



22

FROM WATERWAY TO PHOTO GALLERY

## New life for the Danube veteran MS Negrelli

Stone transporter, event location, fish 'ark' - the long life of the MS Negrelli would be enough for an entire Danube fleet. Built in 1966 at ÖSWAG-Linz on behalf of the Bundesstrombauamt, the ship's 'youth' was initially characterized by its use as a floating beast of burden in groyne and bank construction.

Equipped with an electric crane and a stone transport barge, the 64-meter-long and 10-meter-wide ship transported and emptied large stone buckets. Over the years, not only its performance but also its flexibility and versatility were to be proven as the crane and barge gave way to new uses.

The ship has remained in continuous service with the Bundesstrombauamt and Wasserstraßendirektion, later with Donaubetriebs AG and finally with viadonau since its launch. In 2005, the Linz University of the Arts booked the ship and converted it into a mobile, non-university location. The spacious belly of the MS Negrelli was converted into an event and exhibition venue and since then has offered many visitors an environment with a unique atmosphere, for example as part of the exhibition 'donau on tour' from 2007 to 2013, with interesting facts about the river, shipping and the work of viadonau.

Despite its advanced age, the versatile ship has remained a magnet for new ideas for use in the recent past. Thus, from 2025, the Negrelli will be converted into a floating breeding station as part of the 'LIFE Boat 4 Sturgeon' project, putting its spacious facilities at the service of species conservation for four sturgeon species. At the mooring on Vienna's Danube Island, around 1.6 million sturgeon are to be bred by 2029 and young of the various species are to be released into the wild in different sections of the Danube.

This is reason enough for us to dedicate the photos in this issue to our versatile and adaptable ship!



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## Danube Action Programme as a compass Heading to a sustainable transport future



**LEONORE GEWESSLER**

Federal Minister in the Federal Ministry  
for Climate Action, Environment, Energy,  
Mobility, Innovation and Technology

Nothing is as dynamic as a river. Eternally shaping, irresistible and timeless, it is the epitome of movement, energy and change in the true sense of the word. Since time immemorial an irreplaceable basis for the development of nature and economy, the dynamics of the Danube offer us unique qualities and advantages for the development of life and biodiversity, but also for transport and traffic. It is therefore not only logical, but also important and right that we give the Danube the strategic attention it deserves today, especially in view of the major challenges of climate change, from a social and transport policy perspective. As the implementation programme of the Freight Transport Master Plan 2030 and an essential part of the Mobility Master Plan 2030 of the Ministry of Climate Protection, which sets the strategic climate protection framework for transport policy in the coming years, we are giving clear expression to this endeavor in the Danube Action Programme 2030 with clearly formulated priorities. Together with viadonau, we want to purposefully continue the modernization of the waterway infrastructure, integrate Danube navigation even more strongly into logistics chains, drive forward the international expansion of uniform information services, promote the conversion of navigation to climate-friendly fuels, and preserve and enhance the invaluable ecological value of the Danube-March-Thaya river system with committed renaturation and species protection projects. As firmly anchored landmarks, these targets describe our course on the Danube until the end of the decade and, as lighthouses on its banks, send an unmistakable message to business, society and politics: The way to a sustainable transport future for Europe and to fulfill the European Green Deal is called: Waterway.

## Climate change solution path

### Understanding and following the flow

In dealing with our waters, we have been following a clear credo for many years: learn from the river. Because when it comes to climate, nature conservation and sustainable navigation, rivers already hold the answers to the most important questions of our time. We just have to look, understand and act accordingly. As a company that not only works on the river, but also for and with it, we create integrity and credibility above all by also being inspired by its efficiency and dynamism in our daily company operations. While we continue to consistently expand the use of renewable energies in the company and continuously improve our energy efficiency and environmental performance, we continue to drive forward the digitalization and internationalization of future-oriented waterway development on the Danube in line with the new Danube Action Programme of the Ministry of Climate Protection in cross-border cooperation. As a navigation tool flexibly attuned to the pressing demands of the present and the future, we are setting the course for the coming years on the Danube with our Corporate Strategy 2030 - for a crisis-resilient waterway and the integrative combination of environmental, economic and safety interests on the river.

With a sense of responsibility, skill, passion and innovation, we are putting a striking exclamation mark behind a holistic concept of development on the Danube. We are convinced that this is what Danube navigation needs now on its way to a green future - modern, reliable and environmentally friendly framework conditions and a waterway that is available as an efficient alternative and an important solution to climate change. For us, the question has long since ceased to be whether the waterway will play a role in tomorrow's European transport network, but rather how big that role will be and how we can jointly provide a strong response for the future on the Danube.

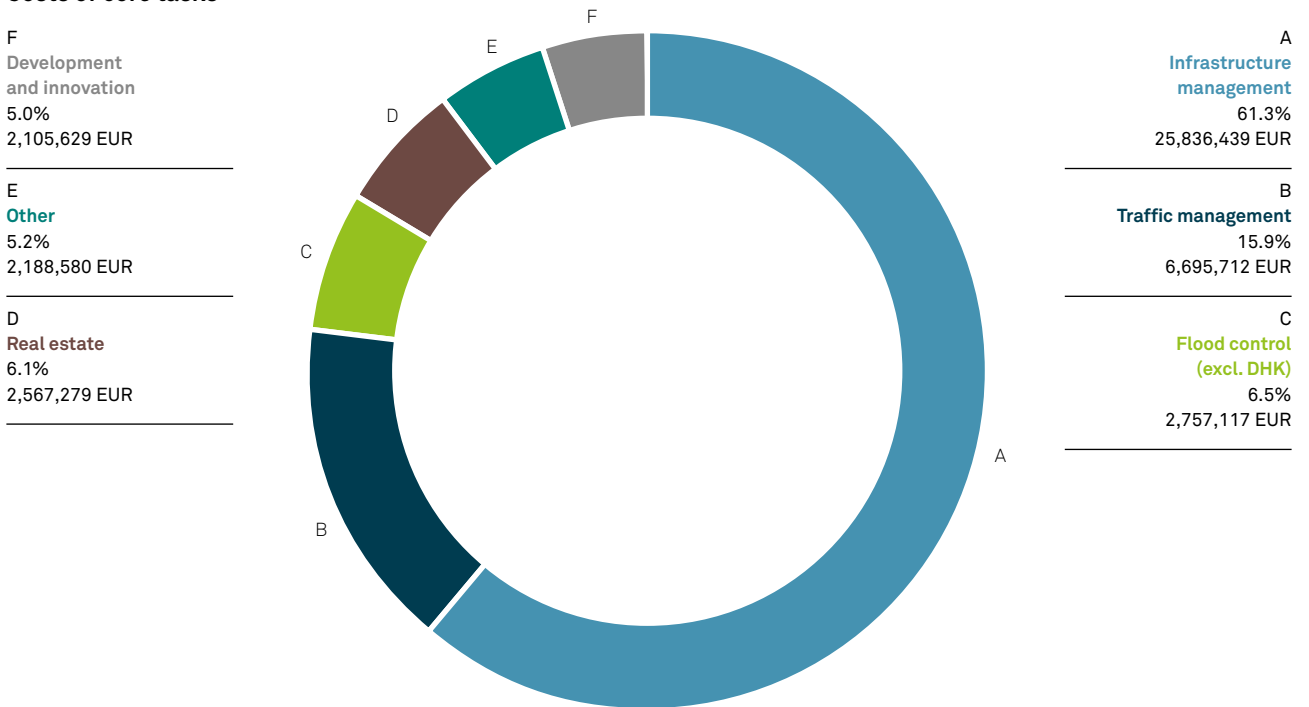


**HANS-PETER HASENBICHLER**  
Managing Director  
of viadonau

FIGURES DATA FACTS

# Costs per core tasks and impact scope viadonau 2022

## Costs of core tasks



## Costs per impact scope



## BALANCE SHEET VIADONAU

## Notable facilitations for shipping More floodplain landscape in the Wachau

In particular for inland navigation and ecology, 2022 was a year of major project successes. The milestones: mandatory new regulation for special transports, complete international introduction of the uniform DAVID border control forms, international implementation of new information and reporting services through RIS COMEX and successful nature conservation projects such as the restoration of valuable floodplain landscapes through LIFE+ Auenwildnis Wachau.

SOTRA new regulation strengthens shift of high & heavy transports to inland waterway vessels: Since January 1, 2022, according to a new regulation, prepared jointly by viadonau and the Ministry of Climate Protection, on special transports for particularly heavy, wide and high transports, which follow the Danube corridor across borders, inland waterway vessels must be used - an important step towards reducing climate-damaging emissions, relieving the road infrastructure and increasing road safety.

Introduction of harmonized DAVID forms along the Danube completed: After Hungary, Croatia, Serbia, Bulgaria and Ukraine introduced the DAVID forms in 2020, Romania and the Republic of Moldova followed in the first half of 2022, thus completing the introduction process. The internationally harmonized forms replace the three most commonly used border control forms (arrival and departure notification, crew list and passenger list), thus simplifying border controls.

LIFE+ Floodplain Wilderness Wachau concludes with renaturation successes: After seven years of watercourse connectivity, bank restoration, floodplain forest reforestation and diverse species protection measures at the Danube bend between Rührsdorf and Rossatz, the EU-funded project LIFE+ Auenwildnis Wachau celebrated its conclusion in Rührsdorf on July 3, 2022. viadonau and the project partners of the Association of World Heritage Communities Wachau-Dunkelsteinerwald and the market community Rossatz-Arnsdorf proudly reflected on a long list of nature conservation goals that had been achieved. 300,000 cubic meters of gravel and soil were moved, 5,000 black poplars were planted and a 1,600 meter long tributary was connected to the Danube.

RIS COMEX ends, CEERIS and EuRIS remain: In June 2022, the EU-funded RIS COMEX project ended after six years, with 13 countries working together to develop cross-corridor RIS services across Europe. The successes: the international systems CEERIS - an information platform for electronic reporting operated in several countries - and EuRIS - a pan-European RIS platform that provides, for example, all fairway data relevant to shipping in a harmonized form.



“At viadonau, good waterway development means successes you can see and feel. Following the upgrading of the dry cargo sites in Linz, we will provide navigation with a new piece of modern, safe waterway infrastructure in 2022 with the construction of the ‘FAIRway works! In the Rhine-Danube corridor’ project”.

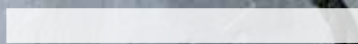
**LEA DOSSER**  
Project Manager Waterway Management

Freight transport on the  
Austrian Danube 2018–2022



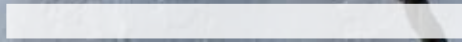


2022



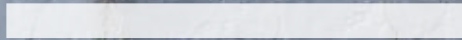
• 6,374,092 t

2021



• 8,270,869 t

2020



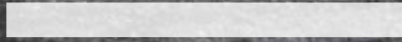
• 8,246,781 t

2019

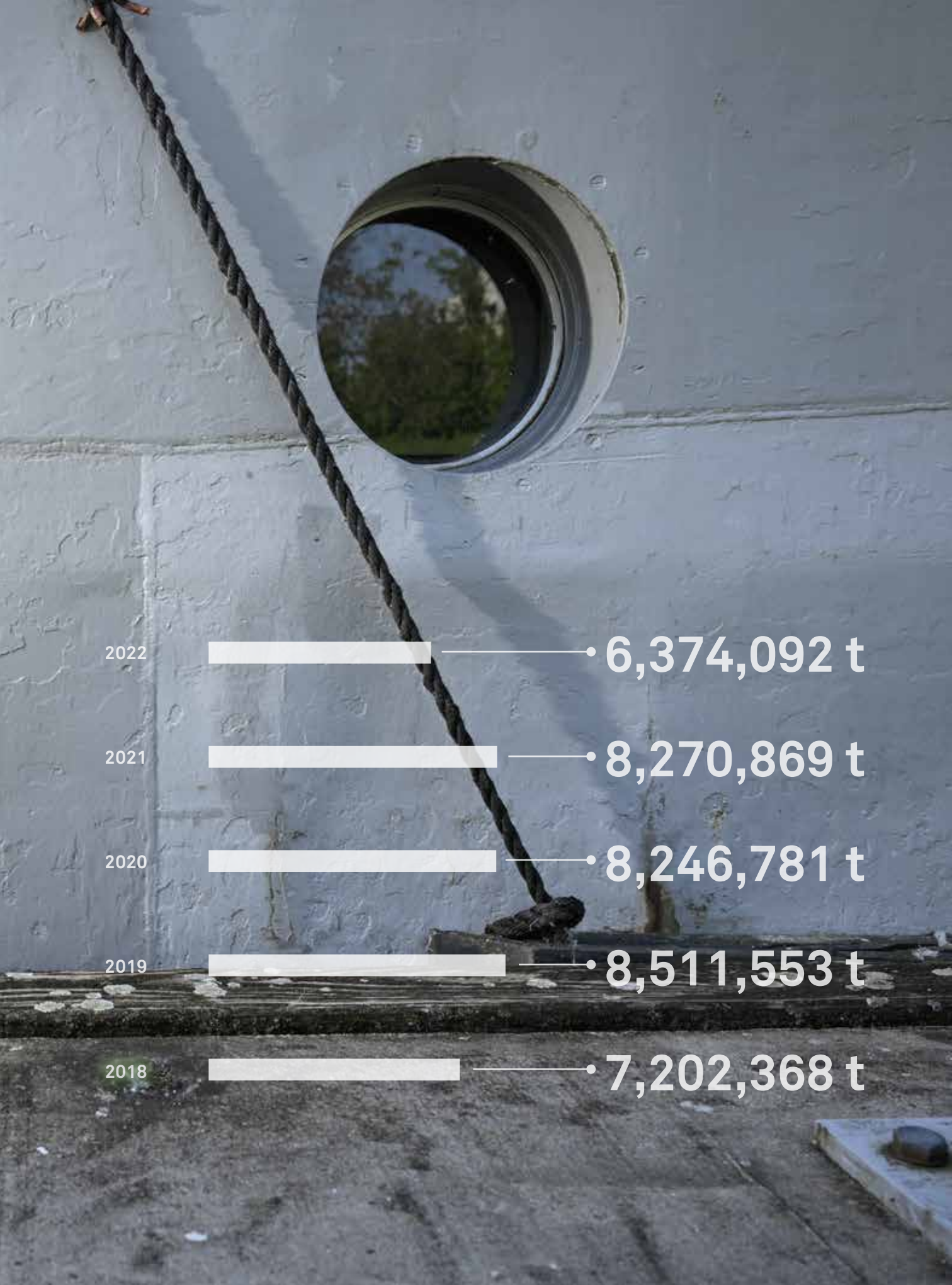


• 8,511,553 t

2018



• 7,202,368 t



Minimum continuously available fairway depths  
on the free-flowing stretches of the Danube 2022

**99.5%**  
above 2.5 m

**Wachau**

**0.5%**  
below 2.5 m



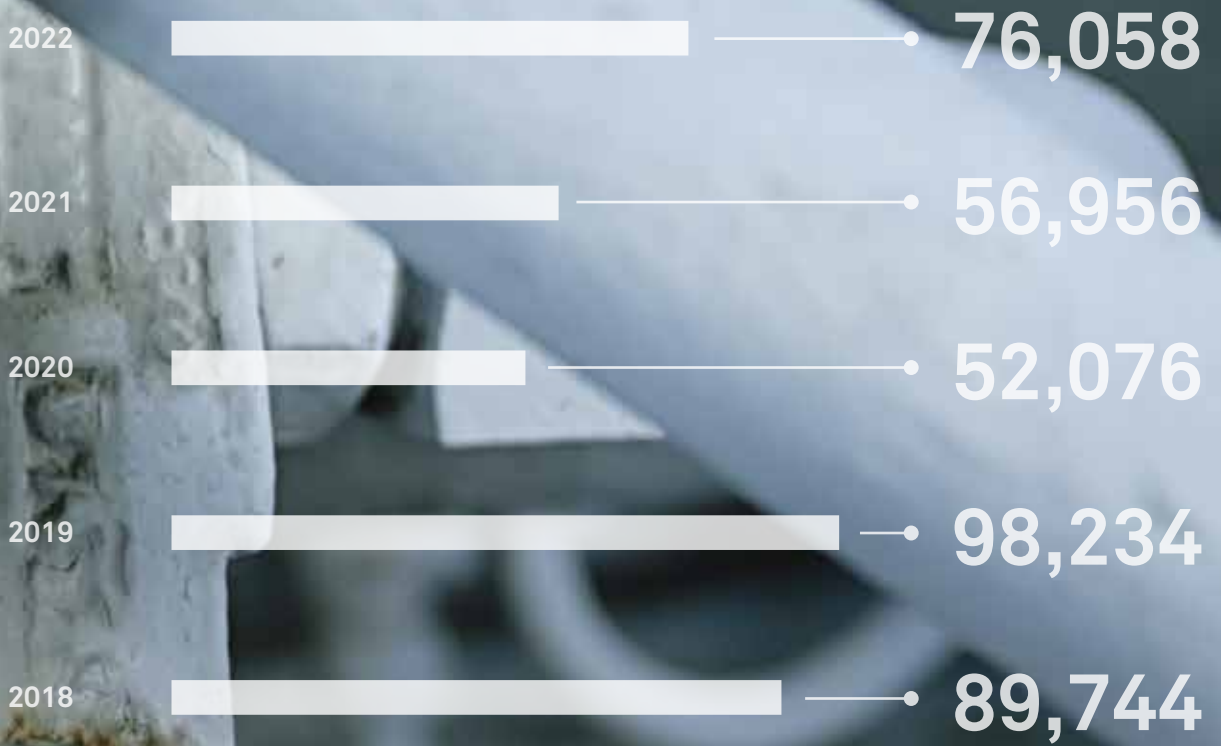
**94.0%**  
above 2.5 m

# East of Vienna

**6.0%**  
below 2.5 m

Locked-through vessel units  
2018–2022





## CUSTOMER SATISFACTION: INFRASTRUCTURE

## Excellent in the Danube region

### Proactive maintenance



“Reliable fairway information is essential on the waterway. Based on regular hydrographic analyses and modern geodata processing, we always keep a close eye on the development trends of the Danube. In this way, we support safe navigation operations as well as research.”

**ULRICH ZANGERL**  
Expert geoinformation

Ongoing monitoring of customer satisfaction is an important indicator for viadonau to achieve more effective service provision. For this reason, a survey of commercial users of the waterway, i.e. freight and passenger shipping, is conducted annually. The feedback is used to further improve the waterway infrastructure services operated by viadonau. A total of 53 responses from the shipping sector were received in the customer survey conducted at the end of 2022. 70% of the responses came from ship captains, 16% from ship owners and 14% from others.

Among other things, the customer survey asks about the quality of maintenance of the navigation channel in the Austrian section of the Danube, i.e. the assessment of viadonau's maintenance dredging. In the current survey, this was assessed with an average grade of 1.3 (2021: 1.7) on a school grade scale of 1 to 5, with 94.1% of respondents awarding the grades “very good” and “good”. As in previous years, this makes viadonau the waterway infrastructure operator with the highest rating of all Danube riparian states. The chart on the opposite page illustrates the detailed results of the current customer survey.

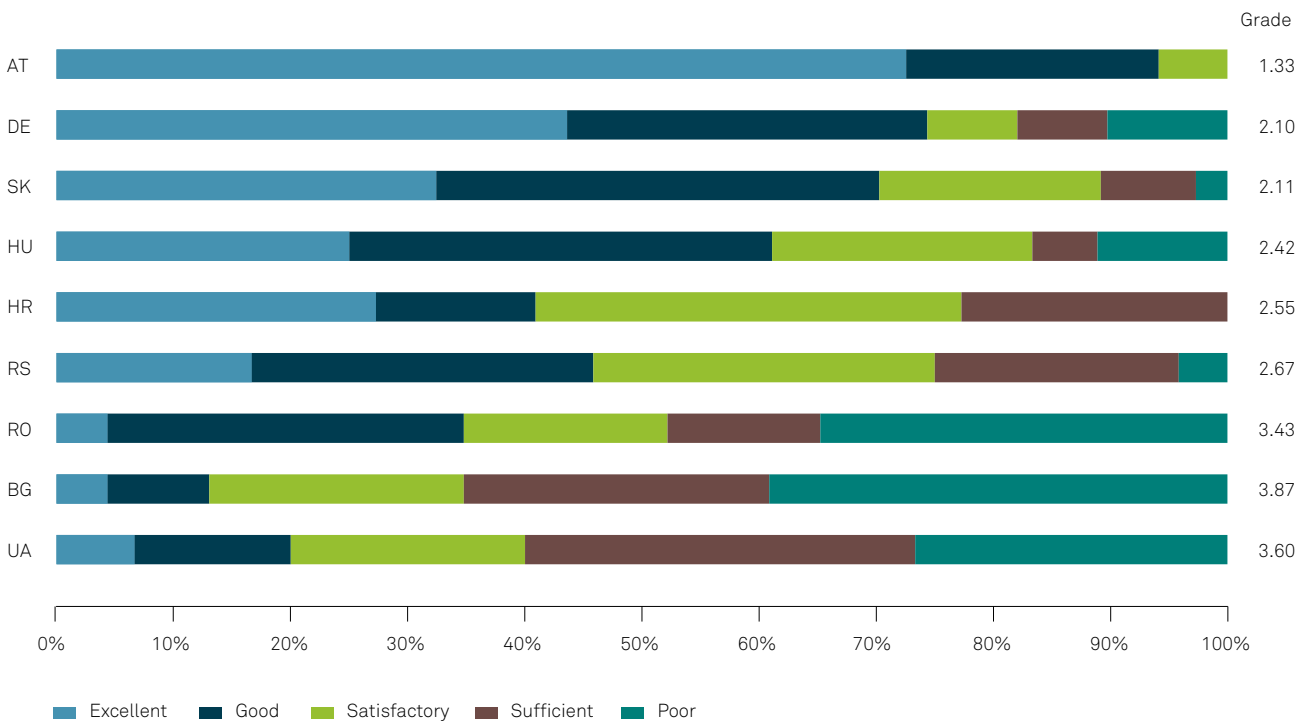
The evaluation of the operation of the ten Danube locks in Austria by viadonau was equally good: A score of 1.5 was awarded in the customer survey for the friendliness and competence of the lock staff and for the general conduct of lock operations on the Austrian section of the Danube (2021: 1.8).

In the current customer survey, the visibility of the fairway buoys for marking the fairway was rated at 1.4 (2021: 1.8), and the positioning of these fairway signs at 1.5 (2021: 1.8). In early 2022, construction could begin on a second, energy-efficient pusher vessel, which, once commissioned in May 2023, will enable optimized handling of floating fairway markers thanks to reduced response times for damage repair.

The assessment of the availability and equipment of public moorings owned by the federal government is also part of the viadonau customer survey. On average, these were given a grade of 2.2 in the current survey, which represents a significant improvement over the grade of 3.0 in 2021. In 2022, the Wildungsmauer small craft landing stage (river km 1,895.0 R) was adapted to a public landing stage for large vessels with dolphins, access bridges and shore power connection. Above the mouth of the river Fischa, a new landing stage for large vessels was created at river km 1,904.9 R, also in the form of dolphins. Starting in the summer of 2022, work was carried out to supply the Linz dry bulk site with shore power (river km 2,129.0 R). Furthermore, the public landing places Klein-Pöchlarn (river-km 2,043.5 L), Metzling (river-km 2,053.6 L) and Aggsbach-Markt (river-km 2,026.4 L) were redeveloped.

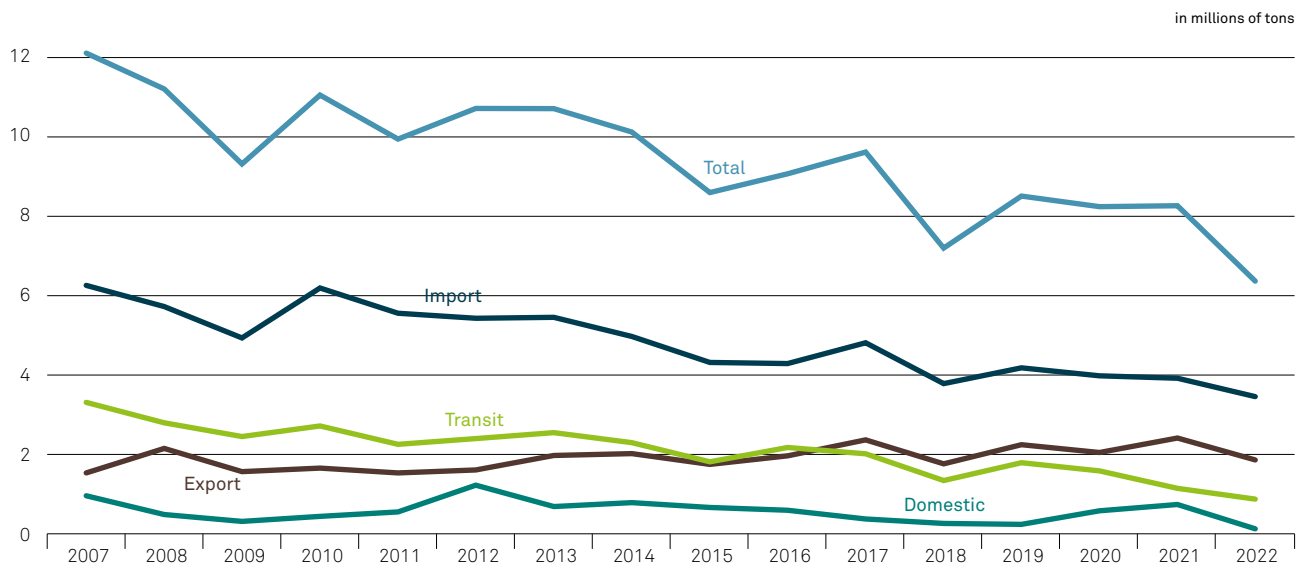
FIGURES DATA FACTS

# Waterway infrastructure quality in the Danube countries 2022



## FIGURES DATA FACTS

## Freight traffic on the Austrian Danube 2007–2022



Transport volumes in tons	Import	Export	Transit	Domestic	Total
2022	3,465,637	1,876,953	890,888	140,614	6,374,092
2021	3,930,863	2,424,784	1,159,264	755,958	8,270,869
2020	3,989,282	2,060,982	1,601,604	594,913	8,246,781
2019	4,193,338	2,258,611	1,805,896	253,708	8,511,553
2018	3,793,364	1,776,694	1,355,563	276,747	7,202,368



## TRANSPORT VOLUMES

## 6.4 million tons on the Austrian Danube Sharp declines in all traffic sectors

Exceptionally unfavourable general conditions led to a sharp decline in the total volume of goods transported on the Austrian Danube in 2022 compared to the previous year, down by 22.9% or 1.9 million tons to 6.4 million tons. A clearly below-average water flow with long-lasting low water periods in March and from July to September, a sharp reduction in demand for inland transports and the outbreak of the Ukraine war from February led to the lowest level in over 30 years.

All transport sectors were affected by the decline. However, by far the greatest decline, both in percentage and absolute terms, was in domestic traffic.

Here, the volumes transported fell by 81.4% or 0.6 million tons compared with 2021, to 0.1 million tons. A major cause of this sharp decline was the discontinuation of the shipment of excavated material in connection with infrastructure work in Linz, which had generated relatively high values for domestic traffic in 2020 and 2021.

The second highest percentage decrease was recorded by transit, which fell by 23.2% (0.3 million tons in absolute terms), closely followed by exports, which decreased by 22.6% (0.5 million tons in absolute terms) compared to the previous year. Import volumes weakened the least. Here, the percentage decrease was 11.8% or 0.5 million tons.

Despite these declines, however, the relative proportions of the individual transport sectors remained unchanged. As before, imports remained by far the most important transport sector, accounting for 3.5 million tons or 54.4%.

Export traffic, at 1.9 million tons or 29.4%, continued to account for the second-largest share of Austrian transport volumes in 2022. Transit again took the third-largest share of total transport volume in 2022 with 14%, reaching a value of 0.9 million tons.

With only a 2.2% share of the total transport volume, domestic transport remained the weakest transport sector.

In line with the reduction in volumes transported, the transport performance of the Austrian Danube also decreased. Compared with 2021, this fell by 20.7% to 5.9 billion tonne-kilometres.

- Decrease of 22.9% in total transport volume
- Sharpest decline in domestic transports
- Weakest decline in import transports

## PORT TRANSHIPMENT

## Water-side port handling declined All ports and lands record declines

- Water-side throughput down 28.5% year-on-year in all ports and countries
- voestalpine works port remains most important Danube port in Austria

In 2022, a total of around 5.6 million tons of goods were handled on the water side in Austria's Danube ports and lands. Compared to the previous year, port throughput recorded a sharp decline of 28.5% or just under 2.2 million tons. This is due to the sharp decline in domestic traffic, the change in import flows due to the Ukraine war and, last but not least, the poor water conditions in March as well as in the summer. There were hardly any significant changes in the proportional port handling in the ranking of the individual ports and countries compared to 2021. voestalpine's plant port in Linz again recorded the largest handling volume in the port comparison along the Austrian Danube in 2022. In terms of total volume, 44.1% was handled on the water side at the voestalpine plant port. This corresponds to a handling volume of just under 2.5 million tons (-12.4% compared to 2021).

The other ports and terminals include the water-side handling volumes from Aschach, the heavy-load port in Linz, Pöchlarn, Pischelsdorf and Korneuburg. This group of ports handled around 1 million tons, which corresponds to a sharp decline of 34.8% compared to the previous year. Nevertheless, the other ports and landings again remained in second place in the ranking with a share of more than 18%.

The Port of Vienna, which comprises the ports of Freudenau, Lobau and Albern as well as the Lagerhaus and Zwischenbrücken sites, also suffered a decline of 34.8%. With a water-side throughput of 0.8 million tons, the Port of Vienna moved up to third place in the ranking of Austrian ports and lands this year.

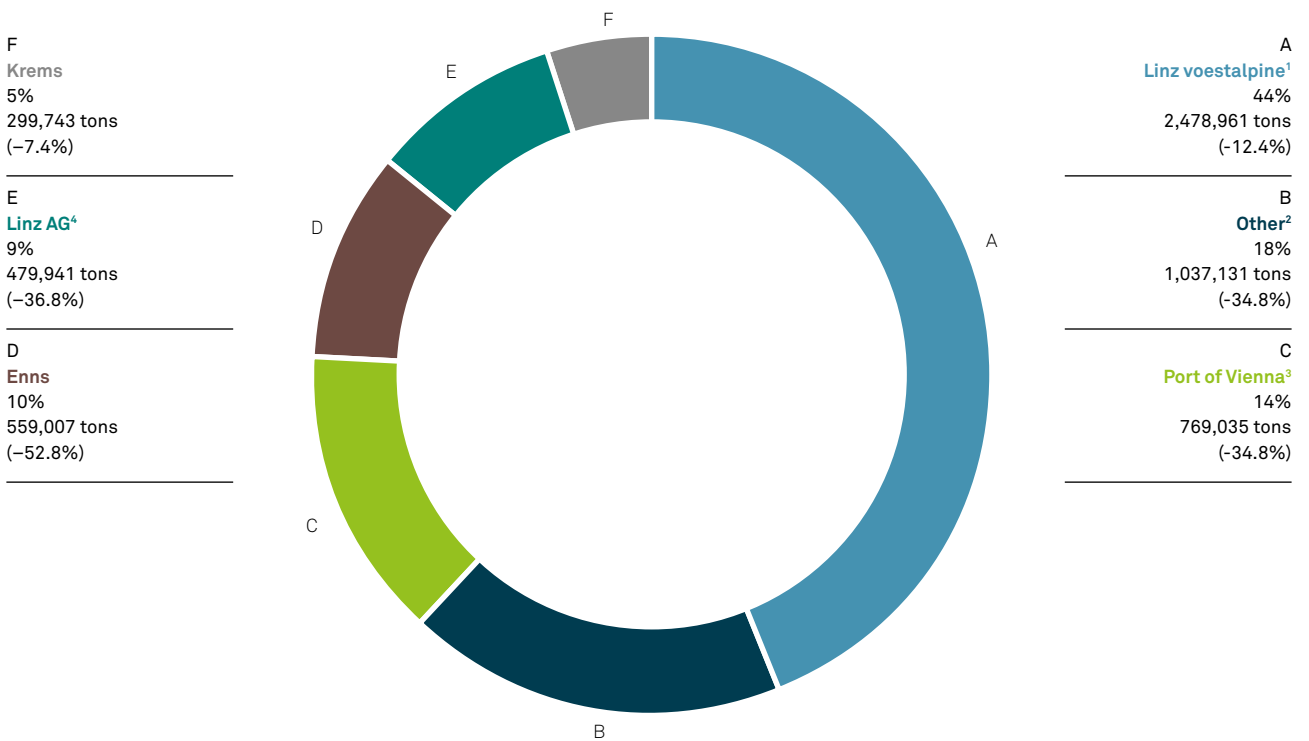
In 2022, Ennshafen recorded the largest relative decline in waterside handled volume at 52.8% due to the loss of a project business, reaching a total of around 0.6 million tons. This corresponds to around 10% of the total volume.

The ports of Linz AG (commercial and oil port) recorded a waterside throughput of 0.5 million tons and therefore a reduction by 36.8% compared to 2021.

The Port of Krems achieved a waterside transshipment volume of around 0.3 million tons, the smallest relative decline (-7.4%) of all Austrian ports and landings. Thus, the water-side transshipment could be kept stable in absolute terms in 2022.

FIGURES DATA FACTS

# Waterside transshipment at Austrian Danube ports and transshipment sites 2022



<sup>1</sup> Including waterside transshipment at the facilities of Industrie Logistik Linz GmbH.

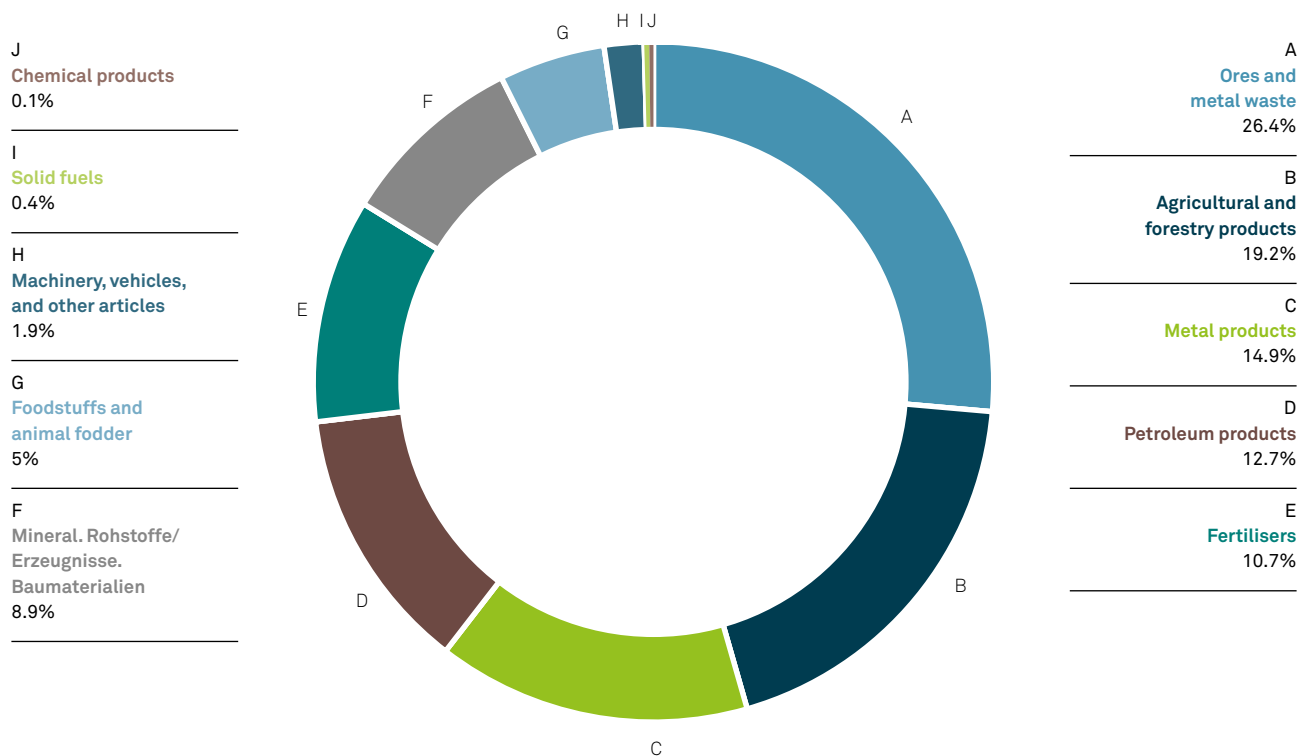
<sup>2</sup> Other ports and transshipment sites include: Aschach, Schwerlasthafen Linz, Pöchlarn, Pischelsdorf and Korneuburg.

<sup>3</sup> The three ports of Freudenuau, Albern and Lobau (oil port) and the two transshipment sites Lagerhaus and Zwischenbrücken have been grouped to compile the total turnover figures for the Port of Vienna.

<sup>4</sup> Data from both the commercial port and the oil port in Linz have been grouped to compile the total turnover figures for the Port of Linz.

## FIGURES DATA FACTS

# Transport volumes by commodity groups on the Austrian Danube 2022



in tons

Goods classification according to NST/R*	Domestic	Import	Export	Transit	Total 2021	Change
Agricultural and forestry products	17,947	781,227	70,752	351,385	1,221,311	-15.9%
Foodstuffs and animal fodder	2,549	170,567	88,742	59,712	321,570	-1.4%
Solid fuels	-	13,814	-	8,730	22,544	119.7%
Petroleum products	118,998	321,497	366,308	-	806,803	-32.9%
Ores and metal waste	-	1,664,583	4,975	12,977	1,682,535	-18.7%
Metal products	-	182,672	625,071	142,500	950,244	-6.0%
Crude and manufactured minerals, building materials	-	211,133	228,684	124,456	564,273	-52.2%
Fertilisers	1,119	107,367	466,536	103,850	678,872	-21.5%
Chemical products	-	-	-	5,135	5,135	-58.9%
Machinery, vehicles and other articles	-	12,770	25,880	82,138	120,788	-13.8%
<b>Total</b>	<b>140,614</b>	<b>3,465,631</b>	<b>1,876,948</b>	<b>890,883</b>	<b>6,374,076</b>	<b>-22.7%</b>

\* NNST/R = Standard Goods Classification for Transport Statistics/revised.

Source: Statistics Austria, adapted by viadonau

## COMMODITY GROUPS

## Significant reduction in freight volume Doubling of the volume of solid fuels

In 2022, the total transport volume carried on the Austrian section of the Danube was 6.4 million tons. This represents a decrease of 22.7%, or 1.9 million tons, compared to the total volume in 2021.

The goods group of ores and metal waste was ranked first with 1.7 million tons, as in previous years. The share of the total volume increased by 1.3% and amounted to 26.4%, but still about 19% less ores and metal waste was transported on the Austrian Danube than in 2021.

The volume of agricultural and forestry products transported amounted to 1.2 million metric tons - a drop of around 230,000 metric tons. With a share of 19.2% of the total volume transported, this group remained in second place - as in the previous year. 950,000 tons or 14.9% of the transport volume was accounted for by metal products. This group recorded the second lowest decrease of 6% compared to 2021.

With a decrease of 32.9% or 395,000 tons compared to the previous year, petroleum products reached a total volume of 806,803 tons. This group lost one place in the ranking, reaching 4th place in 2022. In total, around 679,000 tons of fertilizer were transported in 2022 - a decrease of 21.5%. This was mainly due to a 166,000 ton drop in exports. This group of goods accounted for 10.7% of the total volume transported.

Compared to the previous year, the transport volume of 560,000 tons of the commodity group of mineral raw materials was more than halved in 2022, while domestic transports decreased by 100% or by 530,000 tons. With a share of 8.9% in total volume, this commodity group occupied the 6th place.

With 322,000 tons and a slight decrease of 1.4%, food and feedstuff transports are the goods group that experienced the smallest decline in 2022. 5.0% of the transport volume on the Austrian section of the Danube is attributable to food and feed transport. In 2022, a total of 121,000 tons of machinery, vehicles and other goods were transported. In total, the transport volume decreased by 13.8% year-on-year.

While solid fuels recorded continuous declines in the preceding years, this commodity group achieved an increase of 119.7% in 2022. In absolute terms, a total of around 23,000 tons were moved in 2022. With a share of 0.4%, this commodity group occupies the penultimate 9th place in the comparison of commodity groups.

Chemical products were the group of goods most affected by the decline, with a decrease of 58.9% and a total transport volume of around 5,000 tons. As in previous years, this group of goods was transported exclusively in transit and, with a share of 0.1% of the total transport volume, occupies the last place.

- Ores and metal waste traditionally in first place
- Food and feed shipments stable, while inland shipments of mineral raw materials declined by 100%.

## PASSENGER TRANSPORT

## Recovery of passenger navigation

### Cabin shipping on the rise

- 288.9% more passengers on river cruises
- Increases of 235.5% in liner services and 88.9% in non-scheduled services
- Five new cruise ships in use on the Danube

In 2022, passenger navigation was able to recover from the pandemic and the strict conditions associated with it. Around 955,000 passengers were carried on the Austrian section of the Danube, an increase of 229.3% compared to 2021. The figure is only 30.8% lower than in 2019.

Despite the war in Ukraine and its negative impact on tourism in the Danube region, river cruises recorded around 350,000 passengers carried in 2022 (+288.9% compared to 2021), only 34.6% lower than in 2019. The number of cabin vessels operating on the Austrian section increased again in 2022 to 159 vessels (+40.7%), five of which were new vessels. These completed a total of 4,715 trips (+158.2%). The transport capacity of river cruises was 27,111 passenger seats - on average, this corresponds to 171 passenger seats per ship.

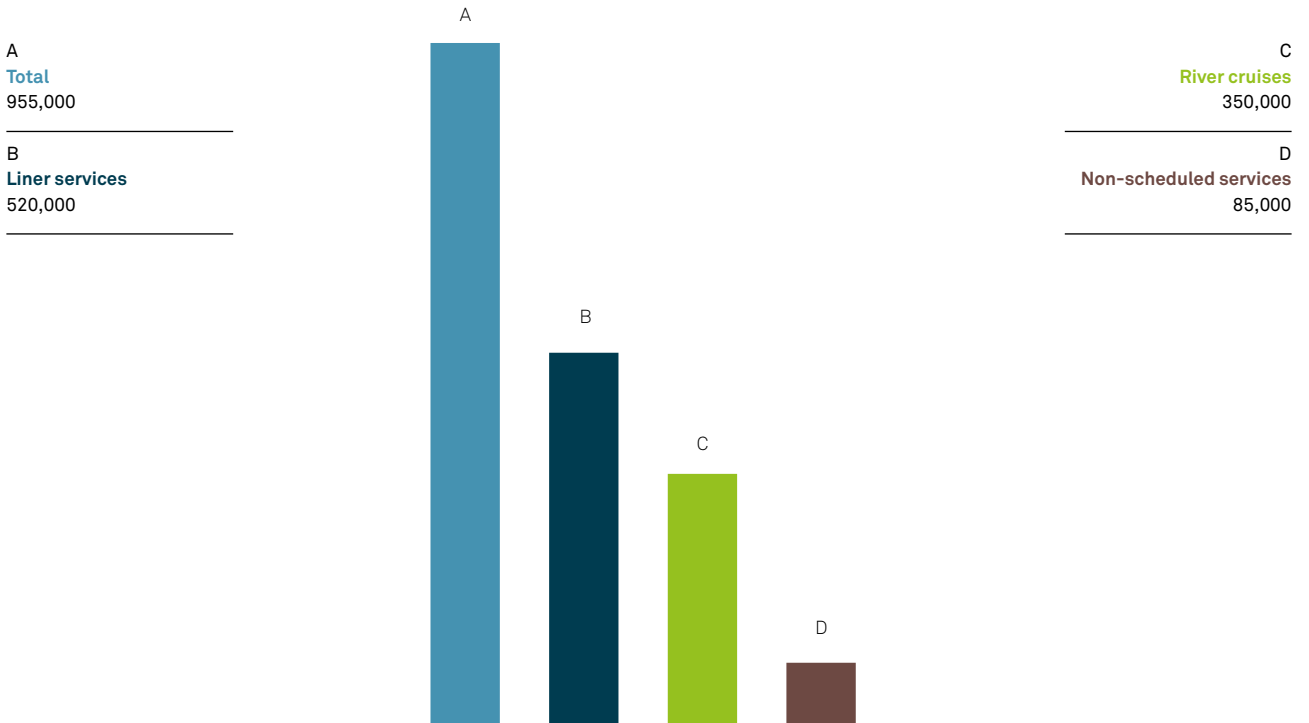
Around 520,000 passengers (+235.5%) were transported on liner services in 2022. DDSG Blue Danube Schifffahrt GmbH reported a total of 191,000 passengers (+130.1%) for its liner services in the Wachau region and Vienna. The two Twin City Liners carried 143,000 passengers (+921.4%) between Vienna and Bratislava, and Fähre Dürnstein GmbH & Co KG reported 17,648 passengers (-11.7%) on its Danube cabs in the Wachau. A further 2,286 passengers (+9.6%) made use of the services offered by Donauschifffahrt Ardagger GmbH with the MS Donaunixe and the MS Maria.

With around 85,000 passengers transported in 2022, non-scheduled services achieved growth of 88.9% compared to the previous year and is now only 19.0% below the figures for 2019. DDSG Blue Danube Schifffahrt GmbH carried 47,000 passengers (+95.8%) on themed, special and charter trips and 7,990 passengers were transported on the MS Stadt Wien of MS Stadt Wien Schifffahrts GmbH on non-scheduled services. The Donauschifffahrt Ardagger GmbH reported 4,731 passengers (+49.9%) and 2,714 passengers travelled on the DFS Schönbrunn of ÖGEG Österreichische Gesellschaft für Eisenbahngeschichte GmbH. Finally, Event Schifffahrt Haider e.U. reported 2 150 passengers (+13.8%) on the MS Carnuntum in non-scheduled services.

The passenger volume of companies that carried fewer than 2,000 passengers on liner or non-scheduled services in 2020 is not shown separately here. No figures are available for the reporting period for other companies operating liner and non-scheduled services on the Austrian section of the Danube.

FIGURES DATA FACTS

# Passengers on the Austrian Danube 2022\*

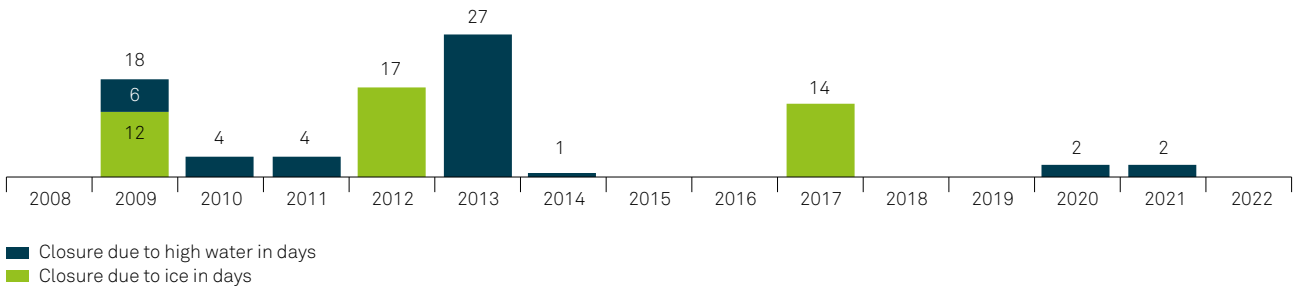
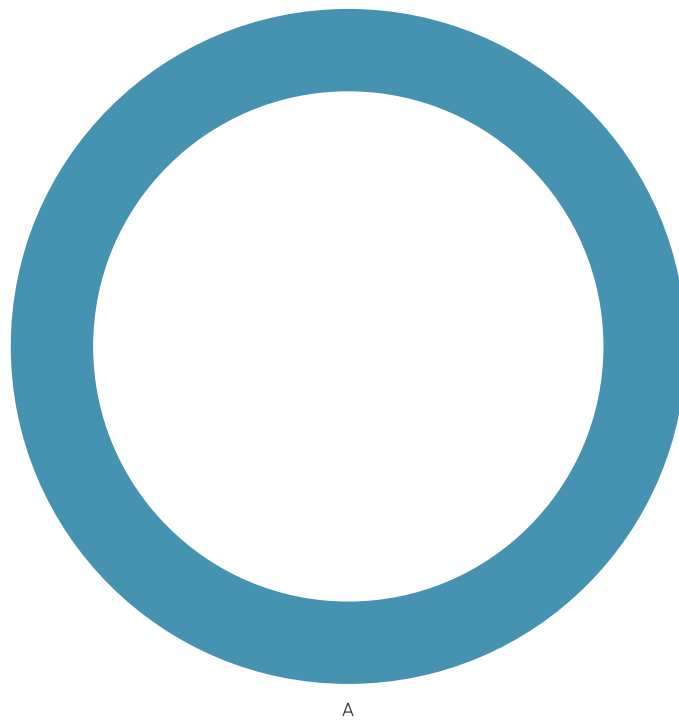


\* Due to the fact that passenger transport on the Danube ceased to be statistically compiled in Austria in 2003 (because of a change in legal basis), the above figures include additional estimates in passenger numbers on liner services and non-scheduled traffic, based on an assumed average capacity utilisation of 40% on passenger ships. The calculation of the total number of passengers on cabin vessels is based on the number of trips these ships made through the locks at Aschach and Freudenau, with an assumed average capacity utilisation of 75%, whereby a deduction of 30% for double counting has been estimated. However, the strict corona restrictions mean that a capacity utilisation of just 40% is assumed for 2020 and 2021. For 2022, an average utilization of 60% was assumed due to effects of the Ukraine war.

Sources: 1. Wiener Bootstaxi, Ahoi Wachau - Ahoi Reichl Geith OG, Central Danube Region Marketing & Development GmbH, DDSG Blue Danube Schifffahrt GmbH, Donauschifffahrt Ardagger GmbH, Donauschifffahrt Wurm & Noé GmbH & Co. OHG, Donau-Taxi Wachau - Fähre Dürnstein GmbH & Co KG, Event Schifffahrt Haider e.U., Genuss-Schifffahrt GmbH, Motorboottaxi Wachau, Motoryacht Wachau, MS Stadt Wien Schifffahrts GmbH, Naufahrt Wolfgang Speckner, Schiffmühle Orth/Donau, viadonau, WGD Donau Oberösterreich Tourismus GmbH

FIGURES DATA FACTS

# Navigational closures due to high water and ice 2008–2022



Sources: Supreme Navigation Authority within the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology, viadonau.



## AVAILABILITY OF WATERWAY

## Danube navigable all year

### No closures due to high water and ice

In the 15-year average from 2008 to 2022, the availability of the Austrian section of the Danube waterway was 98.4% or about 359 days per year. During this period, there were three ice closures with an average duration of about 14 days, while in seven years the waterway had to be closed due to high water with an average duration of just under seven days each.

From a hydrological point of view, the water flow on the Danube in 2022 was below average, which repeatedly led to short periods of low water, especially in the second half of the year. However, water levels above the maximum navigation water level (HSW 2010) were not recorded. An official closure of navigation due to high water or ice formation was not necessary on the Austrian section of the Danube in 2022. Thus, the waterway was available on 365 days or 100.0% of the year.

Weather-related official closures can be ordered by the navigation police on the Austrian section of the Danube waterway due to extreme situations such as ice formation or high water. While closures due to considerable ice formation are mainly limited to the winter months, usually to January and February, high water waves tend to occur in the spring or summer months.

Apart from closures due to high water and ice, official closures of the Danube waterway can also be ordered as a result of traffic accidents, lock failures, water pollution, construction work or events. In 2022, these closures of navigation had a total duration of one day and four hours. Total lock closures, i.e. the parallel closure of both lock chambers, lasted a total of about 16 hours in 2022 and affected four of the ten locks on the Austrian section of the Danube. By far the largest share (just under eleven hours) was accounted for by the closure of the Freudenu locks due to a shipwreck in the outer harbour. Local closures of the waterway due to events accounted for a total of just over twelve hours in 2022.

- Long-term availability of the Danube at 98.4%.
- No closures due to high water and ice in 2022

## LOAD FACTOR

## Average load factor at 58%

### Low water periods in March and summer

- Average daily mean value of the gauge Wildungsmauer at 228 cm
- Highest transport and traffic volume in February

2022 was characterized by an atypical and very unfavourable water flow for navigation. Unusual were the low water phases in March and in the months July to September – months that are usually characterized by a high water flow.

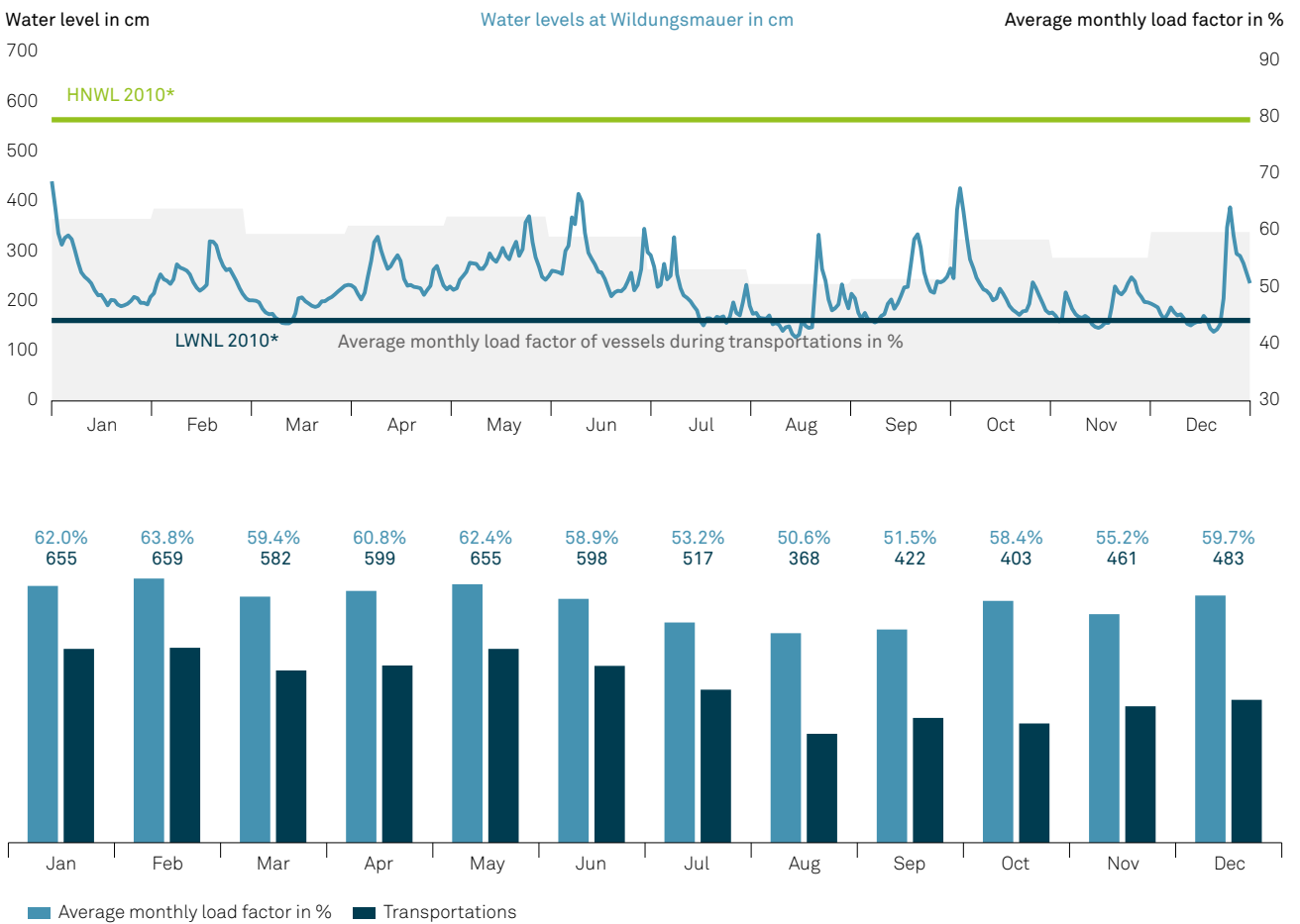
As a result, the average daily mean value of the Wildungsmauer gauge in 2022 was only 228 cm, which was 26 cm lower than the comparable value of the previous year. The lowest daily mean value was determined on August 15 with 129 cm.

The utilization rate of the ships was correspondingly low, reaching an average of only 58% in 2022. A monthly utilization rate averaging over 60% was only achieved in the first half of the year, with the maximum being reached in February at 63.8%. With 0.7 million tons, February was also the month with the highest transport volume and, with 659 transports, also the month with the highest traffic volume on the Austrian Danube. In August, on the other hand, the most unfavourable month of the year in terms of water conditions, only 0.3 million tons were transported, with 368 shipments and an average utilization rate of only 50.6%.

On average, 0.5 million tons of goods were shipped across the Austrian Danube with 534 transports per month in 2022. The total volume of 6.4 million tons was transported with a total of 6,402 transportations.

FIGURES DATA FACTS

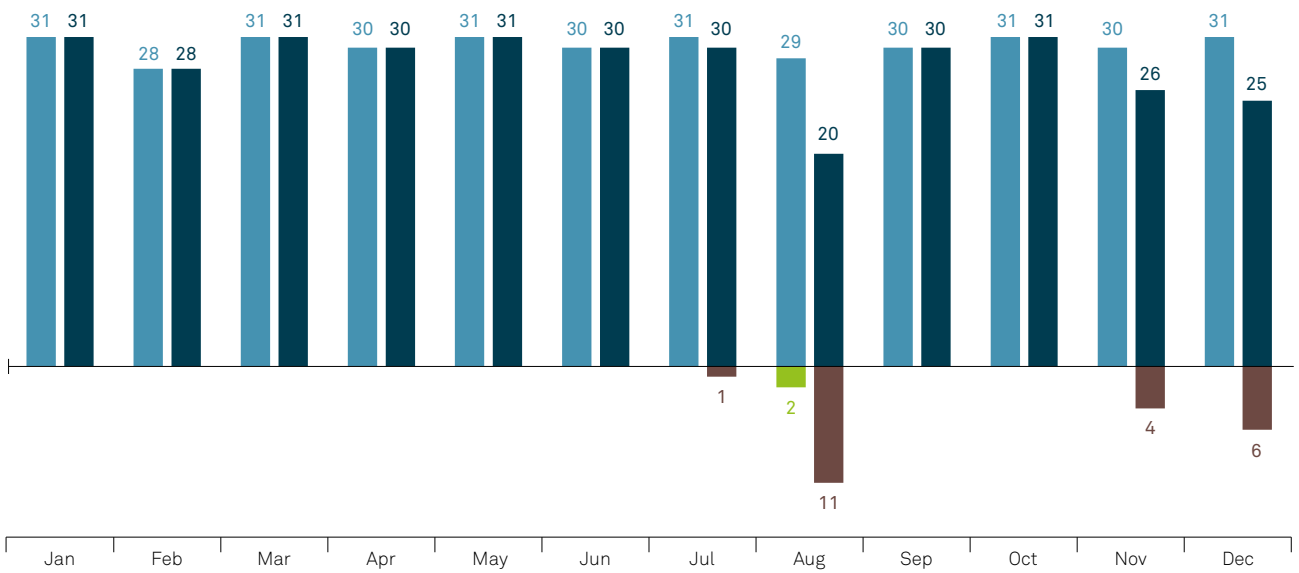
# Water levels and resulting load factors of cargo vessels in 2022 using the Wildungsmauer gauge of reference



\* LNWL 2010 (low navigable water level): This water level exceeded on 94.0% of days in a year during ice-free periods with reference to a 30-year observation period (1981–2010). The current LNWL value for the water gauge Wildungsmauer is 162 cm.  
 HNWL 2010 (highest navigable water level): This value represents the water level corresponding to the discharge exceeded on 1.0% of days in a year with reference to a 30-year observation period (1981–2010). At Wildungsmauer, the highest navigable water level is currently 564 cm.

FIGURES DATA FACTS

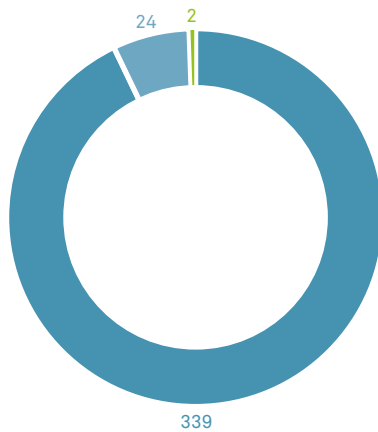
# Minimum continuously\* available fairway depths in days on the free-flowing stretches of the Danube 2022



**Wachau**  
Kienstock gauge of reference; Minimum fairway depths in days

■ Above 2,5 m  
■ Below 2,5 m

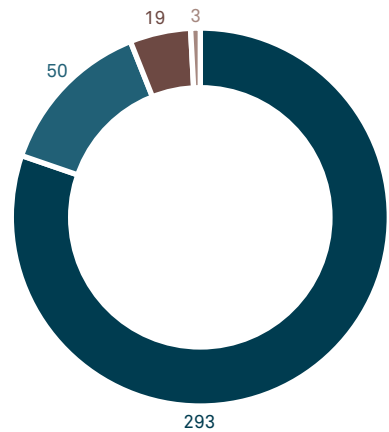
■ ≥ 27 dm  
■ 26 + 25 dm  
■ 24 + 23 dm  
■ 22 + 21 dm



**East of Vienna**  
Wildungsmauer gauge of reference; Minimum fairway depths in days

■ Above 2,5 m  
■ Below 2,5 m

■ ≥ 27 dm  
■ 26 + 25 dm  
■ 24 + 23 dm  
■ 22 + 21 dm  
■ ≤ 20 dm



\* Based on the fairway width required for a four-unit pushed convoy travelling downstream without encountering other vessels. Fairway width depends on the river bend radii involved.

Source: viadonau

## FAIRWAY DEPTHS

## Availability around 94% Only 22 days under 2.5 m

From a hydrological point of view, the Danube showed a noticeably below-average water flow in 2022 compared to the decade 2012 to 2021. The daily mean of water levels at the Wildungsmauer gauge (reference gauge for the section of the Danube between Vienna and Bratislava) was about 14% below the mean of the reference period. The daily mean values of the gauge were above mean water (MW 2010) on only 45 days of the year - in 2021 there were 115 days. On 37 days, or 10.1% of the days in 2022, water levels were below regulatory low water (RNW 2010). Especially in the second half of the year, with the exception of the month of October, shorter low-water periods with a duration of two to a maximum of twelve days occurred again and again.

Despite the unfavourable water conditions, fairway depths of more than 2.5 m were maintained in the deep channel in the two free-flowing stretches of the Austrian Danube in nine months in 2022 (January to July, September and October), with the exception of a single day. In total, a minimum fairway depth of 2.5 m was available in the deep channel on 363 days or 99.5% of the year (+8.3% compared to 2021). In the free-flowing section east of Vienna, a minimum navigation depth of 2.5 m was guaranteed on 343 days or 94.0% of the year (+7.7%). In the relevant shallow sections of the Wachau and east of Vienna, fairway depths of less than 2.3 m were available on only three days in the entire year 2022. Conversely, fairway depths of at least 2.7 m were available for navigation on 293 days.

The minimum available fairway depths for the two free-flowing sections of the Austrian Danube (Wachau and east of Vienna) were determined using all hydrographic surveys of the riverbed published by viadonau in 2022. They were evaluated in combination with the respective gauge hydrographs (mean daily water levels at the Kienstock and Wildungsmauer gauges of reference). The reference was the continuous availability of a deep channel inside the fairway, representing the required fairway width for a 4-unit pushed convoy travelling downstream without encountering other vessels.



“viadonau has always stood for forward-looking waterway management. This also means responding appropriately to the increasingly changeable climatic conditions on the Danube, integrating quick and flexible solutions to improve fairway conditions and thus ensuring the continued high availability of the Danube waterway in Austria.”

**ANDREAS PECK**  
Project Manager  
Waterway Management

## TRANSPORT DENSITY

## Traffic in the east remains strong Transport upstream dominant

- Highest transport volumes in the eastern sections
- 2.8 million tons imported upstream
- 17,463 tons shipped per day

The traffic band clearly illustrated that significantly higher transport volumes continued to be recorded in the central and eastern sections of the Austrian Danube in 2022. With regard to the nine sections of the Austrian Danube, between 2.1 million tons (section between the German-Austrian border and Aschach) and 5 million tons (section between Vienna and the Austrian-Slovakian border) were transported in 2022.\*

The increasing transport volume from west to east can also be illustrated by the following classification: While in the individual sections between the German-Austrian border and Linz only just over 2 million tons were transported in each case, between Linz and Pischelsdorf it was already well over 3 million tons in each case and between Pischelsdorf and the Austrian-Slovakian border well over 4 million tons in each case.

The traffic band also highlights the greater importance of the upstream transport direction, i.e. from east to west, compared to the downstream transport direction, i.e. from west to east: in 2022, almost twice as much goods were shipped upstream (4.2 million tons) than downstream, at 2.2 million tons.

Similarly, the transport sector with the highest volume, imports, with a total of 3.5 million tons, illustrates the dominance of the transport direction from east to west. While 2.8 million tons of imported goods were transported upstream across the Slovakian-Austrian border, the volume of goods imported to Austria from the West amounts to only 0.7 million tons.

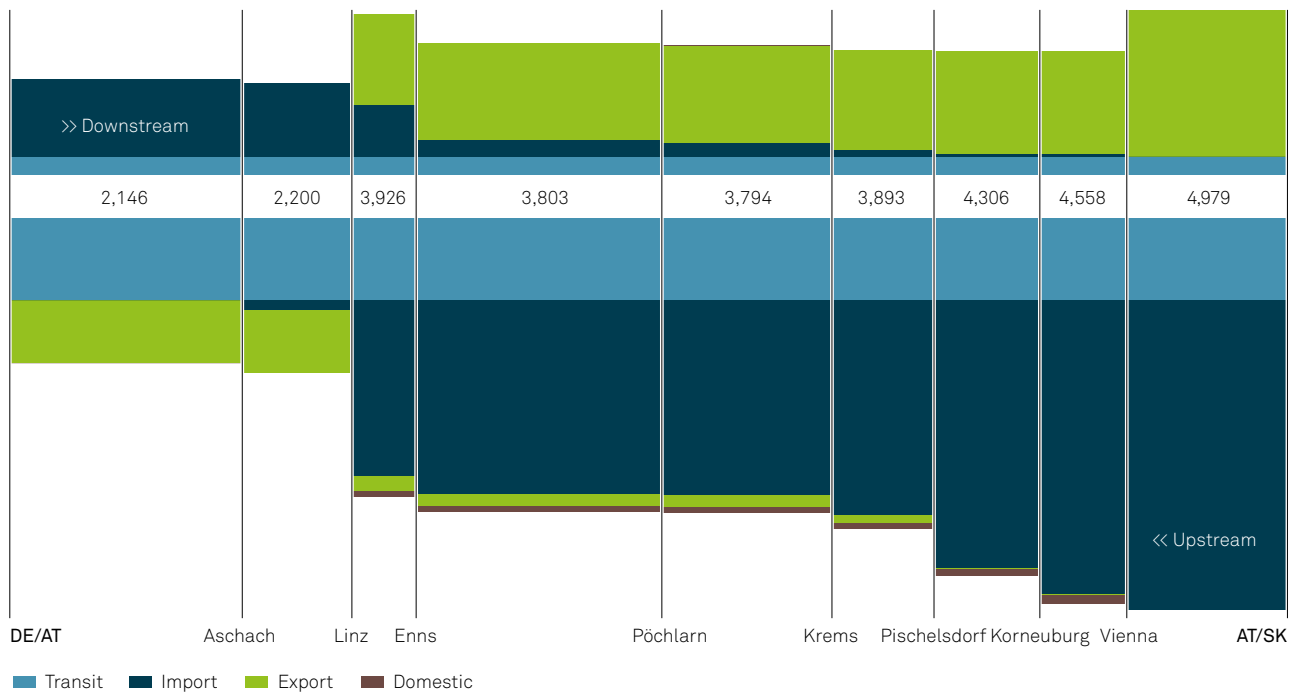
It is also worth mentioning with regard to upstream imports that 1.5 million tons, and thus more than half of the volume imported via Austria's eastern border, are shipped to Linz. This highlights the great importance of Linz as a port location, where 98.4% of goods imported from the east were handled in the port of voestalpine AG alone in 2022.

An average of 17,463 tons per day were shipped across the Austrian Danube in 2022. 13,642 tons were transported on average per day in the section between Vienna and the Austrian-Slovakian border alone.

\* Excluding transports within a port location.

FIGURES DATA FACTS

# Density of freight traffic on the Austrian Danube 2022

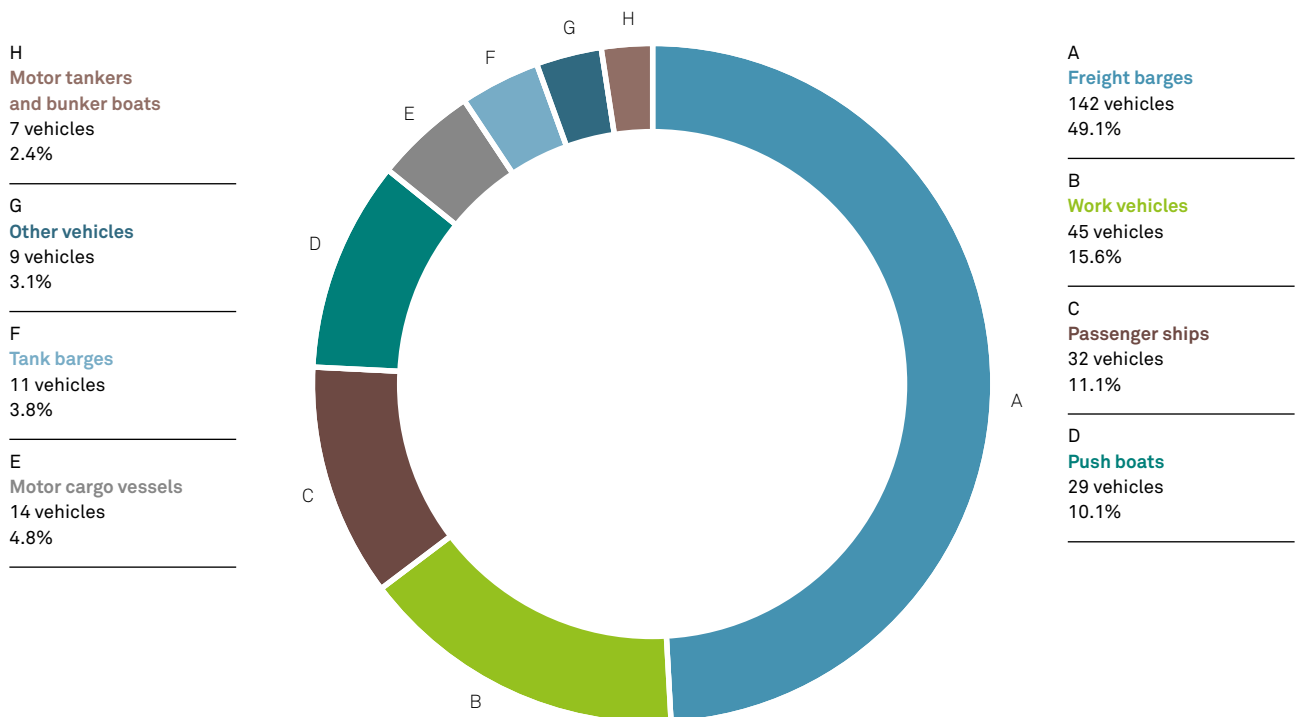


Section	Length in km	Import upstr.	Import d'str.	Export upstr.	Export d'str.	Domestic upstr.	Domestic d'str.	Transit upstr.	Transit d'str.	Total upstr.	Total d'str.	In sum
Border DE/AT–Aschach	63.21	0	692	563	0	0	0	734	157	1,297	849	2,146
Aschach–Linz	31.30	84	661	563	0	0	1	734	157	1,381	819	2,200
Linz–Enns	16.87	1,570	458	140	818	47	2	734	157	2,491	1,435	3,926
Enns–Pöchlarn	67.63	1,731	144	113	870	49	5	734	157	2,627	1,176	3,803
Pöchlarn–Krems	46.20	1,742	124	113	870	49	5	734	157	2,638	1,156	3,794
Krems–Pischelsdorf	26.30	1,922	62	77	889	48	4	734	157	2,781	1,112	3,893
Pischelsdorf–Korneuburg	29.60	2,395	25	17	918	60	0	734	157	3,206	1,100	4,306
Korneuburg–Vienna	23.64	2,628	25	16	918	80	0	734	157	3,458	1,100	4,558
Vienna–Border AT/SK	45.76	2,774	0	0	1,314	0	0	734	157	3,508	1,471	4,979

Source: Statistics Austria, adapted by viadonau

## FIGURES DATA FACTS

## Overview of the Austrian Danube fleet\* according to vehicle type 2022



\* The Austrian Danube fleet includes vehicles of category 1 according to Section 3 of the Vessel Technology Regulation (Schiffstechnikverordnung), which is defined as follows: "a vehicle whose length (L) is 20 m or more or whose product of length (L), breadth (B) and draught (D) is 100 m<sup>3</sup> or more, or which is intended to carry more than 12 passengers (passenger vessels), a floating device or a tug or push boat which is intended to tow, push or tow coupled vessels of this kind."

Sources: Register of inland vessels, Vienna; Supreme Navigation Authority within the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology; viadonau.



## AUSTRIAN DANUBE FLEET

## Size of the Danube fleet stable

### Freight barges remain strongest group

In 2022, the Austrian Danube fleet comprised 289 vessels (plus 1 compared to the previous year) with an average age of 44 years. The Danube fleet includes approved vehicles in category 1 according to Section 3 of the Vessel Technology Regulation, which are registered in Austria. The categorization of the vehicles is based on the vehicle types defined in UNECE Recommendation 28.

Just under half of the vehicles can be assigned to the category of non-motorized freight barges (142 vehicles or 49.1%). They are on average 41 years old, 68.8 meters long, 10.1 meters wide, have a draught of 2.5 meters and a loading capacity of 1,446.9 tons.

The second strongest category in 2022, with 45 units or 15.6%, were work vehicles, such as construction site vehicles and floating equipment, with an average age of 45 years.

In third place were passenger vessels with 32 vehicles or 11.1% of the Austrian Danube fleet. These are mainly day-trip vessels. Only one cruise ship with 164 passenger beds is registered in Austria. The passenger vessels are on average 48 years old with an average transport capacity of 267 passengers.

A total of 29 push boats were registered in Austria in 2022 (10.0% of all vehicles). They are on average 46 years old, 31.0 meters long, 9.0 meters wide, have a draught of 1.7 meters and an engine power of 1,405 kW.

The Austrian Danube fleet also included 14 motor cargo vessels (4.9%). They are 43 years old on average, 92.1 meters long, 10.9 meters wide, have a draught of 2.5 meters, a loading capacity of 1,706.6 tons and an engine power of 1,063 kW.

Of the tank barges, 11 units were registered in Austria (3.8%). They are on average 34 years old, 78.1 meters long, 10.4 meters wide, have a draught of 2.8 meters and a carrying capacity of 1,641.3 tons.

A further nine vessels (3.1%) are grouped under the "Other vessels" category. These include, for example, sports boats over 20 meters or ferries.

Finally, seven motor tankers or bunker boats were registered in Austria. They are on average 62 years old, have a loading capacity of 414.7 tons and an engine power of 341 kW.

- In 2022, the Austrian Danube fleet comprises 289 vehicles with an average age of 44 years
- Freight barges are the most frequent vehicle group with 49.1%
- Work vehicles come second, accounting for 15.6%, followed by passenger and day-trip vessels with 11.1% in third place

## LOCKED-THROUGH VESSEL UNITS

## 76,000 units locked through Passenger transport multiplies

- Decrease of 14.8% in locked-through freight vessels compared to last year
- 162.5% increase in passenger traffic compared to the previous year

In 2022, a total of 76,058 passenger and freight vessels passed through the nine Austrian lock facilities (excluding the Jochenstein power plant on the Austrian-German border). These included 21,337 motorized freight and motor tankers (-15.3% compared to 2021), 13,965 pusher craft (-14.0%) and 40,756 passenger ships (+162.5%). As part of the shipping units operating in convoy, there were 29 609 cargo and tank lighters or barges (-13.0%). For all types of vessels and convoys in freight and passenger traffic, this represents an increase of 33.5% in the number of vessel units handled compared with 2021.

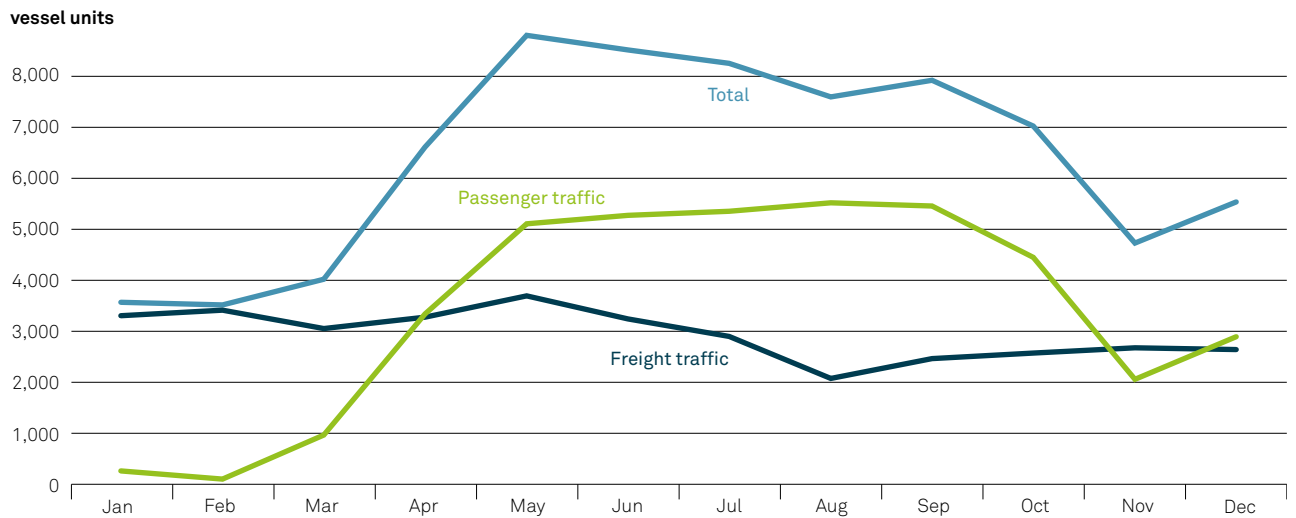
In 2022, overall traffic volumes recovered from the years of the Covid 19 pandemic, which is reflected in the lock numbers. In freight traffic the number of vessel units passing through locks on the Austrian Danube decreased (by 14.8% or 6,130 units less than in 2021). In absolute terms, passenger traffic more than doubled compared to the previous year (by 162.5% or 25,232 ship units more than in 2021). In 2022, freight traffic accounted for 46.4% of the total shipping volume (-26.3 percentage points compared to 2021), while passenger traffic accounted for 53.6% (+26.3 percentage points).

Based on the year 2022 as a whole, the average number of vessels at an Austrian Danube lock was 8,451 convoys or individually moving vessels (an increase of 2,123 vessel units compared to 2021) - this was 704 (+177) vessel movements per month, and 23 units moved per day and lock. As in previous years, the Freudenu lock (Vienna) recorded the largest volume of ship movements with 10,429 ship units (+31.4% compared to 2021), followed by the Greifenstein lock with 9,172 units. The Aschach lock handled the lowest number of vessels with 7,226 units.

Apart from the commercial shipping units used for freight and passenger traffic at the Austrian Danube locks, 9,031 small vessels used for sports and leisure navigation (-4.0% compared to 2021) as well as 1,631 other shipping units - such as public authority and emergency vehicles - were also locked in 2022.

FIGURES DATA FACTS

# Vessel units\* in freight and passenger transport locked through Austrian Danube locks in 2022



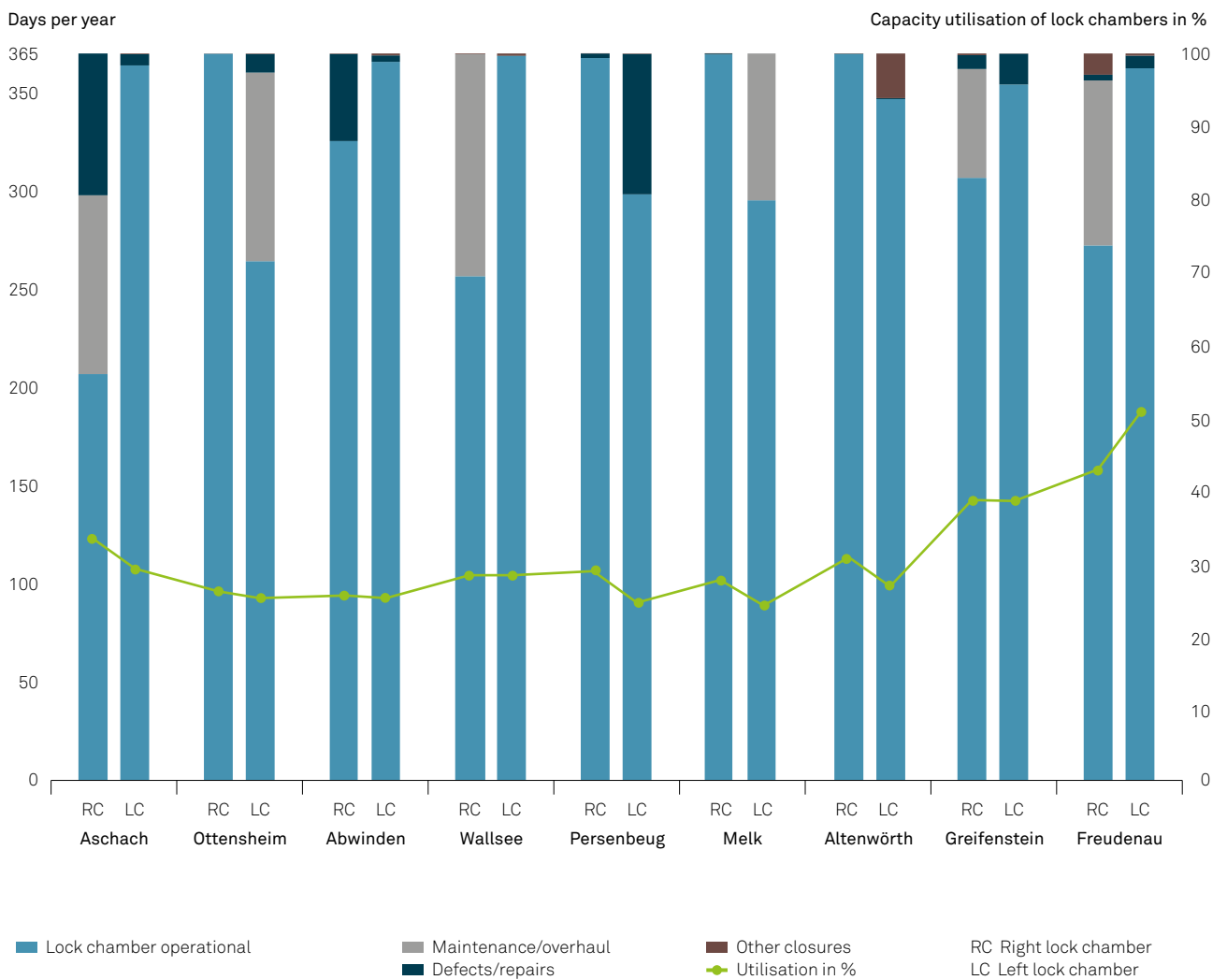
	Freight traffic	% to previous year	Passenger traffic	% to previous year	Total	% to previous year
<b>2022</b>	<b>35,302</b>	<b>-14.8</b>	<b>40,756</b>	<b>+162.5</b>	<b>76,058</b>	<b>+33.5</b>
2021	41,432	-7.1	15,524	+107.0	56,956	+9.4
2020	44,575	-2.9	7,501	-85.7	52,076	-47.0
2019	45,915	+7.8	52,319	+11.0	98,234	+9.5
2018	42,597	-16.7	47,147	+7.1	89,744	-5.7

\* Vessel units in freight transport include convoys (pushers, motor cargo vessels or motor tankers with cargo and tank lighters or barges) and individual vessels (motor cargo vessels and motor tankers or individual pushers and tugs). The passenger vessels are day-trip vessels and cabin vessels.

Source: viadonau

FIGURES DATA FACTS

# Availability of Austrian Danube locks 2022



Source: viadonau

## AVAILABILITY OF LOCK CHAMBERS

## 99.82% continuous availability

### Mean chamber utilisation around 31%

As the nine Austrian Danube locks are large-scale technical installations, they need to be serviced and maintained at regular intervals to ensure operational functionality and safety and thus also the capacity of waterway traffic flow. These lock overhauls, along with necessary large-scale repairs, accounted for around 79% of all closure days of the 18 lock chambers in 2022. The average duration of overhauls carried out in the winter half year 2021/22 and completed by the spring of 2022 was 155 days per chamber.

Other reasons for lock closures included repairs caused by technical defects during the year. They resulted in around 16% of all closure days in total. In addition, around 5% of closure days were due to scheduled modification or maintenance work, dredging in and around lock facilities, surveying, water pollution and accidents. Last year, the left lock chamber of the Altenwörth lock had the greatest impact, as it had to be closed for 23 days due to an accident and the resulting repair work. In 2022, no weather-related closures such as high water or ice were recorded.

The 18 lock chambers on the Austrian Danube were continuously available on almost 364 days (99.82%) in 2022. In the months of April to October, which are the busiest for passenger, sports and leisure navigation, only two locks were completely closed for short periods. This was due to urgently needed work and repair measures while the second lock chamber was undergoing an overhaul or repair. These took less than 1 hour on average.

In the low-traffic months of November to March only three lock chambers were out of operation simultaneously. This was due to urgently needed work and repair measures and an accident while the second lock chamber was undergoing an overhaul or repair. The work lasted 3.5 hours on average.

Capacity utilisation of the individual lock chambers averaged at around 31% in 2022. The distribution of utilisation differs quite widely from a geographical perspective. As in previous years, the Freudenu lock reported the highest average utilisation of about 47%, while the Abwinden lock recorded the lowest utilisation of around 25%. In this regard, the degree of lock chamber utilisation corresponds to its "occupancy time", i.e. the entire period from the entry of the first to the exit of the last jointly locked-through vessel, assuming 24/7 availability of the lock chambers and taking into account the lock closures.

- 99.82% continuous availability of the Austrian locks in 2022
- Lock overhauls are carried out during the low-traffic period from November to March in order to avoid waiting times

## WAITING TIMES AT LOCKS

## Waiting times for only 6.8% of vessels Average waiting time 33 minutes



“At the Danube locks, we follow a consistent awareness of reliability and quality. Excellently trained and with an outstanding overview, we guarantee the captains the safety and stability which make the Danube the indispensable backbone for essential flows of goods in Europe every day.”

**HELGA PERZ**  
Lock supervision Ottensheim

In 2022, an average of 6.8% of all vessel units (commercial freight and passenger vessels) on the Austrian section of the Danube were required to wait at the nine lock facilities. The mean waiting time for these 6.8% amounted to 33 minutes over the entire year.

Lock availability and traffic volumes are the principal factors that influence waiting times. Around 75% of the waiting times incurred can be attributed to the unavailability of lock chambers due to overhauls, repairs/disruptions and necessary repairs after accidents. The remaining roughly 25% are primarily caused by traffic circumstances, unusual events and regular operations. Adjusted for the impact of lock overhauls, unplanned repairs and increased traffic, only 1% of vessels had to accept an average waiting time of around 20 minutes.

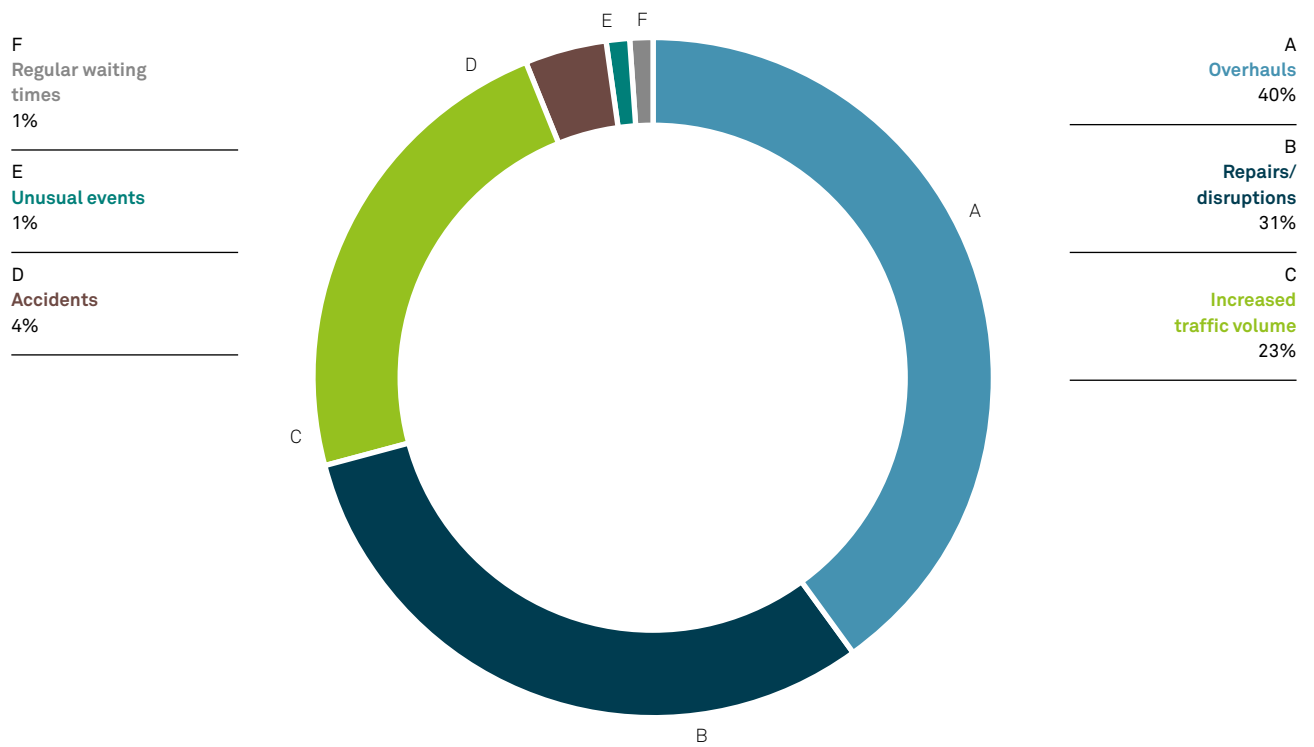
Considered in detail 40% of the waiting times resulted from the revisions of the lock chambers in Aschach, Melk as well as Greifenstein. Another third (31%) of the waiting times resulted from repairs/disruptions during the year and closures due to dredging or surveying. A share of 4% was mainly due to an accident in the lock area and the resulting repair measures at the lock facility in Altenwörth.

After a slow recovery from the effects of the COVID-19 pandemic situation in previous years, 23% of the waiting times were due to an increased traffic volume. This includes situations in which more vessels are waiting at a lock than can be accommodated in one chamber.

At 1% of the waiting times, a rescue operation as well as a statistical survey on the transit volume had an impact on navigation, and only a further one percent of the waiting times fell within the lock supervisory staff's direct sphere of influence.

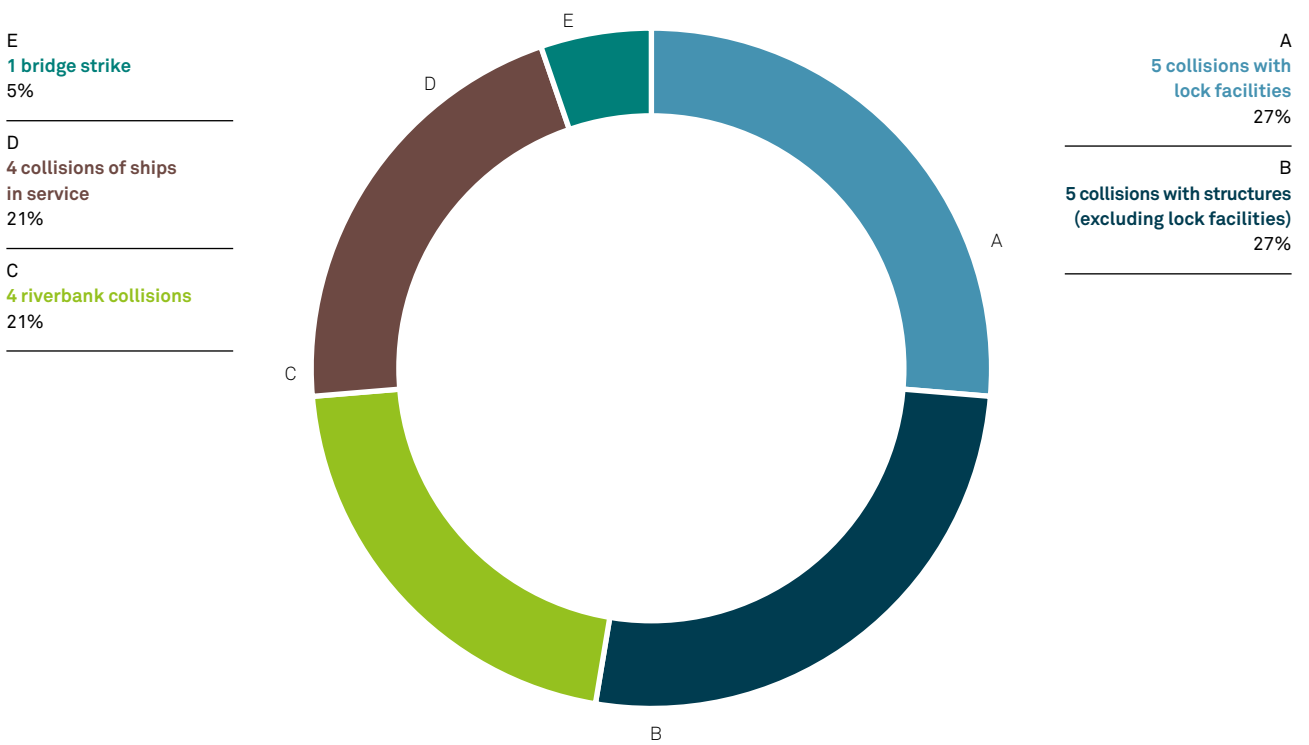
FIGURES DATA FACTS

# Causes of waiting times at Austrian Danube locks 2022



FIGURES DATA FACTS

# Traffic accidents according to type of damage on the Austrian Danube 2022





## ACCIDENTS

## Slight increase in number of accidents

### Collisions most frequent type

In regard to accident statistics, Danube navigation continues to be an unbeatably safe transport mode, compared to land transportation by road or rail. A total of 16 accidents involving commercial passenger ships, freight vessels or convoys resulting in damage to property and/or personal injury occurred during the course of 2022 on the Austrian section of the Danube. Nine accidents with cargo vessels were recorded, while another nine incidents resulted in damage to a passenger ship.

Broken down according to the type of accident, there were five collisions with lock facilities and five collisions with other structures. Collisions with a riverbank and collisions of vessels in service occurred in four accidents each. Moreover, there was a collision with a bridge. One accident involved both a collision with a riverbank and a sports boating facility. Another accident happened while leaving a port and resulted in both a collision of vessels and damage to a sports boating facility. In a third accident, both the riverbank was hit and a dock facility was damaged.

One accident resulted in personal injuries in freight and passenger traffic on the Austrian Danube section in 2022. Two persons were injured to an undetermined degree in a collision between a sports boat and a passenger ship. There were no incidents of water pollution or leakage of cargo in 2022.

The majority of accidents in 2022 occurred in impounded sections. In total, nine accidents were recorded here, among these were four collisions with a riverbank, four collisions with ships in service, three collisions with other structures and one with a bridge. Two accidents of these involved both a riverbank and other structures. In one accident two ships collided and furthermore a facility was damaged.

Within the vicinity of lock facilities (whilst being locked-through or in either the headwater or tailwater area of the lock) five accidents were recorded in 2022, all collisions with the lock itself.

Two more collisions with other structures were registered on the free-flowing stretch of the Danube east of Vienna. No accident occurred on the free-flowing section of the Danube between Melk and Krems (Wachau) in 2022.

Sports and recreational boating, which is not included in the accidents described above (except in the case of collisions with commercial freight and passenger vessels), recorded two accidents involving damage on the Austrian section of the Danube in 2022. The incidents involved a collision with a riverbank, in which one person was slightly injured, and a collision with another structure.

- Collisions with lock and other facilities were the most frequent types of accidents in 2022
- Personal damage: 2 injured persons of indeterminate degree, no deaths
- Passenger vessels and cargo vessels were involved in 9 accidents each

## MODAL SPLIT

## Slight decline in total volume Danube share falls to around 7%

- Rail share rises by 2 percentage points
- 64.5 million tons over the western border
- Danube share up to 22%

Compared to the previous year, a total of 91.6 million tons of goods were transported across the border within the Austrian Danube corridor by road, rail and the river Danube, a decrease of 0.9%. Nevertheless, this was the second highest value ever achieved.

This slight decline was at the expense of road and inland waterway transport, whose shares of the total decreased by one percentage point to around 65% and 7% respectively. By contrast, rail shipments increased by 2 percentage points to a share of around 28%.

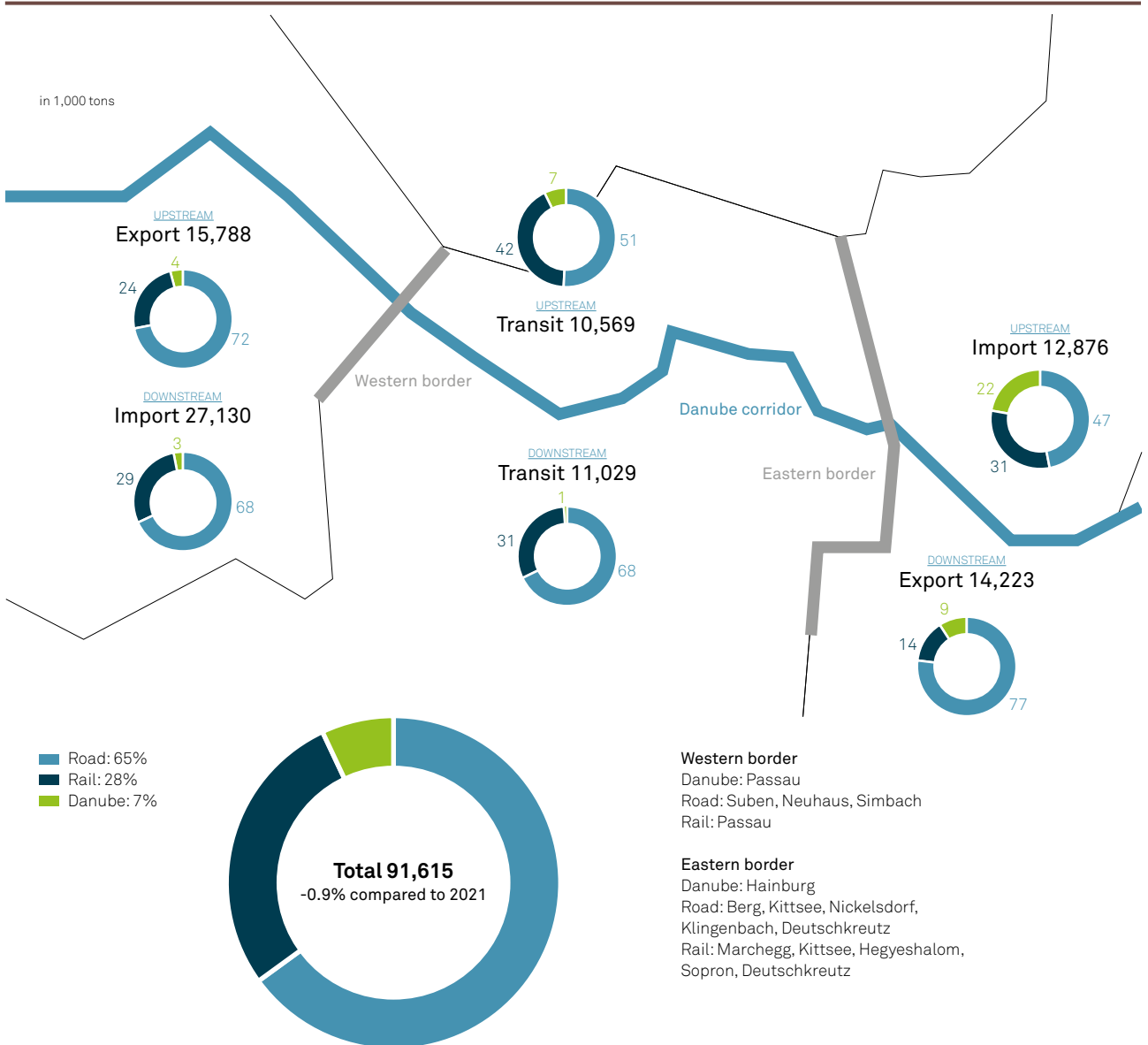
At 27.1 million tons, imports over the western border of the Danube corridor accounted for the highest volume of goods, followed by exports over the western border at 15.8 million tons. Taking into account the upstream and downstream transit traffic, with a total of 64.5 million tons, the transports over the western border exceeded those over the eastern border (48.7 million tons in total) by 32.4%.

However, the share of the Danube in transports over the western border of the Danube corridor was only between about 1% (downstream transit) and 7% (upstream import). In 2022, the Danube's share of the more important volumes transported over the eastern border of the Danube corridor ranged between approximately 1% (downstream transit) and 22% (upstream import).

Apart from only one exception, the imports over the western border where the Danube was able to maintain its share of transport volume at around 3%, its share declined for all other transport sectors and transport directions. The largest decline was recorded for imports over the eastern border, where the Danube's share declined by 3 percentage points compared to 2022.

FIGURES DATA FACTS

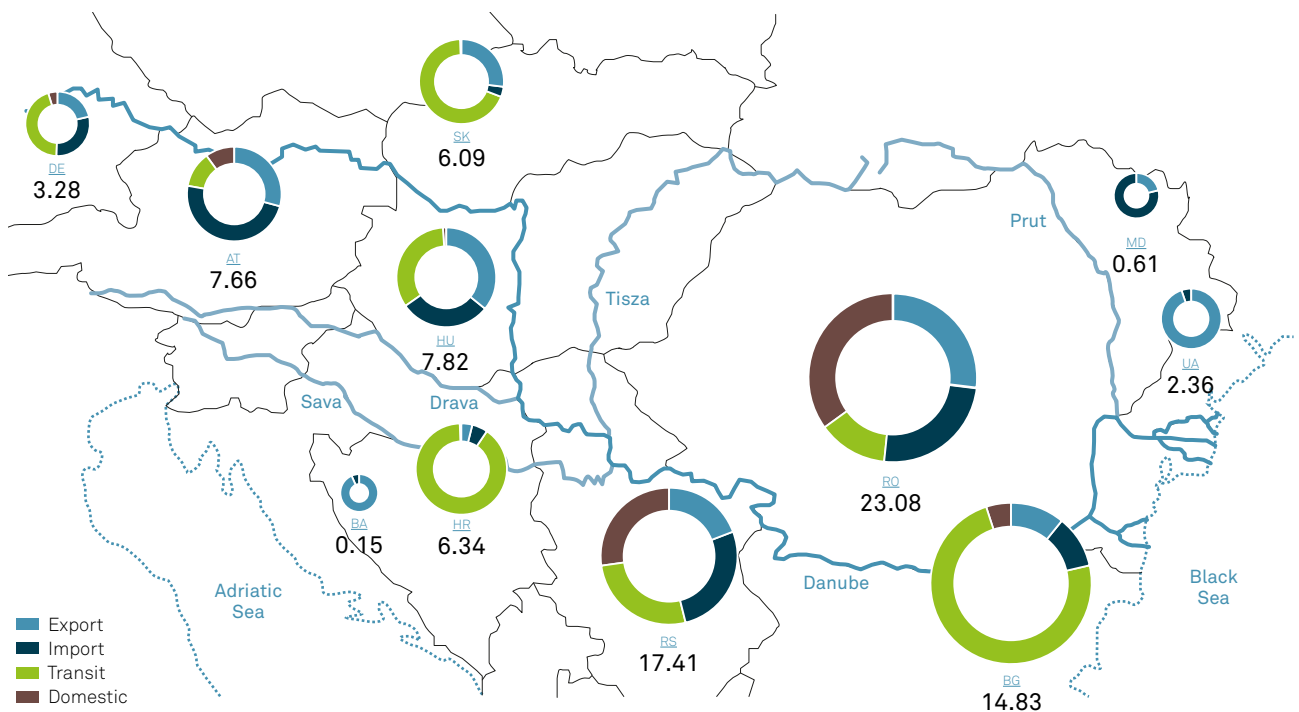
# Cross-border freight traffic in the Austrian Danube corridor 2022



Source: Austrian Institute for Spatial Planning (ÖIR), adapted by viadonau

## FIGURES DATA FACTS

## Freight transport on the entire Danube 2021



In millions of tons	DE	AT	SK	HU	HR	BA	RS	RO	BG	MD	UA*
Export	0.71	2.25	1.65	2.82	0.25	0.14	3.38	6.24	1.63	0.13	2.24
Import	0.95	3.71	0.24	2.29	0.36	0.01	4.67	5.74	1.58	0.48	0.12
Transit	1.47	0.94	4.18	2.64	5.70	0.00	4.64	3.03	10.88	0.00	n.a.
Domestic	0.15	0.76	0.02	0.07	0.03	0.00	4.72	8.07	0.74	0.00	n.a.
<b>Total</b>	<b>3.28</b>	<b>7.66</b>	<b>6.09</b>	<b>7.82</b>	<b>6.34</b>	<b>0.15</b>	<b>17.41</b>	<b>23.08</b>	<b>14.83</b>	<b>0.61</b>	<b>2.36</b>

\* Data on transit and domestic traffic on the Ukrainian section of the Danube is not available. Therefore, the sum total as stated only includes export and import volumes.

Sources: Eurostat, Danube Commission, national traffic statistics, adapted by viadonau

## FREIGHT TRANSPORT ON THE ENTIRE DANUBE 2021

## 36.5 million t transport volume in 2021

### Highest transport volumes in Romania

In the entire Danube region, including Bosnia and Herzegovina – which is connected to the Danube via the Sava River – and the Danube-Black Sea Canal, a total of 36.5 million tons of goods were transported by ship in 2021. This transport volume was thus a moderate 2.5 million tons or 7.4% higher than in 2020.

In terms of individual countries, the largest transport volumes were achieved in Romania with 23.08 million tons, followed by Serbia with 17.4 million tons and Bulgaria with 14.8 million tons. Transport volumes were significantly lower in Hungary with 7.8 million tons, Austria with 7.7 million tons, Croatia with 6.3 million tons, Slovakia with 6.1 million tons, Germany (local government districts of the Upper Palatinate/Lower Bavaria) with 3.3 million tons, and Ukraine with 2.4 million tons.\* Trailing behind were Moldova with 0.6 million tons and Bosnia-Herzegovina with 0.2 million tons. However, Bosnia-Herzegovina recorded the highest year-on-year growth in national transport volumes within the Danube region in 2021, at 50.5%.

If one considers the individual transport sectors of export, import, transit and domestic transport at country level, the dominance of individual transport sectors becomes clear in some countries. In Bosnia-Herzegovina, for example, 93% of transport volume was generated by exports alone.

In Moldova, on the other hand, imports accounted for around 79% of the transport volume, while transit traffic dominated in Croatia (90%), Bulgaria (73%) and Slovakia (69%). The transport volume in Germany, Austria, Hungary, Serbia and Romania was much more balanced.

17.2 million tons were transported via the Danube-Black Sea Canal in 2021, a slight increase of 4.2% compared to 2020. On the Sulina arm, the middle of the three arms of the Danube Delta, 5.1 million tons were transported, which was actually an increase of 13.3% over the 2020 figure

- Increase of 7.4% compared to 2020
- Largest increase in Bosnia-Herzegovina
- 17.2 million tons on the Danube-Black Sea Canal

## FAIRWAY CONDITIONS ALONG THE ENTIRE DANUBE

## Below-average water discharge

### Unfavourable fairway conditions

- Unfavourable fairway conditions due to challenging hydrological situation
- Most severe bottlenecks on the Hungarian and the Lower Danube

The year 2022 was characterised by unfavourable hydrological conditions in several months. Already in spring, the defined low navigable water level was not reached on large parts of the Danube for several days. On the Lower Danube historically low water levels were recorded for multiple days, especially in August and September. The hydrological conditions only improved in December 2022.

With a few exceptions, fairway conditions along the entire Danube were therefore significantly worse than in the previous year. Especially on the Hungarian and the Lower Danube, the required 2.5 m fairway depth were only reached on about 60-75% of the year. The worst nautical bottlenecks in 2022 were on the Hungarian stretch of the Danube (bottlenecks Nyergesújfalu and Solt) and on the Romanian-Bulgarian stretch of the Danube (bottlenecks Belene and Vardim). In the period July-August, navigation in the Svishtov area was de facto suspended for more than a month due to a lack of pro-active maintenance.

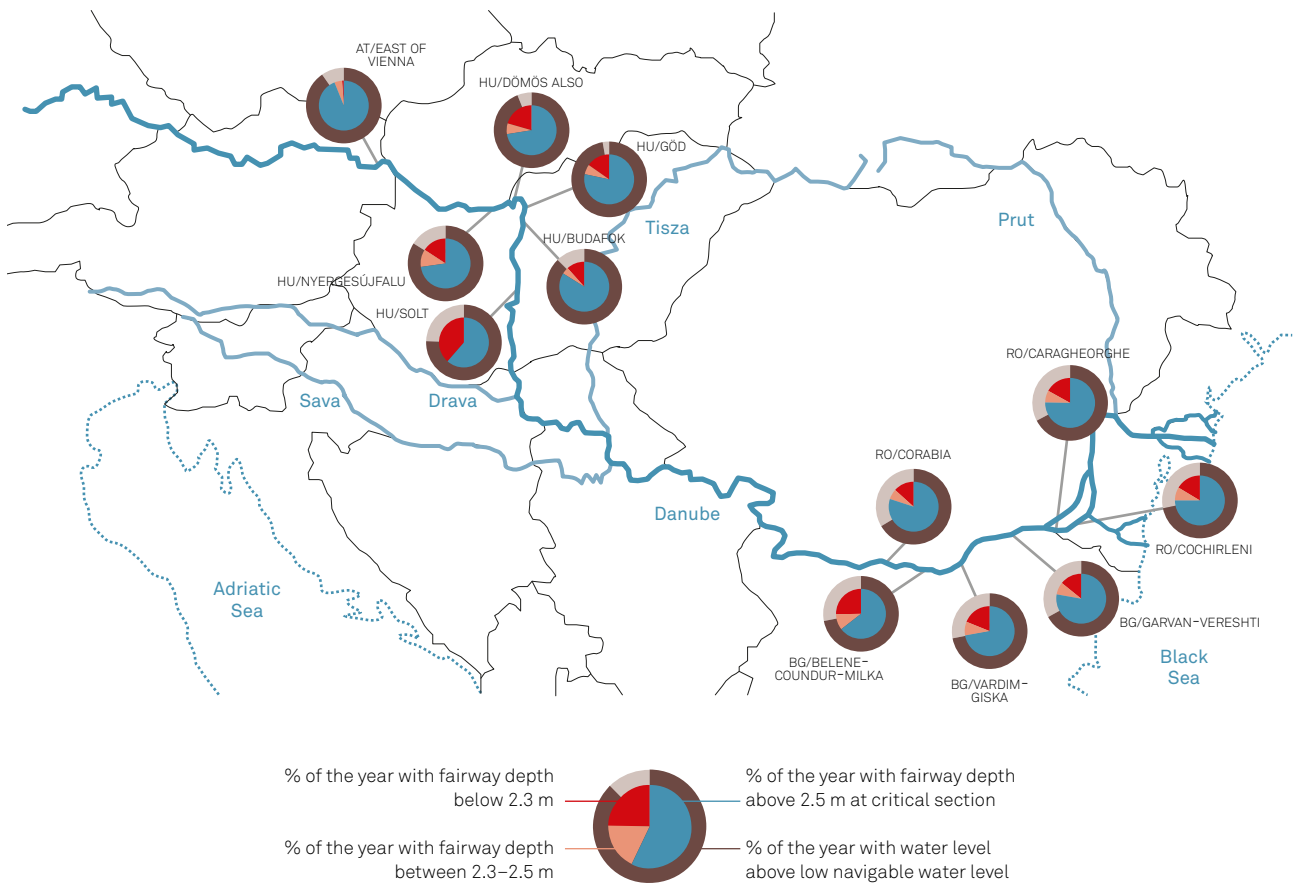
The chart provides a status overview of the most important critical locations on the Danube in 2022. For each critical location, the figure illustrates the situation regarding fairway availability (inner circle) in relation to reference water levels (outer circle). The maintenance target is to provide fairway depths equal to or exceeding 2.5 m on at least as many days per year as the statistical Low Navigable Water Level (LNWL). This situation corresponds to the inner blue circle reaching the level of the outer dark brown circle. In 2022, this maintenance target was not achieved in several critical locations along the Danube.

It is also important to include depths of just under 2.5 m when interpreting the status of critical locations. These allow for a slightly reduced level of navigability although not reaching a depth of 2.5 m. On some sections of the fairway depths of 2.4 m or 2.3 m (light-red colour in the inner circle) were available on some of the days.

Since the endorsement of the “Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries” in 2014, significant steps have been taken in implementing it. Considerable investments have been made and specialized equipment was purchased by many riparian countries through EU co-financed projects within the Connecting Europe Facility, the national Operational Programmes and the Instrument for Pre-Accession (IPA).

FIGURES DATA FACTS

# Fairway conditions at critical locations along the Danube 2022





No data from Germany were available at the time the graphic was created. In the free flowing section between Straubing and Vilshofen the objective is to maintain the fairway depth of 2 m related to Low Navigable Water Level (LNWL).

For a detailed interpretation of the chart, reference is made to the "Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries" and the National Action Plan Update July 2023. Individual framework conditions at critical sections need to be taken into account. The severity of the critical sections, along with reasons for failing to meet the maintenance targets, differ and may change over the course of time.

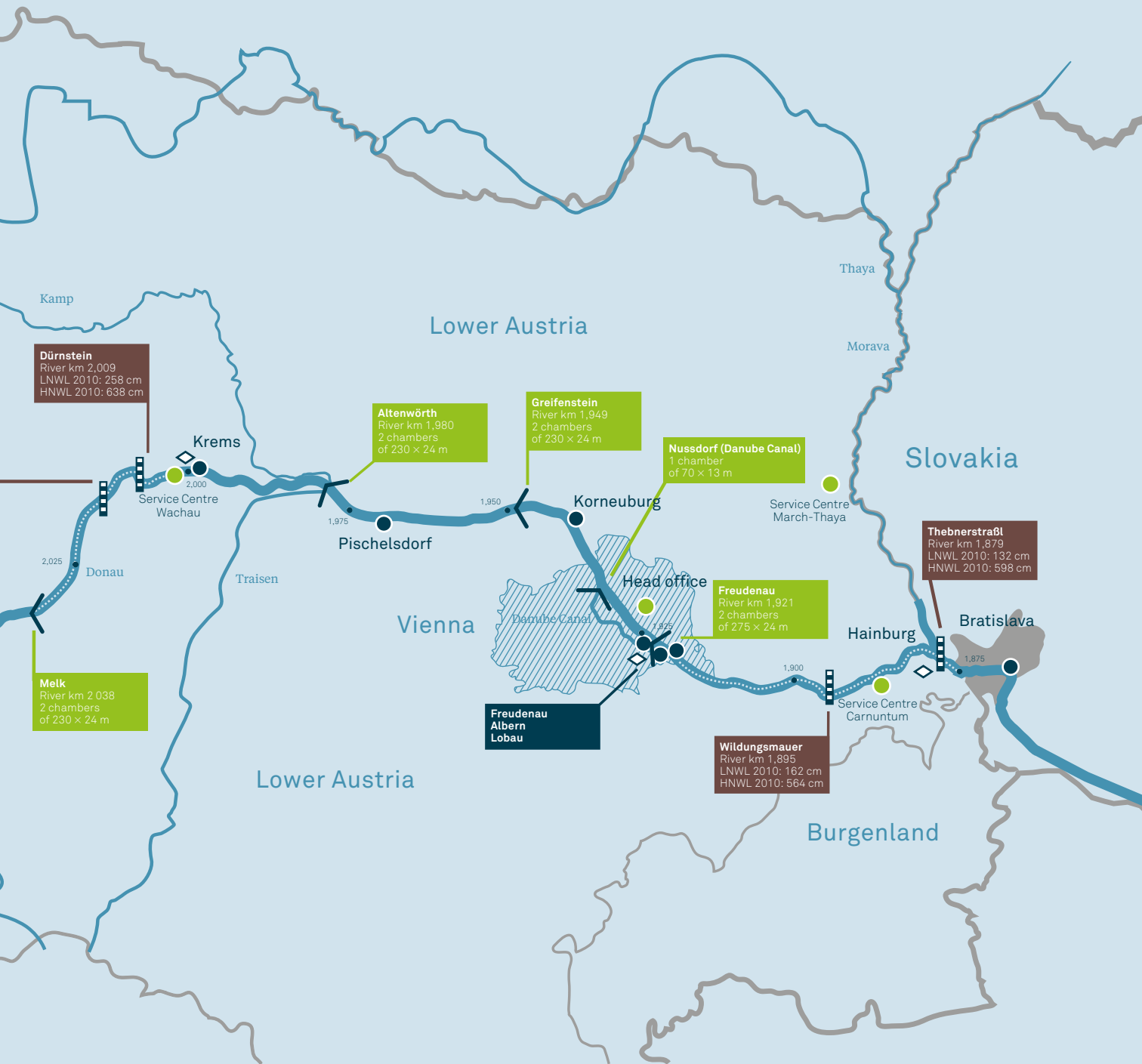
Sources: "Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries" and the National Action Plan Update July 2023, which have been prepared within the framework of the EU Danube Region Strategy ([www.navigation.danube-region.eu](http://www.navigation.danube-region.eu)) and the FAIRway Danube project. Chart adapted by viadonau.



The Austrian section of the Danube

- |   |   |
|---|---|
|  Waterway                |  Navigation surveillance |
|  Free-flowing stretch    |  viadonau Service Centre |
|  Lock                    | LNWL Low navigable water level  |
|  Important water gauge   | HNWL Highest navigable water level  |
|  Port/transshipment site |   |





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# Key data on Danube navigation 2022<sup>1</sup>

## Transport volumes

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6.4 million tons (-22.9%)	<ul style="list-style-type: none"><li>• Import: 3.5 million tons (-11.8%)</li><li>• Export: 1.9 million tons (-22.6%)</li><li>• Transit: 0.9 million tons (-23.2%)</li><li>• Domestic: 0.1 million tons (-81.4%)</li></ul>
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## Transport performance

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5.9 billion tkm (-20.7%)	• Within Austria: 1.2 billion tkm (-18.1%)
6,402 transportations (-19.8%)	• Outside Austria: 4.7 billion tkm (-21.3%)

## Waterside transshipment at Austrian ports and transshipment sites

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5.6 million tons (-28.5%)	<ul style="list-style-type: none"><li>• Ores and metal waste: 1.7 million tons (-18.9%)</li><li>• Petroleum products: 0.9 million tons (-33.9%)</li><li>• Agricultural and forestry products: 0.9 million tons (-10.9%)</li><li>• Metal products: 0.8 million tons (+4.0%)</li><li>• Fertilisers: 0.6 million tons (-23.2%)</li><li>• Crude and manufactured minerals, building materials: 0.4 million tons (-71.8%)</li><li>• Other goods: 0.3 million tons (-2.2%)</li></ul>
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## Vessel units locked through Austrian Danube locks

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76,058 vessel units <sup>2</sup> (+33.5%)	<ul style="list-style-type: none"><li>• Freight transport: 35,302 units (-14.8%)</li><li>• Passenger transport: 40,756 units (+162.5%)</li></ul>
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## Passenger transport (including estimation)

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0.96 million passengers (+229.3%)	<ul style="list-style-type: none"><li>• Liner services: 520,000 passengers (+235.5%)</li><li>• River cruises: 350,000 passengers (+288.9%)</li><li>• Non-scheduled services: 85,000 passengers (+88.9%)</li></ul>
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## Accidents

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16 traffic accidents with damage	<ul style="list-style-type: none"><li>• Personal injuries: 0 deaths, 2 injured indeterminate degree</li><li>• Damage to property: 15 incidents with damage to riverbanks and facilities, 4 ship to ship, 0 ships sunk</li></ul>
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## Availability of the waterway

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365 days	• Closures due to high water: 0 days
15 year average: 359 days	• Closures due to ice: 0 days

<sup>1</sup> Changes from 2021 are given as percentages in brackets

<sup>2</sup> Convoys and individual vessels

