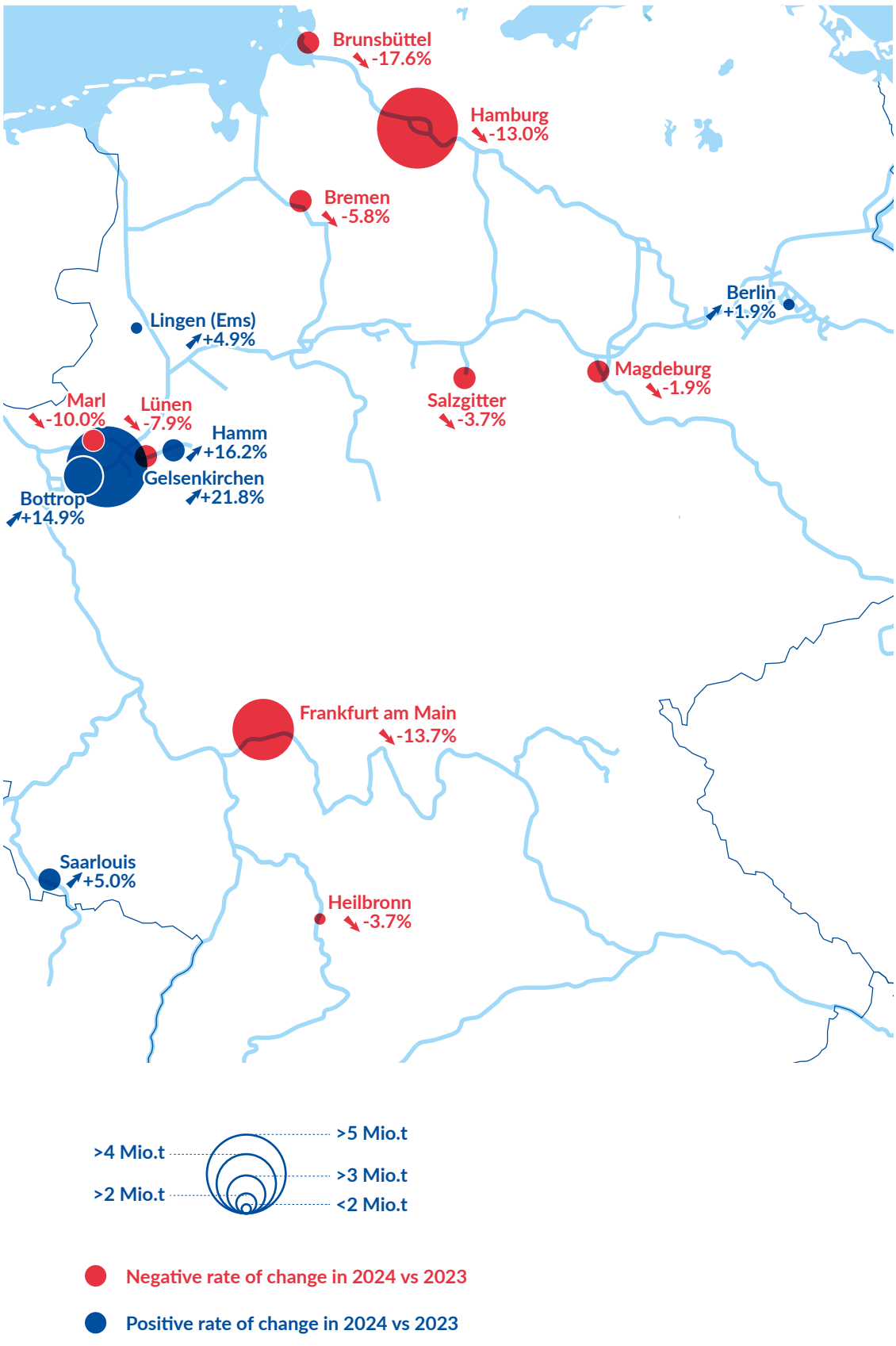
TABLE 2: **INLAND WATERWAY CARGO HANDLING IN MAJOR NON-RHINE PORTS IN GERMANY** (IN MILLION TONNES) **AND RATE OF CHANGE 2024/2023 ***

	2021	2022	2023	2024	2024/2023
Hamburg	7.6	8.3	7.6	6.6	-13.0%
Gelsenkirchen	4.9	4.9	4.3	5.2	+21.8%
Frankfurt am Main	5.4	4.8	5.0	4.3	-13.7%
Bottrop	2.8	2.8	2.8	3.2	+14.9%
Saarlouis	2.6	2.8	2.7	2.8	+5.0%
Magdeburg	2.7	2.4	2.7	2.7	-1.9%
Brunsbüttel	2.8	2.8	3.2	2.6	-17.6%
Marl	3.1	2.9	2.9	2.6	-10.0%
Bremen	3.3	3.2	2.7	2.5	-5.8%
Salzgitter	2.7	2.7	2.5	2.4	-3.7%
Hamm	2.1	2.1	2.0	2.3	+16.2%
Lünen	2.3	2.6	2.3	2.1	-7.9%
Lingen (Ems)	2.1	2.0	1.8	1.8	+4.9%
Heilbronn	2.2	1.9	1.6	1.6	-3.7%
Berlin	1.8	1.7	1.3	1.4	+1.9%
Total	48.4	47.7	45.5	44.4	-2.5%

Source: Destatis

** Data on German ports are based on the geographical approach, which means that all cargo turnover within a city is taken into account, and not only the cargo handled in a specific port. For Hamburg, the figures in accordance with this approach are therefore higher than the figures of the Port of Hamburg, due to other transhipment places in the city.*

TOTAL YEARLY WATERSIDE TRAFFIC (IN MILLION TONNES)



DUTCH PORTS

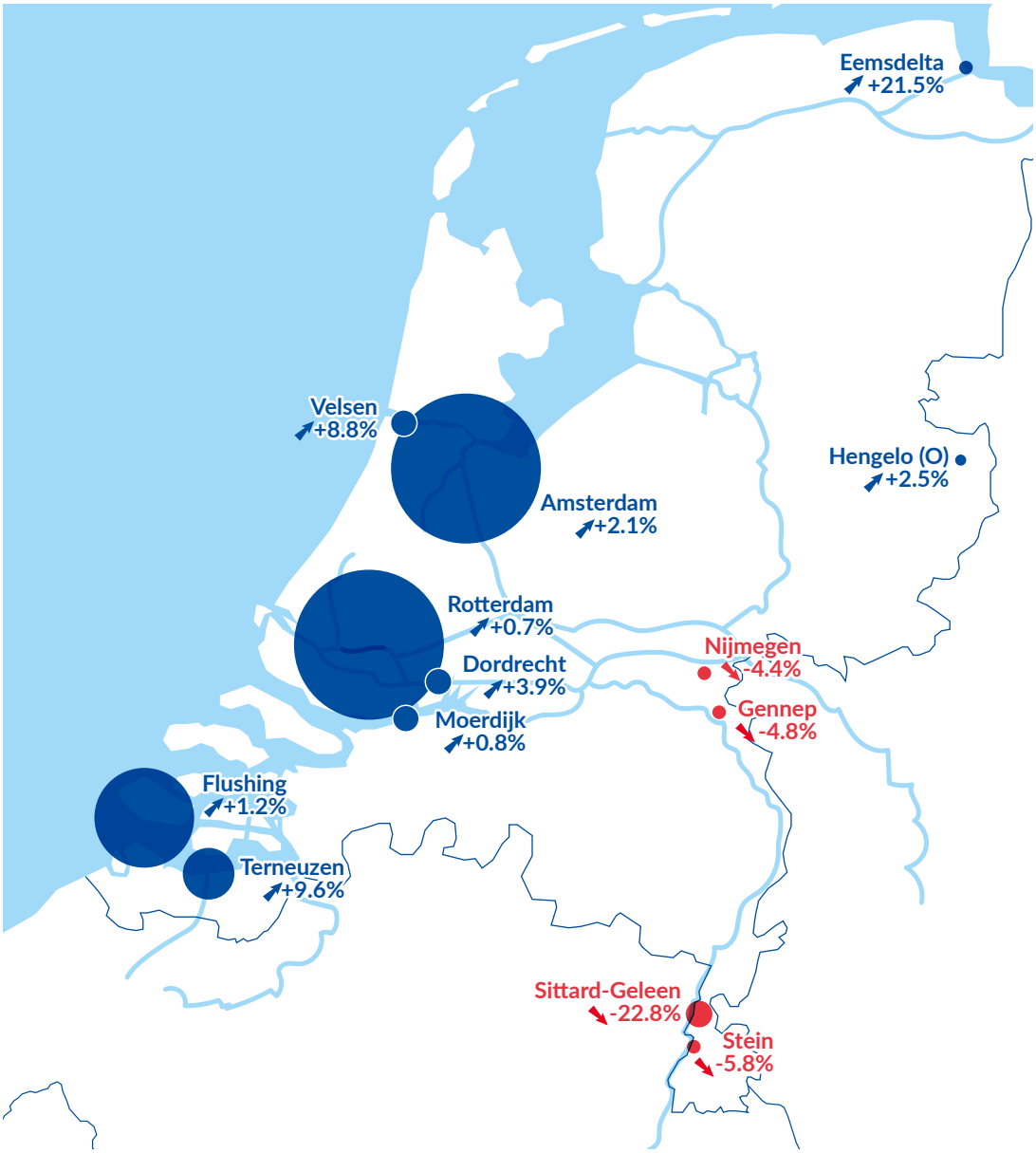
TABLE 3: **INLAND WATERWAY CARGO HANDLING IN MAJOR DUTCH PORTS** (IN MILLION TONNES) **AND RATE OF CHANGE 2024/2023**

	2021	2022	2023	2024	2024/2023
Rotterdam	157.7	151.3	140.9	141.9	+0.7%
Amsterdam	56.3	56.3	52.3	53.5	+2.1%
Flushing (North Sea Port)[39]	21.1	24.6	22.8	23.0	+1.2%
Terneuzen (North Sea Port)[40]	12.7	11.6	14.8	16.3	+9.6%
Moerdijk	9.7	9.4	8.9	9.0	+0.8%
Velsen	7.2	6.7	6.4	7.0	+8.8%
Sittard-Geleen	7.1	6.7	7.2	5.6	-22.8%
Dordrecht	6.5	5.9	5.4	5.6	+3.9%
Eemsdelta[41]	4.5	5.0	3.7	4.4	+21.5%
Stein	3.3	3.2	4.3	4.1	-5.8%
Hengelo (O)	3.6	2.9	3.2	3.3	+2.5%
Nijmegen	2.9	2.9	3.0	2.9	-4.4%
Gennep	3.3	2.9	2.4	2.3	-4.8%
Total	**295.9**	**289.4**	**275.4**	**278.8**	**+1.2%**

Source: CBS

[39] *The North Sea Port is a port area crossing Belgium and the Netherlands and is the result of the merger of three ports: Ghent (BE), Terneuzen (NL) and Flushing (NL).*
[40] *Idem*
[41] *Eemsdelta has only existed since 1 January 2020 and is the result of the merger between the cities of Appingedam, Delfzil and Loppersum. For this reason, data appear under the name of Delfzil in the previous annual reports.*

TOTAL YEARLY WATERSIDE TRAFFIC (IN MILLION TONNES)



FRENCH AND BELGIAN PORTS

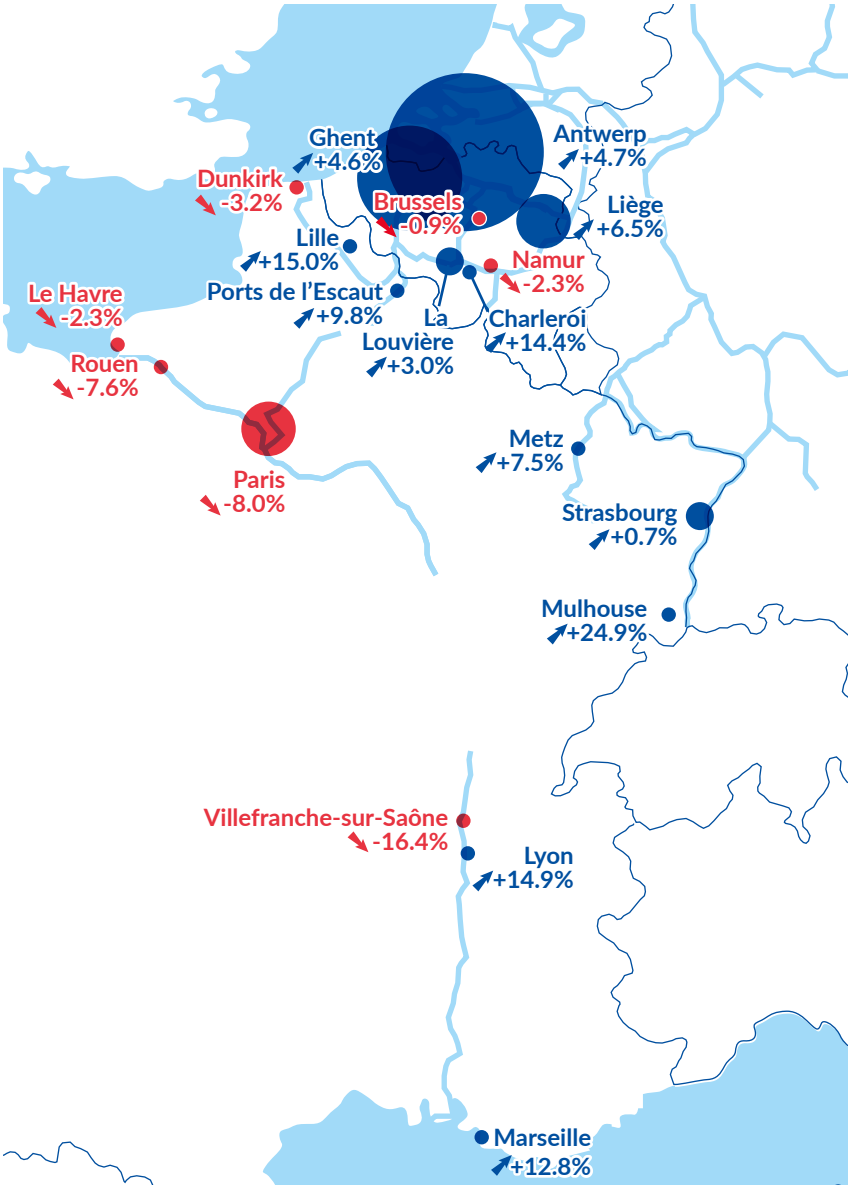
TABLE 4: **INLAND WATERWAY CARGO HANDLING IN MAJOR FRENCH AND BELGIAN PORTS** (IN MILLION TONNES) **AND RATE OF CHANGE 2024/2023**

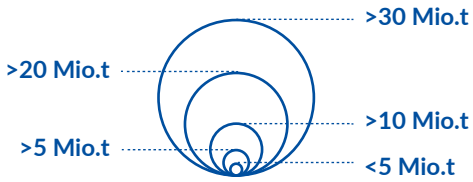
	2021	2022	2023	2024	2024/2023
Antwerp (BE)	109.4[42]	101.2	97.8	102.5	+4.7%
Ghent (North Sea Port)[43] (BE)	25.9	28.4	23.9	25.0	+4.6%
Paris (FR)	22.5	20.6	19.6	18.0	-8.0%
Liège (BE)	14.9	14.5	11.8	12.5	+6.5%
La Louvière (BE)	6.4	6.8	6.4	6.6	+3.0%
Strasbourg (FR)	6.9	6.4	6.2	6.2	+0.7%
Rouen (FR)	5.4	4.9	5.0	4.7	-7.6%
Brussels (BE)	5.4	5.1	4.8	4.7	-0.9%
Mulhouse (FR)	4.1	3.6	3.1	3.9	+24.9%
Namur (BE)	4.3	4.3	3.9	3.8	-2.3%
Le Havre (FR)	3.0	3.2	2.9	2.8	-2.3%
Lille (FR)	2.3	2.4	1.9	2.3	+15.0%
Dunkirk (FR)	2.6	2.1	2.1	2.0	-3.2%
Marseille (FR)	2.0	2.1	1.8	2.0	+12.8%
Metz (FR)	1.7	1.8	1.4	1.5	+7.5%
Lyon (FR)	1.2	1.2	1.1	1.2	+14.9%
Ports de l'Escaut[44] (FR)	1.2	1.2	1.1	1.2	+9.8%
Charleroi[45] (BE)	n.a	n.a	1.0	1.1	+14.4%
Villefranche-sur-Saône (FR)	0.7	0.7	0.7	0.6	-16.4%
Total	219.9	210.5	196.5	202.6	+3.1%

Sources: Voies Navigables de France, Ports de Paris, Port de Liège, Port Autonome du Centre et de l'Ouest, Port de Strasbourg, Port de Mulhouse, Port de Bruxelles, Port de Namur, Nouveau Port de Metz, Port de Lille, Port de Dunkerque, Port of Antwerp-Bruges, Association française des ports intérieurs (AFPI)
The "total" relates only to the ports mentioned in the table, and not to all French and Belgian ports.

[42] From 2021 onwards, figures for inland waterway goods transport at the Port of Antwerp and Zeebrugge appear under the name "Port of Antwerp-Bruges".
[43] The North Sea Port is a port area crossing Belgium and the Netherlands and is the result of the merger of three ports: Ghent (BE), Terneuzen (NL) and Flushing (NL).
Figures for the Port of Ghent are no longer available as it is now part of the North Sea Port. However, an estimation could be made by the CCNR, based on data provided by, on the one hand North Sea Port, on the other hand CBS for Flushing and Terneuzen. The estimation was then made possible by proceeding as follows:
Data from North Sea Port – (data from Port of Flushing + data from Port of Terneuzen).
[44] "Ports de l'Escaut" or "Syndicat Mixte Dock Seine Nord Europe Escaut", more information available at : https://hautsdefrance.cci.fr/cci-grand-hainaut/docks-seine-nord-europe-escaut/
[45] Data were only available from 2023 onwards.

TOTAL YEARLY WATERSIDE TRAFFIC (IN MILLION TONNES)





Negative rate of change in 2024 vs 2023

Positive rate of change in 2024 vs 2023

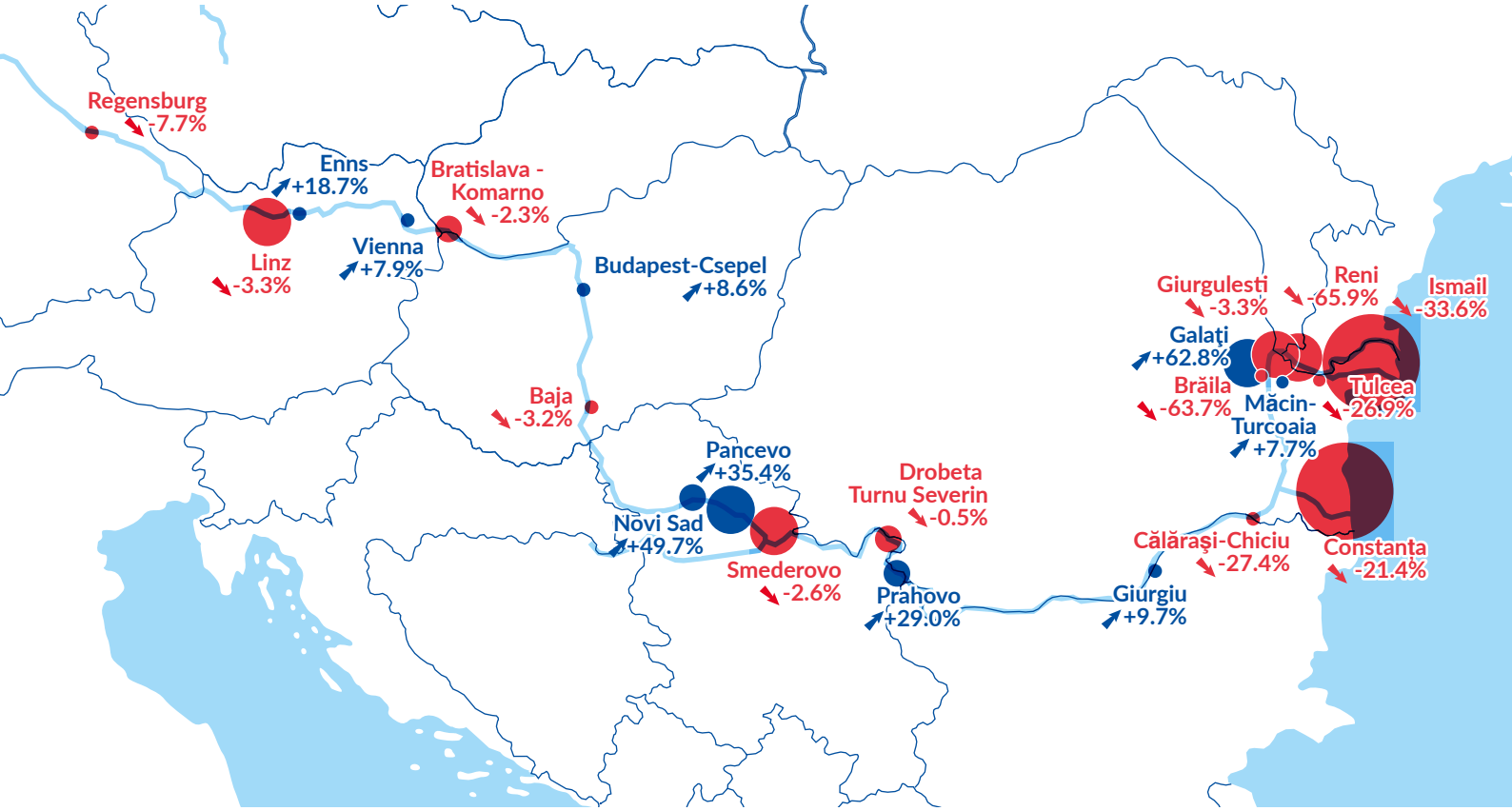
DANUBE PORTS

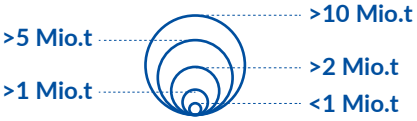
TABLE 5: **INLAND WATERWAY CARGO HANDLING IN MAJOR DANUBE PORTS** (IN MILLION TONNES) **AND RATE OF CHANGE 2024/2023**

	2021	2022	2023	2024	2024/2023
Constanţa (RO)	15.8	15.4	21.7	17.0	-21.4%
Ismail (UA)	4.1	8.9	20.3	13.4	-33.6%
Reni (UA)	1.4	6.8	10.1	3.4	-65.9%
Galaţi (RO)	3.3	3.1	1.9	3.2	+62.8%
Linz (AT)	3.5	2.9	2.9	2.8	-3.3%
Smederovo (RS)	3.2	3.0	2.8	2.8	-2.6%
Giurgulesti (MD)	1.8	2.1	2.7	2.6	-3.3%
Pancevo (RS)	0.9	1.6	1.6	2.2	+35.4%
Bratislava – Komarno (SK)	1.8	1.9	1.5	1.5	-2.3%
Drobeta Turnu Severin (RO)	1.2	1.0	1.4	1.4	-0.5%
Prahovo (RS)	1.0	0.9	1.0	1.4	+29.0%
Novi Sad (RS)	1.4	0.9	0.9	1.4	+49.7%
Regensburg (DE)	1.3	1.1	1.0	0.9	-7.7%
Budapest-Csepel (HU)	1.2	1.0	0.9	0.9	+8.6%
Giurgiu (RO)	1.0	0.7	0.7	0.8	+9.7%
Călăraşi-Chiciu (RO)	0.9	0.6	0.9	0.7	-27.4%
Măcin (RO)	1.2	0.9	0.7	0.7	+7.7%
Vienna (AT)	0.9	0.6	0.6	0.7	+7.9%
Enns (AT)	0.7	0.5	0.4	0.5	+18.7%
Baja (HU)	0.6	0.3	0.4	0.3	-3.2%
Brăila (RO)	0.5	0.8	0.4	0.1	-63.7%
Tulcea (RO)	1.3	0.5	0.2	0.1	-26.9%
Total	**49.0**	**55.7**	**75.0**	**58.9**	**-20.4%**

Sources: Danube Commission market observation report, Romanian National Institute of Statistics
The "total" relates only to the ports mentioned in the table and not all Danube ports. The data used in figure 6 come from the Port of Constanța while the data used in this table come from the Romanian National Institute of Statistics. This can explain the slight difference in the figures reported.

TOTAL YEARLY WATERSIDE TRAFFIC (IN MILLION TONNES)





Negative rate of change in 2024 vs 2023

Positive rate of change in 2024 vs 2023

SAVA PORTS

TABLE 6: **INLAND WATERWAY CARGO HANDLING IN MAJOR SAVA PORTS** (IN 1,000 TONNES) **AND RATE OF CHANGE 2024/2023 ***

	2021	2022	2023	2024	2024/2023
Other ports (Serbia) **	2,283	3,200	4,381	1,959	-55.3%
Sremska Mitrovica (Serbia)	693	1,194	722	446	-38.2%
Šabac (Serbia)	224	142	131	203	+54.9%
Slavonski Brod (Croatia)	192	161	180	154	-15.5%
Sisak (Croatia) ***	29	38	29	n.a	n.a
Brčko (Bosnia and Herzegovina - BaH)	31	41	61	15	-75.6%
Total	3,452	4,775	5,505	2,777	-49.5%

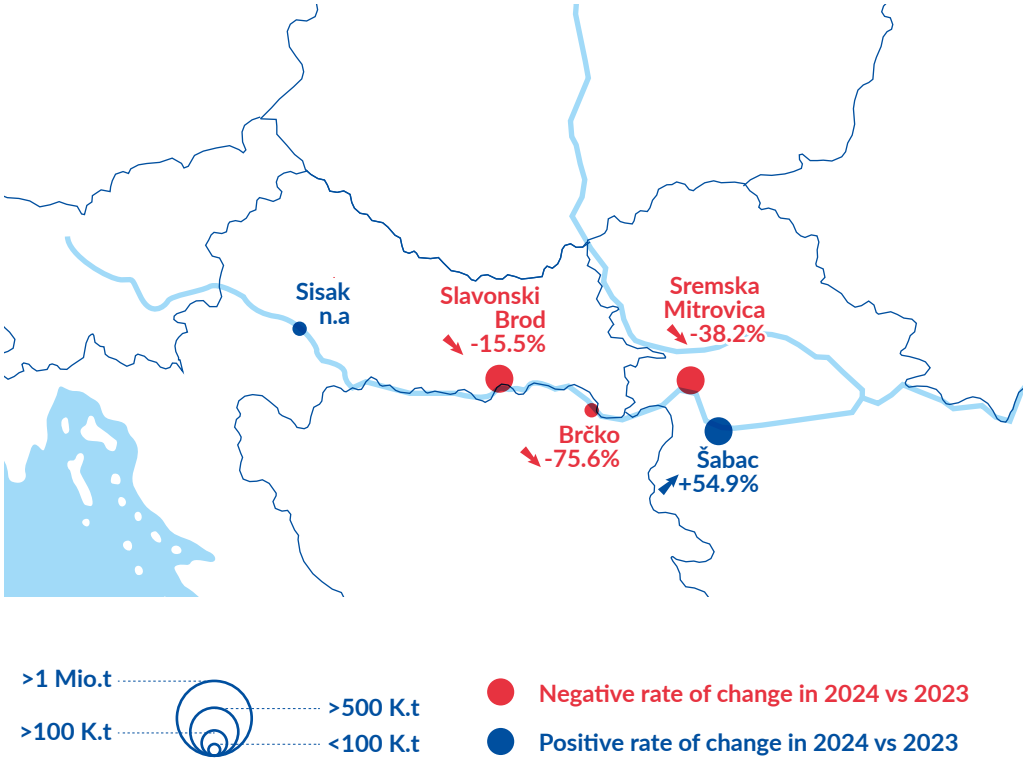
Source: International Sava River Basin Commission

** In 2015, the Port of Šamac in Bosnia and Herzegovina reported bankruptcy, therefore no transhipment of cargo has been recorded since then. The production process of Brod oil refinery has been at a standstill since 2020. Since 2018, data for smaller transhipment places in Serbia began to be collected as part of the category "other ports".*

*** In 2024, transhipment numbers were considerably lower than the previous years (driven by a strong decrease in the transport of coal and construction materials), reflecting the challenges and stagnation affecting economic activities across the Republic of Serbia and the surrounding region.*

**** Several important companies on the Upper Sava had to close down in 2024 which has had a considerable impact on the activities of the Port of Sisak and explains the fact that no data are available in 2024.*

TOTAL YEARLY WATERSIDE TRAFFIC (IN 1,000 TONNES)




SRB

06

CARGO FLEETS

- In Rhine countries, the number of small vessels in the inland navigation sector continued to follow a decreasing trend while the number of large vessels continued its increase. The Danube fleet is dominated by dry cargo vessels as well as push and tug boats. More than 70% of the total transport volume on the Danube is carried by pushed convoys.
- For Rhine countries, the newbuilding activity declined in 2024 compared to 2023, especially for dry cargo vessels, with only 13 new units built (down from 34 in 2023). Tanker vessel construction also slowed slightly, with 38 new vessels added, compared to 49 in the previous year.
- The average loading capacity of newbuilt tanker vessels increased significantly from 4,218 tonnes in 2023 to 5,326 tonnes in 2024, confirming the ongoing trend towards larger vessels. The average loading capacity for new dry cargo vessels also rose, reaching 4,230 tonnes, up from 2,716 tonnes. Most newly built vessels in both the dry and liquid cargo segments were registered in the Netherlands.
- In terms of age structure, around 80% of dry cargo vessels were built in the 20th century, while only 38% of tankers date from that period, reflecting a newer tanker fleet overall.

II SIZE OF FLEETS
PER MACRO-REGION AND COUNTRY IN EUROPE

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

	Dry cargo vessels	Liquid cargo vessels	Push and tug boats	
RHINE FLEET	6,381	1,453	1,326	9,160
DANUBE FLEET	2,523	120	681	3,324
OTHER COUNTRIES *	786	0 #	277	1,063
	9,595	1,543	2,254	13,392 **

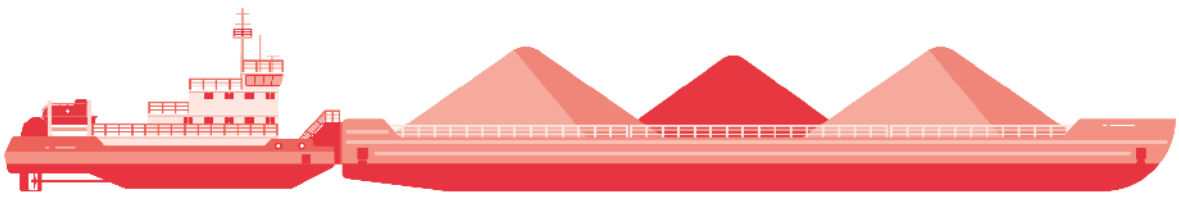
Sources: 1) Rhine countries: VNF (France), CBS/Rijkswaterstaat (Netherlands), ITB (Belgium), German Waterways and Shipping Administration (WSV), Registration Duties, Estates and VAT authority of Luxembourg, Swiss Rhine ports. 2) Danube countries (German Danube fleet, Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria, Moldova, Romania, Ukraine): Danube Commission. Other countries: Eurostat [iww_eq_loadcap], [iww_eq_age].

** Other countries = Poland, Czech Republic, Italy, Finland, Lithuania*

*** The figures for the total number of vessels exclude the German Danube fleet, which is included in the Danube fleet data, as they are also captured in the Rhine fleet category. This explains why the figures for the category "total number of vessels" are different from the total of the three categories (Rhine fleet + Danube fleet + other countries). German Danube fleet in 2022 = dry cargo (95); liquid cargo (30); push and tug boats (30).*

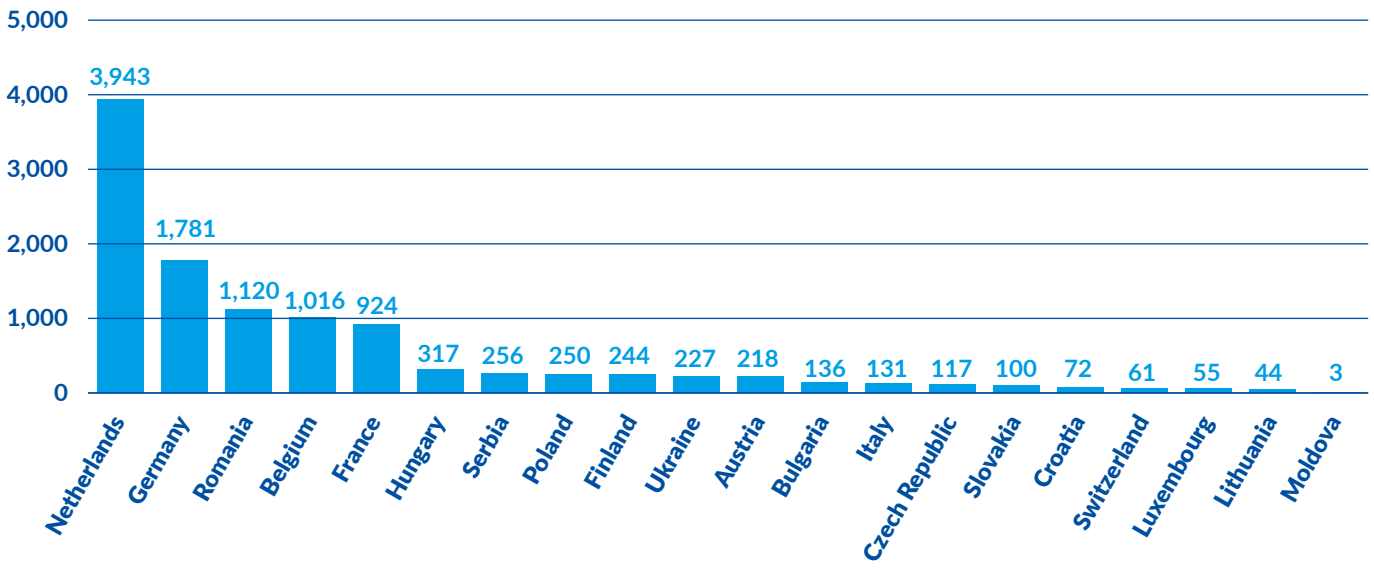
Rhine fleet (2024) except for Germany (2023) and Luxembourg (2025), Danube fleet (2022), other countries (2023) except for Italy (2017).

 # Based on the existing statistics, it is not possible to identify liquid cargo vessels for other countries. The vessels in these countries were all categorised as dry cargo vessels.



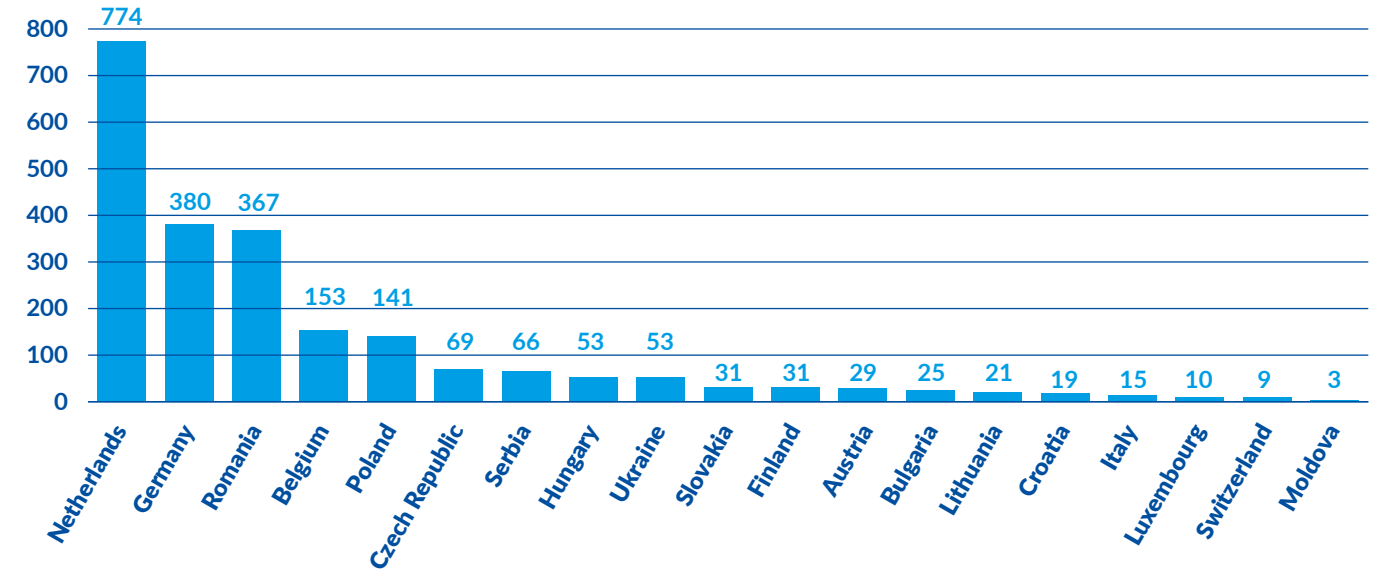
The following figures show the number of dry and liquid cargo vessels taken together (self-propelled vessels and barges) and the number of push and tug boats per country in Europe.

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



Sources: Eurostat [iww_eq_loadcap], national sources for Rhine countries (Registration Duties, Estates and VAT authority of Luxembourg, Swiss Rhine ports, German Waterways and Shipping Administration, VNF, ITB, Rijkswaterstaat and CBS) and Danube Commission for Danube countries (Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria, Moldova, Romania, Ukraine)
** Data are for 2023, except for Italy (2017), Danube countries (2022) and Luxembourg (2025)*

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



Sources: Eurostat [iww_eq_age], Registration Duties, Estates and VAT authority of Luxembourg, and Danube Commission for Austria, Moldova, Romania and Ukraine
** Data are from 2023, except for Italy (2017), Austria, Moldova, Romania and Ukraine (2022) and Luxembourg (2025).*

EVOLUTION
OF THE RHINE FLEET

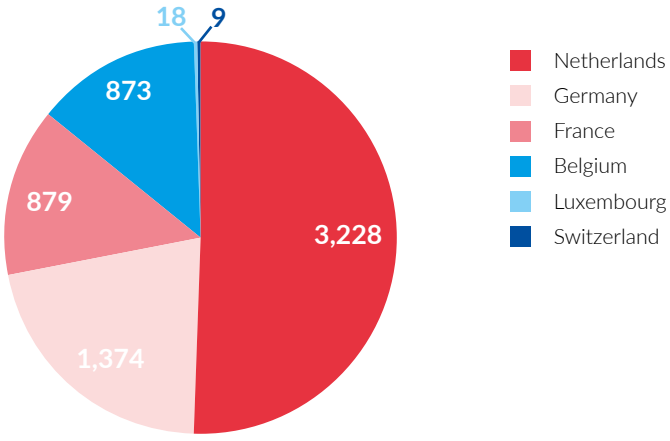
DRY CARGO FLEET IN RHINE COUNTRIES

Fleet data used for this part are entirely based on national fleet data from waterway administrations. The reason for this 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.

Data used for the Dutch fleet contain the inland vessels that are registered in the Netherlands, and which were active (in the Netherlands as well as abroad) in 2024[46]. The total number of dry cargo vessels registered in Rhine countries was, according to these sources, 6,381 in 2024, compared to 6,410 in 2023, 6,768 in 2022 and 6,901 in 2021. As these figures show, there has been a clear downward trend, in particular in the most recent past. This downward trend is due to the decline in the number of small vessels. Another more recent cause is the export of dry cargo vessels from the Rhine to the Danube region within the Solidarity Lanes initiative.

The share of the Dutch fleet within all dry cargo vessels in Rhine countries is 51%. Germany is ranked second with a share of 22%, followed by France (14%), Belgium (14%), Switzerland (<1%) and Luxembourg (<1%).

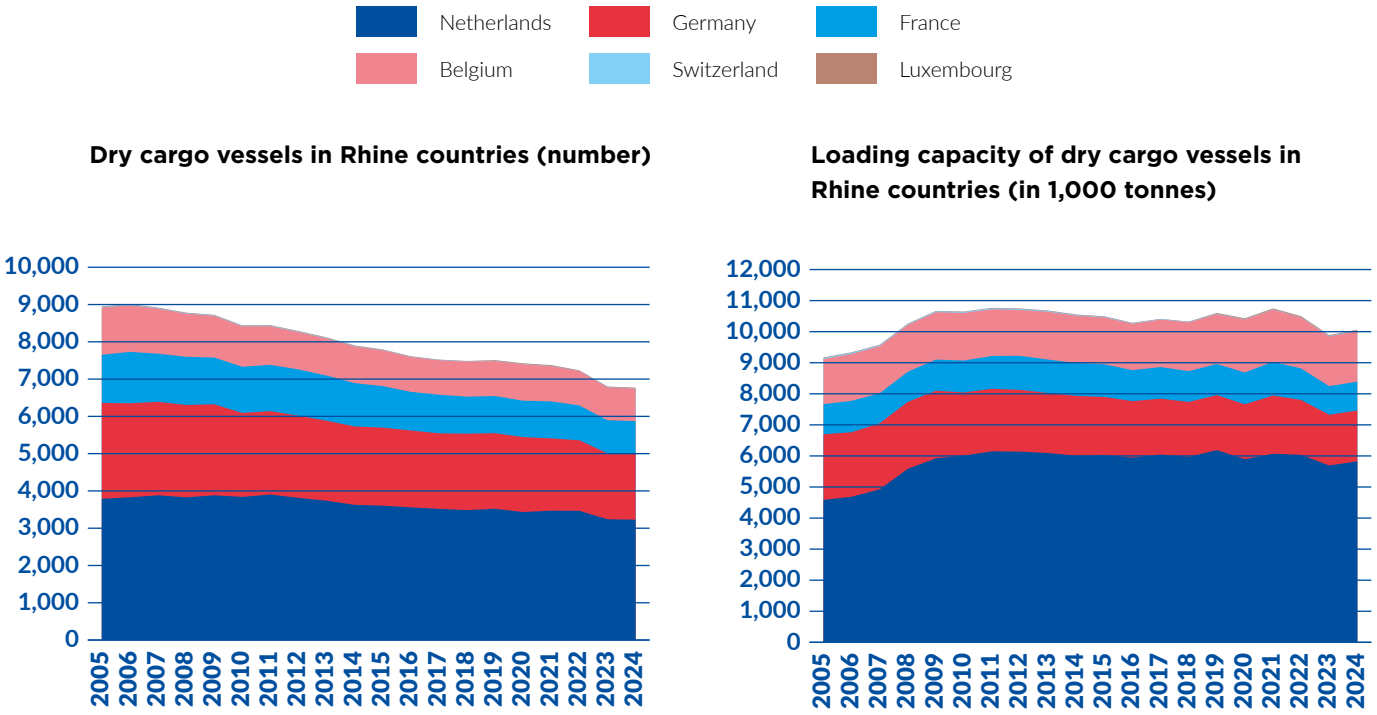
FIGURE 3: **NUMBER OF DRY CARGO VESSELS IN RHINE COUNTRIES IN 2024 ***



Sources: CCNR based on national data (see table 1)
** Data for Germany relate to 2023.*

[46] *The Statistical Office of the Netherlands (CBS) receives raw data on 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 2024 in the Netherlands.*

FIGURES 4 AND 5: **DRY CARGO FLEET IN RHINE COUNTRIES ***

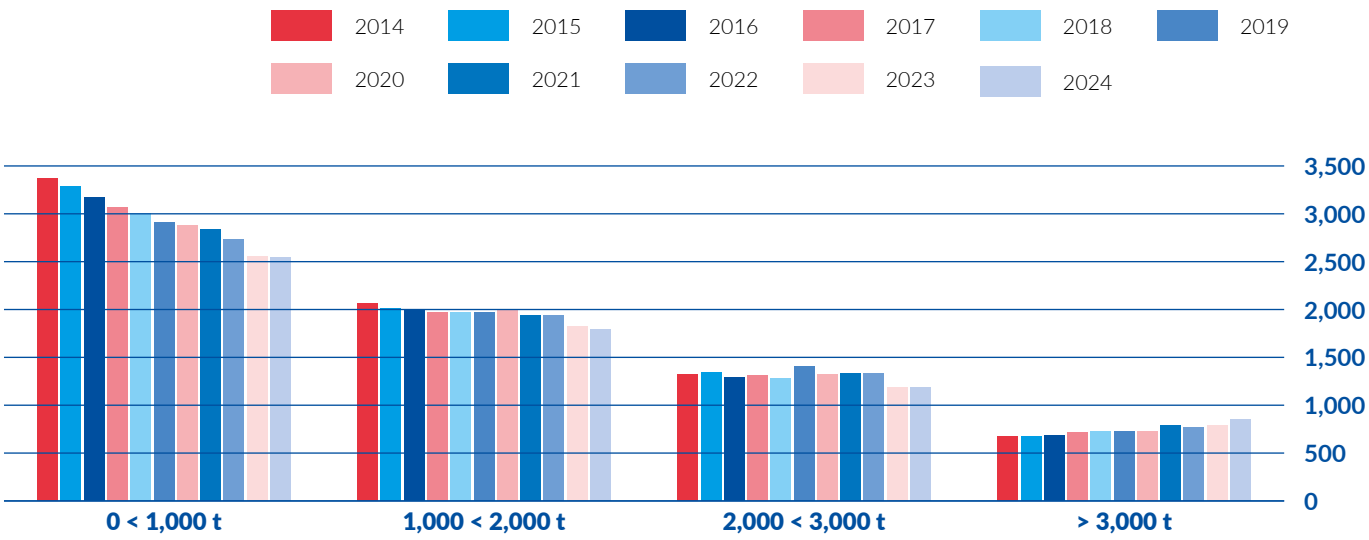


Sources: CCNR based on national data (see table 1)
** For Germany, data were not available for 2024, so 2023 data were used for this year.*

The total loading capacity of the dry cargo Rhine fleet has remained rather constant since 2008 and amounted to 10.0 million tonnes in 2024. The average loading capacity per vessel was 1,577 tonnes in 2024, compared to 1,296 in 2012.

It is often cited that the number of small vessels in the inland navigation sector is decreasing. Long-term data tend to confirm this hypothesis. As the following figure shows, the number of vessels with a maximum deadweight of 1,000 tonnes pursued a decreasing trend between 2014 and 2024. In the more recent past (2023-2024) the number of vessels decreased also for larger dry cargo vessels. This can be explained by the export of dry cargo vessels to the Danube region, which took place in 2023. Altogether, the number of dry cargo vessels in 2023 counted 413 vessels less than in 2022. This was a reduction of 5.7% of the fleet. A part of this reduction is presumed to be due to the export of vessels, while another part is presumed to be due to the declining trend for dry cargo vessels.

FIGURE 6: **DRY CARGO FLEET IN RHINE COUNTRIES PER LOADING CAPACITY CATEGORY**

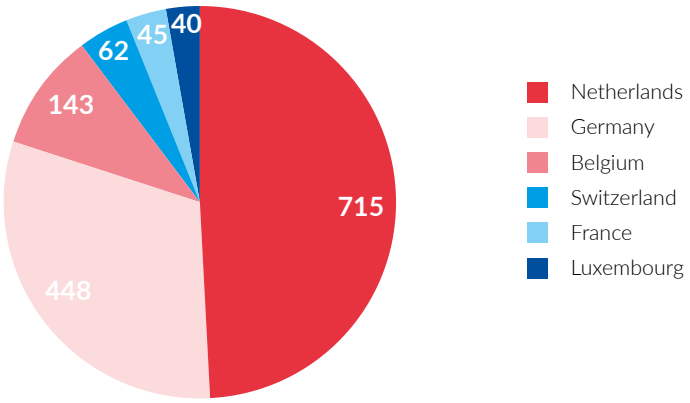


Sources: National administrations in Rhine countries, CCNR analysis

LIQUID CARGO FLEET IN RHINE COUNTRIES

The share of the Dutch fleet within all liquid cargo vessels in Rhine countries is 49%. Germany is ranked second with a share of 31%, followed by Belgium (10%), Switzerland (4%), France (3%) and Luxembourg (3%). The total number of tanker vessels has decreased since 2012, as the number of vessels being phased out (mostly single hull vessels) was higher than the number of new (double hull) vessels entering the market.

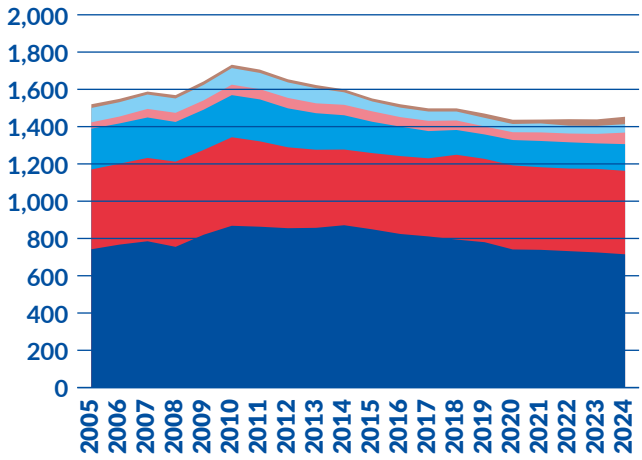
FIGURE 7: **NUMBER OF LIQUID CARGO VESSELS IN RHINE COUNTRIES IN 2024 ***



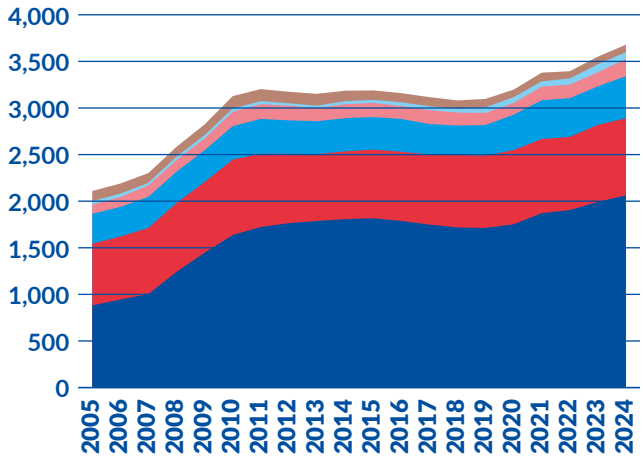
Sources: CCNR based on national data (see table 1)
** For Germany, data relate to 2023.*

FIGURES 8 AND 9: **LIQUID CARGO FLEET IN RHINE COUNTRIES ***

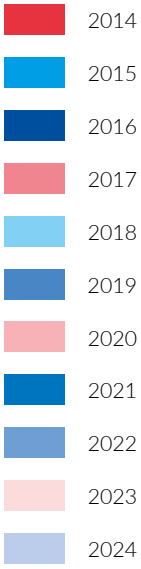
Liquid cargo vessels in Rhine countries (number)



Loading capacity of liquid cargo vessels in Rhine countries (in 1,000 tonnes)



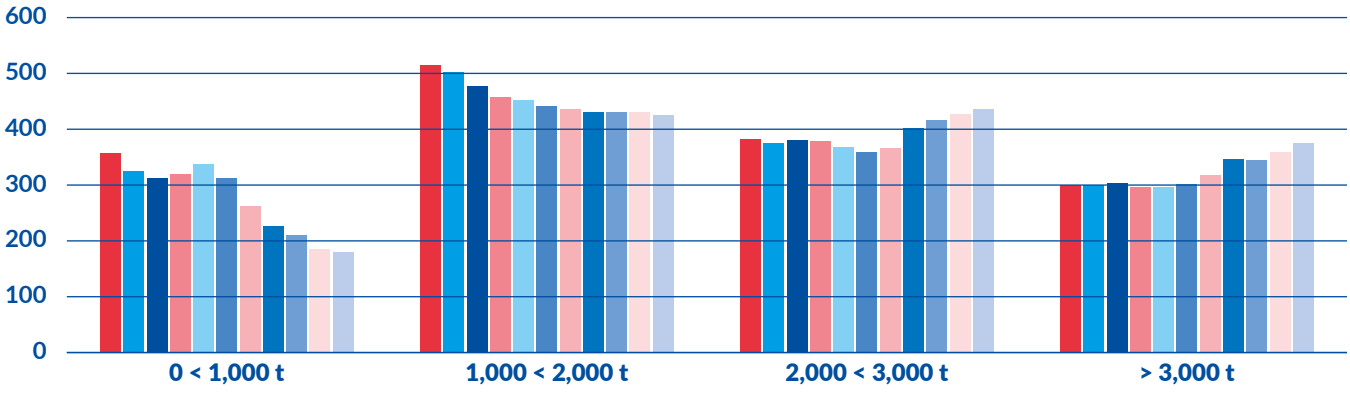
Sources: CCNR based on national data (see table 1)
** For Germany, data were not available for 2024, so 2023 data were used for this year.*



The number of liquid cargo vessels in Rhine countries was 1,453 in 2024, an increase compared to 1,439 in 2023, 1,440 in 2022 and 1,438 in 2021. The loading capacity of the entire tanker fleet has also increased. In 2024, it was 3.7 million tonnes, compared to 3.6 million tonnes in 2023, 3.4 million tonnes in 2022 and 3.4 million tonnes in 2021. The average loading capacity of a tanker vessel in Rhine countries rose to 2,557 tonnes in 2024, compared to 1,919 tonnes in 2012.

The increase of the entire loading capacity of the tanker fleet in recent years can be explained by large tanker vessels entering the market. This is confirmed by the figure below. At the same time as large tanker vessels entered the market in increasing numbers, smaller tanker vessels left the market.

FIGURE 10: **LIQUID CARGO FLEET IN RHINE COUNTRIES PER LOADING CAPACITY CATEGORY**



Sources: National administrations in Rhine countries, CCNR analysis

EVOLUTION OF THE DANUBE FLEET[47]

According to statistics of the Danube Commission (DC) (with clarification based on surveys of shipping companies in the DC Member States), by the end of 2022, 76% of the Danube fleet was composed of dry cargo vessels (2,523), 20% push boats and tugs (681) and 4% were tanker vessels (120).

DRY CARGO FLEET IN THE DANUBE REGION

According to the statistics of the Danube Commission (with clarification based on surveys of shipping companies in its Member States), by the end of 2022, 389 self-propelled dry cargo vessels were in operation together with 2,134 dry cargo barges, with a total cargo capacity of around 3.0 million tonnes[48]. The Romanian dry cargo fleet is the largest in the Danube area with a share of around 44% of all dry cargo vessels.

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 navigation conditions.

In 2024, for the Upper Danube at the lock of Gabčíkovo, 45% of all cargo was transported in pushed convoys. For the Middle Danube at Mohács, the share of pushed convoys within total transport was 68%. For the Lower Danube, the share of pushed convoys within total transport was even higher.

TABLE 2: **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 report

[47] Source: 2022 Danube Commission yearbook of statistics. Fleet data for 2022 except for Austria, Hungary, Romania and Bulgaria for which the latest available data are from 2021. For the German fleet, only the German Danube fleet is considered within the Danube fleet data.
[48] Idem

LIQUID CARGO FLEET IN THE DANUBE REGION

According to the statistics of the Danube Commission (with clarification based on surveys of shipping companies in its Member States), by the end of 2022, 36 self-propelled tanker vessels were in operation, together with 84 tanker barges, with a total cargo capacity of around 0.16 million tonnes[49].

[49] Source: 2022 Danube Commission yearbook of statistics. Fleet data for 2022 except for Austria, Hungary, Romania and Bulgaria for which the latest available data are from 2021. For the German fleet, only the German Danube fleet is considered within the Danube fleet data.

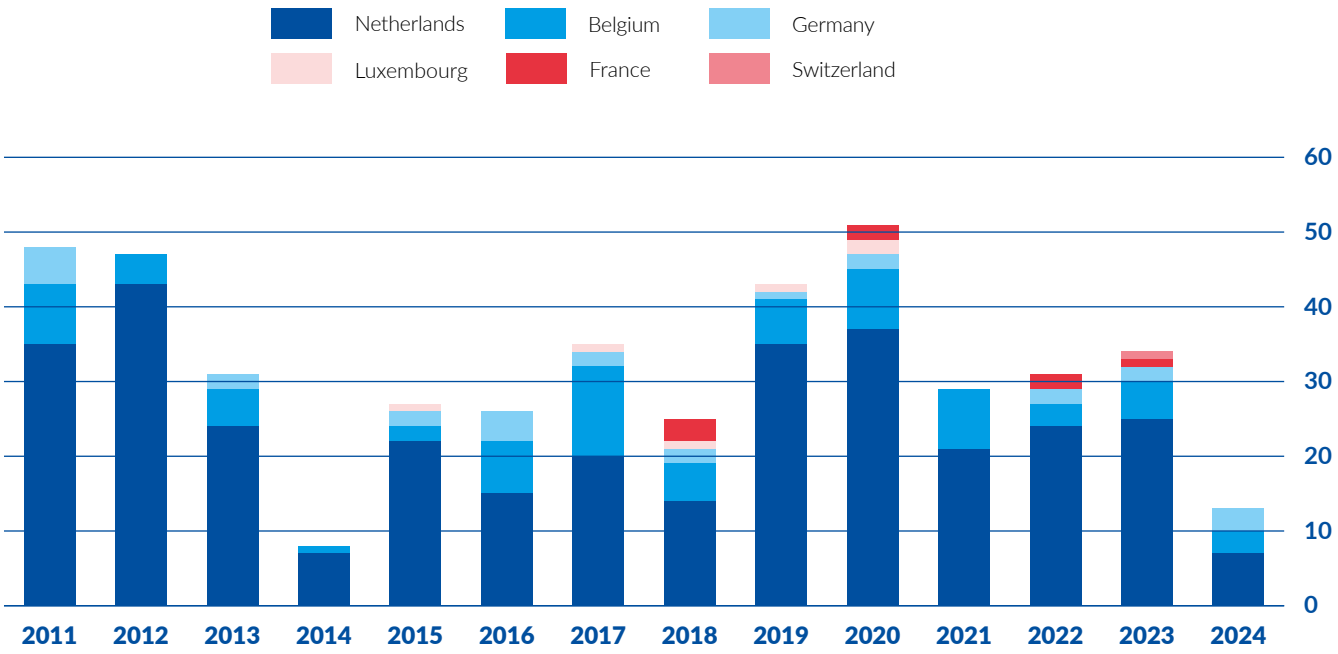
NEW VESSEL CONSTRUCTION IN RHINE COUNTRIES[50]

In 2024, newbuilding activity has slowed down compared to 2023. This was especially the case for dry cargo vessels, for which the newbuilding rate was less than half as high as in the previous year (13 new dry cargo vessels in 2024 compared to 34 new dry cargo vessels in 2023). The number of tanker vessels was also lower than the previous year (38 tanker vessels in 2024 compared to 49 tanker vessels in 2023). The weak development of transport demand in recent years, especially for dry cargo transport on the Rhine, can be considered as one main reason for the decrease in the newbuilding rate. It is also worth noting that vessels classified under the category "Other", such as patrol or service vessels, are not included in the graphs presented here.

Dry cargo

The majority of the new dry cargo vessels entering the market in 2024 are registered in the Netherlands (7 out of 13), followed by Belgium (3 out of 13) and Germany (3 out of 13).

FIGURE 11: **NEW DRY CARGO VESSELS COMING ON THE MARKET PER COUNTRY OF REGISTER** (NUMBERS, 2011-2024)

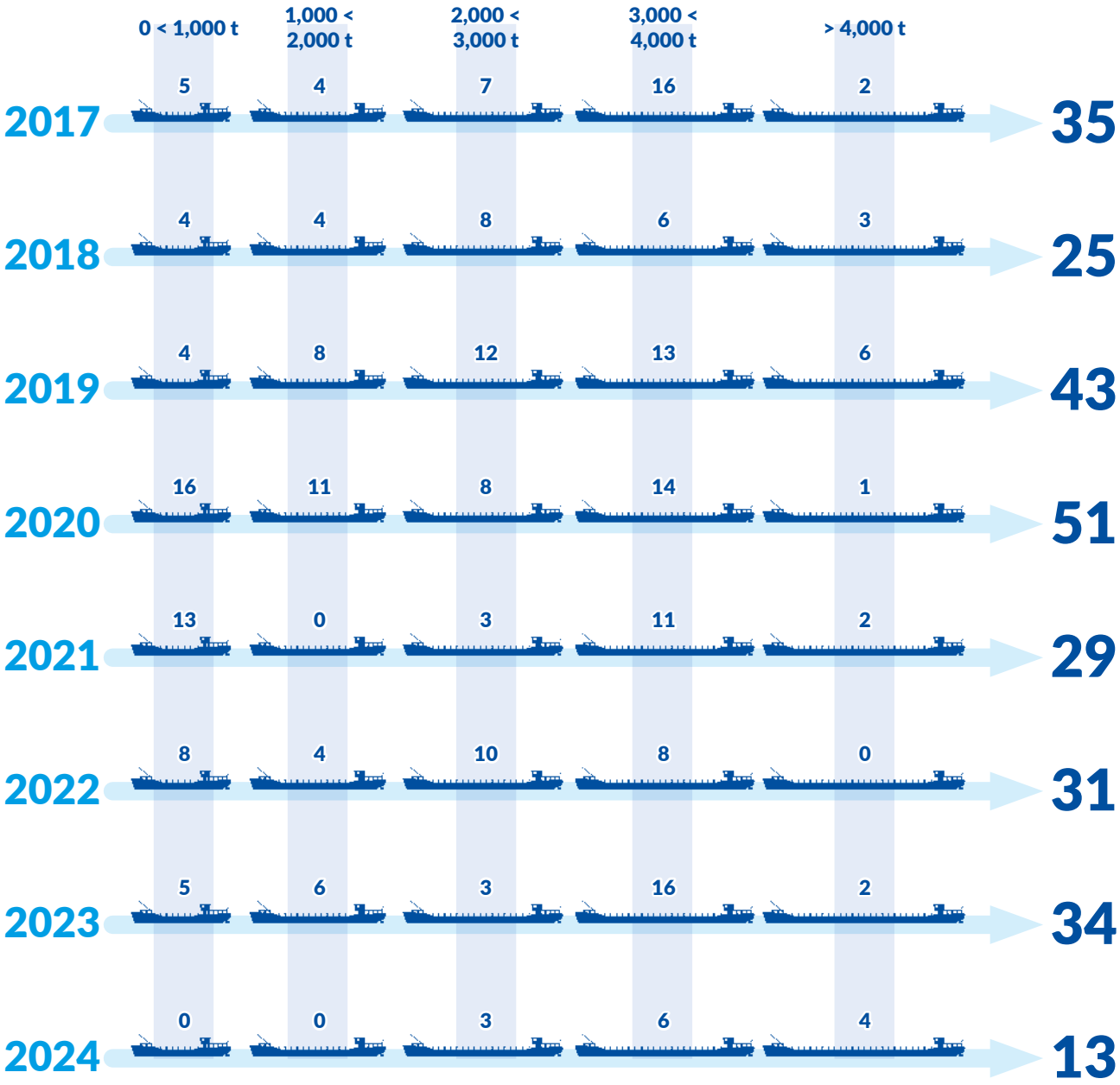


Source: IVR

[50] *The Netherlands, Germany, Belgium, France, Switzerland, Luxembourg*

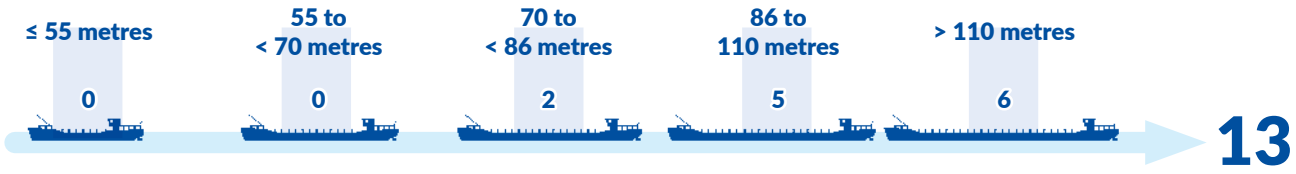
As is often the case, the most common loading capacity for newly built dry cargo vessels in 2024 was in the 3,000 < 4,000 tonnes range. The average loading capacity of new dry cargo vessels in 2024 amounted to 4,230 tonnes compared to 2,716 tonnes in 2023.

TABLE 3: **NEWLY BUILT DRY CARGO VESSELS ACCORDING TO LOADING CAPACITY**



Source: IVR
Note that in 2024, for four newly built vessels, the deadweight was partly estimated due to initially missing values. Estimations were also made in the previous years. Total numbers contain vessels for which no deadweight tonnage value is known, which explains the possible differences between the overall totals and the sum of vessels sorted by their loading capacity in each column.

TABLE 4: **NEWLY BUILT DRY CARGO VESSELS IN 2024 BY LENGTH**

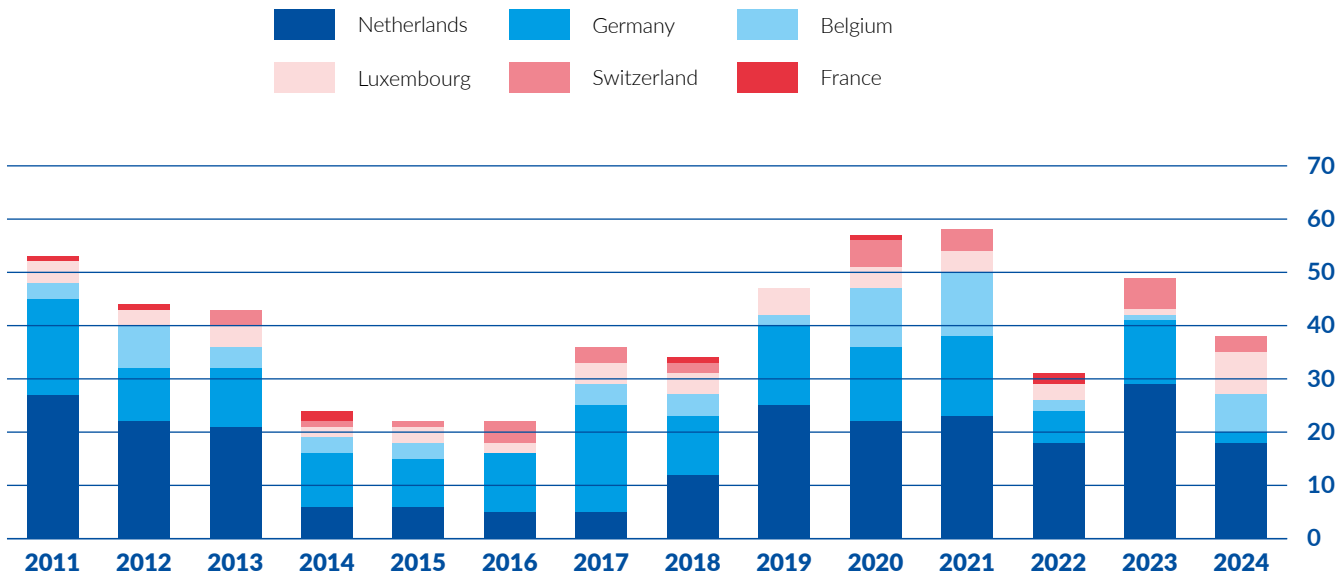


Sources: IVR, CCNR analysis

Liquid cargo

According to the IVR database, 38 new tanker vessels entered the market in 2024, a decrease compared to 2023, when 49 were delivered. As usual, the majority of the new vessels are registered in the Netherlands (18), followed by Luxembourg (8), Belgium (7), Switzerland (3) and Germany (2). Despite of the decrease in the number of vessels, the new loading capacity was higher in 2024 than in 2023 (see text further below).

FIGURE 12: **NEW TANKER VESSELS COMING ON THE MARKET PER COUNTRY OF REGISTER** (NUMBERS, 2011-2024)



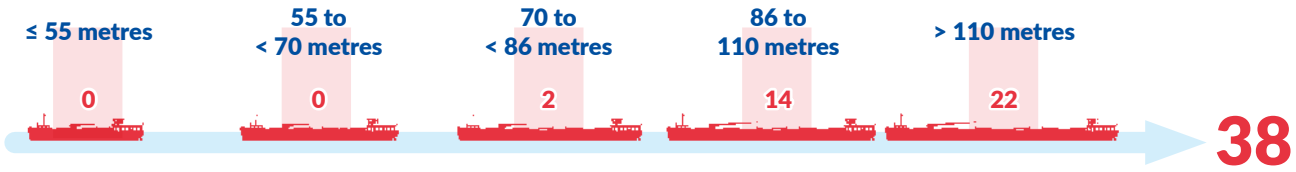
Source: IVR

The most common loading capacity of the new tanker vessels is in the category "> 4,000 tonnes," with 21 new tanker vessels in 2024. The overall average loading capacity increased from 4,218 tonnes in 2023 to 5,326 tonnes in 2024. This is solely explained by the high number of newbuilt vessels in the "> 4,000 tonnes" category in 2024 (21) compared to 2023 when 15 such vessels were built. In general, an increasing number of vessels are built to have a loading capacity exceeding 4,000 tonnes, often by several thousand tonnes, confirming the trend towards larger vessels being built in the liquid cargo segment observed in recent years.

TABLE 5: **NEWLY BUILT LIQUID CARGO VESSELS ACCORDING TO LOADING CAPACITY**

Sources: IVR, CCNR analysis
Note that in 2024, for seven newly built vessels, the deadweight was partly estimated due to initially missing values. Estimations were also made in the previous years. Total numbers contain vessels for which no deadweight tonnage value is known, which explains the possible differences between the overall totals and the sum of vessels sorted by their loading capacity in each column.

TABLE 6: **NEWLY BUILT LIQUID CARGO VESSELS IN 2023 BY LENGTH**

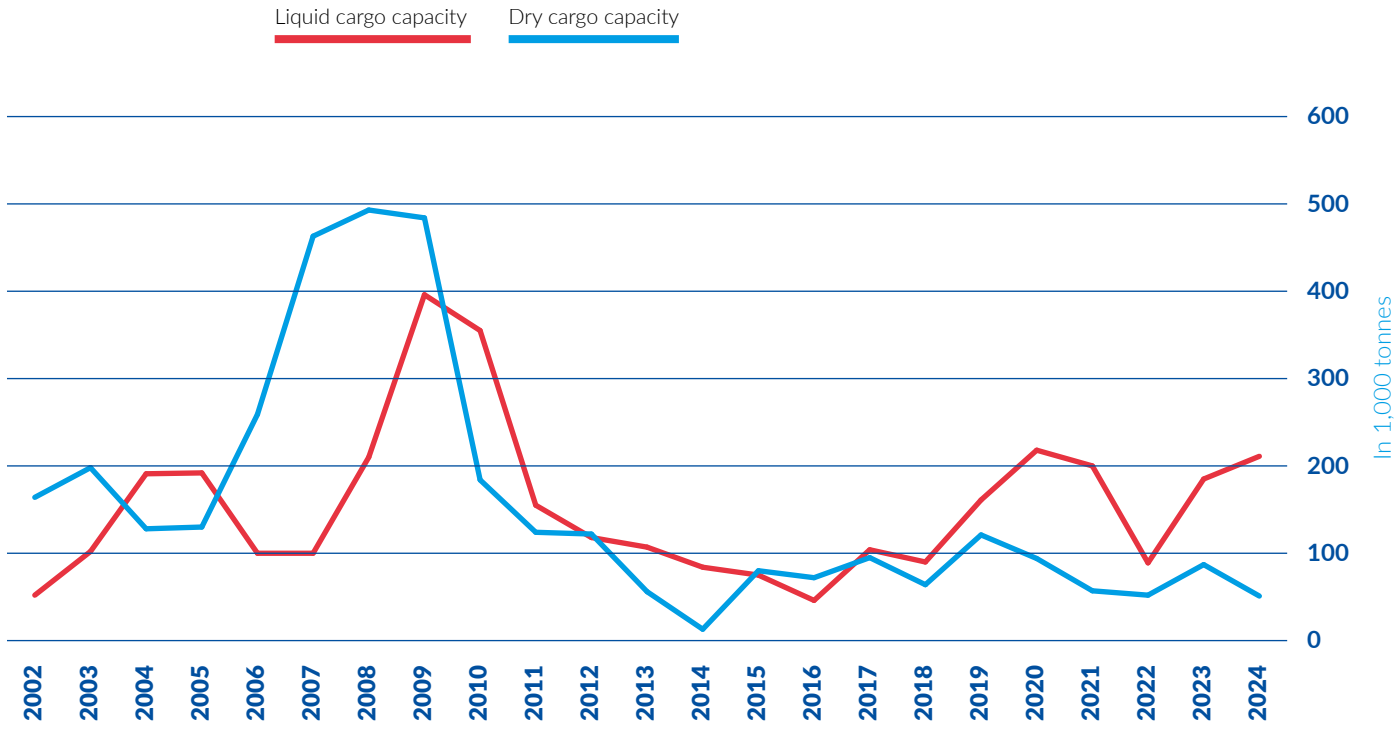


Sources: IVR, CCNR analysis

According to the IVR newbuilding data, one new push boat (registered in Switzerland) was delivered in 2024 (compared to 6 in 2023).

Figure 13 illustrates the new loading capacity for dry and liquid cargo vessels entering the market by year. Following a prolonged post-financial crisis slump, recent years have witnessed a resurgence in new capacity for liquid cargo vessels. For dry cargo vessels, the curve does not show a clear recovery. As was mentioned before, the development of transport demand in the dry cargo sector was very weak in recent years, which might have caused the prolonged slump in newbuilding rates and related capacities entering the market.

FIGURE 13: **NEW CAPACITY COMING ON THE MARKET FOR DRY AND LIQUID CARGO** (LOADING CAPACITY IN 1,000 TONNES)

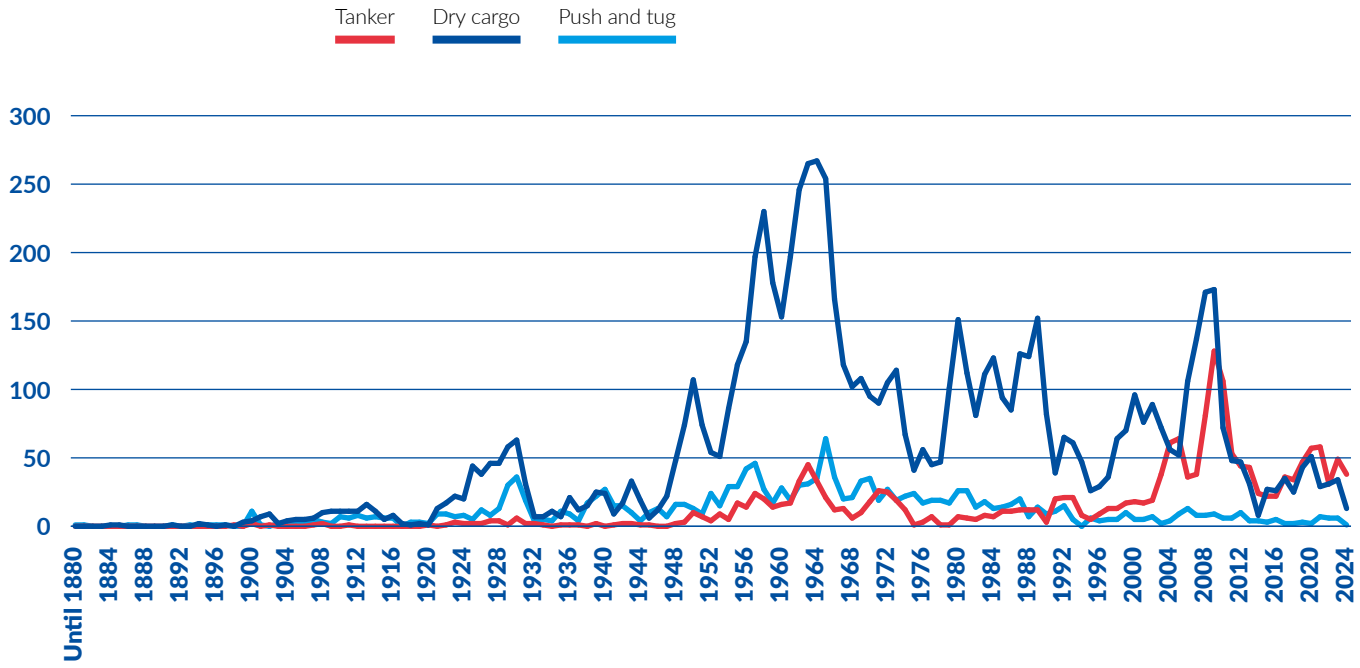


Source: IVR
In 2024, for eleven newly built vessels, the deadweight was partly estimated due to initially missing values. Estimations were also made in the previous years.

AGE STRUCTURE
OF THE RHINE CARGO FLEET

According to the vessel database of the IVR[51], around 80% of the dry cargo fleet was constructed in the 20th century, whereas this share amounts to 38% for the tanker fleet. According to this same database, the Netherlands holds the largest number of vessels within the Rhine fleet in almost every vessel category, followed by Germany.

FIGURE 14: **COMMISSIONING YEARS FOR THE RHINE FLEET OVER TIME** (NUMBER OF INLAND VESSELS)

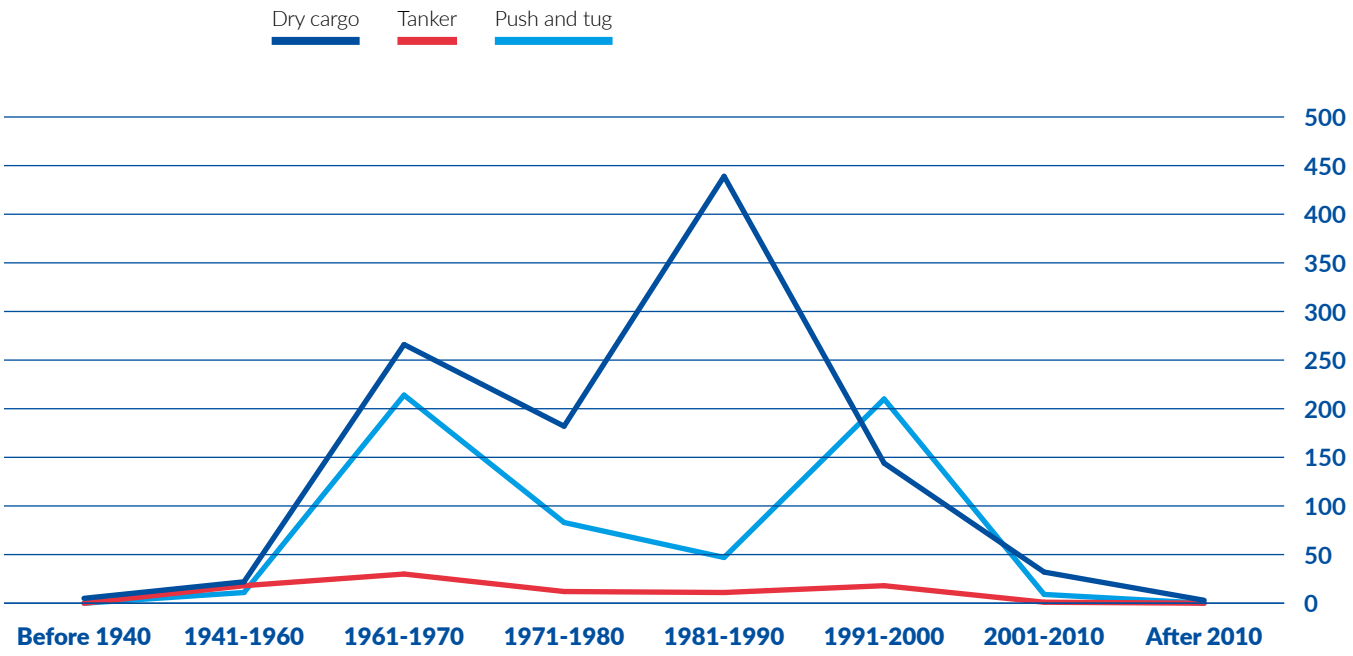


Sources: IVR, CCNR analysis
Note that nine dry cargo vessels and 12 push and tug boats have an unknown year of construction. Furthermore, 221 additional tanker vessels, 1,844 dry cargo vessels and 490 push and tug boats are recorded in the IVR database as being registered in countries other than Rhine countries.

[51] *The IVR database accounts for active vessels but might also include some inactive vessels, in particular those commissioned in earlier years.*

According to the Danube Commission data, most of the dry cargo fleet was built during the 1961-1970 and 1981-1990 periods. For the push and tug boat category, most vessels were built in the 1961-1970 and 1991-2000 periods. According to this same source, Romania holds the largest number of vessels within the Danubian fleet in every vessel category, followed by Hungary and Serbia.

FIGURE 15: **COMMISSIONING YEARS FOR THE DANUBE FLEET OVER TIME** (NUMBER OF INLAND VESSELS) *



Sources: 2022 Danube Commission yearbook of statistics, CCNR analysis
** Commissioning year is unknown for several vessels. This can explain the differences between the numbers for each fleet type in this graph compared to the total number of vessels registered in the Danubian fleet.*

CAPACITY
MONITORING

DRY CARGO VESSELS

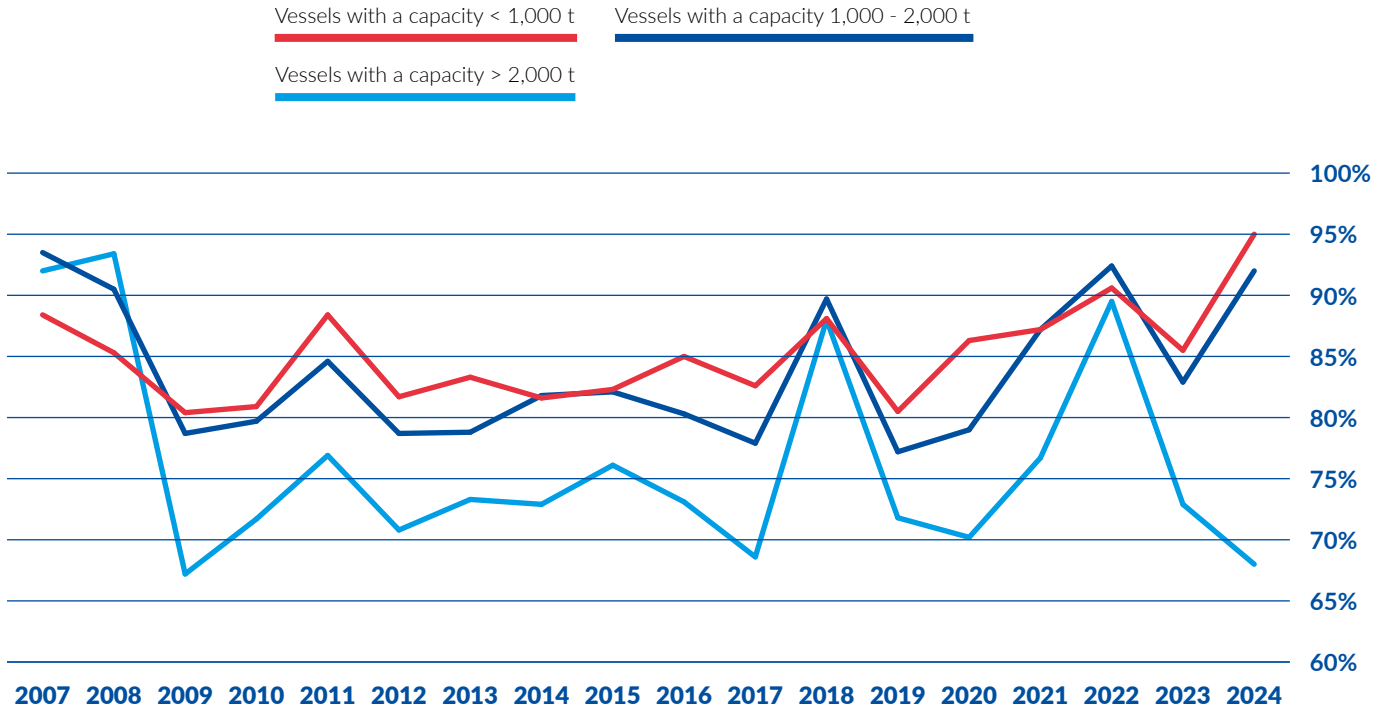
After a year 2023 marked by a major decline in goods transported on inland waterways, the situation stabilised in 2024. The segment of container transport stopped its downward trend, agricultural and food products experienced an increase in volumes, while the volumes of iron ore remained stable compared to 2023.
A notable exception is the drop in the transport of sand, stones and gravel and the drop in coal transport due to the energy transition, which causes a decline of EU coal imports.

Regarding the evolution of the fleet, the decrease in the number of vessels with a capacity below 2,000 t continued. Although smaller vessels offer flexibility during low water levels, they suffer from the shortage of boatmasters and benefit less from economies of scale than large vessels. In the meantime, the fleet of vessels with a capacity higher than 2,000 t expanded.

Compared to recent years, 2024 stands out as there has been no day with a water level below the equivalent water level on the Rhine. Therefore, there was no capacity reduction due to low water levels. The decrease in the utilisation of the capacity for large vessels is explained by the increase of vessels with a capacity above 2,000 t and the stable transport demand. For vessels below 2,000 t, the decrease in overall capacity due to the shrinking fleet combined with the stable transport demand led to an increase in the usage of the capacity. These two opposite dynamics result in an average utilisation of 78%, which is similar to 2023 (77%).

In the absence of low water levels, the observed trend is likely to continue. In the short term, the number of smaller vessels is expected to continue decreasing. But the growing trend towards automation may dampen the drop in the long run. As the energy transition progresses, the transport of coal will further decrease. The reverse modal shift, which was occurring particularly in the container segment, seems to have stopped. Nevertheless, the situation needs to be closely monitored as measures may be needed for inland waterway transport to remain attractive. Last but not least, the last two years (2023 and 2024) have been particularly favourable regarding water levels. Due to climate change, it is expected that low water level episodes will increase in the future. Therefore, even if 2024 seems more stable, the sector should keep on investing efforts into developing a resilient fleet.

FIGURE 16: **DEGREE OF CAPACITY UTILISATION OF DRY CARGO VESSELS IN THE RHINE AREA**



Sources: Panteia calculation based on data provided by CCNR

LIQUID CARGO VESSELS

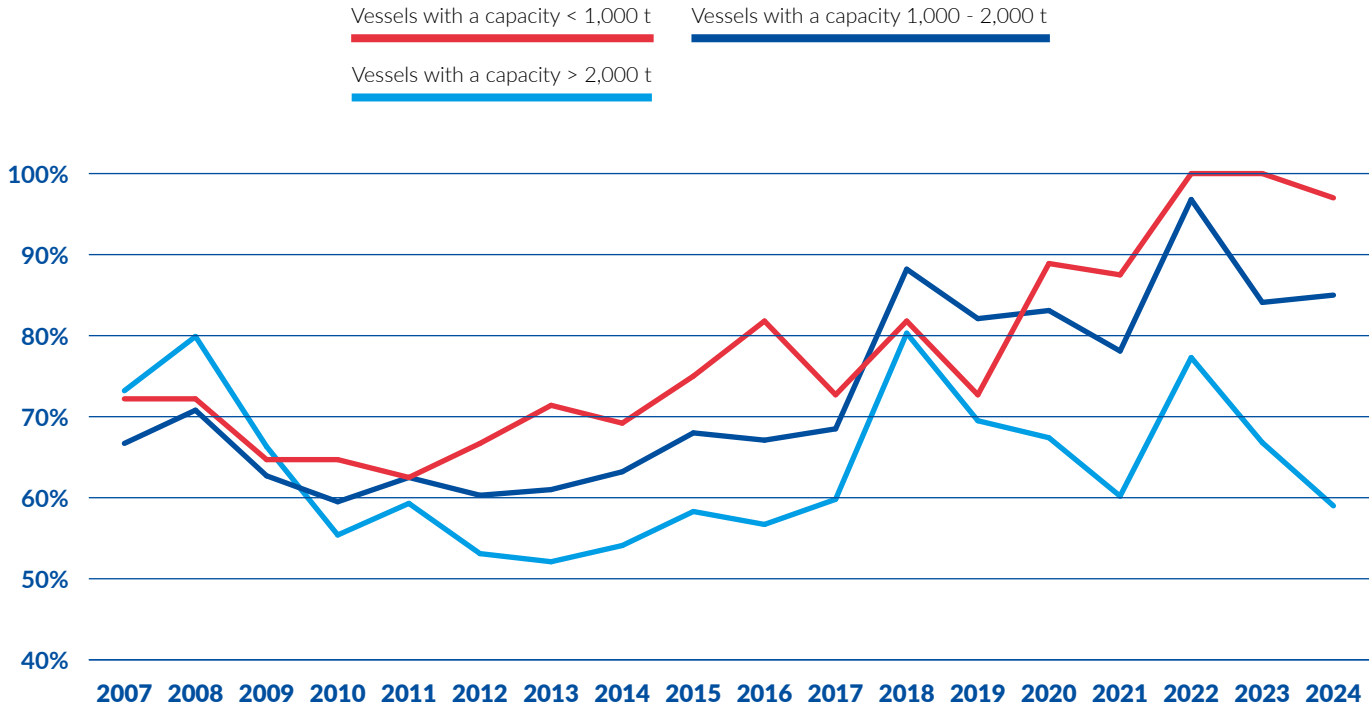
In contrast to the dry cargo sector, the liquid cargo sector experienced a sharp increase in the transport of oil products and chemicals compared to 2023. This is caused by a rising demand for LNG and the falling price of raw materials for the chemical industry.

Regarding the fleet, the number of vessels with a capacity below 1,000 t is decreasing as well as those with a capacity of between 1,000 t and 2,000 t, but this is less pronounced than in the case of dry cargo. On the other hand, the number of large vessels is growing (particularly in Switzerland and Luxembourg, with 10 and 6 newbuilt vessels respectively).

The tanker shipping market benefited in particular from the favourable conditions regarding water levels, as it is more sensitive to low water. Due to the investment in new vessels, the capacity utilisation of large vessels has decreased compared to 2023, despite increased volumes. On the other hand, capacity usage increased for the smaller tankers due to the increased demand and the shrinking fleet for small vessels. In the end, the vessels with a large capacity drive the average capacity utilisation rate, which has decreased from 71% in 2023 to 65% in 2024.

As it stands, the liquid cargo segment seems to face overcapacity, in the light of an average degree of capacity utilisation of only 65%. But given the foreseen increasing frequency of droughts, the additional capacity can well be a 'luxury' that will be necessary to face the future. The reason is that more vessels will be needed in the case of low water to transport the same amount of cargo. Moreover, even if the energy transition drives down the demand for oil products, this will be compensated for by the rising transport of liquid biofuels.

FIGURE 17: **DEGREE OF CAPACITY UTILISATION OF LIQUID CARGO VESSELS IN THE RHINE AREA**



Sources: Panteia calculation based on data provided by CCNR

INNOVATIVE
DEVELOPMENTS IN THE INLAND NAVIGATION FLEET CONTRIBUTING TO REDUCING EMISSIONS

In accordance with the mandate given by the Mannheim Ministerial Declaration of 17 October 2018, the CCNR adopted in December 2021 a roadmap for reducing emissions from inland navigation[52], which called for the creation of a database on innovative vessels.

To develop such a database, available data on innovative inland navigation vessels was compiled within the framework of the Inspection Regulation Committee of the CCNR, with the following scope:

- innovative vessels understood as being designed to emit less air pollutants or greenhouse gases than a conventional diesel vessel;
- freight and passenger vessels with a Rhine Vessel Inspection Certificate or a Union certificate[53];
- vessels planned, under construction, in service or cancelled projects.

Even if biofuels contribute to reducing - under certain conditions - greenhouse gas emissions, vessels running on biofuels were not taken into account in the analysis, as switching to biofuels does not call for a specific design or technical adaptation at the level of the vessel. Also, diesel electric vessels are not considered as innovative vessels.

For the purpose of this analysis, 81 vessels were considered: 57 freight vessels, 19 day-trip passenger vessels, 3 cabin vessels and 2 training vessels[54]. The vast majority of the innovative vessels sail with a Rhine Vessel Inspection Certificate. They are mainly new built vessels (around 85%) but also retrofitted vessels (around 15%).

The number of innovative vessels in service represents less than 0.2% of the entire inland navigation fleet in Europe, 56 of which were built, retrofitted or planned from 2021 onwards. Nine came into service in 2024, and ten are still considered as projects (both newbuilt and retrofit).

Several projects were foreseen to be built in 2023 and 2024 but suffered some delays. Indeed, such innovative projects involve complex technologies which are often applied for the first time on inland navigation vessels, making the risk of delay quite likely. Delays are generally linked to the manufacturers of such technologies being unfamiliar with maritime/inland navigation legislation, underestimation of complexity, lack of overall project management and financial issues.

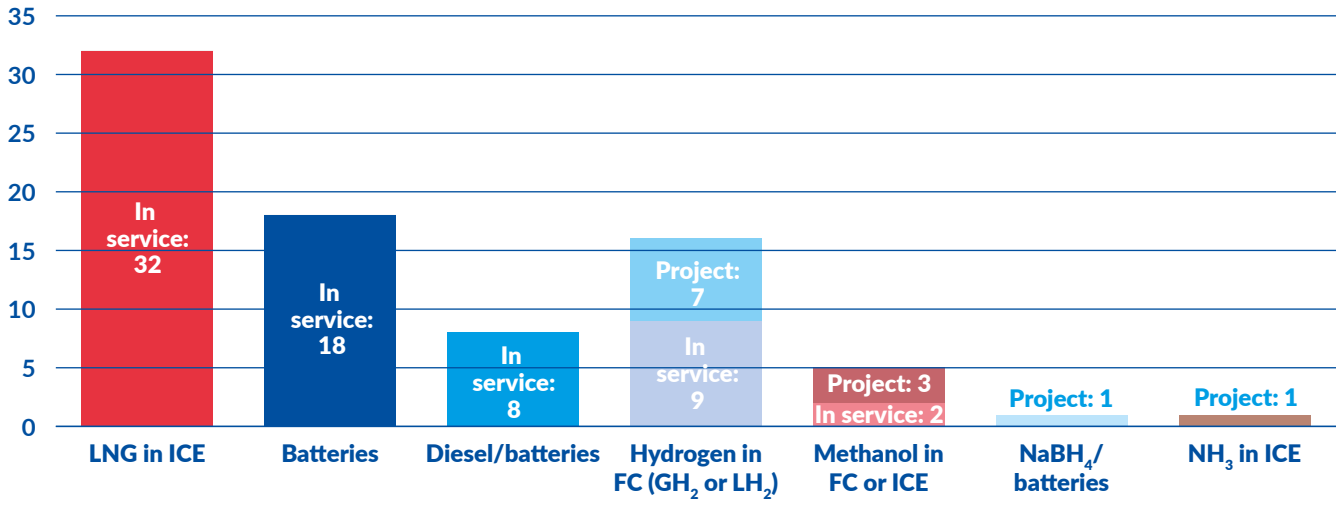
[52] See https://www.ccr-zkr.org/files/documents/Roadmap/Roadmap_en.pdf
[53] This excludes vessels with a strictly national certificate or vessels below the thresholds of the Rhine Vessel Inspection Regulations (RVIR) and the directive (EU) 2016/1629.
[54] The floating equipments were not taken into account for the purpose of this analysis but are included in the database.

Several projects have also been cancelled before being finalised[55]. The reasons behind the cancellation of a project could be of a different nature, such as economic (not enough demand, lack of subsidies), organisational (withdrawal of a partner) or even technical (safety or operational issues). Most of the projects cancelled were LNG propelled vessels. Indeed, fossil LNG is no longer considered as a long-term option, notably for reducing carbon emissions in inland navigation. The other vessels which were cancelled or removed from service concerned hydrogen or methanol propelled vessels. The reasons for these cancellations are firstly mostly economic and, secondly, technical. Four out of these vessels were planned to operate with fuel cell systems, as well as two which are currently out of service.

This trend does not consider the evolution of the number of innovative vessels outside the scope of this database.

These innovative vessels run or are expected to run on - as the primary energy carrier[56] - batteries, liquefied natural gas (LNG), methanol, compressed hydrogen (GH_2) mainly in combination with batteries, liquefied hydrogen (LH_2), sodium borohydride with batteries ($NaBH_4$) or ammonia (NH_3).

FIGURE 18: **NUMBER OF VESSELS USING ALTERNATIVE ENERGIES AS ONE OF THE MAIN ENERGY CARRIERS ***



Source: CCNR database

** The category "Hydrogen" includes vessels that use or are likely to use fuel cells for propulsion The category "Methanol" includes 4 vessels operating with a combustion engine and one foreseen to operate with a fuel cell system. The category "Batteries" include vessels sailing solely on batteries. The category "Diesel/batteries" consists solely of vessels that are capable of relying on batteries alone for propulsion. ICE=internal combustion engine; FC = Fuel cells*

Figure 18 above reflects the alternative energies used as one of the main energy carriers (for vessel propulsion). It often comes with other energy carriers onboard, notably diesel engines for redundancy purposes or as an emergency power source. The majority of vessels that run or plan to run on hydrogen usually use hydrogen in compressed form as it is cheaper than the liquefied form. Among those using GH_2, only one aims at employing it as the sole energy carrier, while the remaining 14 also have battery and/or diesel drivetrains. In other words, it is anticipated that different (modular) options for zero-emissions powertrains, using mixes of energy sources/

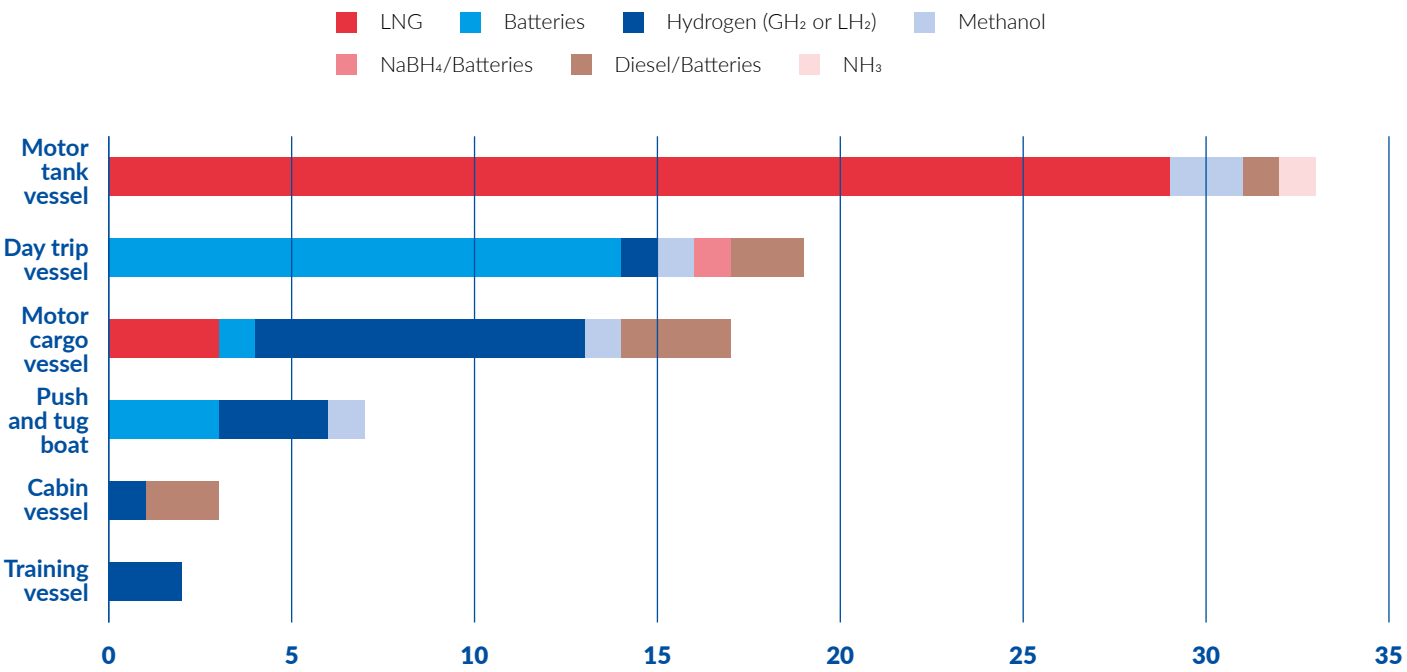
[55] *These are not taken into account in the 81 vessels considered in this analysis.*
[56] *The primary energy carrier is the most commonly used for vessel propulsion, while secondary and tertiary energy carriers are used to a lesser extent.*

fuels, will play a role in achieving the ambitious emission reduction objectives set at the international level. This is confirmed by the profile of the innovative vessels (in service, under construction or project) which almost all use multiple energy carriers (around 74%).

Moreover, there is no "one-size-fits-all" solution for achieving energy transition. The choice of an appropriate emission reduction technology depends on several factors, which include the sailing profile of the vessels, their type, the market segment in which they operate, but also the related technical constraints.

This is reflected in the following figure, showing how innovative applications find their way into the inland navigation sector.

FIGURE 19: **DISTRIBUTION OF INNOVATIONS PER VESSEL TYPE AND PRIMARY ENERGY CARRIER**[57]



Most of these innovative vessels are equipped with a combustion engine as their main energy converter (43), of which 33 are also equipped with an electric motor. In addition, eight vessels running mainly on batteries are also equipped with a combustion engine for redundancy purposes or as an emergency power source. This is a positive evolution which should facilitate a modular system approach. Indeed, the integration of batteries or fuel cell systems in existing vessels requires a vessel to be equipped with an electric motor in the first place. 26 vessels operate solely with battery electric propulsion systems or are capable of relying on batteries alone for propulsion and 18 operate with fuel cell systems. It should be highlighted that one vessel is designed to use swappable batteries containers.

[57] *Projects cancelled or out of service excluded.*

07

PASSENGER TRANSPORT

- In 2024, the active European river cruise fleet remained stable at 408 vessels, providing 60,702 beds. Although seven new vessels entered the market, an equal number was withdrawn. Newbuilding activity, which had been slow since the Covid-19 pandemic, showed signs of recovery in 2024 and is expected to accelerate in 2025 and 2026. Viking River Cruises alone has ordered 19 new vessels for delivery between 2025 and 2028.
- Demand for river cruises continued to grow strongly, with 1.39 million passengers recorded in the 2024 season - up 14% from 2023 - and €3.54 billion in ticket sales. Most passengers cruised on the Rhine and Danube, with North American, German, Austrian and Swiss guests accounting for the majority. The French rivers and the Douro followed, but at a considerable distance.
- Growth in terms of cruise traffic was observed on the Rhine, on the Moselle and on the Danube, however at a lower rate for the Danube. Capacity utilisation on the Danube, a key indicator in assessing the recovery of the river cruise sector, surpassed in 2024 the pre-pandemic levels of 2019.

FLEET
FOR RIVER CRUISES[58]

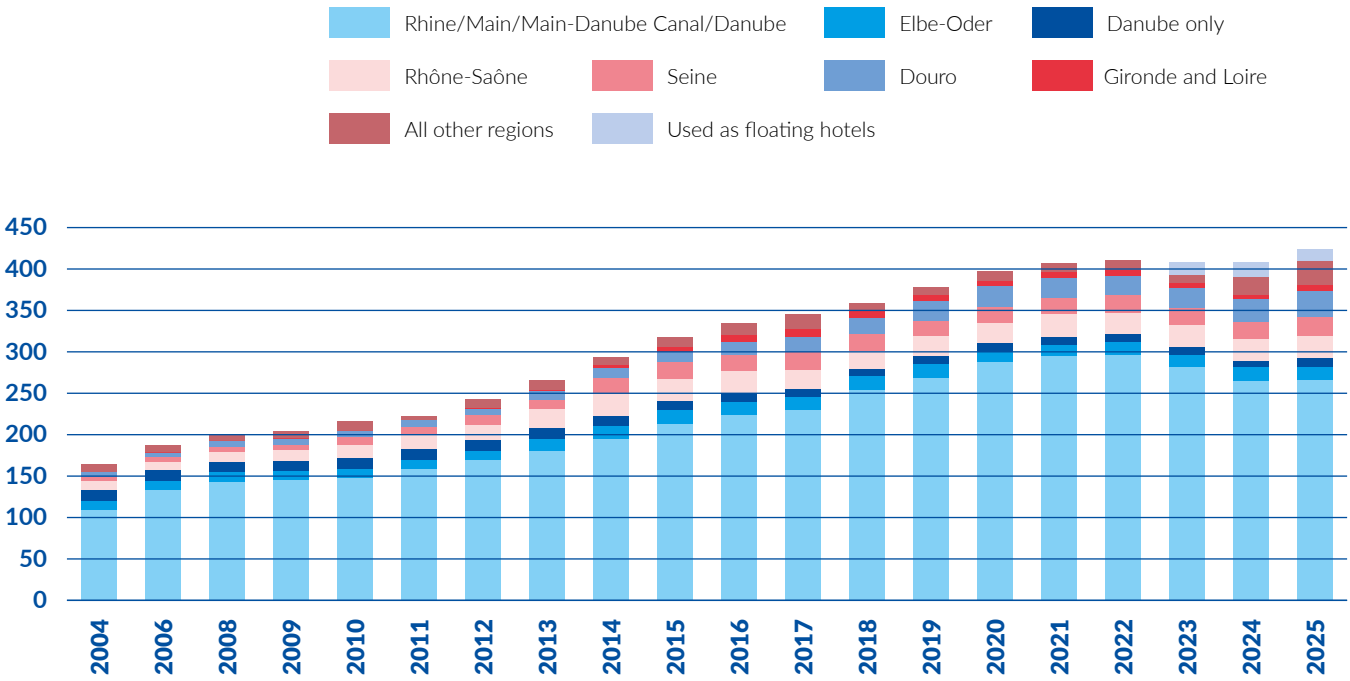
The active river cruise fleet in Europe[59], which represents more than 40% of the world active river cruise fleet, is mainly concentrated on central European waterways[60], accounting for nearly 75% of the total river cruise fleet in Europe. As in 2023, the number of active river cruise vessels in Europe in 2024 amounted to 408[61], representing 60,702 beds in total (compared to 60,402 beds in 2023). Indeed, despite seven new river cruise vessels entering the market in 2024, seven were also withdrawn.

Since Covid-19, the new building activity for river cruises remained rather slow between 2022 and 2024. However, it is expected to pick up again in 2025. Newbuilding figures for 2024 were indeed higher than in 2023 and are expected to almost triple in 2025. The order book for 2026 is also promising. As a sign of this positive development, Viking River Cruises, alone contracted 11 new vessels for 2025 and 2026 and eight more were ordered for 2027 and 2028. Recently more vessels than ever were ordered for the Rhône, Seine or the Douro.

The Russian war of aggression against Ukraine has spurred an increase in the demand for hotel capacity for war refugees from Ukraine, adding to an already rising number of people asking for asylum in Europe. As a result, some vessels, in parallel to their cruising activities outside the main touristic seasons, are being used as floating hotels. This remained true in 2024. Some vessels, particularly those that are more than 50 years old, have even been permanently converted to floating hotels; this was the case for six vessels in 2022 and 16 in 2023. In early 2024, 18 such vessels were declared and it is unknown whether they will return to the cruise market. Due to the ongoing war, no cruises are currently possible on the Dnepr in Ukraine and four cruise vessels that used to navigate on the Dnepr are now operating on the Danube.

[58] A. Hader, The River Cruise Fleet Handbook (May 2025). Only river cruise vessels with a minimum of 40 beds are considered in this analysis.
[59] Europe without Russia and Ukraine
[60] Rhine, Main, Main-Danube Canal, Danube, Elbe-Oder
[61] Including 16 vessels used as floating hotels and not actively cruising.

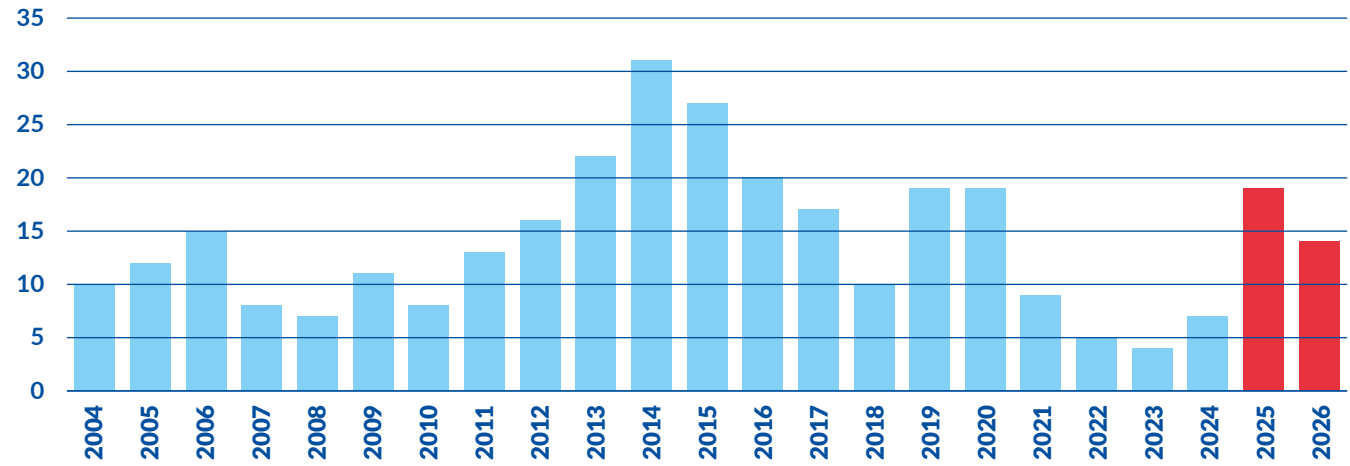
FIGURE 1: **NUMBER OF RIVER CRUISE VESSELS IN THE EU BY REGION OF OPERATION** (2004-2025) *



Source: A. Hader., The River Cruise Fleet Handbook (May 2025)
** 2025: based on order books as of May 2025, of which 14 are temporarily being used as floating hotels.*

During the 2024 season, seven new vessels were built (compared to four in 2023), as planned in the order books. 19 are foreseen to enter the market in 2025, pointing to a recovery of the newbuilding activity. 14 vessels have already been ordered for the 2026 season, confirming this positive trend.

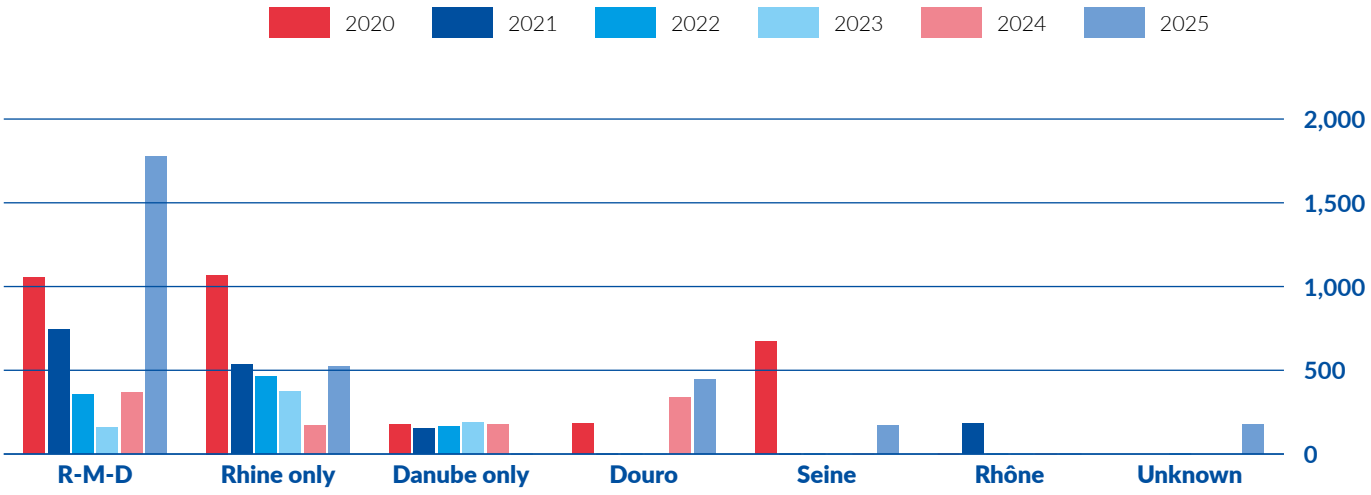
FIGURE 2: **NEW RIVER CRUISE VESSELS FOR THE EUROPEAN MARKET 2004-2026 ***



Source: A. Hader, The River Cruise Fleet Handbook (May 2025)
** 2025 and 2026: based on order books as of May 2025*

In 2024, the seven new vessels brought an additional capacity of 1,056 beds (compared to 720 beds in 2023) to the river cruise market in Europe. An additional capacity of 3,079 beds is expected for the year 2025.

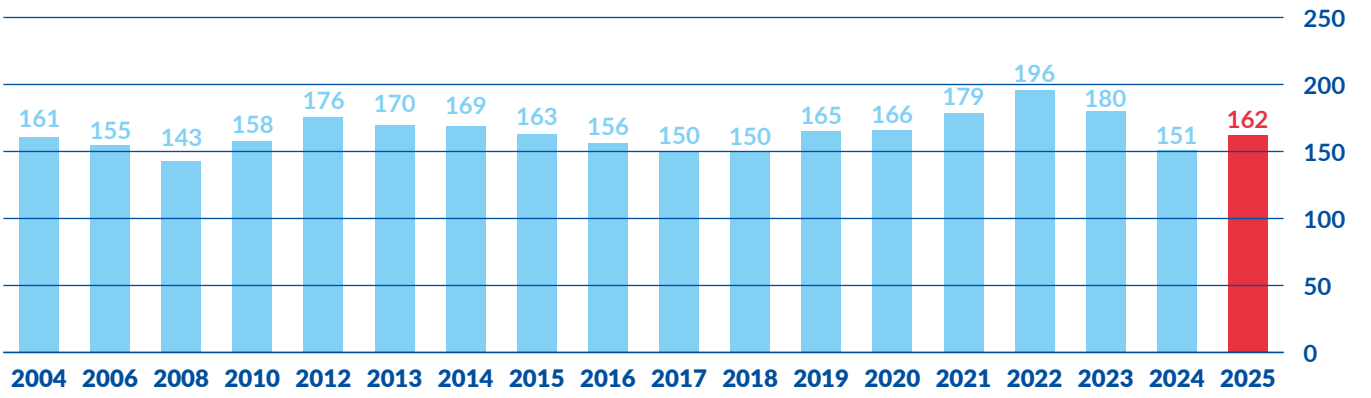
FIGURE 3: **NEW CRUISE CAPACITIES FROM 2020 TO 2025 PER REGION OF OPERATION** (NUMBER OF BEDS) *



Source: A. Hader, The River Cruise Fleet Handbook (May 2025)
** R-M-D= Rhine/Main/Main-Danube Canal/Danube. 2025: based on order books as of May 2025.*

After a decrease between 2014 and 2018, the average number of beds in new cruise vessels followed an increasing trend until 2022. In 2022, the important increase in terms of average number of beds per vessel, which can be observed in figure 4, is explained by the entry into the market of the A-ROSA SENA which has a capacity of 280 beds. No such large vessel entered the market in 2023, leading to a decrease in the average number of beds in new river cruise vessels in 2023 compared to 2022. In 2024 the average number of beds per new river cruise vessel further decreased.

FIGURE 4: **AVERAGE NUMBER OF BEDS IN NEW RIVER CRUISE VESSELS IN EUROPE BY YEAR OF CONSTRUCTION ***



Source: A. Hader, The River Cruise Fleet Handbook (May 2025)
** Figure for 2025: based on order books as of May 2025.*

DEMAND
FOR PASSENGER TRANSPORT ON EUROPEAN WATERWAYS[62, 63, 64]

The river cruise industry in Europe experienced significant growth between 2023 and 2024, where both passenger numbers and sales have been rising. Indeed, during the 2024 season, 1.39 million passengers (an increase of +14.0% compared to the 2023 season) from all over the world travelled on European rivers and generated 3.54 billion euro of gross ticket sales (an increase of +14.0% compared to the 2023 season). Although only 46% of passengers came from overseas, they generated 71% of the total revenue and had a longer length of stay on river cruises than European guests.

Most river cruise passengers travelled on the Rhine (including tributaries) and Danube in the 2024 season, and way ahead of the number of passengers on the French rivers and the Douro. The number of river cruise passengers increased in most source markets in 2024, the majority of them coming from the USA/Canada (571,682 persons, representing a share of 41% of the total number of passengers) and the DACH region[65] (506,003 persons, representing a share of 37% of the total number of passengers). With regard to the age of passengers, the 56-65 and 66-75 age groups largely dominate the European river cruise market.

In France, the economic recovery observed in 2023 for the entire river tourism sector[66] did not continue in 2024 when the number of passengers totalled 9.7 million (a reduction of -20% compared to 2023). The reasons for this decline are mainly the economic situation during the year and the organisation of the 2024 Olympic Games in Paris which had a negative impact in the short term[67]. The inclement weather also played a role in the decline in the number of visitors.

Regarding sustainability measures, in the current context greener vessels can be used as a marketing tool to attract more passengers. In fact, it appears that customers might be willing to pay more for a low/zero emission vessel trip but only if the price difference is not too high. The higher demand for low and zero emission vessels from customers can be a considerable push factor for vessel owners to invest in greening technologies and sustainable alternative fuels.

[62] Der Flusskreuzfahrtmarkt 2024 – IG River Cruise
[63] Baromètre de l'activité tourisme fluvial, édition 2025 – Entreprises fluviales de France
[64] PLATINA3 IWT policy platform – Funding and financing the energy transition of the European IWT fleet – Annex 5 – Additional topic to consider for future work – Role of customers and intermediaries in the greening challenge
[65] DACH stands for the Germany - Austria – Switzerland source market.
[66] Data for France concern the river tourism sector which includes river cruise vessels, ferries, hotel barges and day-trip vessels.
[67] The preparations resulted in numerous interruptions to shipping services during the 18 months leading up to the Olympic Games. During the event, restrictions on use also represented an immediate cost for the sector. Finally, the usual customers (particularly from North America) did not return until September 2024 (more information available in the "Baromètre de l'activité tourisme fluvial, édition 2025").

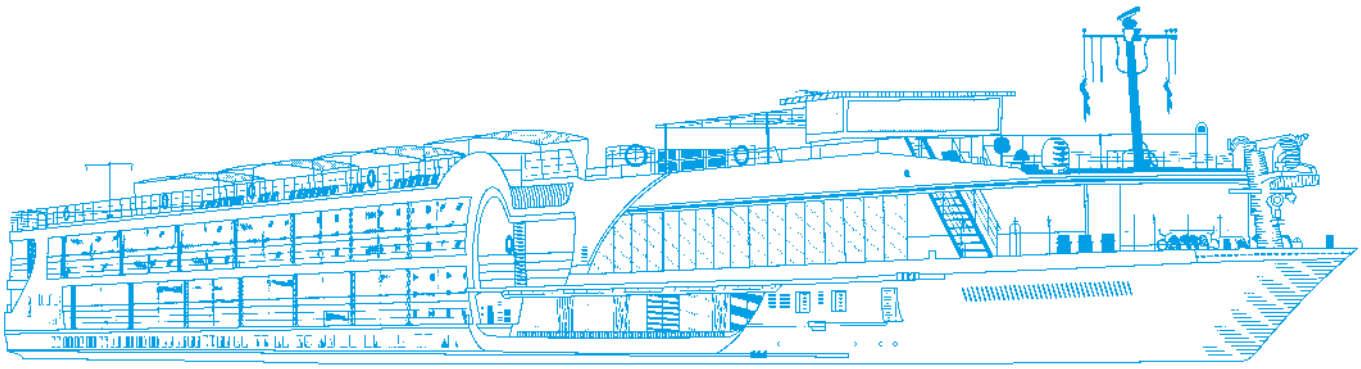
For example, results from a survey undertaken in France show that a majority of companies in the river tourism sector ranked the greening of their fleet as their top investment priority for the next 12 months[68]. Furthermore, 37% of respondents canvassed in Paris own at least one electric or hybrid vessel, either in active use or at an advanced stage of development, further highlighting the growing interest of passenger river companies in environmental issues. The conversion of the Paris Trocadéro cruise vessel to all-electric is a telling example of this new trend[69].

FOCUS ON SUSTAINABILITY FIGURES IN THE EUROPEAN RIVER CRUISE SECTOR

- 61% of the vessels can run on synthetic fuels, 70% can run on biogenic fuels and 2% are equipped with an electric drive.
- 96% of the vessels are equipped with shore power connections.
- 29% of the vessels have a selective catalytic reduction system.
- 34% of the vessels are able to comply with CCNR II NO_x limits.
- 87% of the vessels have an advanced water treatment system on board.

Source: IG river cruise survey; answers representing 222 vessels out of the 408 that compose the active river cruise fleet in Europe.

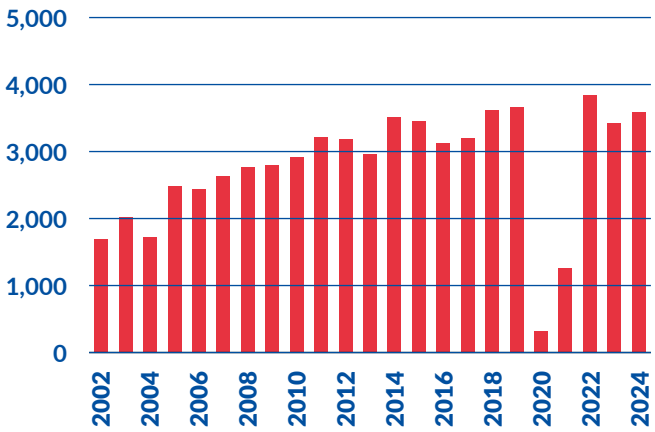
With 3,214 cruise vessels passing the lock of Iffezheim on the Rhine, the result was 9.1% higher than in 2023. Cruise traffic increased also on the Moselle river at the lock of Koblenz. In 2024, 1,538 cruise vessels passed this lock, compared to 1,518 in 2023 (+1.3%). The traffic of river cruise vessels at other locks of the Moselle was slightly lower than the previous year[70]. Finally, the Danube also saw an increase of river cruise traffic in 2024. In 2024, 3,597 cruise vessels passed the lock of Jochenstein at the Upper Danube which is located on the border between Germany and Austria. The comparison with the value from 2023 (3,432) results in an increase of +4.8%. At the second measurement point on the Upper Danube, the lock of Gabčíkovo (border between Slovakia and Hungary), 4,344 vessels were registered, compared to 4,030 in 2023 (+7.8%).



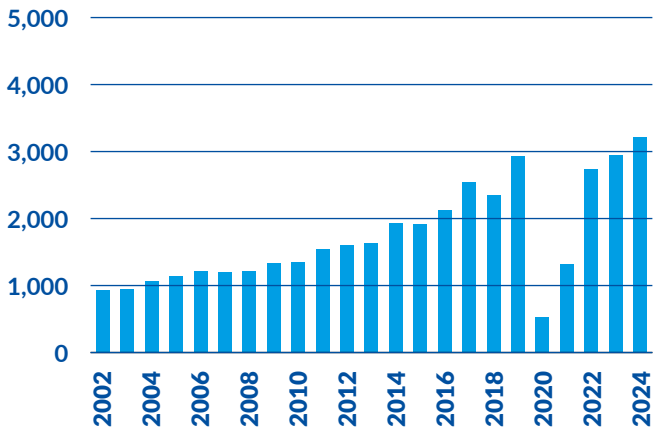
[68] *This survey was carried out in the context of the "Baromètre de l'activité tourisme fluvial".*
[69] *https://www.actemium.com/news/first-fully-electric-transformation-of-a-sightseeing-river-boat/*
[70] *The other locks along the Moselle are the locks of Fankel and Zeltingen, where 1,207 and 1,153 river cruise vessels passed in 2024.*

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

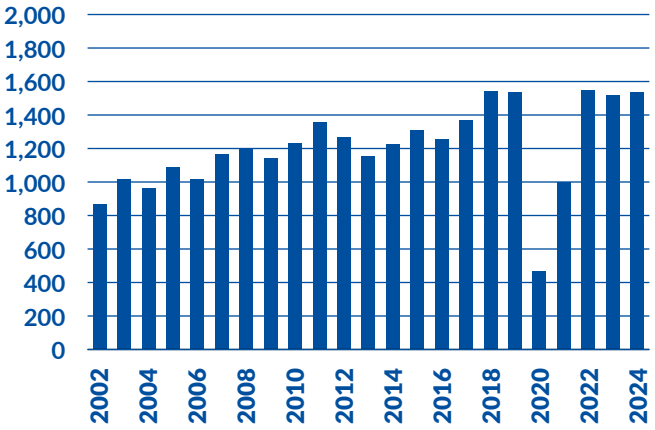
Danube



Rhine



Moselle



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

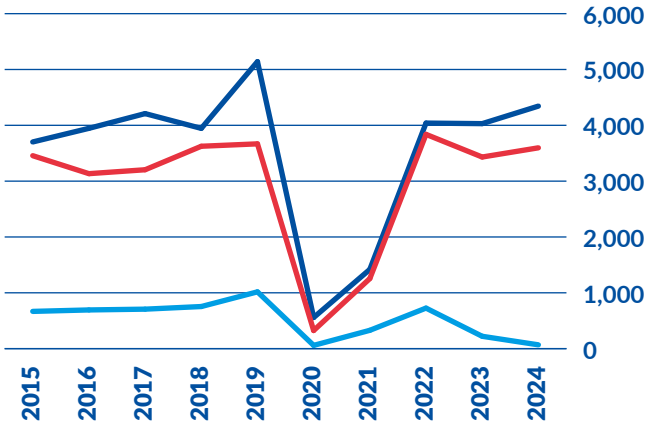
The utilisation rate of the river cruise vessels passing the locks is also a key indicator in assessing the recovery of the river cruise sector. Despite the impact of the war in the Danube region since 2022, the year 2024 confirmed the positive evolution already observed in 2022 and 2023, as suggested by the data obtained for the Danube region (see following box - focus on capacity utilisation in the river cruise sector).

For three geographical points along the Danube (two on the Upper Danube and one on the Middle Danube), data regarding vessel movements and the number of passengers is available from 2015 onwards. This geographical distinction makes it possible to observe differences in cruising intensity on the different stretches of the Danube. The analysis shows that activity is at its highest on the Upper Danube. River cruises registered on the Upper Danube are short trips lasting five, seven or eight days on the Passau-Vienna-Bratislava-Budapest routes. Cruising activity on the Middle Danube south of Budapest is lower than on the Danube stretches upstream of Budapest. The cruise vessels registered at the measurement point south of Budapest carry out long trips to the Danube delta with a duration of 14 days.

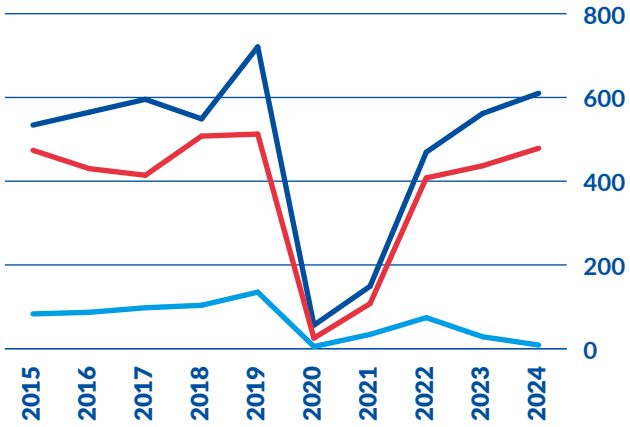
FIGURES 8, 9 AND 10: **EVOLUTION OF VESSEL MOVEMENTS AND PASSENGER NUMBERS PER STRETCHES OF THE DANUBE AND AVERAGE NUMBER OF PASSENGERS PER VESSEL ***

Upper Danube SK-HU Upper Danube DE-AT Middle Danube HU-HR-RS

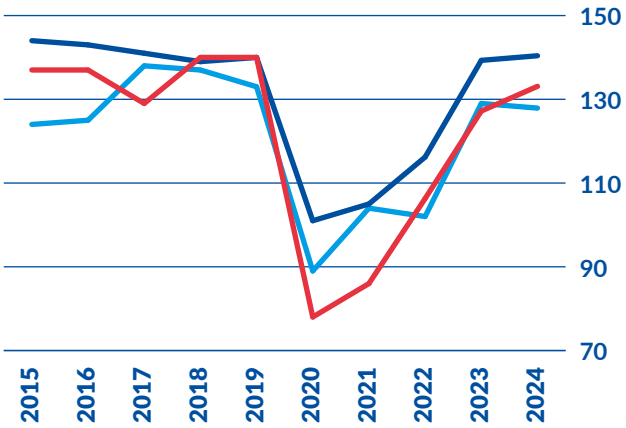
Vessel movements (in number of vessels)



Number of passengers (in 1,000)



Average number of passengers (per vessel)



Source: Danube Commission

** Upper Danube DE-AT = Austrian-German border (lock of Jochenstein). Upper Danube SK-HU = Slovakian-Hungarian border (lock of Gabčíkovo). Middle Danube HU-HR-RS = Hungarian-Croatian-Serbian border (border point of Mohács in southern Hungary).*

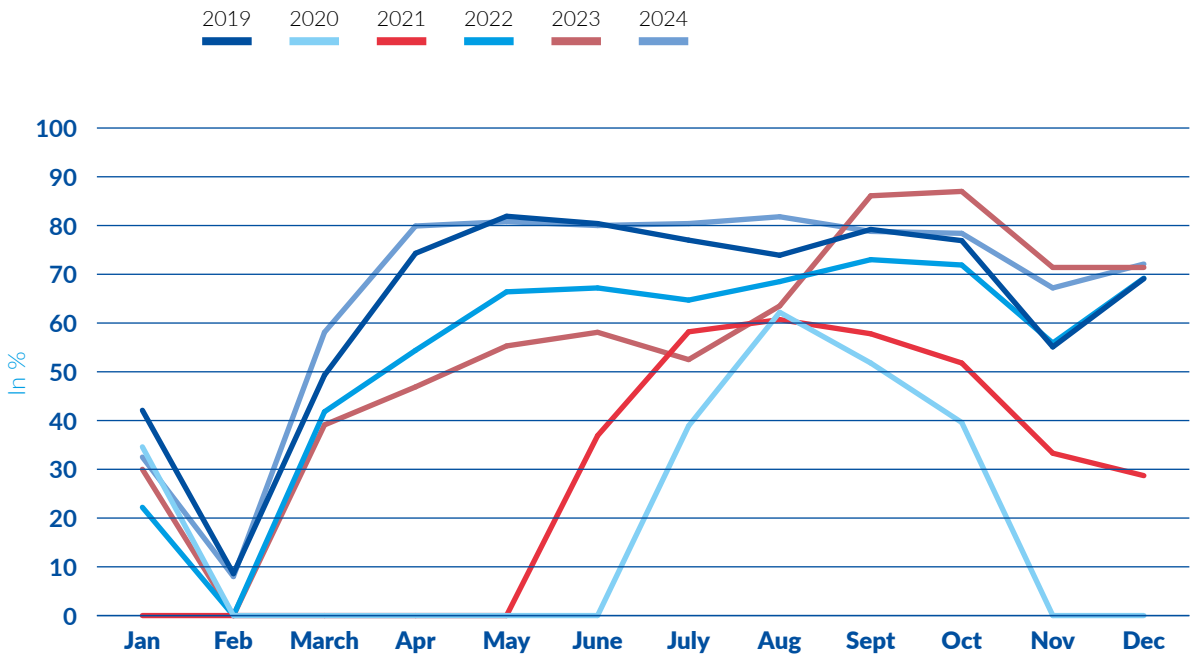
For the two measurement points along the Upper Danube, the data indicate an increase in the number of vessel movements and in the number of passengers in 2024. For the measurement point at the Middle Danube in the south of Budapest, a decrease in vessel movements and passengers could be observed. The vessels that are registered at the Middle Danube operate cruises with a duration of 14 days with the Lower Danube as a destination. Due to the war in Ukraine and the related threats for the Lower Danube region, the number of cruises and passengers for these long cruises dropped. Indeed, this can be explained by the fact that some companies have adapted their services by rerouting some of their journeys to avoid this dangerous area.

FOCUS ON CAPACITY UTILISATION IN THE RIVER CRUISE SECTOR

The analysis of the capacity utilisation of a fleet enables a thorough overview to be carried out of how the supply/demand relationship evolves throughout the years.

The degree of capacity utilisation of river cruise vessels on the Upper Danube can be calculated on the basis of data provided by the German Waterways and Shipping Administration (WSV) on river cruise vessels passing the lock of Jochenstein (German-Austrian border) on the Danube.

FIGURE 11: **DEGREE OF CAPACITY UTILISATION OF RIVER CRUISE VESSELS ON THE DANUBE** (IN %) *



Source: German Waterways and Shipping Administration (WSV)
** At the lock of Jochenstein (German-Austrian border)*
Capacity utilisation = ratio of number of passengers divided by passenger capacity

This figure brings to light the recovery of the river cruise sector on the Danube[71]. In 2024, capacity utilisation was as high as it was in 2019. As 2019 was the last pre-pandemic year, this result points to a sound recovery of the river cruise sector on the Danube. The average degree of capacity utilisation in 2024 was 76.6%, compared to 61.2% in 2023, 65.7% in 2022 and 74.8% in 2019.

[71] *Such data were not available for the Rhine and the Moselle.*

Most of the passenger traffic in the Sava and Kupa river ports is recorded at the Port of Belgrade in Serbia. Since 2015, the number of river cruise passengers recorded by the Port of Belgrade (passenger terminal) has increased constantly, from 60,000 passengers in 2015 to 104,000 in 2019. This reflected the positive evolution of cruising activity observed on the Danube. Indeed, most of the cruise vessels that stop in Belgrade are generally for cruises that take place along the Danube and stop in important eastern European capitals.

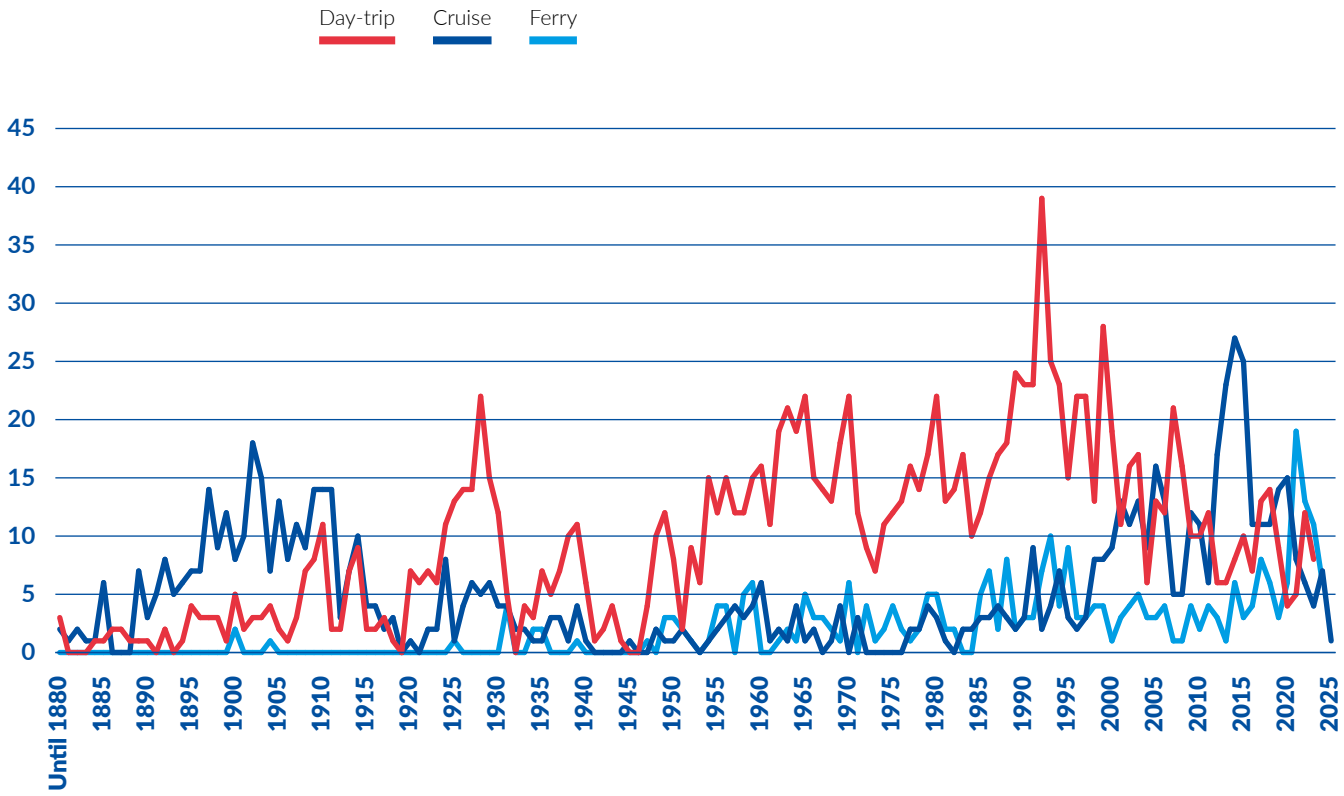
As is the case in other regions, passenger traffic suffered from the Covid-19 pandemic. In Belgrade, only 561 passengers were recorded by the port in 2020. After 2020, passenger traffic has been recovering to reach 78,496 passengers in 2024, a figure which remains below the pre-pandemic levels (104,000). Yet figures show a positive sign towards a return to normality. In 2023, Serbia opened a new passenger terminal in Sremska Mitrovica and Šabac. This should certainly support the development of passenger transport in the region. Navigability conditions on the waterways also remain an obstacle for the further development of passenger transport in this region[72].

[72] Passenger transport data have to date not been processed in a detailed manner due to a lack of up-to-date records, as well as non-harmonised methodology between the countries.

AGE STRUCTURE
OF THE RHINE PASSENGER FLEET

Concerning the passenger fleet, it is divided into passenger ferries, river cruise vessels, and passenger day-trip vessels. The figure below depicts the current fleet and its evolution over time. However, it is worth noting that inactive vessels may be included in these figures, and some of the newest vessels may not be accounted for. Most passenger ferries and day-trip vessels (which represent 76% of all passenger vessels) were constructed in the 20th century, but there has nevertheless been significant newbuilding activity in the 21st century. The river cruise new build activity remains lower in 2024 compared to the pre-Covid crisis.

FIGURE 12: **COMMISSIONING YEARS FOR THE RHINE PASSENGER FLEET OVER TIME** (NUMBER OF INLAND VESSELS)



Sources: IVR and CCNR analysis
Note that one river cruise vessel and six day-trip vessels have an unknown year of construction. The database of IVR accounts for active vessels but also includes some inactive vessels, in particular those commissioned in earlier years.

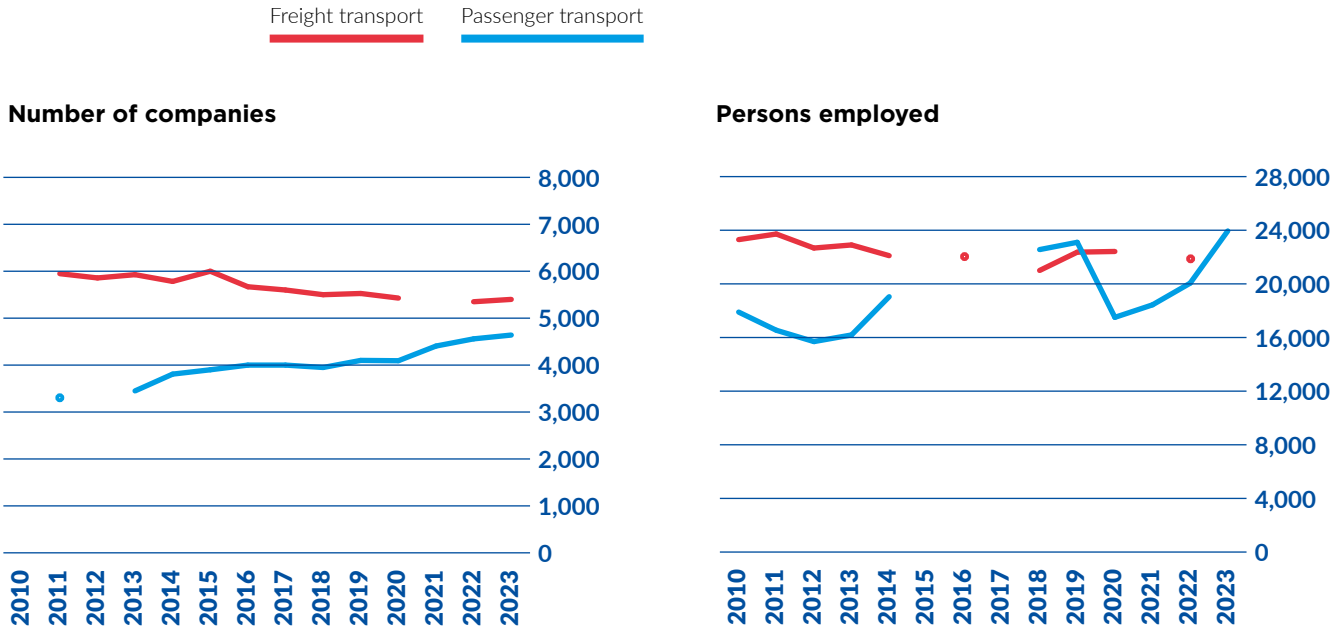
08

COMPANIES, EMPLOYMENT, TURNOVER AND PERSONNEL COSTS[73]

- **In 2023, 5,462 companies were active in IWW freight transport across Europe, with 87% based in Rhine countries, particularly in the Netherlands (59% of total). The Danube region, though representing only 4.8% of companies, accounted for 13% of employment due to larger average company size. Employment in the freight sector has shown a slightly negative trend since 2010, with 22,844 people employed in 2022. By contrast, in terms of company numbers, IWW passenger transport saw growth, with 4,659 companies in 2023 - 42% in Rhine countries, 13% in Danube countries, and 29% in southern Europe. Employment in this segment reached 23,945 in 2023, rebounding after the pandemic. Germany, Italy, and Switzerland accounted for 61% of total passenger employment.**
- **Turnover in IWW freight transport in the EU-27 (plus Switzerland and Serbia) reached approximately €7.5 billion in 2023, down from €7.8 billion in 2022. Rhine countries generated 92% of this figure, led by the Netherlands and Germany. In IWW passenger transport, turnover climbed significantly to €3.5 billion in 2023 (from €2.7 billion in 2022), continuing its recovery from the pandemic. Rhine countries accounted for 94% of passenger turnover.**
- **Labour costs per employee and per year in 2022 averaged €32,830 in freight transport and €23,590 in passenger transport across the EU. Costs were highest in western and northern Europe - especially Switzerland, Finland, and Germany - and lowest in eastern Europe.**

[73] The topic related to crew shortage was further analysed and developed in the thematic report 2023 on labour market, available at: https://inland-navigation-market.org/archives/?lang=en

FIGURES 1 AND 2: **DEVELOPMENT OF THE NUMBER OF COMPANIES AND EMPLOYMENT IN FREIGHT AND PASSENGER TRANSPORT IN THE INLAND WATERWAY TRANSPORT SECTOR IN EUROPE**



Sources: Eurostat [sbs_na_1a_se_r2] until 2020 and [sbs_sc_ovw] from 2021

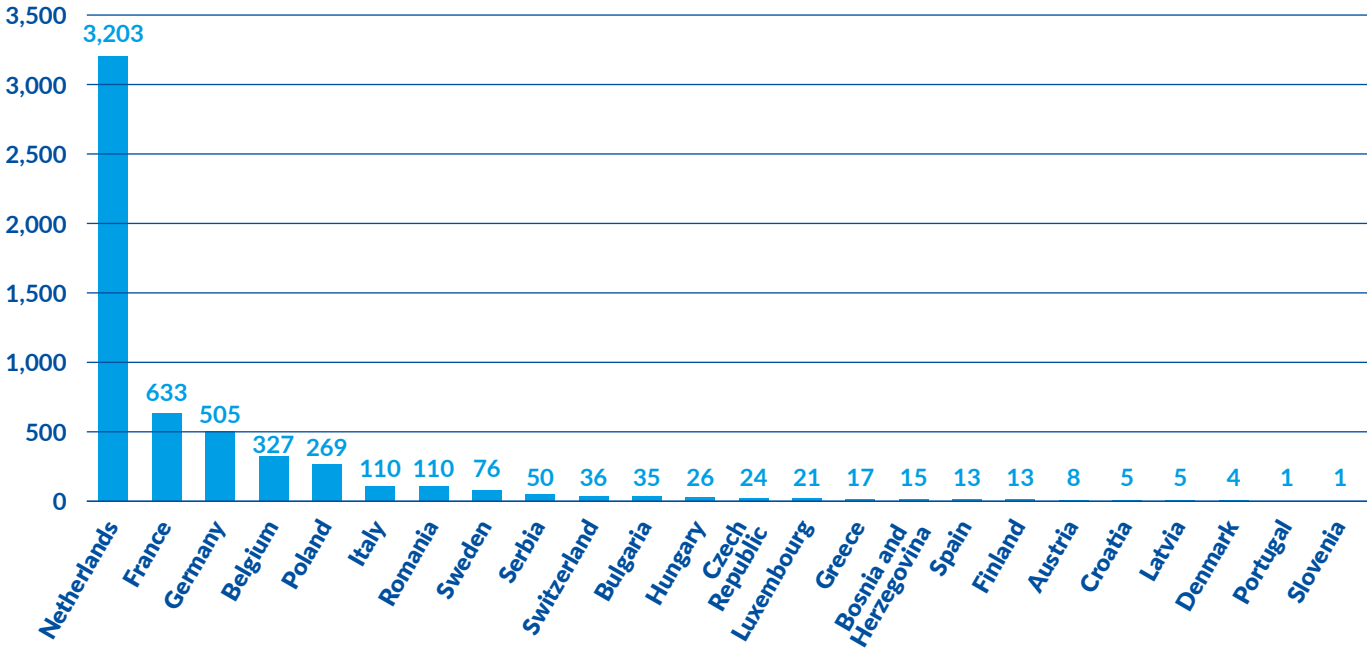
COMPANIES
AND EMPLOYMENT IN FREIGHT TRANSPORT

According to Eurostat figures, 5,462 IWW freight transport companies were active in Europe (EU-27 plus Bosnia-Herzegovina, Serbia and Switzerland) in 2023[74]. Around 87% (4,725 in absolute numbers) were registered in Rhine countries[75]. The Netherlands alone comprised 3,203 IWW freight companies, which represents 59% of the total number in Europe and 68% of the number in Rhine countries. Since 2011, the trend in the number of IWW freight transport companies in Europe has been declining slightly (see figure 1). The number of companies in 2023 was 9% lower than in 2011.

[74] Latest Eurostat figures for the overall number of enterprises in the freight transport sector [sbs_sc_ovw] are available for the year 2023. The value of 5,462 includes data for Slovakia for 2022 and data for Serbia for 2020.
[75] The Netherlands, Germany, Belgium, France, Switzerland and Luxembourg

The number of companies in Danube countries is relatively low (261[76] which is equivalent to a share of 4.8%), compared to the share that the Danube has within total transport performance on EU-27 inland waterways (21%)[77]. In this regard, it should be noted that companies in the Danube region are larger on average, which means that they have more employed persons on average than companies in the Rhine region. This difference in size can mainly be explained by historical reasons. Indeed, many companies in the Danube region are former state-owned companies which are larger than private companies.

FIGURE 3: **NUMBER OF COMPANIES IN IWW FREIGHT TRANSPORT IN EUROPE IN 2023 ***



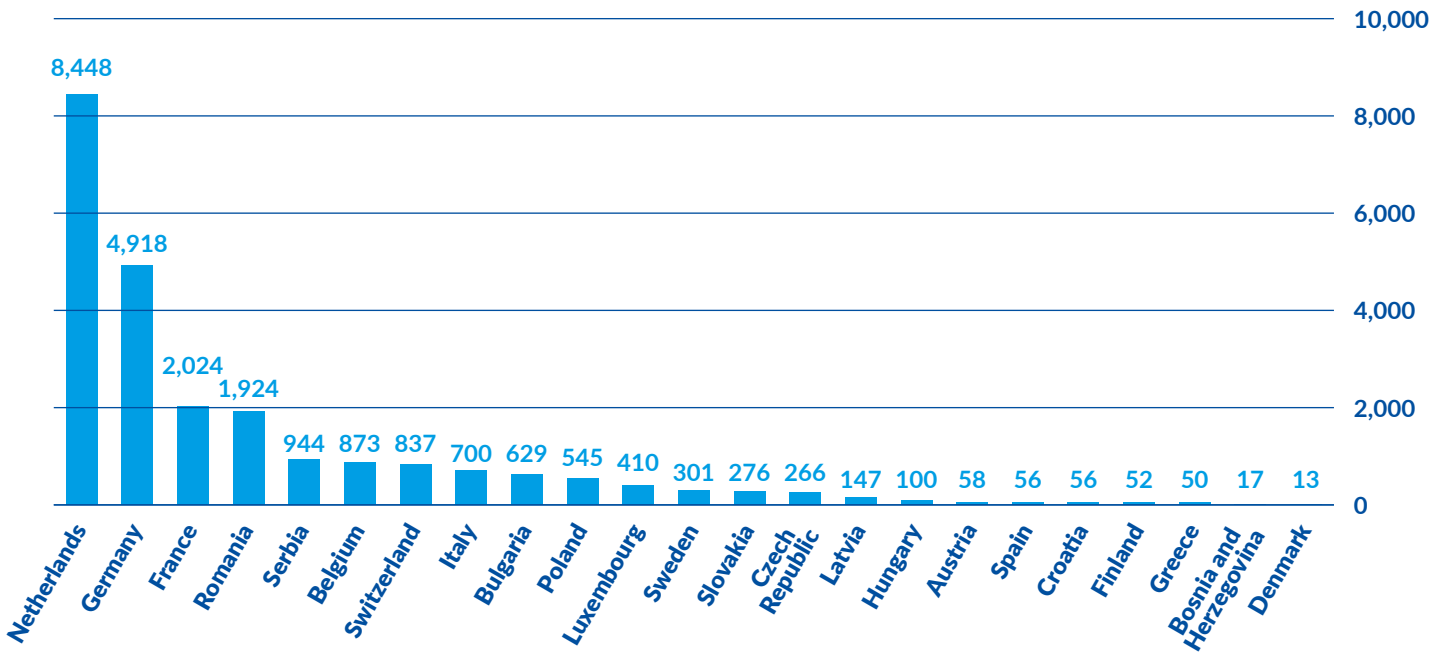
Sources: Eurostat [sbs_na_1a_se_r2] and [sbs_sc_ovw]

** Data for Slovakia refer to 2022, data for Serbia to 2020 as data for 2021-2023 are unavailable for reasons of confidentiality. For Italy and Poland, the high number of companies relative to freight volumes is influenced by the structure of the inland waterway sector. In both countries, the majority of enterprises are very small. In Poland, only about 60% of companies classified under inland waterway transport are active in freight transport; many report only their fleet or perform technical services rather than transporting cargo. This can explain the rather high figures observed for both countries compared to the rather low inland navigation transport activity in these countries.*

The number of employed persons in IWW freight transport includes self-employed, helping family members and employees. The total number of this variable was 22,844 in 2022[78]. The number of persons employed in Rhine countries accounted for 81%, persons employed in Danube countries for 13% and persons employed in companies in countries outside the Rhine and Danube regions, for 6%. The trend in the number of persons employed was slightly negative between 2010 and 2022. The decrease between these two years was -6%.

[76] Austria, Croatia, Hungary, Slovakia, Serbia, Bulgaria and Romania. There are no Eurostat data for Serbia from 2021 onwards. The latest available data date back to 2020 and amounted to 50 IWW freight companies. The value 261 includes the 50 Serbian companies.
[77] Value for 2023
[78] Latest Eurostat figures for the overall number of employed persons in the IWW freight transport sector [sbs_sc_ovw] are available for the year 2022, while per country they are available already for 2023. The value of 22,844 includes data for Serbia (for 2020).

FIGURE 4: **NUMBER OF PERSONS EMPLOYED IN IWW FREIGHT TRANSPORT IN EUROPE IN 2023 ***



Sources: Eurostat [sbs_na_1a_se_r2] and [sbs_sc_ovw]
** Data for France and Slovakia refer to 2022. Data for Serbia refer to 2020. For Italy and Poland, the high number of employees relative to freight volumes is influenced by the structure of the inland waterway sector. In Poland, only about 60% of companies classified under inland waterway transport are active in freight transport; many report only their fleet or perform technical services rather than transporting cargo. This can explain the rather high figures observed compared to the rather low inland waterway transport activity.*

It can be observed that Germany has more than twice as many employed persons in IWW freight transport than France, while France has a higher number of companies. These data reflect the smaller average size of French companies compared to German companies. French companies had 3.2 employed persons per company in 2023 compared to 9.7 persons per company in Germany.

It should be noted that figures obtained from national labour market institutions or from other national offices might differ substantially from figures obtained from Eurostat, due to different statistical labour market concepts. For cross-country comparisons, Eurostat is treated as the preferred source because data are harmonised across countries and are thus comparable.

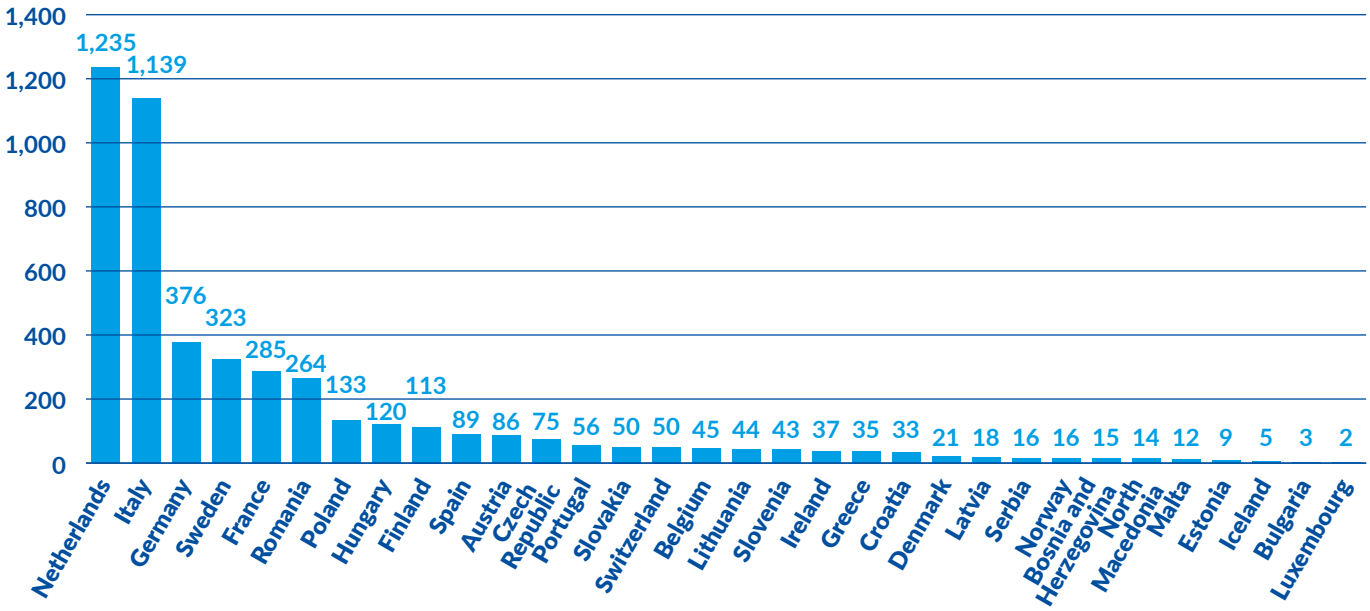
II COMPANIES
AND EMPLOYMENT IN PASSENGER TRANSPORT

The number of IWW passenger companies in Europe (EU-27 plus Bosnia-Herzegovina, Serbia and Switzerland) was 4,659 in 2023[79]. The geographical distribution shows that 42% of them are registered in Rhine countries, while those registered in Danube countries represent 13%. In contrast to IWW freight transport, southern European countries have a rather high share within passenger transport companies (29% in 2023). Furthermore, Scandinavian countries represented 10% of all passenger transport companies in 2023.

Between 2011 and 2023, the number of IWW passenger transport companies in Europe followed a rather steady upward trend (see figure 1). As a result, the number of companies in 2023 was 40% higher than in 2011.

The three countries with the highest number of companies are the Netherlands, Italy and Germany. In terms of the number of companies, Switzerland ranks in the middle of the European countries. However, as is seen below, Switzerland ranks on position 3 when it comes to employment in passenger transport. The reason for this divergence is the fact that Switzerland hosts many river cruise companies which have a higher number of employees than other types of companies in passenger transport.

FIGURE 5: **NUMBER OF IWW PASSENGER TRANSPORT COMPANIES IN EUROPE IN 2023 ***



Source: Eurostat [sbs_sc_ovw]

** Data for Serbia and Bulgaria refer to 2022. For Poland, the high number of companies is influenced by the structure of the inland waterway sector. In Poland, the majority of enterprises are very small and only about 60% of companies classified under inland waterway transport are active in freight transport; many report only their fleet or perform technical services rather than transporting cargo. This can explain the rather high figures observed for Poland compared to the rather low inland navigation transport activity.*

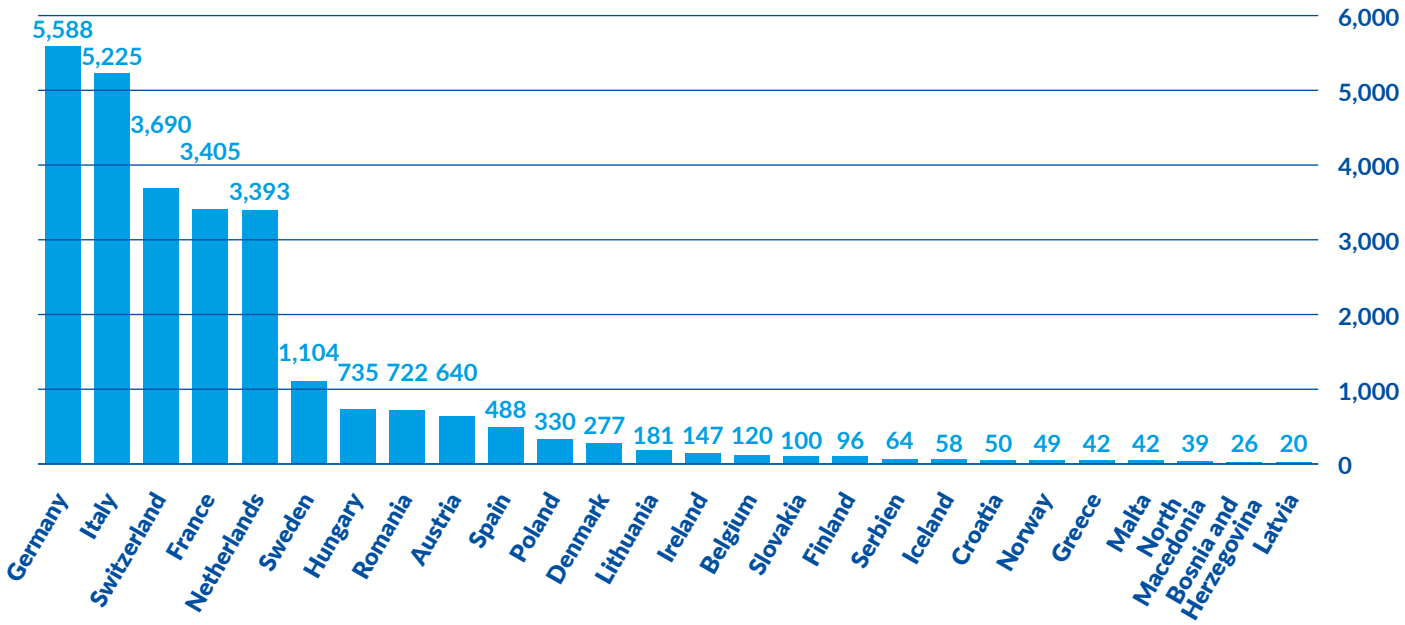
[79] *This figure includes 16 companies in Serbia (in 2022) and 3 in Bulgaria (2022).*

The total number of persons employed in European IWW passenger transport amounted to 23,945 in 2023. The development for the years 2020-2023 shows an impact and a recovery from the Covid pandemic (see figure 2). Hence, in 2023, the number of persons employed returned to its upward trend that is visible for the time period 2010-2023.

Regarding the number of companies, the Netherlands are on rank 1. However, this country is only on rank 5 when it comes to the number of persons employed. The reason is that the Netherlands have many day trip companies in cities such as Amsterdam. The size of these day trip companies is mostly small, compared to the large river cruise companies, which are often located in Switzerland or Germany.

Regarding employment, Germany takes the lead ahead of Italy and Switzerland. Around 61% of all persons employed in IWW passenger transport are employed in one of these countries. In these three countries, the transport of passengers is rather high, due to many inland waterways (including lakes) and – in the case of Germany and Switzerland – due to many river cruise companies.

FIGURE 6: **NUMBER OF PERSONS EMPLOYED IN IWW PASSENGER TRANSPORT IN EUROPE IN 2023 ***



Source: Eurostat [sbs_sc_ovw]
** Data for Poland and Serbia refer to 2022.*

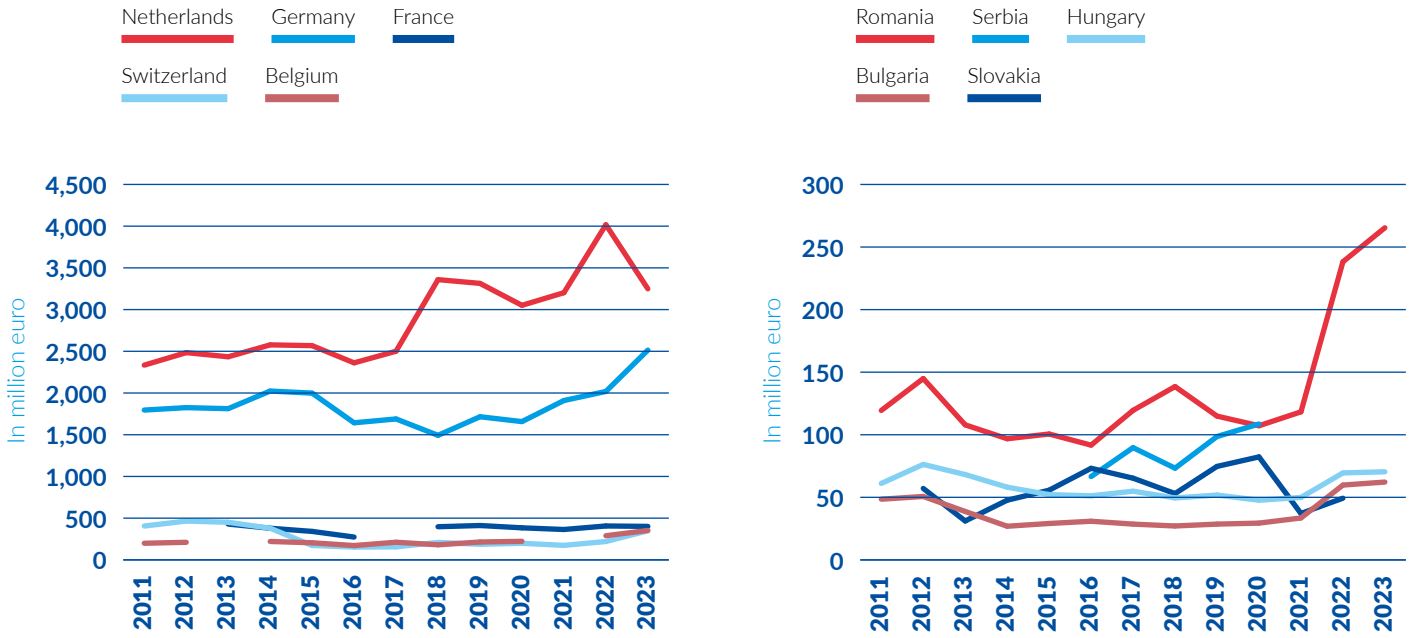
About 68% of all persons employed in EU inland waterway passenger transport are employed in Rhine countries. The share of Danube countries amounts to 10%, the share of southern European countries is 24% and the share of Scandinavian countries is 7%.

II TURNOVER

TURNOVER IN IWW FREIGHT TRANSPORT

In 2023, for IWW freight companies in the EU-27 (plus Switzerland and Serbia), a turnover of approximately 7.5 billion euro was registered, compared to 7.8 billion euro in 2022 and 6.1 billion euro in 2021[80]. Rhine countries accounted for approximately 6.9 billion euro (92% of the turnover in the EU-27, plus Switzerland and Serbia).
For the two largest countries in IWW freight transport, the Netherlands and Germany, an upward trend can be observed since 2018.

FIGURE 7: **ANNUAL TURNOVER IN IWW FREIGHT TRANSPORT IN RHINE AND DANUBE COUNTRIES** (IN MILLION EURO) *



Sources: Eurostat [sbs_na_1a_se_r2], [sbs_sc_ovw], Centraal Bureau voor de Statistiek (CBS-NL) for data before 2021, Swiss Federal Tax Administration (FTA-CH) for data before 2021, CCNR estimation based on data from Eurostat for France for 2019.
For Switzerland and the Netherlands, a break in the data can be observed from 2021 onwards. This is due to the use of Eurostat figures from 2021 onwards derived form a new database [sbs_sc_ovw]. Turnover data were missing in the former Eurostat database [sbs_na_1a_se_r2] for these two countries, leading to the use of national databases from CBS and FTA for years before 2021. Therefore, for these two countries, data available up until 2020 (included) cannot be compared with data from 2021 onwards.
** The value for Dutch companies for data until 2020 (included) are an estimation based on net turnover data for the entire inland navigation sector in the Netherlands. Therefore, the statistical office CBS estimates that 92% of total turnover is related to freight transport. Value for Swiss companies for data until 2020 (included) was converted into euros according to the yearly average exchange rate.*

[80] *These figures include the turnover for Serbia (109 million euro). The last year for which turnover data for Serbia are available is 2020.*

TABLE 1: **TURNOVER IN IWW FREIGHT TRANSPORT IN RHINE COUNTRIES** (IN MILLION EURO)

	2022	2023
Dutch companies	3,808	3,249
German companies	2,366	2,513
French companies	406	401
Belgian companies	289	353
Swiss companies	244	348
Rhine countries	**7,113**	**6,864**

Source: Eurostat [sbs_sc_ovw]

The estimated turnover generated in IWW freight transport companies registered in Danube countries amounted to 528 million euro in 2022, and 542 million euro in 2023. Hereby, the data for Serbia are missing for both years, the data for Austria are missing for 2022 and the data for Slovakia are missing for 2023.

TABLE 2: **TURNOVER IN IWW FREIGHT TRANSPORT IN DANUBE COUNTRIES** (IN MILLION EURO)

	2022	2023
Romanian companies	238	265
Serbian companies	109	109
Hungarian companies	69	70
Bulgarian companies	60	62
Slovakian companies	49	49
Austrian companies	30	34
Croatian companies	3	2
Danube countries *	**528**	**542**

Source: Eurostat [sbs_sc_ovw]
** Data for Serbia refer to 2020, data for Austria and Slovakia are estimated.*

Within European regions outside of the Rhine and Danube areas, the countries with the highest turnover[81] are Italy (59 million euro), Sweden (52 million euro), Poland (52 million euro) and Czech Republic (36 million euro).

[81] *All values for 2022*

TURNOVER IN IWW PASSENGER TRANSPORT

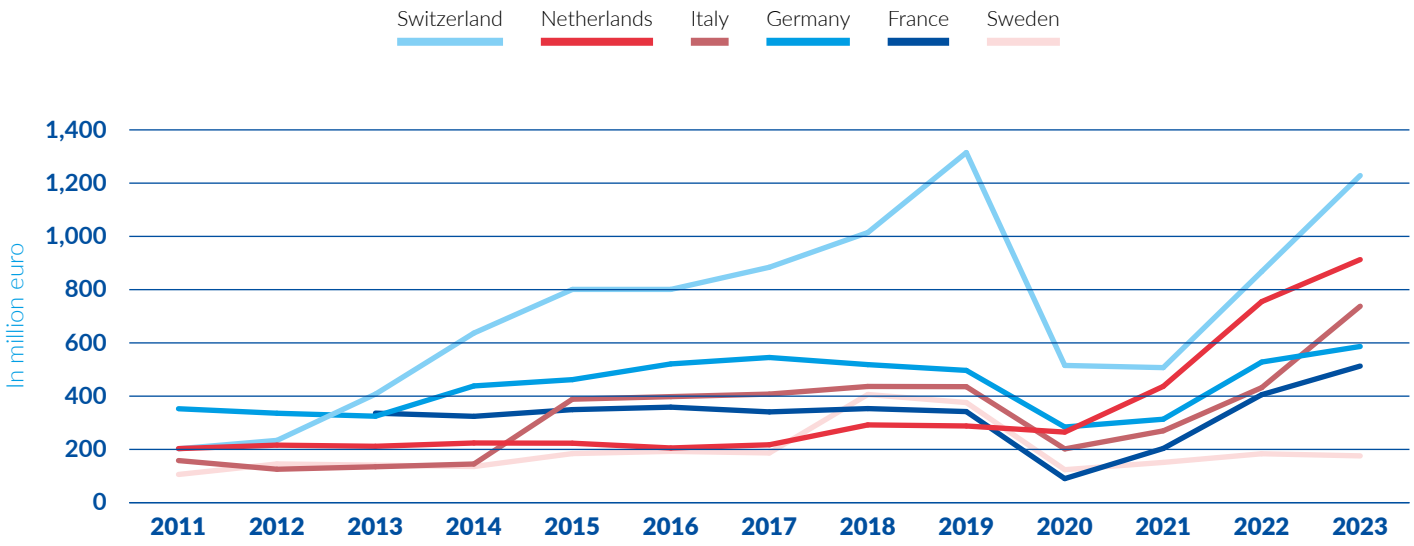
Regarding turnover in the EU (plus Switzerland and Serbia) for IWW passenger companies in 2023, approximately 3.5 billion euro was registered, compared to 2.7 billion euro in 2022 and 1.6 billion euro in 2021.

Rhine countries[82] accounted for approximately 3.3 billion euro in 2023, a share of 94% within total IWW passenger turnover in Europe.

It is important to note that the following turnover figures include those generated by all passenger market segments (day trips on rivers, day trips on lakes, river cruises or ferry traffic). For some countries, the turnover figures are based almost entirely on river cruise activities or day trip activities or on both activities.

The curves for turnover in IWW passenger transport reflect a strong recovery that took place in 2022 and 2023 from the covid pandemic. The turnover values that were reached in these years are often higher than the pre-pandemic levels.

FIGURE 8: **ANNUAL TURNOVER IN IWW PASSENGER TRANSPORT IN MOST RELEVANT COUNTRIES** (IN MILLION EURO) *



Sources: Eurostat [sbs_na_1a_se_r2] until 2020, [sbs_sc_ovw] from 2021 onwards, Centraal Bureau voor de Statistiek (CBS-NL) for data before 2021, Swiss Federal Tax Administration (FTA-CH) for data before 2021 and CCNR estimation based on data from Eurostat only for France for the year 2019.
For Switzerland and the Netherlands, a break in the data can be observed from 2021 onwards. This is due to the use of Eurostat figures from 2021 onwards derived form a new database [sbs_sc_ovw]. Turnover data for these two countries were missing in the former Eurostat database [sbs_na_1a_se_r2], leading to the use of national databases from CBS and FTA for years before 2021. Therefore, for these two countries, data until 2020 (included) cannot be compared with data from 2021 onwards.
** The values for Dutch companies for years until 2020 (included) are an estimation based on net turnover data for the entire inland navigation sector in the Netherlands. In this instance, the statistical office CBS estimates that 8% of total turnover is related to passenger transport. Value for Swiss companies until 2020 (included) was converted to euros according to the yearly average exchange rate. Data were unavailable for many countries until 2020.*

[82] *Without Luxembourg, as data are not available for reliability reasons.*

TABLE 3: **TURNOVER IN IWW PASSENGER TRANSPORT IN RHINE COUNTRIES** (IN MILLION EURO)

	2022	2023
Swiss companies	868 (e)	1,228
Dutch companies	755	913
German companies	528	587
French companies	406	513
Belgian companies	17	16
Rhine countries	**2,574 ***	**3,257**

Source: Eurostat [sbs_sc_ovw]
** Includes an estimation for Switzerland as data were unavailable in 2022. (e) = estimation.*

For companies in Danube countries, the existing data[83] show significantly lower values than in Rhine countries. For some years and countries, some data are unavailable. This indicates often very low economic activities of an industry, so that data are not high enough to be disseminated (for reasons of confidentiality).

The generally low values of Danube countries regarding turnover for IWW passenger transport does not point to low passenger transport numbers on the Danube in general. It rather points to a combination of factors, such as the fact that most river cruises on the Danube are operated by companies that have their headquarter in Rhine countries. In this case, turnover is counted within Rhine countries and not within Danube countries. Furthermore, the turnover in a Danube country might be very low, because of low wage levels in Danube countries. Lower wages and therefore lower personnel costs imply lower total costs, especially in passenger transport which is quite labour-intensive. Lower total costs, in return, imply lower price levels and therefore also lower turnover figures.

[83] *For several Danube countries, turnover data in the Eurostat SBS database is missing for confidentiality reasons. Similarly, the turnover values reached low levels and could therefore not be displayed.*

TABLE 4: **TURNOVER IN IWW PASSENGER TRANSPORT IN DANUBE COUNTRIES** (IN MILLION EURO)

	2022	2023
Austrian companies	76 (e)	95
Hungarian companies	31	37
Romanian companies	20	22
Slovakian companies	14 (e)	14
Serbian companies	3	3
Croatian companies	2	3
Companies from Bosnia-Herzegovina	1 (e)	1
Danube countries *	**147**	**175**

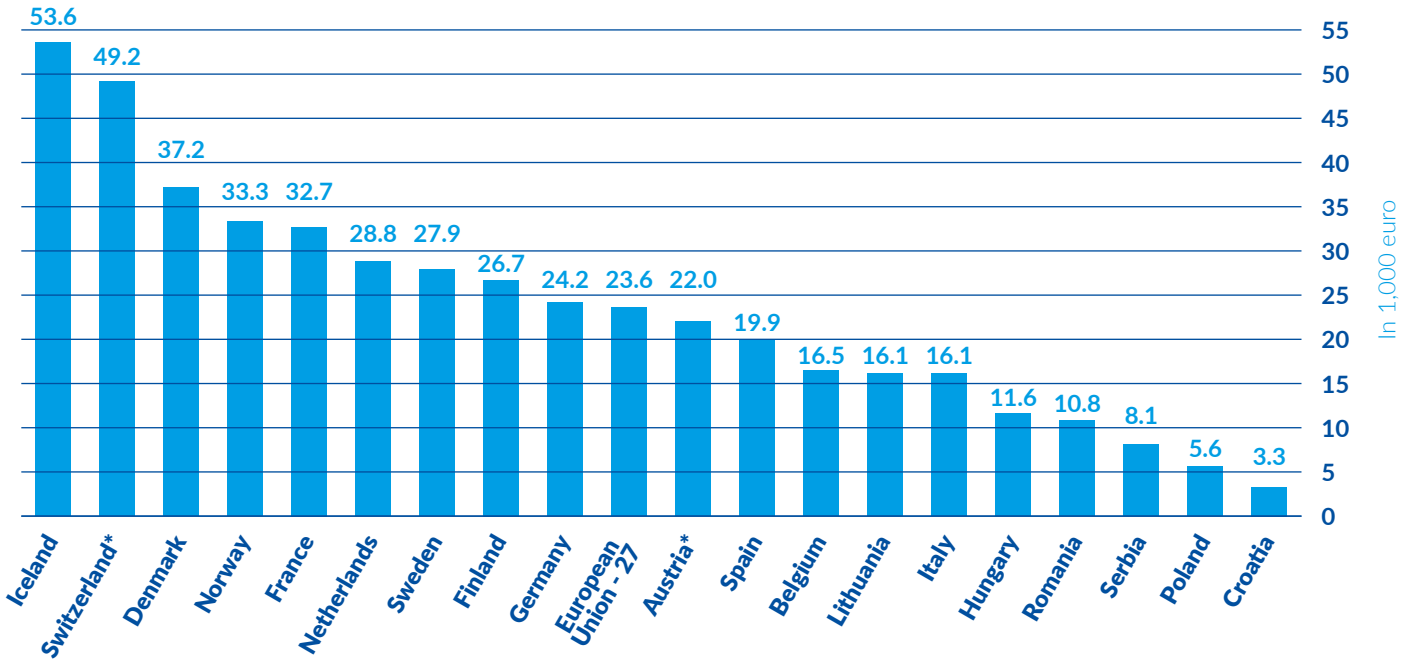
Source: Eurostat [sbs_sc_ovw]
** Includes estimations for Austria, Slovakia, Serbia, Bosnia-Herzegovina. (e) = estimation.*

Two countries in Europe outside the Rhine and Danube region with a considerable level of turnover in IWW passenger transport are Italy (738 million euro in 2023) and Sweden (176 million euro in 2023). It can be noted that for Italy, the turnover is almost entirely generated from day trips activity on lakes and on passenger transport in Venice.

UNIT LABOUR COSTS
PER PERSON EMPLOYED

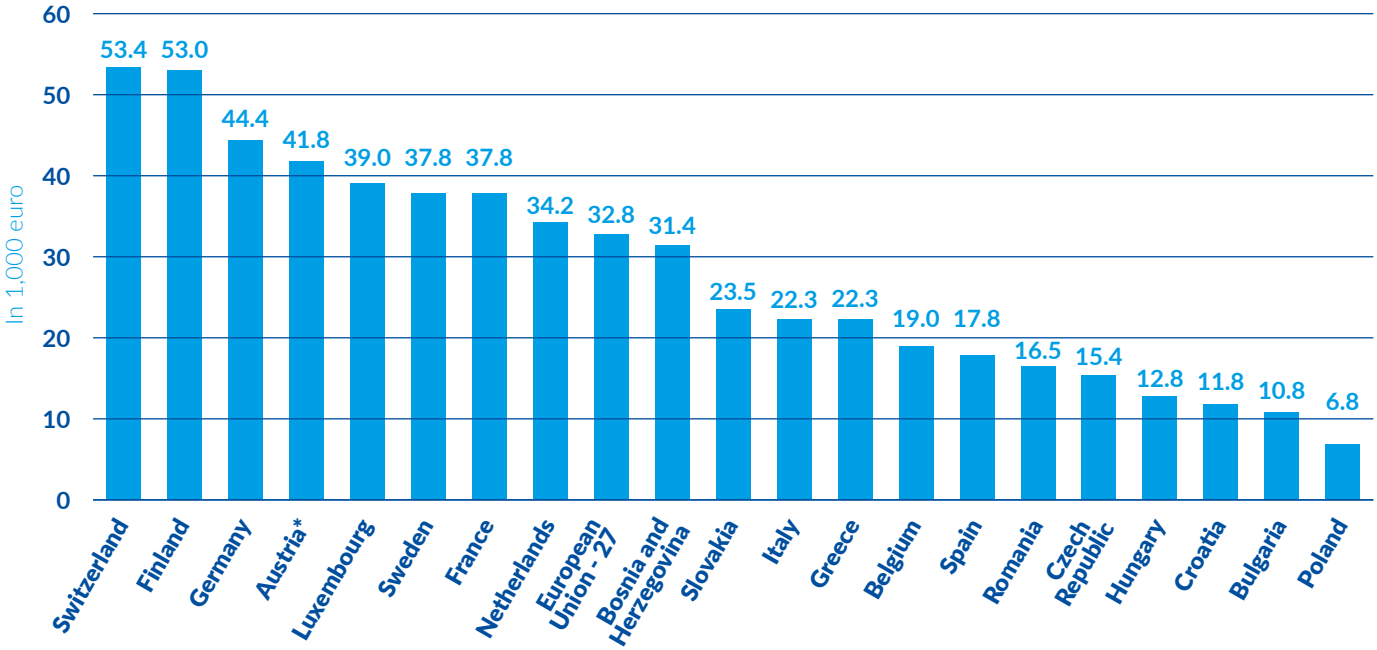
In inland waterway transport, the level of unit labour costs per person employed depends on the region in Europe. The highest values in IWW passenger transport are observed in Iceland, Switzerland and Denmark. For IWW freight transport, the highest values are found in Switzerland, Finland and Germany. In general terms, unit labour costs per person employed are relatively high in countries in northern and western Europe, and relatively low in eastern Europe. The average value for the European Union (European Union – 27) was 23,590 euro in 2022 in IWW passenger transport. For IWW freight transport, the average value for the European Union (European Union – 27) was 32,830 euro in 2022.

FIGURE 9: **UNIT LABOUR COSTS PER PERSON EMPLOYED PER COUNTRY IN IWW PASSENGER TRANSPORT IN 2022** (IN 1,000 EURO)



Source: Eurostat [sbs_sc_ovw]
** Data for Switzerland and Austria are for 2021.*

FIGURE 10: **UNIT LABOUR COSTS PER PERSON EMPLOYED PER COUNTRY IN IWW FREIGHT TRANSPORT IN 2022** (IN 1,000 EURO)



Source: Eurostat [sbs_sc_ovw]
** Data for Austria are for 2021.*

09

OUTLOOK FOR INLAND WATERWAY FREIGHT TRANSPORT AND PASSENGER TRANSPORT

- In the short term, transport demand for steel and iron ore remained relatively stable in Rhine countries in 2024, even though steel production increased in Rhine countries overall. A negative trend is observed in Danube countries. Long-term forecasts suggest that steel production will stay below pre-pandemic levels due to structural changes in demand, rising energy costs, and decarbonisation trends, with limited growth expected in iron ore transport.
- In 2024, agricultural and food products were the market segment with the highest growth rate in Rhine transport. Transport of agricultural and food products show a positive outlook, particularly in the Danube region, where production and demand are projected to increase.
- Container transport has experienced a prolonged downturn due to multiple overlapping crises, including low water levels, geopolitical tensions, rising energy prices and changes in global trade flows. While figures from early 2024 indicate a modest recovery, long-term prospects remain cautious. Inland container transport is expected to grow slowly in the coming years, closely tied to global trade and maritime throughput, but will likely remain below pre-crisis growth rates.
- The chemical sector continues to face challenges linked to high energy prices and weaker industrial demand. Nevertheless, a limited recovery in transport volumes was observed in 2024. Long-term projections point to a continuation of the growth for chemical transport on inland waterways, despite only modest growth for chemical production, constrained by competitiveness issues and economic uncertainty.

SHORT-TERM OUTLOOK
FOR IWT MARKETS IN RHINE AND DANUBE COUNTRIES

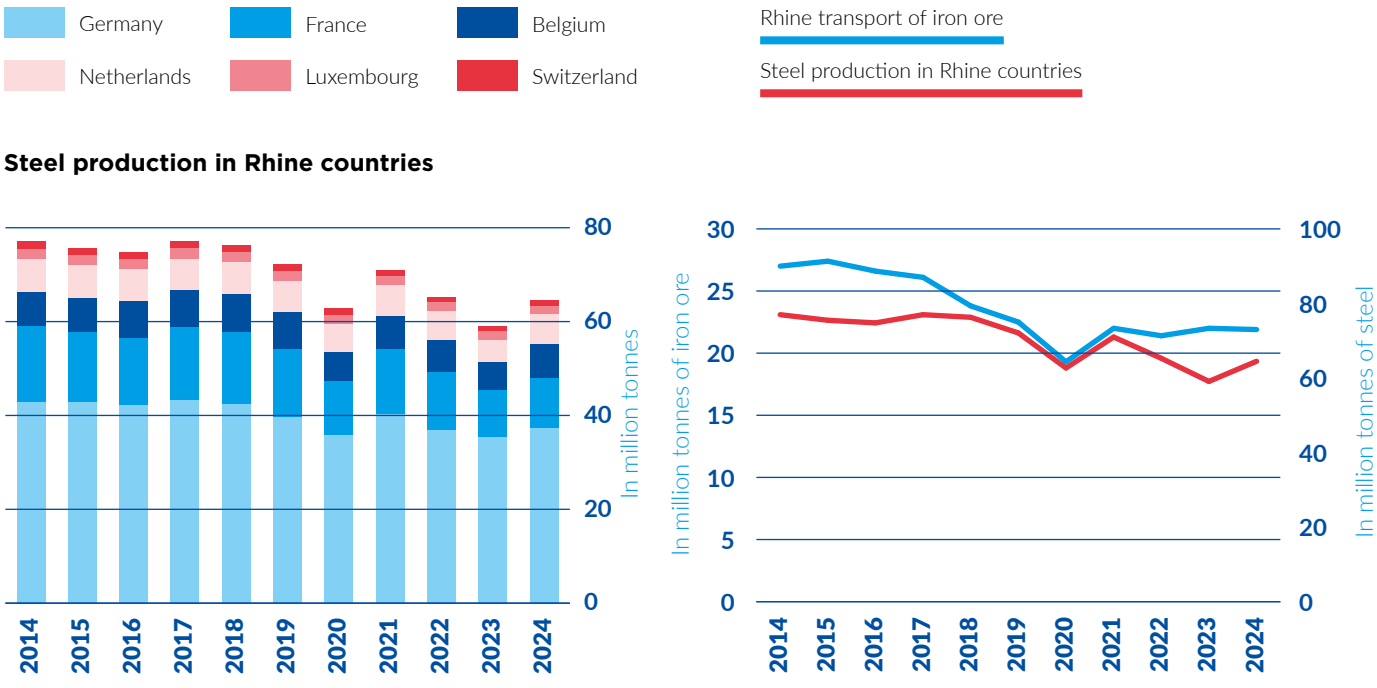
STEEL AND IRON ORE

Inland navigation is an important transport mode for raw materials and end products of the steel industry. In the German steel industry (the largest steel producing country in the EU) for example, inland navigation has a market share of 32% among all logistic activities, according to the German Steel Association. This market share has been fairly constant since 2010.

On the entire Rhine, more than 16% of all cargo transport is related to steel production (iron ore, coking coal, metals, metal products)[84]. On the Danube, this share is even higher and amounts to 40% for the Middle Danube.

Iron ore transport on the Rhine in general follows a similar trend as steel production, despite a small divergence in 2023, due to a replenishment of stocks for iron ore. Steel production in Rhine countries increased by +9.3% in 2024 compared to 2023, while transport of iron ore on the entire Rhine remained constant.

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

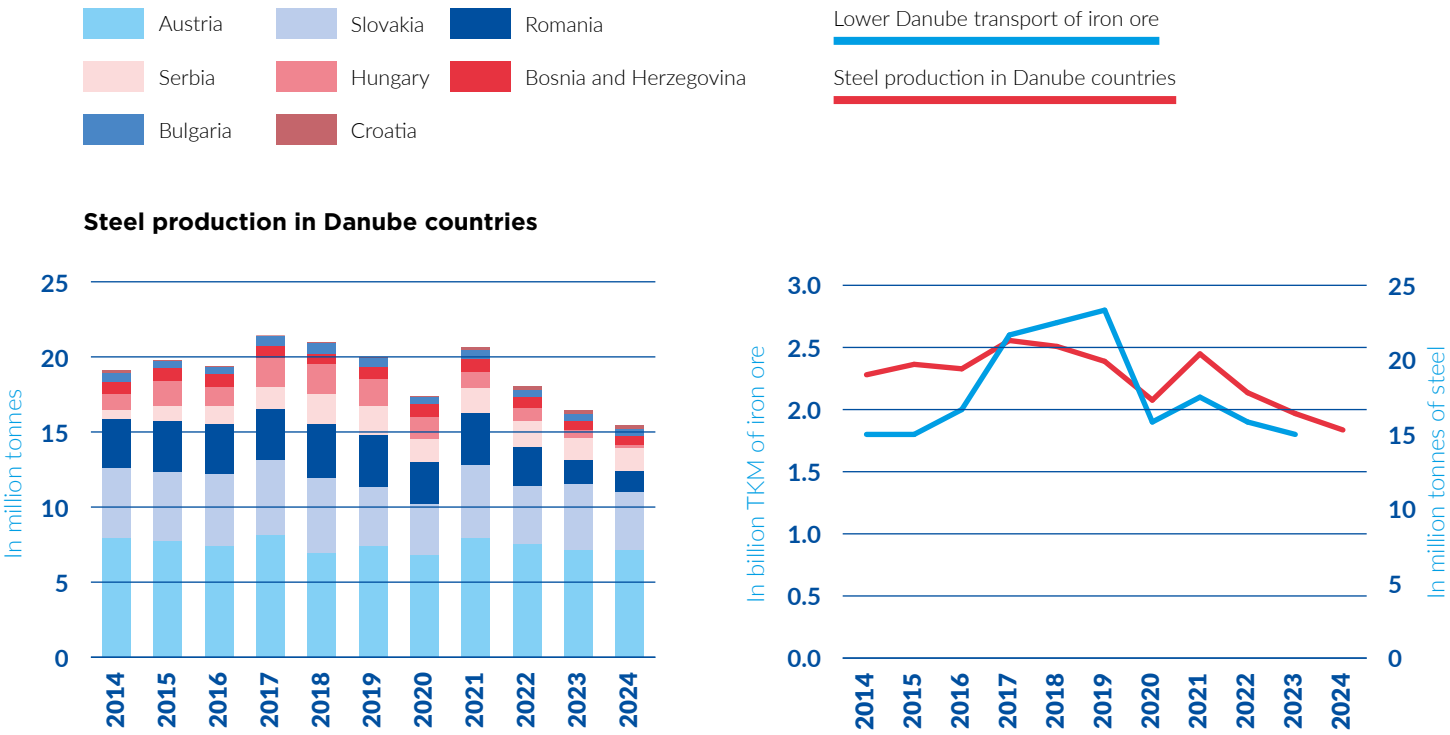


Sources: Eurofer, Destatis, Rijkswaterstaat, CCNR analysis. Switzerland: estimation.

[84] *Without scrap steel*

Steel production in Danube countries[85] amounted to 15.4 million tonnes in 2024, a decrease of -6.7% compared to 2023.

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



Sources: Eurofer, Eurostat [iww_go_atygo]
** Lower Danube = Bulgaria; data for 2024 not available*
Data for Serbia and Bosnia-Herzegovina for 2024: estimation

Outlook for the iron ore and steel segment

According to Eurofer[86], 2024 was still marked by persistent negative factors such as the conflict in Ukraine and related rises in energy prices and production costs, which led to a contraction of steel demand. In 2025, apparent steel consumption is projected to decline again (-0.9%), due to the anticipated impact of US tariffs and the resulting uncertainty and trade-related disruptions. Although subject to high uncertainty, the outlook should be more optimistic in 2026 as apparent steel consumption is projected to recover (+3.4%). However, this recovery will be conditional on a positive evolution in the industrial outlook and an easing of global tensions.

Steel demand is dependent upon the development in the steel using sectors, which are in particular the construction sector and the automobile industry. In Germany, two-thirds of demand for steel comes from these two sectors, for which the following outlook can be expected according to Eurofer:

- The construction sector should experience flat growth in 2025 (+1.1%) due to persistently weak housing demand, and experience a modest recovery in 2026 (+0.8%), primarily driven by the anticipated effects of the change in monetary policy by the Central Bank (monetary easing, lowering of interest rates).

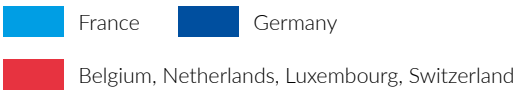
[85] *Without Ukraine*
[86] *Eurofer (2025), Economic and steel market outlook 2025-2026, Q2 report*

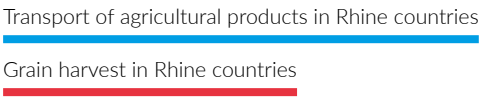
- For the automotive industry, increasing global uncertainty and low confidence should result in another annual drop (-2.6%) in 2025, before experiencing a moderate increase in 2026 (+1.9%).

AGRICULTURAL AND FOOD PRODUCTS

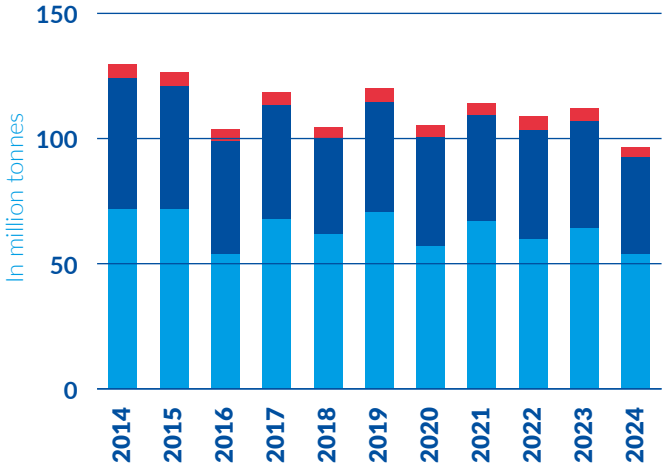
Agricultural and food products have a share of around 10% (2024) in Rhine navigation and around 23% in Danube navigation.

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

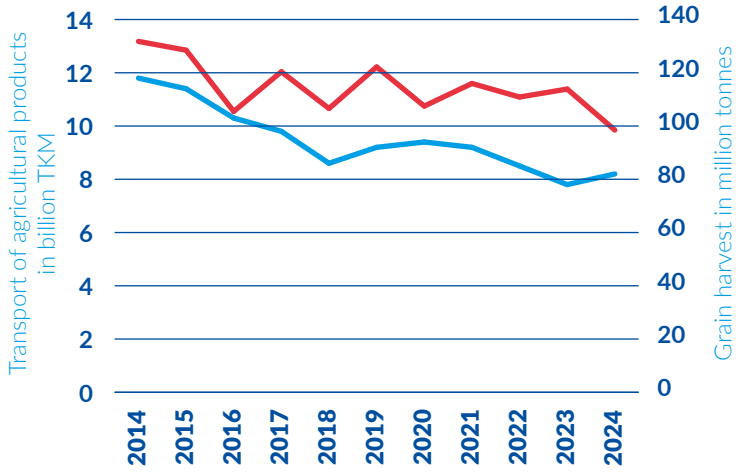




Grain harvest in Rhine countries

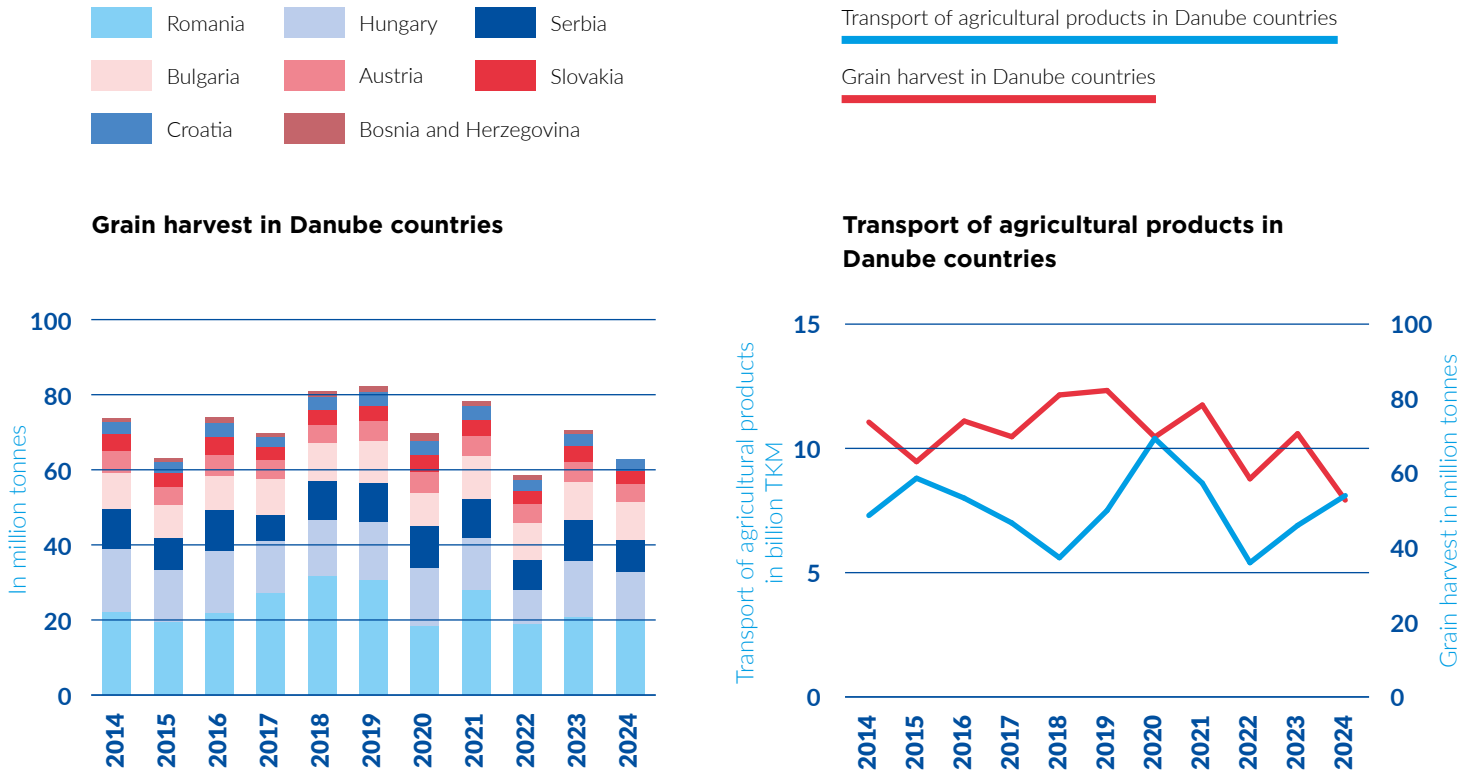


Transport of agricultural products in Rhine countries and grain harvest



Sources: Eurostat [apro_cpsh1] and [iww_go_atygo]
Grain = Cereals (excluding rice) for the production of grain (including seed)

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



Grain harvest in Danube countries

Transport of agricultural products in Danube countries

Sources: Eurostat [apro_cpsh1] and [iww_go_atygo]
Grain = Cereals (excluding rice) for the production of grain (including seed). For figure 7, missing data for Bosnia and Herzegovina in 2024. For figure 8, data for Serbia and Bosnia and Herzegovina are not available for the transport of agricultural products in Danube countries.

Outlook for the agri-food segment

Wheat

For soft wheat[87], harvest volumes for the 2024/25 season in the European Union, including France, are below the 5-year-average. On a worldwide scale, harvest volumes are above the 5-year-average. The situation is similar for hard wheat[88], where harvest volumes are slightly below the 5-year-average in France as well as in the rest of the European Union. On a worldwide scale, they are above the 5-year-average.

Barley

Worldwide production amounts to 144.0 million tonnes for the 2024/25 season. Harvest volumes on a worldwide scale, as well as in the EU-27, including France, are below the 5-year-average. Harvest results are foreseen to increase in the 2025/26 season, to a level of 147.5 million tonnes.

Maize

Harvest results on a worldwide scale are expected to increase to a level of 1,274 million tonnes in the season 2025/26.

[87] *Soft wheat is generally suitable as a raw material for flour and baked goods, such as bread and bread rolls, but is also used to produce malt, animal feed and starch.*
[88] *Hard wheat is primarily used for the production of pasta.*

TABLE 1: **HARVEST VOLUMES IN THE SEASON 2023/24 COMPARED TO 5-YEAR-AVERAGE**

Harvest season 2024/25 in million tonnes	World	EU-27	France
Soft wheat	**762.1**	**111.7**	**25.5**
5-year average	749.1	124.1	34.6
Hard wheat	**35.7**	**7.2**	**1.2**
5-year average	32.5	7.4	1.4
Maize	**1,218**	**59.1**	**14.9**
5-year average	1,178	65.3	13.3
Barley	**144.0**	**49.1**	**9.8**
5-year average	152.8	51.9	11.8

Sources: FranceAgriMer April 2025, Banque CIC agriculture, European Commission, Service de la statistique et de la prospective (SSP) du Ministère de l'Agriculture et de la Souveraineté alimentaire (France)

CHEMICALS

Since the Covid-19 pandemic began in 2020, the chemical industry has had to navigate turbulent market conditions. The European chemical industry encountered challenges with economic recession, inflation and high energy prices in 2022 and 2023. This led to reduced demands and put pressure on chemical margins. As a result, several companies across the Netherlands, Germany, and France recently announced plant closures or job cuts[89].

As in the previous years, hopes of an economic recovery did not materialise for the EU chemical sector in 2024, although a slight recovery is observed on a global scale. Under the impulse of the first half year 2024 which seemed to point to a recovery, the production level in the EU increased compared to 2023 (+2.0%). However, production levels remained below the pre-Covid period. In addition, the weak demand combined with declining business confidence and a downward trend on the prices and sales side, negatively weighed on production in the second half of 2024. These trends are observed across both Rhine and Danube countries.

The reduced demand can be explained by the difficult economic situation which persisted in 2024 and an uncertain outlook. On the production side, energy prices remained high in 2024 (gas prices in the EU in 2024 are still 98% above pre-pandemic level (2014-2019)), even though the price of the chemical industry raw material, mainly naphtha and crude oil, decreased. Higher energy prices in Europe compared to the USA also put Europe at a competitive disadvantage, and this is expected to remain true at least in the short-term[90].

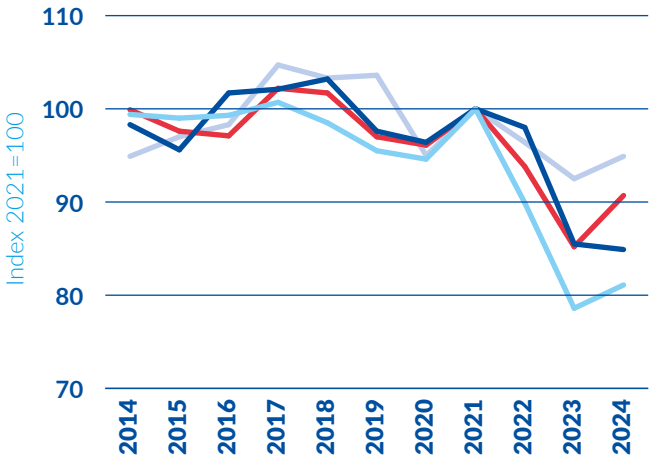
[89] *Source: Deloitte 2025, Chemical industry outlook (last consulted on 02.05.2025). Available at: https://www2.deloitte.com/us/en/insights/industry/oil-and-gas/chemical-industry-outlook.html*
[90] *Verband der Chemischen Industrie (VCI), Economic situation, Annual report 2024 (last consulted on 02.05.2025, https://www.vci.de/die-branche/aktuelle-wirtschaftliche-lage/jahresbilanz-2024.jsp) and CEFIC Chemicals Trends Report (last consulted on 27.05.2025, https://cefic.org/cefic-chemicals-trends-report/)*

With regard to transport performance, the share of chemicals amounts approximately to 17% on the Rhine and 11% on the Danube. The transport performance for chemicals in Rhine and Danube countries has fluctuated over the last five years, with significant drops in 2018 (low water effect) and 2022 (as a consequence of the war in Ukraine and the low waters). For both rivers, the trend in transport demand roughly followed the trend in production.

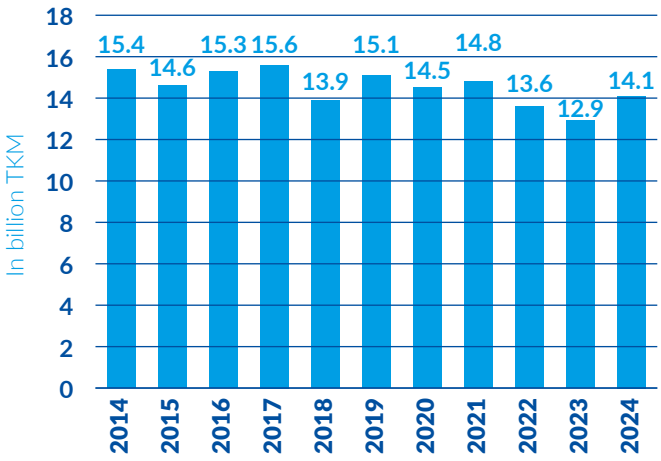
FIGURES 9, 10, 11 AND 12: **INDEX OF CHEMICAL PRODUCTION AND TRANSPORT OF CHEMICAL PRODUCTS IN RHINE AND DANUBE COUNTRIES**

France Belgium Netherlands Germany

Index of chemical production in Rhine countries

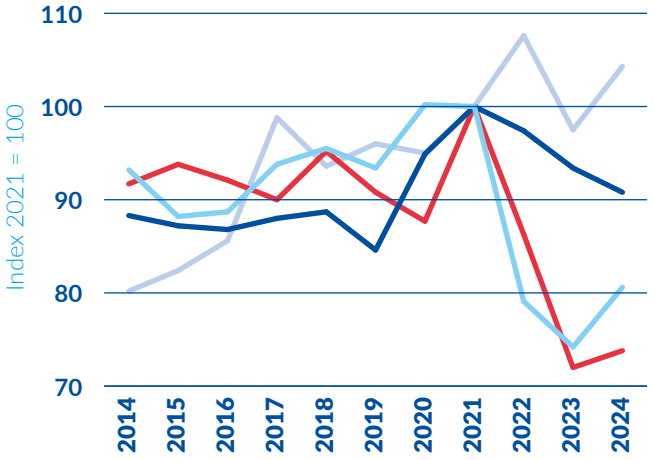


Transport of chemical products in Rhine countries

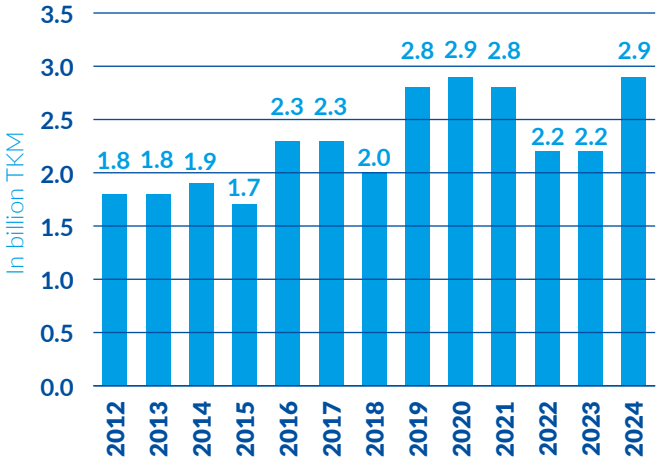


Bulgaria Austria Romania Hungary

Index of chemical production in Danube countries



Transport of chemical products in Danube countries



Sources: Eurostat [sts_inpr_a] and [iww_go_atygo]

Outlook for the chemical segment

In 2025, the imposition of US tariffs on chemical imports and exports has significantly disrupted the global chemical industry, creating widespread economic, geographical, and business impacts[91]. The EU-27 chemical sales is highly generated from exports, and the USA is the first export country for the sector in this region. The announced tariffs expose the EU chemical industry business environment to high risks, however their impact on the chemical industry remains uncertain. With regard to the demand, significant output declines were observed in the automotive industry in 2024, which is among the main drivers of the chemical sector[92]. In 2025, the demand increase is expected to be limited due to weak economic conditions, especially in Germany and the USA, structural problems, a low industry and consumers' confidence, and a high uncertainty in Europe. Consequently, EU-27 chemicals output is projected to grow from 2.5% in 2024, to probably less than 0.5% in 2025. Overall, no sign of improvements was noticeable in the first months of 2025, and the recovery of the chemical industry is still uncertain[93].

CONTAINERS

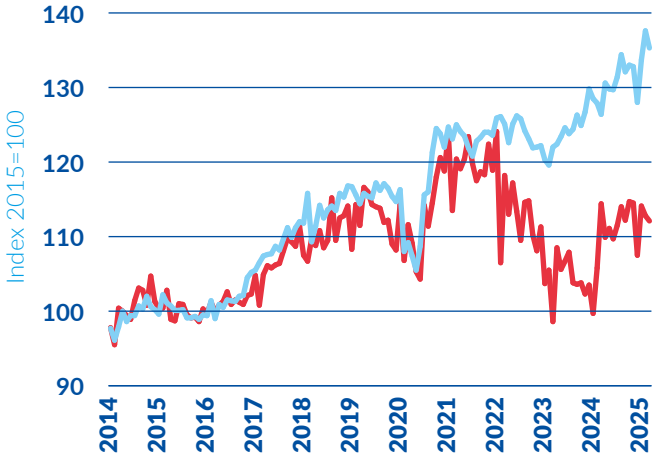
Container transport in inland navigation has been declining for several years. The years 2018 and 2022 witnessed two extended periods of low water levels that restricted navigating the Rhine, particularly in terms of volumes, and led to a certain reverse modal shift regarding container transport. Moreover, the invasion of Ukraine by Russia in 2022 had a significant impact on trade both directly – by hindering Ukraine's capability to trade – and indirectly – by causing an energy shock leading to higher energy prices and a cascade of geopolitical fragmentations that weakened trade between countries which sided with Russia and those that opposed it[94]. Finally, in the aftermath of the pandemic, the consumption of goods has slowed down, while the consumption of services has increased, which also contributed to a negative impact on container transport. However, container transport has shown signs of a recovery in 2024. The total volume of container transport across the entire Rhine in 2024 increased by +2.0% compared to 2023. This shift can be attributed to a combination of factors, including a recovery in maritime container throughput in major ports such as Rotterdam and Antwerp, driven in particular by growth in consumer goods and food products as well as more favourable water levels.

[91] *Source: MarketsandMarkets, January 2025, "Trump Tariff Impact on Global Chemical Industry". Available at: https://urlr.me/WDS6a4*
[92] *CEFIC Chemicals Trends Report (last consulted on 27.05.2025). Available at: https://cefic.org/cefic-chemicals-trends-report/*
[93] *Ibid*
[94] *IMF World Economic Outlook, April 2024*

FIGURES 13 AND 14: **INDEX OF CONTAINER THROUGHPUT IN THE WORLD AND IN THE NORTHERN RANGE** (2015 = 100) **AND IWW CONTAINER TRANSPORT IN EUROPE** (IN TEU)

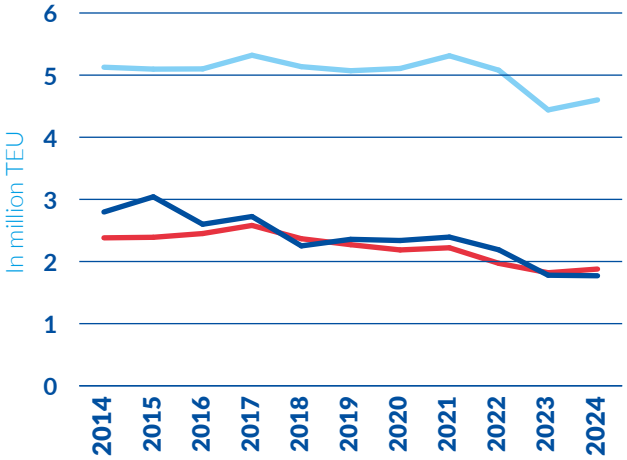
World Northern Range

Index of container throughput in the world and in the Northern Range



Netherlands Germany Belgium

Container transport on European inland waterways



Sources: RWI/ISL Container Throughput Index, seasonally adjusted series, Eurostat [iww_go_actygo]

Outlook for the container segment

Despite these difficult circumstances, a recovery might be on the horizon as container transport in Northern Range ports[95] witnessed a significant resurgence in container throughput in 2024 and in the first two months of 2025. RWI/ISL index values rose by +6.6 index points in January 2025[96] compared to December 2024, and by +14.4 index points when compared to January 2024. However, February and March 2025 marked a slight decline compared to the previous months, respectively -1.3 and -0.7 index points, reflecting the first effects of the new US customs policy.

Overall, these figures suggest a possible end to the long-lasting decline in container throughput in these European maritime ports, which began in 2022, resulting from several factors (including the lack of competitivity of the EU industry, higher gas prices and less intense world trade) and that intensified in November 2023, after the first attacks by Houthi rebels on cargo ships in the Red Sea. Furthermore, on a broader scale, maritime transport is expected to grow in line with global trade, with container trade growth stabilising at around 2.7% per year in the period 2025-2029. While demand for bulk commodities continues to support overall maritime transport, the growth in containerised cargo is being driven more significantly by factors such as economic growth in developing countries. As explained in the UNCTAD 2024 Review of Maritime Transport, developing countries are increasing their demand for manufactured goods, contributing to higher container volumes[97].

[95] *The expression 'Northern Range' designates the concentration of European maritime ports located along the North Sea, most of which are among the most active in the world. These Northern Sea ports mainly refer to Antwerp, Rotterdam, Le Havre, Zeebrugge, Hamburg, and Bremen/Bremerhaven. Together, they give an indication of economic development in the northern Eurozone and Germany.*
[96] *RWI/ISL Container Throughput Index, last consulted on 28.05.2025. Available at: https://www.isl.org/en/services/rwiisl-container-throughput-index. Note that global container throughput is an important indicator for international trade and economic activity.*
[97] *UNCTAD Review of maritime transport 2024*

However, this growth for container transport remains low compared to the pre-pandemic average of +4.9%[98]. In Europe, part of the increase in container volumes might also be partly due to the arrival of vessels that are avoiding the Red Sea due to geopolitical tensions, as well as the economic recovery in the Eurozone.

The outlook for container transport in inland navigation therefore remains mixed. Geopolitical tensions, including trade policy uncertainties, continue to affect trade patterns, and Europe is still recovering from a difficult macroeconomic context. While short-term growth is projected, container trade is expected to grow at a slower pace than before. The IMF's World Economic Outlook for 2025 has revised its global trade forecasts, projecting a slowdown in container transport[99]. Additionally, recent shifts in US customs policy are beginning to disrupt global container flows. While container throughput rose in almost all regions in January and February 2025, this was followed by a decline in March 2025, possibly due to the fact that businesses rushed to ship their goods before the start of the new US tariffs[100]. In addition, the extent to which this low growth trend will remain will also depend on the further escalation of conflicts that affect gas and energy prices. Last but not least, the negative impact of inefficient handling of inland container vessels in seaports, both financially and in terms of reliability of IWT, should not be underestimated. The persistence of this phenomenon - together with other factors (i.e. low water events) - could ultimately contribute to reverse the modal shift. As such, expectations should therefore remain moderated.

OUTLOOK FOR PASSENGER TRANSPORT

The new building activity for river cruises in Europe improved in 2024, and the active fleet remained the same as in 2023, attaining 408 river cruise vessels. Overall, since Covid-19, the new building activity for river cruises remained rather slow between 2022 and 2024. However, it is expected to pick up again in 2025. Newbuilding figures for 2024 are indeed higher than in 2023 and are expected to almost triple in 2025. The order book for 2026 is also promising. As a sign of this positive development, Viking River Cruises alone contracted 11 new vessels for 2025 and 2026 and eight more were ordered for 2027 and 2028. Recently more vessels than ever were ordered for the Rhône, Seine and the Douro.

The forecast for river cruises' sales in 2025 is predominantly positive as, in the context of the survey conducted by IG River cruise, 81% of respondents expect an increase in sales figures compared to 2024, particularly regarding passengers from the USA/Canada and Australia/New Zealand. As regards passengers coming from the DACH region and the UK/Ireland, expectations are more cautious, with a higher proportion of companies forecasting stable sales figures[101].

[98] *IMF World Economic Outlook, April 2024*
[99] *IMF World Economic Outlook, April 2025*
[100] *RWI/ISL Container Throughput Index, last consulted on 07.05.2025. Available at: https://www.isl.org/en/services/rwiisl-container-throughput-input-index-0325*
[101] *Source: Der Flusskreuzfahrtmarkt 2024 – IG River Cruise*

In France, more than half of the companies working in the river tourism sector express concern about 2025, mainly due to increased operating costs, fees and tolls, and recruitment difficulties within the sector. Yet, they are optimistic about the medium-term development of their business as the media exposure of Paris and the waterways during the 2024 Olympic Games point to unprecedented development prospects[102].

Despite this global positive overview, it is also important to underline that the persisting geopolitical tensions might result in smaller European companies being more cautious about expanding their fleet into new markets. Indeed, as highlighted by the shipping company, Navibelle[103], concentrating on the European market and not targeting overseas clients - who are more likely to cancel their cruises in Europe in the event of geopolitical tensions - is a way to mitigate risks. For larger cruise companies however, the growth of the fleet is expected to continue.

[102] *Baromètre de l'activité tourisme fluvial, édition 2025 - Entreprises fluviales de France*
[103] *https://navibelle.com/*

LONG RUN OUTLOOK
FOR IWT MARKETS IN RHINE AND DANUBE COUNTRIES BASED ON PRODUCTION

Transport demand in IWT is derived from the development of underlying economic sectors and branches such as the construction and energy sectors, the steel industry, petrochemical and chemical industry, etc. To analyse the long-term development of transport demand according to goods segments, it is therefore crucial to look at long-term trends of the production of the respective goods.

The forecasts shown below were based on data from Oxford Economics from March 2025. These forecasts do not therefore consider events that took place after this date.

It is acknowledged that besides production levels, several other factors should be considered to develop a comprehensive outlook model for IWT volumes. The level of production is however considered as one of the building blocks towards the development of such a model.

It is therefore important to consider such long-term outlooks with caution given that these forecasts are mostly based on production, and that many exceptional years have distorted long-term trends in recent years (i.e. low water in 2018 and 2022, Covid in 2020, war in Ukraine from 2022 onwards, US “trade war” with Europe).

TABLE 2: **SHARE OF MAJOR GOODS SEGMENTS WITHIN RHINE TRANSPORT**
(BASED ON CALCULATION OF SHARE IN TONNES)

Product segment	Share in % in 2022	Share in % in 2023	Share in % in 2024	Average share 2014-2024 in %
Mineral oil products	20.3	22.1	22.7	20.8
Chemicals	16.7	16.2	16.8	15.3
Sands, stones, gravel	16.4	17.3	16.5	17.2
Container	11.1	10.2	10.2	10.9
Agribulk and food products	9.7	9.6	10.0	9.5
Iron ore	7.3	7.9	7.7	7.6
Coal	9.5	7.3	6.2	8.7
Metals	5.0	5.0	5.1	4.8
Other	3.9	4.3	4.9	5.4

Sources: CCNR calculation based on Destatis, Rijkswaterstaat and VNF

For the Danube, the major goods segments with the highest shares are agricultural products, food products and iron ores. Due to a substantial amount of missing data, it is not possible to indicate the exact shares per goods segment for the Danube.

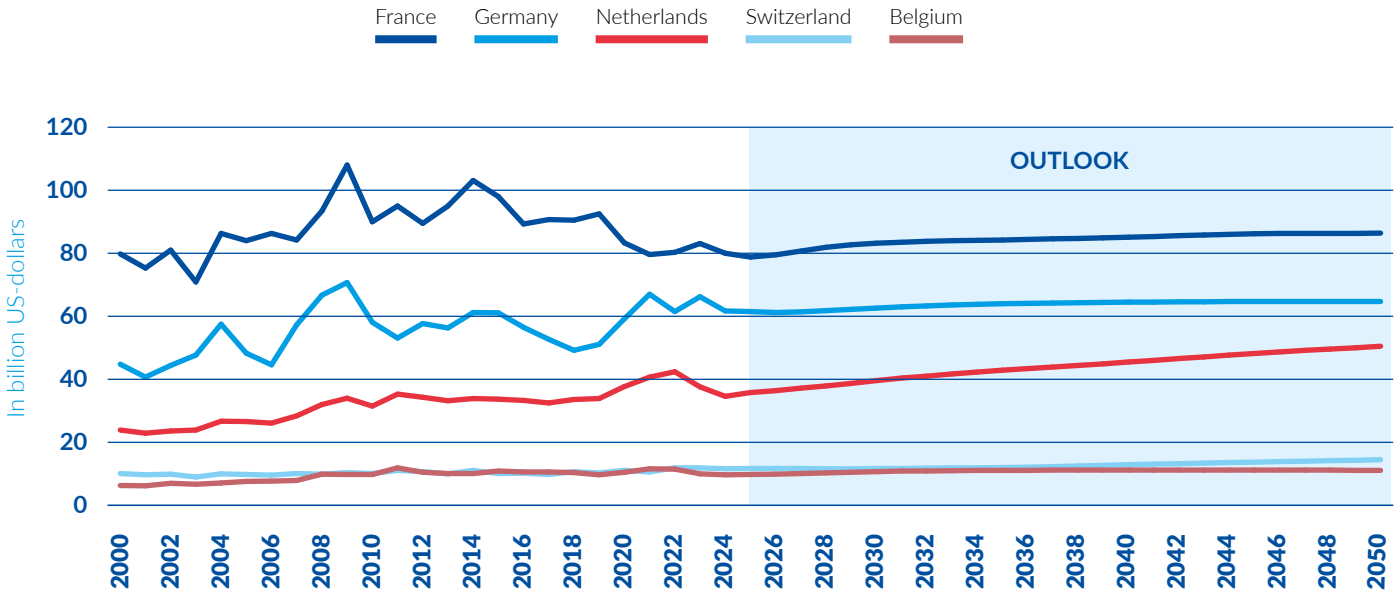
AGRICULTURE, FORESTRY AND FISHERIES

A correlation between harvest results and inland waterway transport of agricultural products has been found for France and Germany.

While IWT is the preferred mode of transport for long-distance shipping of agricultural and food products, according to large shipping companies questioned as part of a *Royal HaskoningDHV* study[104], the 2020 decade is likely to witness a decline in using the IWW mode of transport. Indeed, the period 2020-2030 is seen as a transition period for agriculture, with a trend towards smaller scale, more localised production. This tendency, coupled with a reduction in the number of small vessels (in which grain is most often carried), could negatively affect the volumes of agricultural products travelling on inland waterways.

Long-term forecasts of the production of agricultural products foresee an increasing trend in Germany, France, Belgium, the Netherlands and Switzerland. The gross real output in this sector is foreseen to increase by +4.9% between 2024 and 2050 in Germany. For France, a growth of +8.0% is expected, +46.0% for the Netherlands, +14.4% for Belgium and +25.0% for Switzerland.

FIGURE 15: **REAL GROSS OUTPUT OF AGRICULTURAL, FORESTRY AND FISHERY PRODUCTS IN RHINE COUNTRIES** (2015 PRICES IN DOLLARS)



Source: Oxford Economics

[104] *Source: Study "Impact energietransities en wereldhandelstromen ingrijpend voor de binnenvaart" available at: https://www.haskoning.nl/nl-nl/projecten/impact-energietransities-en-wereldhandelstromen-ingrijpend-voor-de-binnenvaart*

Overall, agricultural production in Rhine countries is expected to experience moderate growth, with the Netherlands and Switzerland showing the strongest upward trend over the decades, while Belgium displays a small negative growth rate in the last period. The data in the tables 3 to 15 indicate the growth rates between 2024 and 2050, between 2020 and 2030, 2030 and 2040 and 2040 and 2050. Hence, for each time frame, a comparison is made between two values. Therefore, the growth rates do not represent annual rates per year.

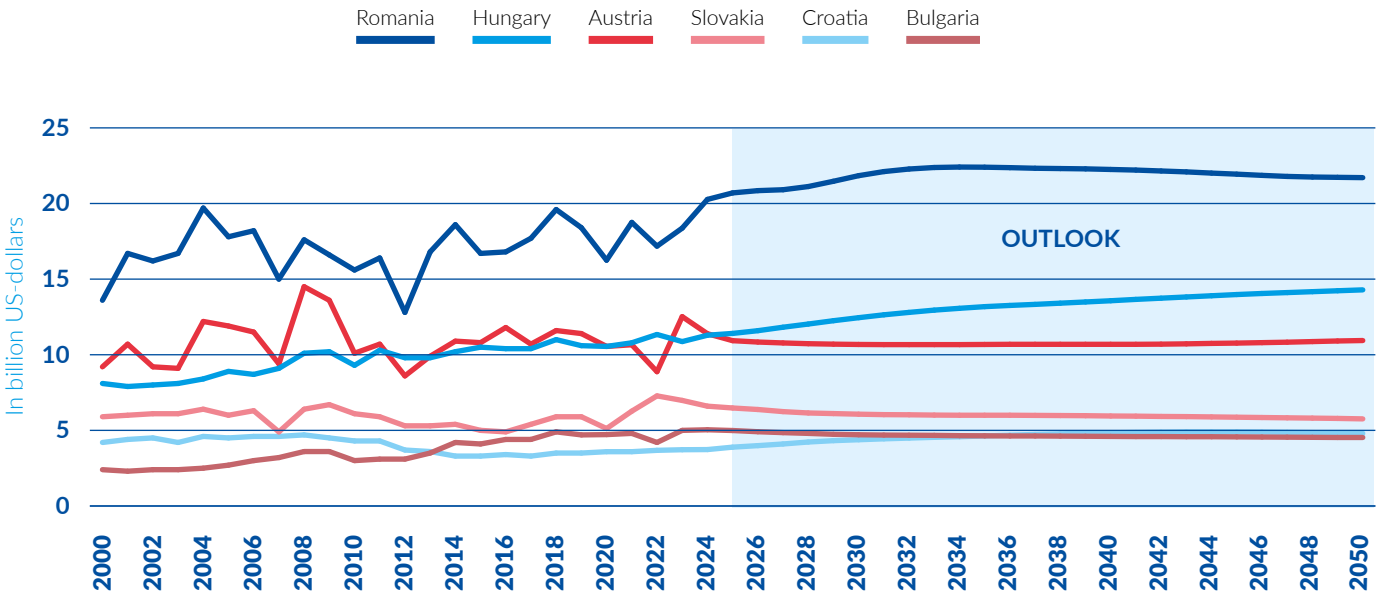
TABLE 3: **GROWTH RATES OF AGRICULTURAL, FORESTRY AND FISHERY PRODUCTION IN RHINE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
France	+8.0%	-0.2%	+2.3%	+1.5%
Germany	+4.9%	+5.9%	+2.9%	+0.3%
Netherlands	+46.0%	+5.0%	+14.9%	+11.0%
Belgium	+14.4%	+1.9%	+4.4%	-0.6%
Switzerland	+25.0%	+5.2%	+10.6%	+12.5%

Source: CCNR calculation

Regarding Danube countries, the output of the sector is forecast to fall by -12.1% in Bulgaria, by -4.4% in Hungary and by -10.0% in Slovakia between 2024 and 2050. It is however expected to increase in Austria (+26.5%), Croatia (+29.7%), and Romania (+6.9%) in the same period.

FIGURE 16: **REAL GROSS OUTPUT OF AGRICULTURAL, FORESTRY AND FISHERY PRODUCTS IN DANUBE COUNTRIES** (2015 PRICES IN DOLLARS)



Source: Oxford Economics

Danube countries show a mixed pattern, with Romania, Austria, Bulgaria and Croatia experiencing strong growth in the 2020s, but most countries in that region facing a subdued development or slight declines in the following decades.

TABLE 4: **GROWTH RATES OF AGRICULTURAL, FORESTRY AND FISHERY PRODUCTION IN DANUBE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
Romania	+7.1%	+34.4%	+1.9%	-2.4%
Austria	+26.6%	+18.0%	+9.0%	+5.3%
Hungary	-4.0%%	+1.2%	+0.1%	+2.3%
Slovakia	-10.1%	-0.2%	-2.3%	-1.5%
Bulgaria	-12.7%	+18.6%	-2.0%	-3.2%
Croatia	+28.7%	+22.0%	+10.5%	-0.8%

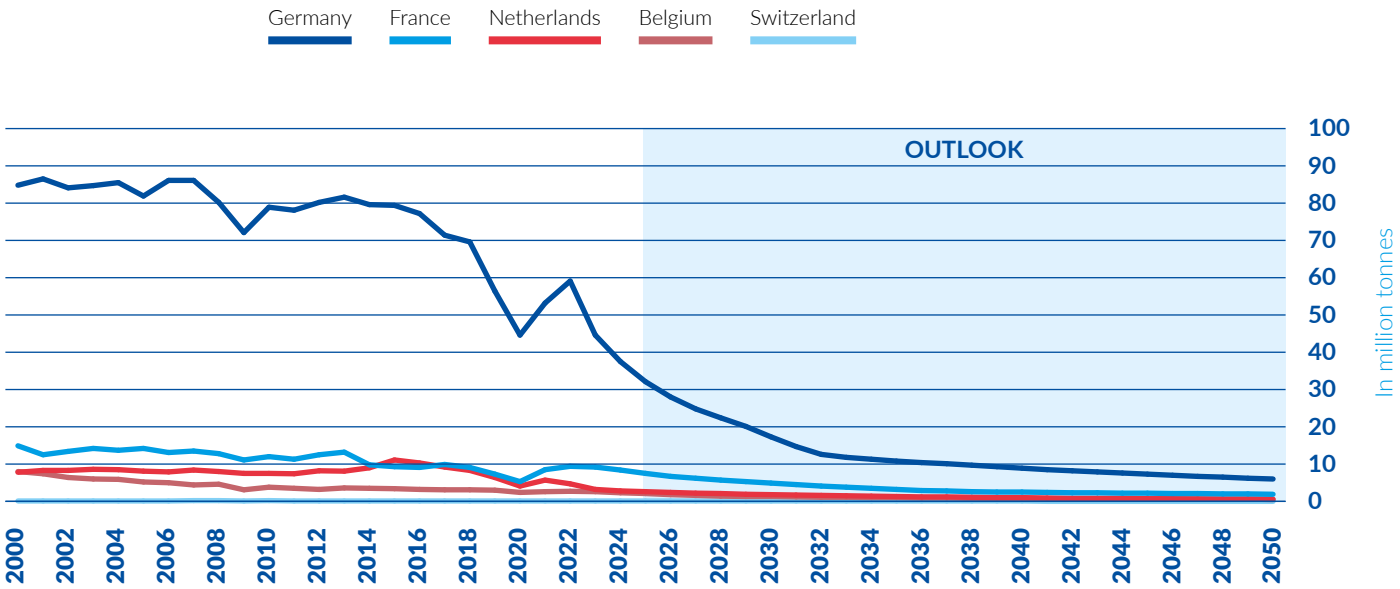
Source: CCNR calculation

COAL

The volume of coal transported on inland waterways is expected to decrease strongly in the next two decades, as European countries progress further in their energy transition. Germany, for example, has planned to close all its coal power plants by 2038; as a result, the country's coal imports have fallen significantly in recent years[105].

The same dynamic has been observed in France, as well as in all Danube countries, where coal consumption is forecast to fall to historically low levels in the long run, even for major consumers such as Bulgaria and Romania. In western Europe, Germany has the largest coal consumption and is dependent on coal imports, which are largely transported on the Rhine. Despite a short-run boom in coal consumption in 2022, the long-run outlook for coal demand is negative. Up until the year 2050, the outlook for domestic coal demand (both for energy generation and steel production) points to a -84.0% decrease in Germany. For France, the expected decrease is -77.4%. For the Netherlands, the reduction is -82.1%, -73.9% for Belgium and -100.0% for Switzerland.

FIGURE 17: **COAL, DOMESTIC DEMAND IN RHINE COUNTRIES, ANNUALISED**



Source: Oxford Economics

Rhine countries show a clear downward trend in coal demand, with all five countries experiencing strong and sustained declines over each decade from 2020 to 2050, particularly in Germany and the Netherlands between 2020 and 2030. This projection for coal demand corroborates the expected negative trend for coal transport on European waterways in the long term.

[105] *In 2013, coal imports amounted to 52.4 mio tonnes, and reduced to 49.7 mio tonnes in 2015, 48.5 mio tonnes in 2017, 43.2 mio tonnes in 2019 and 31.3 mio tonnes in 2020. After a temporary resurgence in coal imports (2021: 38.7 mio tonnes; 2022: 42.6 mio tonnes), the downward trend resumed in 2023 (2023: 30.1 mio tonnes).*

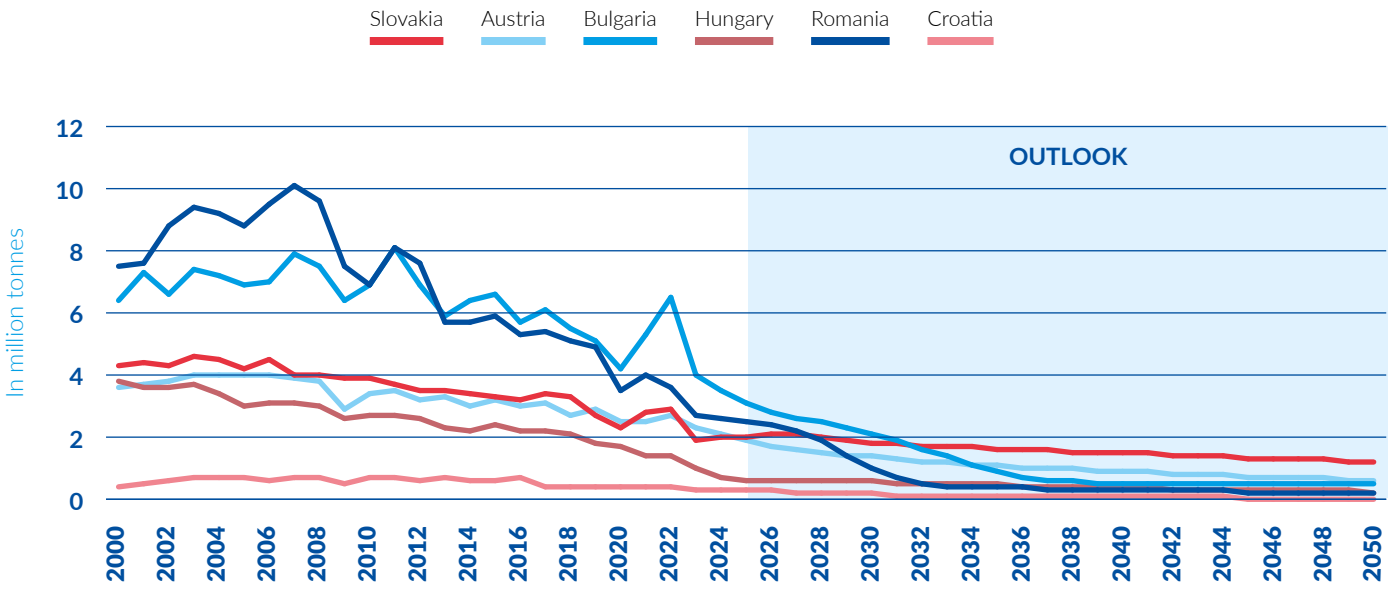
TABLE 5: **GROWTH RATES OF COAL DEMAND IN RHINE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
France	-77.4%	-7.9%	-49.6%	-21.5%
Germany	-84.0%	-61.1%	-48.7%	-32.6%
Netherlands	-82.1%	-56.2%	-47.2%	-45.3%
Belgium	-73.9%	-47.4%	-39.2%	-18.4%
Switzerland	-100.0%	-21.8%	-28.6%	-40.0%

Source: CCNR calculation

Coal consumption in countries in the Danube region is expected to follow a similar downward trend as in Rhine countries despite a slight uptake during the Covid-19 pandemic. From 2024 to 2050, the domestic demand for coal is forecast to fall by -71.4% in Austria, -100.0% in Croatia, -71.4% in Hungary, and -40.0% in Slovakia. The two countries where demand is currently the greatest (Romania and Bulgaria) are expected to witness an even more severe downtrend (-92.3% and -85.7% respectively).

FIGURE 18: **COAL, DOMESTIC DEMAND IN DANUBE COUNTRIES, ANNUALISED**



Source: Oxford Economics

Based on the available data for coal demand, Danube countries are projected to undergo a sharp and continuous decline in coal transport between 2020 and 2050, with particularly steep reductions in Romania, Hungary, Bulgaria and Croatia during the first two decades. Even countries with smaller declines, such as Slovakia, still show a consistent negative trend in coal across all decades.

TABLE 6: **GROWTH RATES OF COAL DEMAND IN DANUBE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
Romania	-92.3%	-71.9%	-69.4%	-36.7%
Hungary	-71.4%	-66.7%	-33.9%	-35.1%
Austria	-71.4%	-45.0%	-34.6%	-32.6%
Bulgaria	-85.7%	-49.8%	-76.1%	-10.0%
Croatia	-100.0%	-58.6%	-66.7%	-20.0%
Slovakia	-40.0%	-21.9%	-18.3%	-17.0%

Source: CCNR calculation

CONTAINERS

It is estimated that about 75-80% of traded goods are shipped by sea[106]. Container transport, in turn, is the dominant mode of transport in maritime trade with nearly 66% of goods transported by sea being containerised[107]. In the absence of more specific data, and because container transport on inland waterways tends to reflect seaborne container transport and world trade, the sum of all imports and exports of goods per country was thus used as a proxy to analyse the evolution of container transport on the Rhine. Danube countries are excluded, as container transport on the Danube is exceedingly rare. Similarly, information related to world trade was used for the outlook for container transport in Europe.

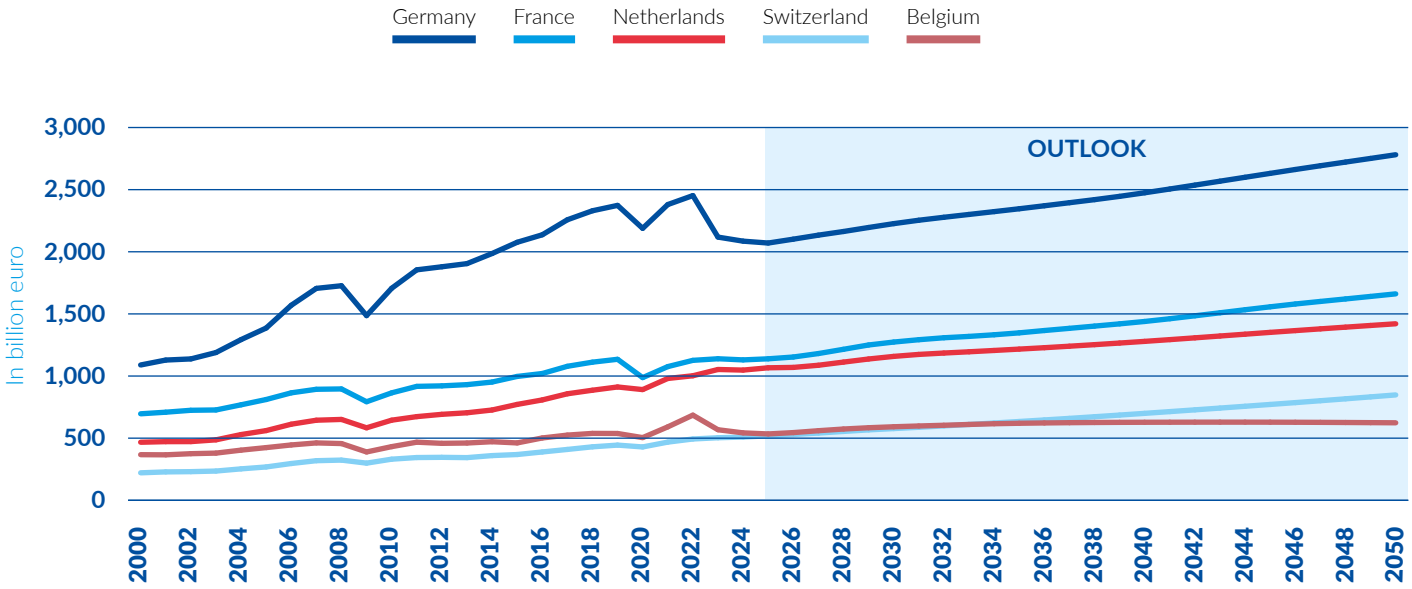
Based on long-term forecasts available for international trade, container transport is likely to experience a steady growth in western Europe. Indeed, the highest growth rate in international trade between 2024 and 2050 is expected to be seen in Switzerland (+66.6%). Germany should remain the country with the highest trade value, with an increase of almost +33.3% in the value of both its exports and imports. The growth of trade value in other western European countries is forecast to increase by +14.9% in Belgium, +35.6% in the Netherlands, and +47.0% in France.

[106] *Source: Verschuur, J., Koks, E.E. & Hall, J.W. Ports' criticality in international trade and global supply-chains. Nat Commun 13, 4351 (2022): https://doi.org/10.1038/s41467-022-32070-0 and UNCTAD seaborne trade data, April 2025.*
[107] *Source: UNCTAD Review of Maritime Transport, 2023*

World trade is assumed to recover from the current economic slowdown and geopolitical tensions and grow in volume at a steady rate, despite a structural rearrangement of trade flows due to these tensions. Indeed, recent years have seen a marked interest in friendshoring and onshoring. The underlying reasons behind this are not only linked to the pandemic and the war in Ukraine, and with the concerns they caused regarding the apparent weakness of supply chains, but also to environmental concerns.

Whether friendshoring will last and change the face of world trade in the long run is difficult to say. If it does, it will certainly cause an increase in container trade within Europe, as most European countries are geographically close to each other and generally enjoy cordial diplomatic relations within the EU, making friendshoring and onshoring in the future likely[108].

FIGURE 19: **YEARLY SUM OF REAL IMPORTS AND EXPORTS OF GOODS IN RHINE COUNTRIES** (2015 PRICES IN EURO)



Source: Oxford Economics
Switzerland's exports and imports value was converted from 2015 Swiss francs to 2015 euros.

[108] *Source: IMF World Economic Outlook, April 2024*

Rhine countries are expected to see moderate to strong growth in the sum of real imports and exports of goods from 2020 to 2050, with Switzerland and France showing the most consistent increases across all decades, while Belgium is projected to experience a slight decline by the 2040s.

TABLE 7: **GROWTH RATES OF THE SUM OF REAL IMPORTS AND EXPORTS OF GOODS IN RHINE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
France	+47.0%	+29.0%	+13.0%	+15.4%
Germany	+33.3%	+1.7%	+11.2%	+12.4%
Netherlands	+35.6%	+30.0%	+10.4%	+11.1%
Belgium	+14.9%	+17.3%	+6.1%	-0.7%
Switzerland	+66.6%	+34.4%	+21.2%	+21.2%

Source: CCNR calculation

CHEMICALS

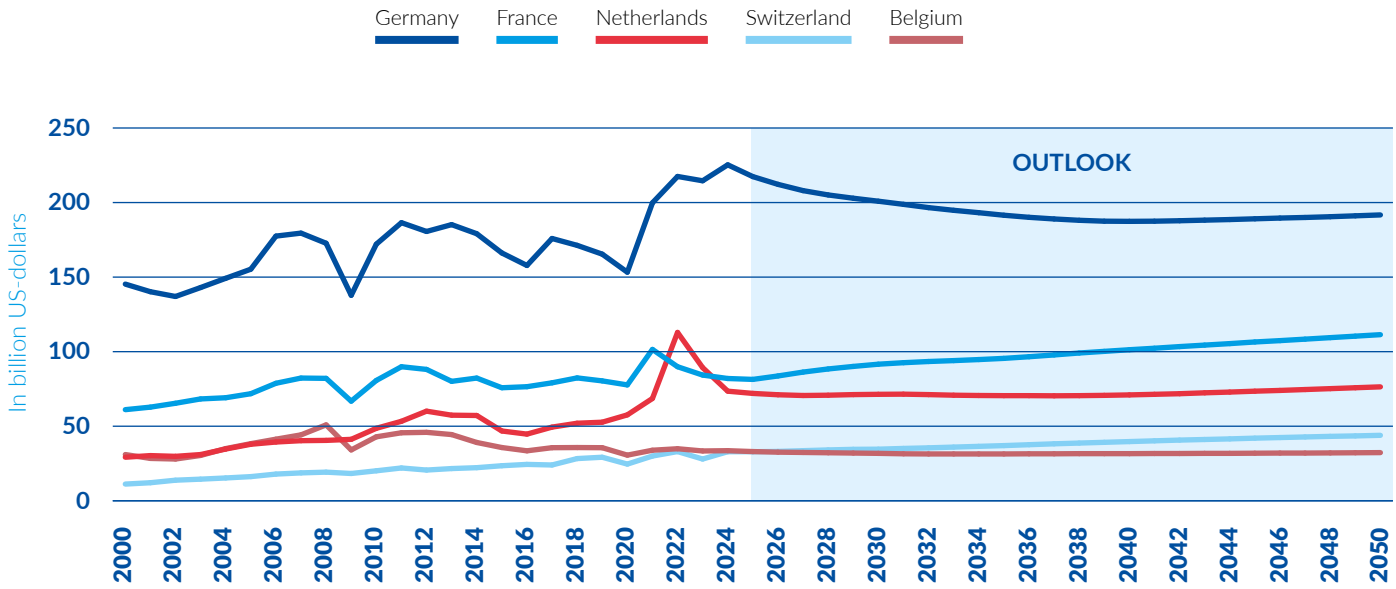
Inland waterway transportation is likely to remain in a strong position for the transport of chemicals, as other modes of transport are generally not considered competitive alternatives, except for pipelines. The chemical industry supplies clients from many economic sectors, especially in agriculture (fertilizers), plastics, automotive, construction, and paper and pulp industries. Moreover, the worldwide trend towards reindustrialisation and friendshoring is planned to be encouraged by the European Commission's Green Deal Industrial Plan, which should ensure consistent outputs for the chemical industry.

The transport of chemicals is a growth market in IWT. This is confirmed by forecasts showing increased chemical production in several European countries. It can be expected that the transport of chemicals on inland waterways will grow in line with the growing production of chemicals. Moreover, the chemical industry is estimated to support more than 75% of all emission reduction technologies needed to reach the 2050 net-zero goals, which will likely drive demand and production in the coming decades[109].

Real gross output of chemical production is expected to grow by +35.9% in France, by +33.4% in Switzerland, and by +3.9% in the Netherlands between 2024 and 2050. A rate of decrease of -14.9% is foreseen for Germany and of -3.9% for Belgium.

[109] *Source: Deloitte, 2024 US chemical industry outlook (last consulted on 10.04.2024). Available at: https://www2.deloitte.com/us/en/insights/industry/oil-and-gas/chemical-industry-outlook.html*

FIGURE 20: **REAL GROSS OUTPUT OF CHEMICALS IN RHINE COUNTRIES** (2015 PRICES IN DOLLARS)



Source: Oxford Economics

Chemical production in Rhine countries is expected to grow strongly in the 2020s, particularly in Switzerland and Germany, but growth is projected to slow down significantly in the decades following, especially in Germany and Belgium.

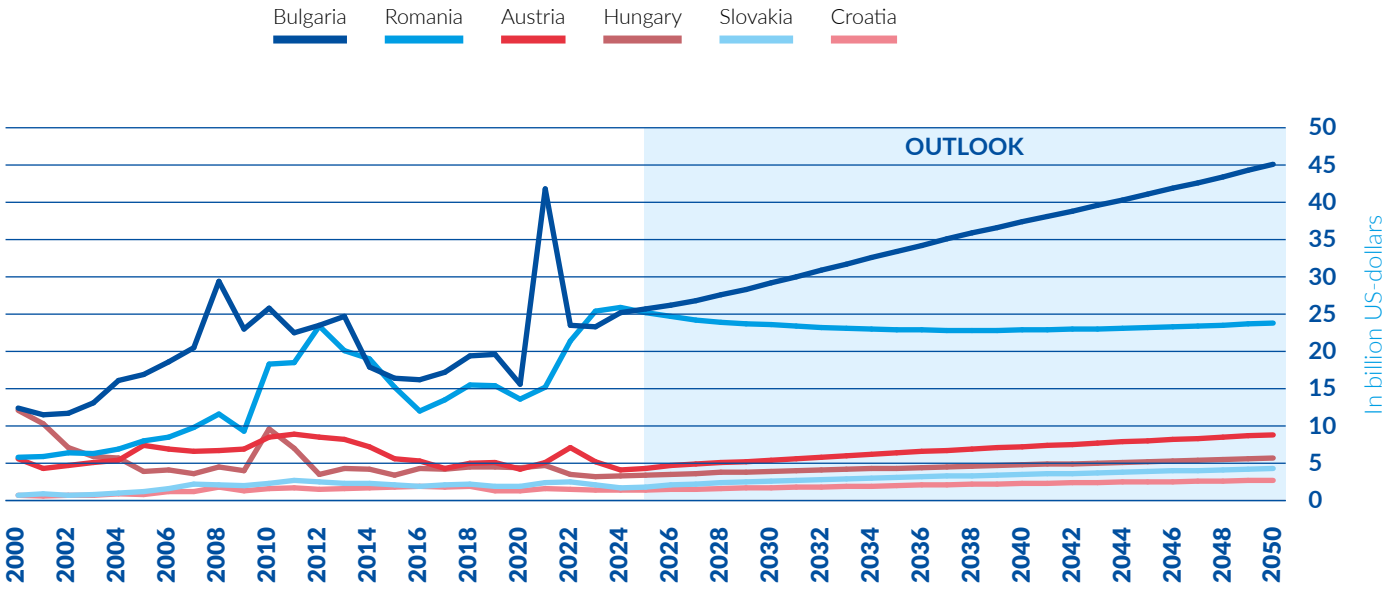
TABLE 8: **GROWTH RATES OF CHEMICAL PRODUCTION IN RHINE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
France	+35.9%	+17.9%	+10.6%	+9.9%
Germany	-14.9%	+31.1%	-6.7%	+2.3%
Netherlands	+3.9%	+24.0%	-0.5%	+7.5%
Belgium	-3.9%	+3.7%	-0.5%	+2.1%
Switzerland	+33.4%	+40.9%	+14.8%	+10.6%

Source: CCNR calculation

Bulgaria, currently the biggest chemicals producer in central and eastern Europe, is expected to experience a sharp increase in its sectorial output by 2050, placing it well ahead of the other countries, with a growth rate of +79.0%.

FIGURE 21: **REAL GROSS OUTPUT OF CHEMICALS IN DANUBE COUNTRIES** (2015 PRICES IN DOLLARS)



Source: Oxford Economics

In Danube countries, chemical production is forecast to grow strongly across all decades, especially in Hungary, Bulgaria, and Slovakia, with only Austria experiencing a small decline during the period 2030-2040.

TABLE 9: **GROWTH RATES OF CHEMICAL PRODUCTION IN DANUBE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
Romania	+72.7%	-10.8%	+22.3%	+19.1%
Hungary	+114.6%	+30.8%	+32.9%	+22.3%
Austria	-8.1%	+73.8%	-3.0%	+4.2%
Bulgaria	+79.0%	+87.1%	+28.0%	+20.7%
Croatia	+92.9%	+34.9%	+32.9%	+19.0%
Slovakia	+152.9%	+38.8%	+33.3%	+22.1%

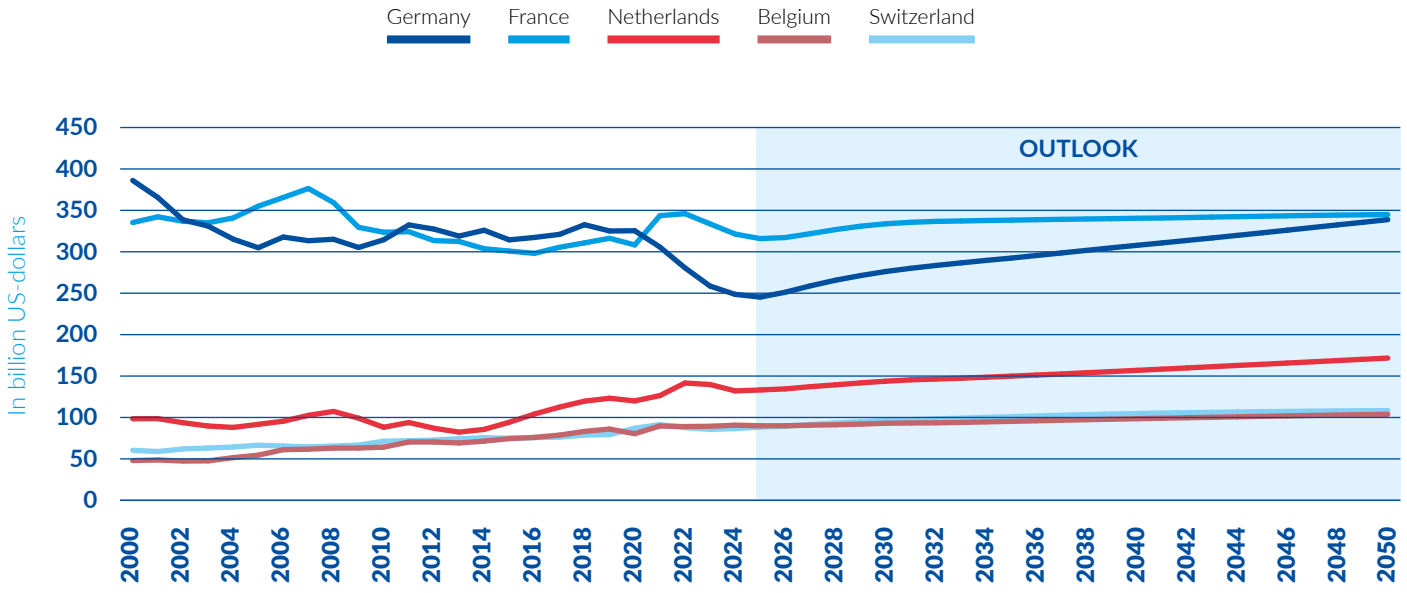
Source: CCNR calculation

CONSTRUCTION MATERIAL, SAND, STONES, GRAVEL

According to a study conducted by *Royal HaskoningDHV*, the Dutch shippers believe that inland waterway transport will remain the main mode of transport for construction materials such as gravel, sands, stones. No major modal shift is expected, but as larger companies are being created by mergers and acquisitions, the number of smaller concrete mortar plants and smaller sand and gravel companies along small waterways is expected to diminish. As larger entities concentrate along the waterways and look for more economies of scale, the demand for smaller vessels should also decrease. The upcoming years anticipate a surge in sand and gravel availability due to dredging efforts to expand waterways, coinciding with a growing demand for materials for dike reinforcement in the face of climate risks.

The transport demand depends strongly on the activity of the construction sector. According to the outlook of Oxford Economics, the inflation-adjusted real output in Germany will grow by +36.3% between 2024 and 2050. For France, the expected growth rate of real output in the construction sector is +7.3%, +30.0% in the Netherlands, +14.4% in Belgium and +25.1% in Switzerland.

FIGURE 22: **REAL GROSS OUTPUT IN THE CONSTRUCTION SECTOR IN RHINE COUNTRIES** (2015 PRICES IN DOLLARS)



Source: Oxford Economics

The construction sector in Rhine countries is expected to recover after a challenging 2020s for Germany, with steady growth projected across most countries in the 2030s and 2040s.

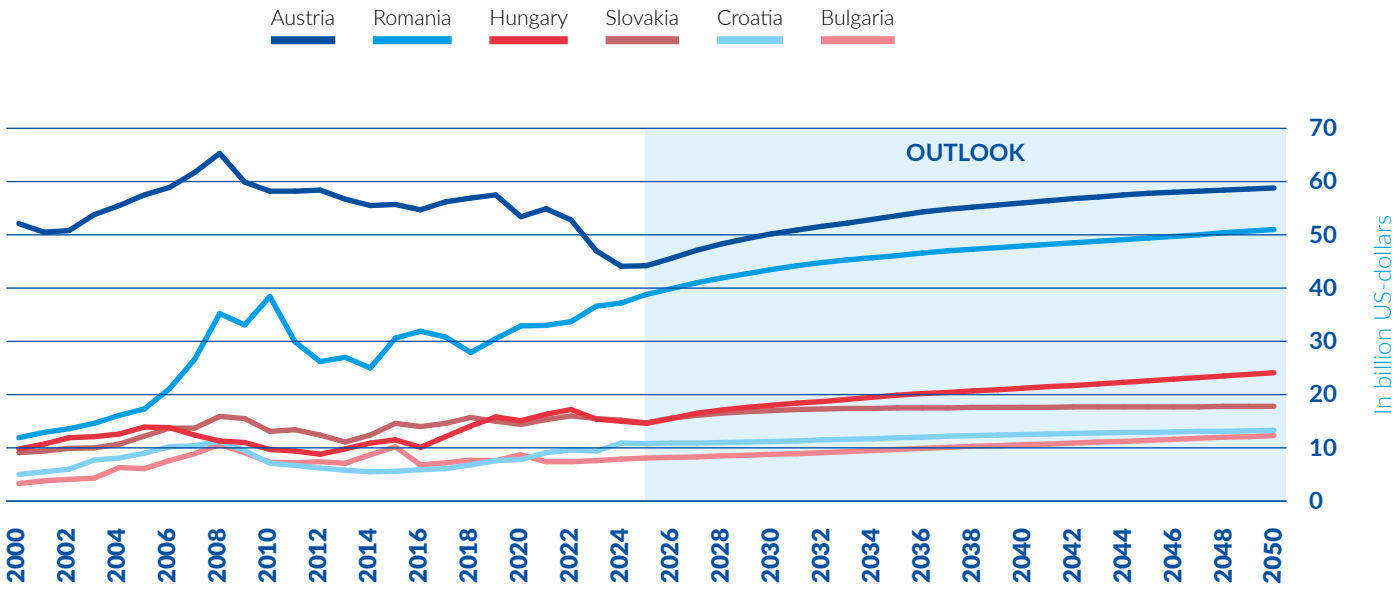
TABLE 10: **GROWTH RATES IN THE CONSTRUCTION SECTOR IN RHINE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
France	+7.3%	+8.3%	+2.0%	+1.3%
Germany	+36.3%	-15.1%	+11.4%	+10.1%
Netherlands	+30.0%	+19.9%	+9.1%	+9.5%
Belgium	+14.4%	+15.6%	+6.0%	+5.3%
Switzerland	+25.1%	+10.8%	+8.7%	+3.4%

Source: CCNR calculation

The construction sector is expected to grow by +55.7% in Bulgaria, +22.0% in Croatia, +60.7% in Hungary, +37.1% in Romania, and +17.1% in Slovakia between 2024 and 2050. Austria's construction sector, currently the biggest in central and eastern Europe, is forecast to catch up and be followed closely by Romania's, with respective growth rates of +33.3% and +37.1% in the same time frame.

FIGURE 23: **REAL GROSS OUTPUT IN THE CONSTRUCTION SECTOR IN DANUBE COUNTRIES** (2015 PRICES IN DOLLARS)



Source: Oxford Economics

Construction output in Danube countries is forecast to grow robustly, particularly in Romania, Croatia, and Hungary during the 2020s, with slightly slower but still a growth in the following decades.

TABLE 11: **GROWTH RATES IN THE CONSTRUCTION SECTOR IN DANUBE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
Romania	+37.1%	+32.1%	+10.1%	+6.4%
Hungary	+60.7%	+19.1%	+17.5%	+13.8%
Austria	+33.3%	-6.0%	+11.6%	+4.9%
Bulgaria	+55.7%	+1.3%	+20.6%	+16.4%
Croatia	+22.0%	+43.6%	+11.4%	+6.2%
Slovakia	+17.1%	+18.3%	+3.2%	+1.1%

Source: CCNR calculation

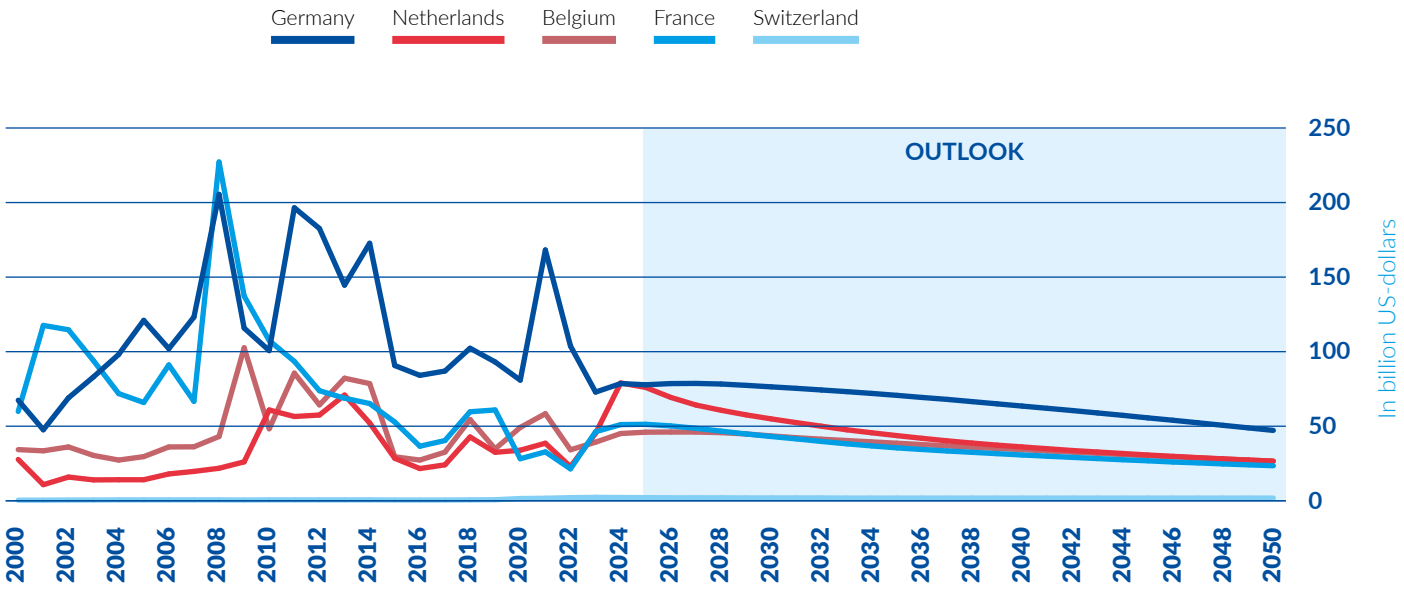
PETROLEUM PRODUCTS AND COKING COAL

As countries progress through their energy transition, the demand for petroleum or mineral oil products is however expected to continue its current downward trend, leading to a decline in its transport through inland waterways. Even though there are financial and technical barriers to the development of carbon neutral propulsion technologies, it is assumed that mineral oil products will gradually be phased out from the propulsion mix in the next two decades, especially under the impulse of the EU legislation ETS2 (Emissions Trading Scheme, the EU trading system for CO_2 emissions) which is expected to drive the prices of fossil fuel upwards. Data from the port of Antwerp show that mineral oil products volumes have been declining continuously since 2013, while the volume of transported chemicals has risen greatly.

For the production of petroleum products (liquid fuels, heating oil) and coking coal or coke, this is foreseen to decrease until 2050. This is explained by the gradual transition to alternative energy sources in the transport sector which is expected to lead to a decrease in the demand for petroleum products (refined liquid fuels). Concerning coking coal, a transition towards carbon free steel production is likely, which is also expected to lead to a decrease in the demand for coking coal in the future.

For Germany, the outlook shows a decrease in the production of both products together of -39.9% until 2050. For France, a decrease of -54.0% is foreseen, a decline of -66.3% for the Netherlands and a decline of -41.0% for Belgium. Switzerland has a very low production level of petroleum products, which is the reason for rather high imports via the Rhine.

FIGURE 24: **REAL GROSS OUTPUT OF COKE AND REFINED PETROLEUM PRODUCTS IN RHINE COUNTRIES** (2015 PRICES IN DOLLARS)



Source: Oxford Economics

The production of petroleum products and coke in Rhine countries shows a general decline after initial growth in some countries in the 2020s, reflecting the ongoing energy transition away from fossil fuels.

TABLE 12: **GROWTH RATES OF COKE AND REFINED PETROLEUM PRODUCTION IN RHINE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
France	-54.0%	+53.2%	-28.8%	-23.5%
Germany	-39.9%	-5.5%	-16.8%	-25.8%
Netherlands	-66.3%	+61.9%	-34.3%	-26.3%
Belgium	-41.0%	-11.5%	-21.3%	-22.3%
Switzerland	-18.2%	+25.0%	-5.3%	-2.2%

Source: CCNR calculation

A similar outlook is foreseen in eastern Europe and Austria, with a decline in petroleum products and coke production: -68.5% in Romania, -29.1% in Croatia and -5.5% in Austria. The three countries where these sectors are expected to grow by 2050 are Bulgaria, with a +244.5% growth rate, Slovakia (+76.0%) and Hungary (+5.4%).

In the Danube region, petroleum products and coke production is expected to decline significantly in most countries after 2030, with Bulgaria being a notable exception, maintaining strong growth throughout.

TABLE 13: **GROWTH RATES OF COKE AND REFINED PETROLEUM PRODUCTION IN DANUBE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
Romania	-68.5%	+50.8%	-41.1%	-24.0%
Hungary	+5.4%	-46.1%	+1.5%	-4.5%
Austria	-5.5%	+8.9%	-0.2%	-12.8%
Bulgaria	+244.5%	+24.4%	+46.0%	+11.3%
Croatia	-29.1%	-52.6%	-2.4%	-25.6%
Slovakia	+76.0%	+23.4%	+16.2%	-2.4%

Source: CCNR calculation

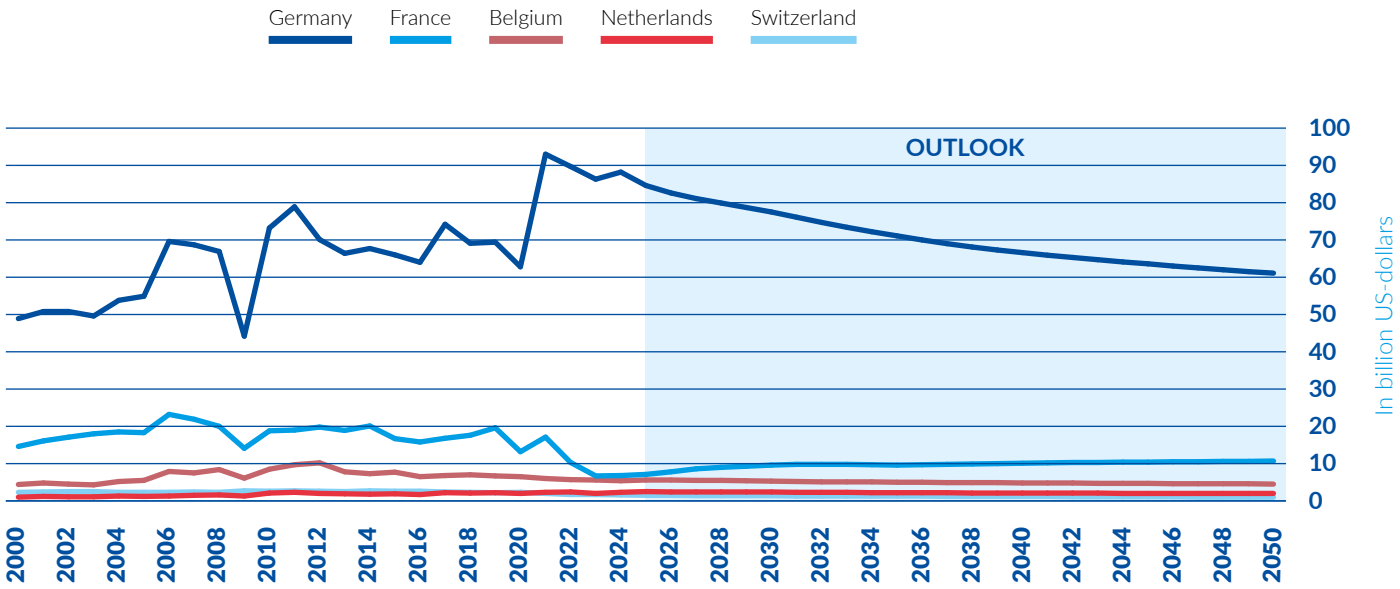
STEEL AND IRON ORE

As a circular economy is expected to play a more important role in the future (study conducted by *Royal HaskoningDHV*), Dutch shipping companies have communicated strong opinions on higher metals recycling rates and a subsequent decline in steel demand and production across western Europe. This could cause a decline in the transportation of steel, but also iron ore, as it will likely be replaced by recycled steel and less emission intensive production technologies. However, the demand for high quality steel is expected to remain high not only in developed countries, but is thought to increase in developing countries, which could make steel remain an important product in European industry.

In cases where steel production is located along inland waterways, a high waterborne transport of iron ore, coking coal and steel products is observed. Germany is the largest steel producing country in Europe and the Rhine is an important transport route for iron ore and steel products.

Between 2024 and 2050, the outlook for German steel production points to a decline of -30.7%. For France, an increase of +57.1% is foreseen but based on a much lower absolute level of steel production. For the transport of iron ore and steel on inland waterways, the Belgian, French and German steel production is of high relevance as the steel industry in these countries is often located along inland waterways. This is not the case for Dutch and Swiss steel industry. Dutch steel production is located at the crossing of deep sea and inland waterways. Raw materials enter by sea, while products leave by inland waterways.

FIGURE 25: **REAL GROSS OUTPUT OF IRON AND STEEL IN RHINE COUNTRIES** (2015 PRICES IN DOLLARS)



Source: Oxford Economics

Steel production in Rhine countries shows divergent trends, the Netherlands shows stagnation in the 2020s before declining, while Germany, France, Belgium, and Switzerland are projected to decline across most periods.

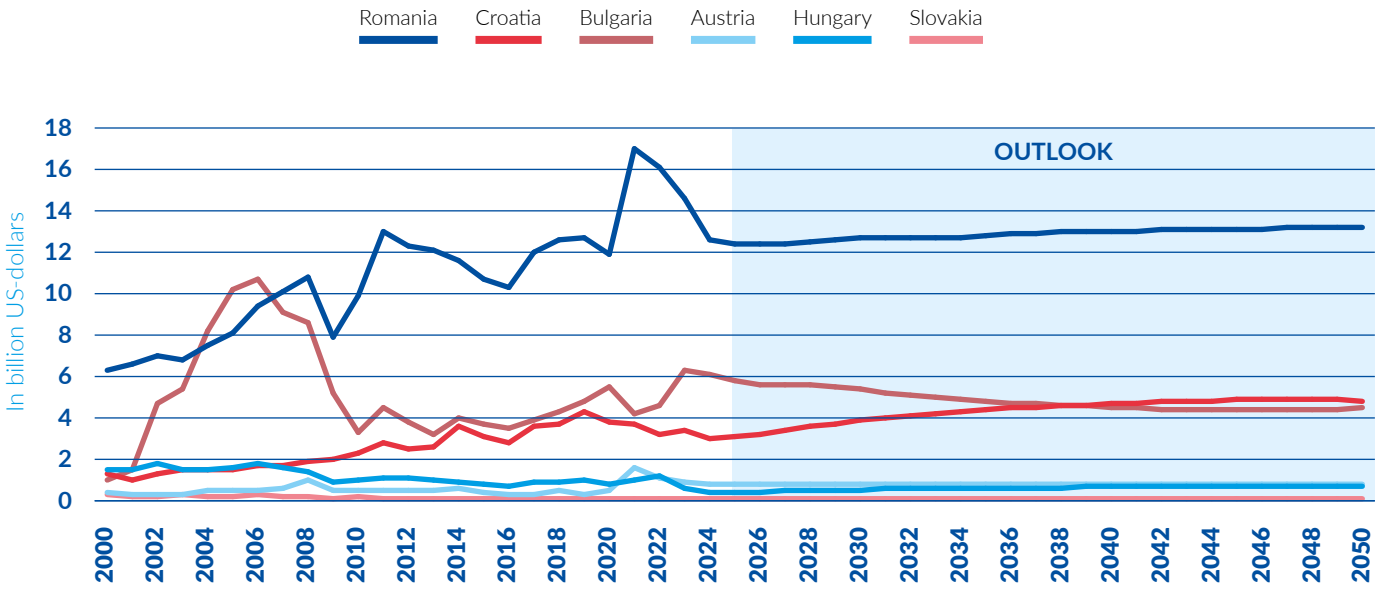
TABLE 14: **GROWTH RATES OF IRON AND STEEL PRODUCTION IN RHINE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
France	+57.1%	-27.4%	+5.4%	+5.1%
Germany	-30.7%	+23.4%	-14.1%	-8.3%
Netherlands	-15.9%	+19.3%	-11.1%	-6.2%
Belgium	-16.6%	-18.5%	-8.9%	-6.4%
Switzerland	-40.7%	-40.0%	-12.6%	-18.6%

Source: CCNR calculation

Austria is expected to remain an important player in the steel sector along the Danube, with a +4.8% growth rate between 2024 and 2050. Romania's steel production, after two sharp drops in the early 2000s and in 2020, will experience a decline of -26.2% by 2050. The forecasts from Oxford Economics point to high growth rates across other regions of central and eastern Europe: +75.0% for Hungary, and +60.0% for Slovakia.

FIGURE 26: **REAL GROSS OUTPUT OF IRON AND STEEL IN DANUBE COUNTRIES** (PRICES OF 2015 IN DOLLARS)



Source: Oxford Economics

Danube countries show more dynamic growth prospects for steel production, particularly Hungary, Croatia, and Slovakia, whereas Romania continues to show a significant decline over the decades.

TABLE 15: **GROWTH RATES OF IRON AND STEEL PRODUCTION IN DANUBE COUNTRIES**

Countries	Growth rate 2024-2050	Growth rate 2020-2030	Growth rate 2030-2040	Growth rate 2040-2050
Romania	-26.2%	-2.9%	-16.0%	-0.9%
Hungary	+75.0%	-29.3%	+24.5%	+1.5%
Austria	+4.8%	+6.3%	+2.7%	+1.5%
Bulgaria	+/-0.0%	+22.0%	+/-0.0%	+/-0.0%
Croatia	+/-0.0%	+46.2%	+1.3%	+5.2%
Slovakia	+60.0%	+1.6%	+20.9%	+3.2%

Source: CCNR calculation

GLOSSARY

ACTUAL DRAUGHT OF A VESSEL: the vertical distance between the bottom of the vessel's keel and the waterline at which the vessel is sailing. For a moving vessel, the actual draught comprises also the squat effect (see 'SQUAT EFFECT' in this glossary).

ACTUAL WATER LEVEL: a measurement indicated on a water level stick that is installed at or near the shore of a river at a gauge station. It does not measure the actual depth of the river, as rivers become deeper in their mid-section. Actual water levels are nevertheless needed to calculate the available draught for the navigation of a vessel on a particular river stretch.

ADVANCED ECONOMIES: according to the economic classification in the IMF World Economic Outlook, the USA, Germany, France, Italy, Spain, Japan, the UK, Canada as well as the Euro Area are part of this category.

ARA REGION: Amsterdam-Rotterdam-Antwerp

ASEAN: Association of Southeast Asian Nations

AVAILABLE OR POSSIBLE DRAUGHT OF A VESSEL: the maximum depth to which the vessel may be safely immersed when loaded with cargo. Both for inland and for seagoing vessels, this depth varies with the ship's dimensions. For seagoing vessels, it depends also on the time of the year and the mass density of the water encountered. The available draught of inland vessels sailing on free-flowing rivers takes into account several parameters that are specific to each river stretch and gauge station. It is calculated as follows:
Available draught = Minimum navigation channel depth + (Actual water level – Equivalent water level) – Under keel clearance.

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

BN: billion

CAPACITY UTILISATION (IN PASSENGER TRANSPORT): ratio of the number of passengers divided by the passenger capacity in a given year, in percentage points. The analysis of the capacity utilisation of a fleet makes it possible to provide a thorough overview of how the supply/demand relationship evolves throughout the years.

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

CONNECTING EUROPE FACILITY II PROGRAMME (CEF II): an EU funding instrument to promote growth, jobs and competitiveness through targeted infrastructure investment at European level.

CORE INFLATION: general increase in the consumer price of goods and services, excluding those that are often more volatile, such as energy and food prices.

DANUBE COUNTRIES: Austria, Bulgaria, Croatia, Hungary, Republic of Moldova, Romania, Serbia, Slovakia, Ukraine

DANUBE SOLIDARITY LANES EU-UKRAINE: lanes aimed at facilitating the forwarding of agricultural produce from Ukraine, but also bilateral trade in goods and access of Ukraine to international markets and global supply chains making sure much needed cereals reach the world market.

DEADWEIGHT (DWT): it is the maximum loading capacity of a ship, therefore the maximum weight that it can carry (measured in tonnes). This weight includes cargo, fuel, fresh water, ballast water, provisions, passengers, and crew. It does not include the empty weight or lightweight of the vessel itself. The sum of deadweight and lightweight of a ship gives the maximum displacement (measured in tonnes).

DEBT SERVICE COSTS: debt payment costs and the interests linked to the debt itself.

ECONOMIC SENTIMENT INDICATOR (ESI): a composite indicator made up of five sectoral confidence indicators with different weights (industrial confidence indicator (40%); construction confidence indicator (5%); services confidence indicator (30%); consumer confidence indicator (20%); retail trade confidence indicator (5%)). It is published monthly by the European Commission.

EMISSIONS TRADING SCHEME (ETS): the EU trading system for CO_2 emissions

EQUIVALENT FLOW: equivalent flow values (indicated in the unit m^3/s) measured against the benchmark levels are recalculated every ten years as flows within a 100-year time series. The equivalent flow values are then used to recalculate the corresponding equivalent water level (EWL) values against the benchmark levels every ten years.

EQUIVALENT WATER LEVEL (EWL): refers to the water level occurring along the Rhine at an equivalent low water flow falling below the long-term average for 20 days per year.

EU: European Union

EUROPE: European inland navigation in this report includes five countries that are not members of the European Union – United Kingdom, Republic of Moldova, Serbia, Switzerland and Ukraine.

EUROPEAN CONFERENCE OF THE MINISTERS OF TRANSPORT CLASS I-VII (CEMT Class I-VII): the Classification of European Inland Waterways is a set of standards for interoperability of large navigable waterways forming part of the Trans-European Inland Waterway Network within continental Europe and Russia. It was created by the European Conference of Ministers of Transport in 1992, hence the range of dimensions are also referred to as CEMT Class I–VII.

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

FAIRWAY REHABILITATION AND MAINTENANCE MASTER PLAN (FRMMP): this highlights national needs and short-term measures in order to ensure the efficient and effective realisation of harmonised waterway infrastructure parameters along the entire Danube and its navigable tributaries.

FARAG REGION: Flushing, Amsterdam, Rotterdam, Antwerp, Ghent

FRIENDSHORING: refers to the observed trend for countries to favour trade with, and to locate economic activities, in countries that share the same political standards. The term was coined by US Secretary of Treasury Janet Yellen during a press conference held on April 13th 2022, and has since been re-used in academic writing and in reports by several organisations, including the IMF.

EUROPEAN TRADING HUB: a dynamic market area for gas trading in the heart of Europe.

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)

GOOD NAVIGATION STATUS (GNS): the state of the inland navigation transport network, which enables efficient, reliable and safe navigation for users by ensuring minimum waterway parameter values and levels of service.

HEADLINE INFLATION: general increase in the consumer price of goods and services, including those that are often more volatile, such as energy and food prices.

INDUSTRIAL TRAFFIC: refers to the traffic that exists directly between the industries located in the port area (such as BASF, AIR LIQUIDE, EUROCHEM…) and the hinterland.

INTERNATIONAL TRANSPORT FORUM (ITF): an intergovernmental organisation within the OECD system

IWT: Inland Waterway Transport

IWW: Inland Waterways

LNG: liquefied natural gas

LOWER DANUBE: stretch of the Danube from the Iron Gates on the border between Serbia and Romania to Sulina on 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.

LOW NAVIGABLE WATER LEVEL (LNWL): refers to a low water level on the Danube under which the water levels do not fall below more than 22 ice free days per year.

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

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

MINIMUM NAVIGATIONAL CHANNEL DEPTH: this corresponds to the minimum depth that should prevail in the fairway area (depth of the fairway box below the equivalent water level). This minimum depth is related to the equivalent water level, as it is the channel depth that should still be present, even if water levels drop to the level of the equivalent water level.

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.

NORTHERN RANGE: designates the concentration of European maritime ports located along the North Sea, most of which are among the most active in the world. These Northern Sea ports mainly refer to Antwerp, Rotterdam, Le Havre, Zeebrugge, Hamburg, and Bremen/Bremerhaven. Together, they give an indication of economic development in the northern Eurozone and Germany.

NORTH SEA PORT: a port area crossing Belgium and the Netherlands and the result of the merger of three ports: Ghent (BE), Terneuzen (NL) and Flushing (NL).

OPEC+: a group of 22 oil-exporting countries which meets regularly to decide how much crude oil to sell on the world market. It comprises 12 OPEC countries (Algeria,Congo,Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates, the Venezuela) plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Russia, Mexico, Malaysia, South Sudan, Sudan, and Oman. It was created in 2016.

RED SEA CRISIS: the incident of 19 October 2023 when the Houthi movement in Yemen started attacking merchant vessels in the Red Sea and caused hundreds of ships to alter their course and sail through the Cape of Good Hope to avoid attacks. This led to a significant drop in international container transport at the end of the year 2023.

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

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.

SQUAT EFFECT: a hydrodynamic effect that is related to the velocity of the water flow under the vessel. The shallower the waterflow under a vessel, the higher is its flow velocity, and the higher is its dynamic pressure. Due to the Bernoulli principle, total pressure is a constant which implies that a higher dynamic pressure implies a lower static pressure. This lower static pressure leads to a lower resistance of the water towards the vessel and implies therefore a further sinking of the vessel into the water, thereby increasing the vessel's actual draught.

TITLE TRANSFER FACILITY (TTF): a virtual trading point for natural gas in the Netherlands. This trading point provides a facility for a number of traders in the Netherlands to trade futures, physical and exchange trades.

TONNE-KILOMETRE (TKM): 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 (EUROSTAT DEFINITION): it comprises the totals invoiced by the observation unit during the reference period, and this corresponds to market sales of goods or services supplied to third parties. It includes all duties and taxes on the goods or services invoiced by the unit with the exception of the VAT invoiced by the unit to its customer and other similar deductible taxes directly linked to turnover; it also includes all other charges (transport, packaging, etc.) passed on to the customer. Price reductions, rebates and discounts as well as the value of returned packing must be deducted.

TWENTY-FOOT EQUIVALENT UNIT (TEU): a unit of cargo capacity for container transport. It is based on the volume of a 20-foot-long (6.1 m) intermodal container, a standard-sized metal box which can be easily transferred between different modes of transport, such as ships, trains, and trucks.

UKRAINIAN GRAIN CORRIDOR: corridor formed in Autumn 2023 on the basis of the Ukrainian seaports of Odessa, Pivdennyi and Chornomorsk (the ports of "Greater Odessa") to export Ukrainian grain. It replaces the Black Sea Grain Initiative route which was cancelled by Russia in July 2023.

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, on the border between 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
CBS	Centraal Bureau voor de Statistiek	Central Statistical Office	The Netherlands
Destatis	Statistisches Bundesamt	Federal Statistical Office of Germany	Germany
INSSE	Institutul National de Statistica	National Institute of Statistics	Romania

BOOKS, JOURNAL ARTICLES AND STUDIES

Original Name	Country
ACTEMIUM, first fully-electric transformation of a sightseeing river boat (02.02.2024). Available at: https://www.actemium.com/news/first-fully-electric-transformation-of-a-sightseeing-river-boat/	France
A. Hader, The River Cruise Fleet Handbook (May 2025)	Europe
Baromètre de l'activité tourisme fluvial, édition 2025 – Entreprises fluviales de France. Available at: https://entreprises-fluviales.fr/nos-publications	France
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CEFIC Chemicals Trends Report (last consulted on 27.05.2025). Available at: https://cefic.org/cefic-chemicals-trends-report/	Europe
2022 Danube Commission yearbook of statistics	Europe
Deloitte, 2025 chemical industry outlook (last consulted on 02.05.2025). Available at: https://www2.deloitte.com/us/en/insights/industry/oil-and-gas/chemical-industry-outlook.html	USA
Der Flusskreuzfahrtmarkt 2024 – IG River Cruise	Europe
Economist Impact. Trade in Transition 2024 – United States. Available at: https://impact.economist.com/projects/trade-in-transition/country-united-states	USA
Eurofer (2025), Economic and steel market outlook 2025-2026, Q2 report. Available at: https://www.eurofer.eu/publications/economic-market-outlook/economic-and-steel-market-outlook-2025-2026-second-quarter	Europe
Financial Times, Trump's Gaza proposal dashes shipping industry's Red Sea hopes (09.02.2025). Available at: https://www.ft.com/content/dd3d3f55-0119-46fb-93b6-418e696ab893	World
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IMF, Regional Economic Outlook – Europe. Available at: https://www.imf.org/en/Publications/REO/EU/Issues/2025/04/25/regional-economic-outlook-Europe-April-2025	World

Original Name	Country
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IMF, World Economic Outlook April 2025: A Critical Juncture amid Policy Shifts. Available at: https://www.imf.org/en/Publications/WEO/Issues/2025/04/22/world-economic-outlook-april-2025	World
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Le journal de la Marine Marchande : Si la situation se stabilise entre Israël et le Hamas, le terrain de jeu va changer pour le transport maritime (20.01.2025). Available at: https://www.actu-transport-logistique.fr/journal-de-la-marine-marchande/shipping/cessez-le-feu-israel-hamas-quelles-consequences-pour-le-conteneur-962605.php	France
MarketsandMarkets, January 2025, "Trump Tariff Impact on Global Chemical Industry". Available at: https://urlr.me/WDS6a4	UK
PLATINA3 IWT policy platform – Funding and financing the energy transition of the European IWT fleet	Europe
Royal HaskoningDHV, Impact energietransities en wereldhandelstromen ingrijpend voor de binnenvaart". Available at: https://www.haskoning.nl/nl-nl/projecten/impact-energietransities-en-wereldhandelstromen-ingrijpend-voor-de-binnenvaart	The Netherlands
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Verschuur, J., Koks, E.E. & Hall, J.W. Ports' criticality in international trade and global supply-chains. Nat Commun 13, 4351 (2022). Available at: https://doi.org/10.1038/s41467-022-32070-0	World
viadonau, several annual reports. Available at: https://www.viadonau.org/newsroom/publikationen/broschueren (last consulted on 28.08.2025)	Austria
WTO. Global Trade Outlook and Statistics 2024. Available at: https://www.wto.org/english/res_e/booksp_e/trade_outlook24_e.pdf	World

OTHER SOURCES

Original Name	English Name	Country
Administrația Canalelor Navigabile (ACN)	Administration of the Navigable Canals (ACN)	Romania
Administration de l'enregistrement, des domaines et de la TVA	Registration Duties, Estates and VAT authority	Luxembourg
Association française des ports intérieurs (AFPI)	French association of inland ports (AFPI)	France
Banque CIC agriculture	CIC Bank agriculture	France
Bundesanstalt für Gewässerkunde (BfG)	German Federal Office for Hydrology (BfG)	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
Department for Transport	Department for Transport	United Kingdom
Donaukommission	Danube Commission	Europe
Eidgenössische Steuerverwaltung (ESTV)	Federal Tax Administration (FTA)	Switzerland
European Commission (EC)	European Commission (EC)	EU
European Steel Association (Eurofer)	European Steel Association (Eurofer)	Europe
EUROSTAT	EUROSTAT	EU
FAIRway project	FAIRway project	EU
FranceAgriMer	FranceAgriMer	France
Insights Global	Insights Global	The Netherlands
Institut pour le Transport par Batellerie/ Instituut voor het Transport langs de Binnenwateren (ITB)	Institute for transport by skippers (ITB)	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
International Monetary Fund (IMF)	International Monetary Fund (IMF)	World
International Sava River Basin Commission	International Sava River Basin Commission	Europe
International Transport Forum (ITF)	International Transport Forum (ITF)	World
Land Niederösterreich	Federal State of Lower Austria	Austria
Moselle Commission	Moselle Commission	Europe

Original Name	English Name	Country
National fleet data	National fleet data	Europe
Navibelle	Navibelle	Switzerland
Organisation for Economic Co-operation and Development (OECD)	Organisation for Economic Co-operation and Development (OECD)	World
Oxford Economics	Oxford Economics	World
Panteia	Panteia	The Netherlands
Ports mentioned in the report	Ports mentioned in the report	Europe
R.A. Administratia Fluviala a Dunarii de Jos Galati (AFDJ)	Galati Lower Danube River Administration, A.A.	Romania
Rijkswaterstaat	Ministry of Infrastructure and Water Management	The Netherlands
Service de la statistique et de la prospective (SSP) du Ministère de l'Agriculture et de la Souveraineté alimentaire	Department of Statistics and Foresight Analysis (SSP) of the Ministry of Agriculture and Food	France
Statistikamt Nord	Statistical Office for Hamburg and Schleswig-Holstein	Germany
Swiss Rhine ports	Schweizerische Rheinhäfen	Switzerland
viadonau	viadonau	Austria
Voies Navigables de France (VNF)	Navigable Waterways of France (VNF)	France
Wasserstraßen-und Schifffahrtsverwaltung des Bundes (WSV)	German Waterways and Shipping Administration (WSV)	Germany
Wirtschaftsvereinigung Stahl	The German Steel Association	Germany

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