Annual Report on Danube Navigation in Austria | viadonau

Key data on Danube navigation 2018[1]

Transport volumes

7.2 million tons (–25.1%)

- Import: 3.8 million tons (–21.3%)
- Export: 1.8 million tons (–25.4%)
- Transit: 1.4 million tons (–33.1%)
- Domestic: 0.3 million tons (–28.9%)

Transport performance

7.0 billion tkm (–28.4%)
7,622 loaded journeys (–14.7%)

- Within Austria: 1.5 billion tkm (–26.4%)
- Outside Austria: 5.5 billion tkm (–28.9%)

Waterside transhipment at Austrian ports and transhipment sites

6.1 million tons (–23.3%)

- Ores and metal waste: 1.9 million tons (–25.5%)
- Petroleum products: 1.5 million tons (–3.1%)
- Metal products: 0.8 million tons (–19.3%)
- Agricultural and forestry products: 0.7 million tons (–4.3%)
- Crude and manufactured minerals, building materials: 0.6 million tons (–37.7%)
- Fertilisers: 0.4 million tons (–38.2%)
- Other goods: 0.3 million tons (–52.2%)

Vessel units locked through Austrian Danube locks

89,744 vessel units[2] (–5.7%)

- Freight transport: 42,597 units (–16.7%)
- Passenger transport: 47,147 units (+7.1%)

Passenger transport (including estimation)

1.3 million passengers (–0.4%)

- Liner services: 700,000 passengers (–0.7%)
- River cruises: 465,000 passengers (+3.3%)
- Non-scheduled services: 95,000 passengers (–13.6%)

Accidents

12 traffic accidents with damage

- Personal injuries: 0 death, 0 serious injured, 0 slightly injured
- Damage to property: 4 ship to ship, 1 grounding incident, 7 incidents with damage to riverbanks and facilities, 0 ship sunk

Availability of the waterway

365 days
15 year average: 357 days

- Closures due to high water: 0 days
- Closures due to ice: 0 days

[1] Changes from 2017 are given as percentages in brackets.
[2] Convoys and individual vessels.

Source: Statistics Austria; Supreme Navigation Authority at the Federal Ministry for Transport, Innovation and Technology; Federal Office of Transport; miscellaneous passenger transport operating companies; viadonau

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Editorial note: Small variations of the figures within this annual report to Statistics Austria's figures may arise due to rounding differences.

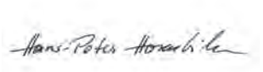
Promoting the strengths of the Danube
Seizing opportunities for the future

NORBERT HOFER
Federal Minister for Transport,
Innovation and Technology

The fact that in Austria the Danube attracts more than one million passengers a year proves that Europe's second longest river is a powerful means of transport and at the same time a river with unique scenic attractions. In order to further strengthen the enormous added value of the Danube as a natural transport system, tourist magnet and intact natural habitat and to safeguard it for the future, the BMVIT (Austrian Ministry for Transport, Innovation and Technology) and viadonau have for many years been working together very closely. The goal: a sensible integration of environmental, safety and economic interests, as well as highest maintenance standards along the entire Danube.

In times in which the development of new, more sustainable transport concepts and transport alternatives is becoming increasingly urgent, the Danube as a natural means of transport – and with it domestic navigation as an environmentally friendly means of transport – represents a unique opportunity for the future, which we want to seize together with the other Danube riparian states – in a targeted manner and across borders. Within the context of promising international projects such as FAIRway Danube and Danube STREAM, harmonised standards for waterway management and transport infrastructure are currently being developed. With the best possible information and modern maintenance, transport journeys are to be made safer and easier to plan, thereby further increasing the quality of use of the important Rhine-Danube transport axis. Progress is already visible on the Danube. Along the stretch of river from Bratislava to the Black Sea, a whole fleet of new working and sounding vessels for modern waterway management is currently emerging – a new beginning with a clear message: The Danube must play an even stronger role within the European transport network in the future.

The waterway as a service hotspot
Development close to our customers



HANS-PETER HASENBICHLER
Managing Director
of viadonau

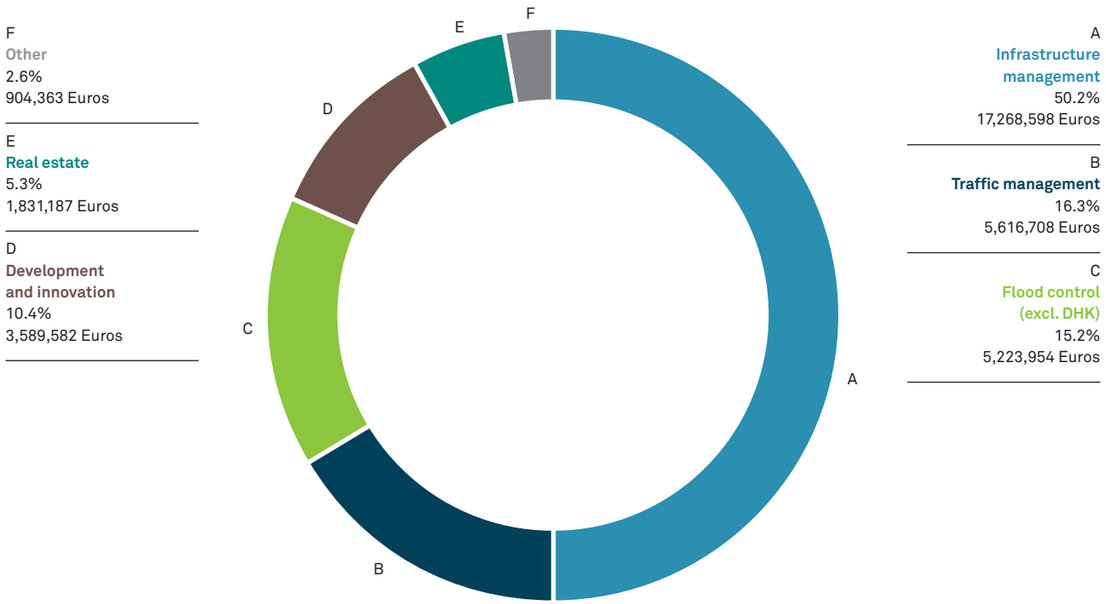
Be it as a transport route, a settlement area or a leisure paradise – the Danube moves us. In the long history of the ever-changing relationship between man and natural forces, we have been learning from the river to the present day and know: The better we understand its daily changes and work with its nature, the more sustainably we can develop the river as a waterway into the future. One example that illustrates our holistic approach particularly well is the relocation of the Hainburg Danube station in 2018. Repositioning the landing stage 400 metres upstream improves the use of the fairway and reduces maintenance dredging – offering a benefit for both shipping and nature in the immediate vicinity of the Danube Floodplains National Park.

In our work, it is always important to us that we offer services that actually reach the users of the Danube. Information and communication are equally important – comprehensive digital information services as well as direct contact with people on the river. With customer-oriented events such as the Danube Business Talks, the RIS COMEX Stakeholder Forum or the stakeholder platforms for our Catalogue of Measures for the Danube East of Vienna, we regularly bring together the many interests in the river and jointly develop sustainable solutions for life, safety and economy on the Danube. At the same time, our employees are available every day on site at the river, where they guarantee safe and reliable use of the river as lock supervisors, maintenance experts, current surveyors or ecologists. With their expertise, they act as indispensable links between the river and its potential users, implementing our common goals for a sustainable and forward-looking waterway directly on the Danube.

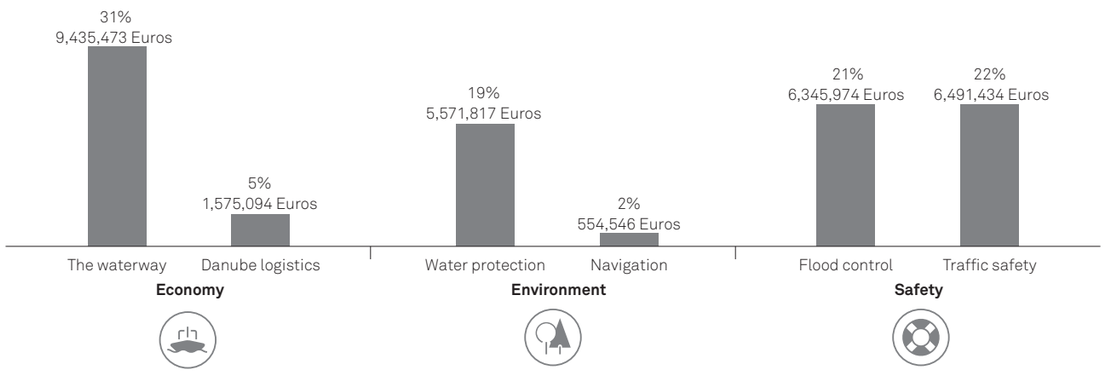
FIGURES DATA FACTS

Costs per core tasks and impact scope viadonau 2018

Costs of core tasks



Costs per impact scope



BALANCE SHEET VIADONAU

Service creates trust
Consistent customer orientation

2018 – a year of opportunities and challenges: Austria's EU Council Presidency in 2018 provided a particularly prestigious opportunity to draw attention to the Danube's growing role within the European transport network. On the other hand, the historical low-water period as the determining factor during the year once again showed how important proactive waterway management is for the reliability of the Danube transport route.

Competitive through sustainability and predictive action. At viadonau, the year featured a number of important international events. The fact that the environment and economic interests are not mutually exclusive, but can – quite on the contrary – complement each other perfectly, was illustrated by the Danube Awareness Day, the inaugural event held as part of Austria's EU Council Presidency. The RIS Corridor Management Stakeholder Forum addressed innovative solutions for the further implementation of the telematics system RIS (River Information Services) in the European waterway network, while the Danube Business Talks formed the highlight of the series of events organised by viadonau. Here, new markets for inland navigation were explored together with representatives from politics, administration and the transport and logistics sector.

Internationalising quality. The events contributed to strengthening international contacts and networks as well as successfully advancing joint transnational projects. The international FAIRway Danube project in particular offered concrete progress in terms of service quality along the entire Danube. The construction and commissioning of several working and sounding vessels in Croatia, Slovakia, Bulgaria and Romania were a strong signal for the Danube as a sustainable mode of transport.

Once again: waterway management. Due to the pronounced low water level, the second half of 2018 in particular was an important test for integrative, proactive waterway management. A new island was created in the Rote Werd shallow section on the Danube east of Vienna in March with the intention of contributing to low water regulation by reducing the flow cross-section. In addition, other critical shallow sections were also improved in a sustainable manner. In order to be able to guarantee the shipping parameters at the Treuschütt ford, viadonau also optimised existing hydraulic structures there in summer – in a way that preserves nature.

An ecological first. In order to ensure sustainable protection of the Danube river banks on the Johlerarm near Hainburg, special measures with an emphasis on soil and water bioengineering aspects were implemented towards the end of 2018. In the inflow area of the side arm, a construction of tree trunks and willow branches was used to secure the bank in an innovative manner – a scientifically guided measure that was used for the first time in this form on the Danube.

"For us the future of the Danube has already begun. We want to know today what will be in demand tomorrow and thus provide modern and accurate services. About 95 percent of the Danube waterway customers questioned gave once again excellent grades to the quality of our services in a survey at the end of 2018. Such kind of satisfaction is our highest reward and shows us that we are on the right path."

CHRISTOPH CASPAR
Head of Communication and Knowledge Management

Freight transport on the Austrian Danube 2015–2018

Passengers on the Austrian Danube 2018

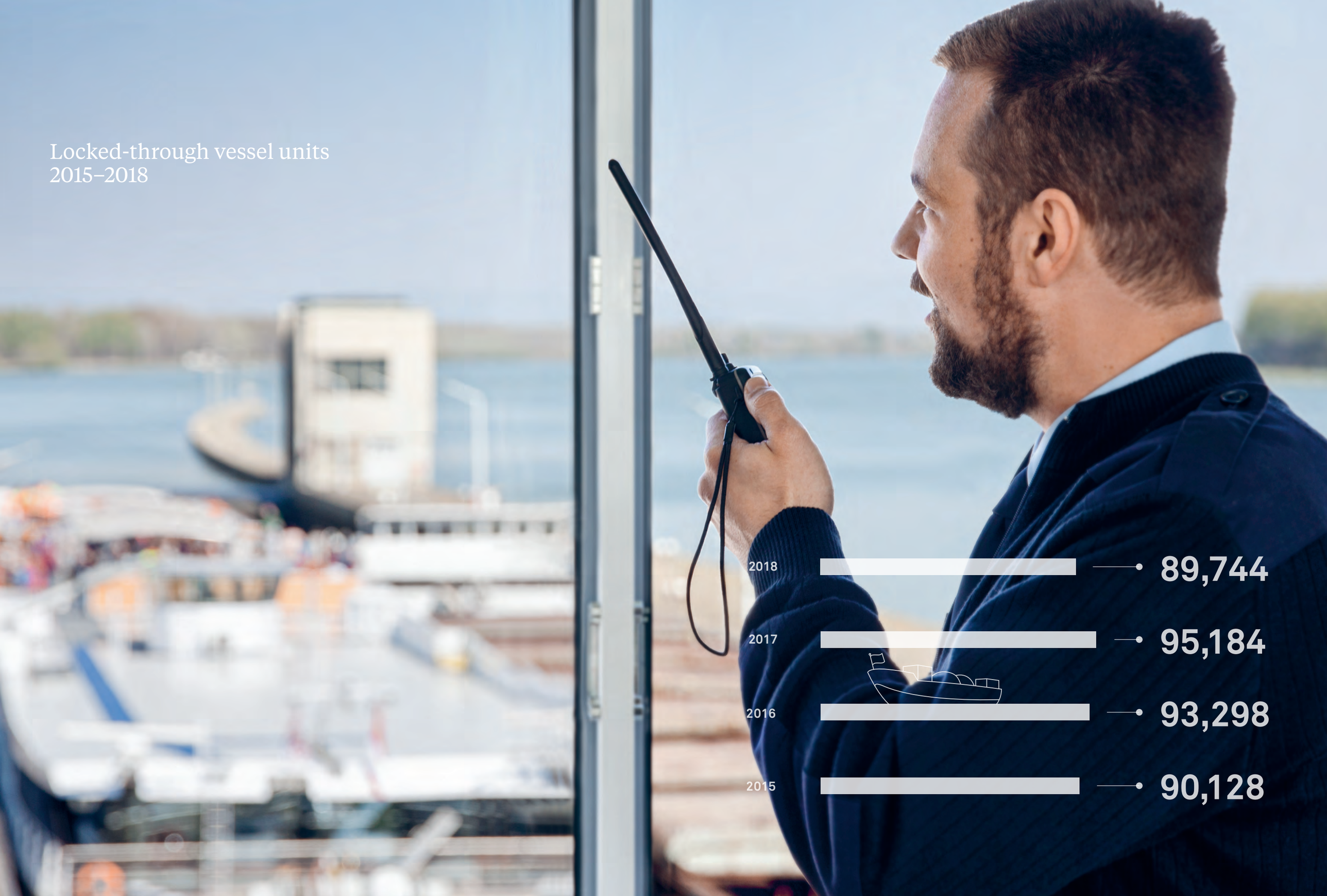
1,260,000 Total

Liner services 700,000

River cruises 465,000

Non-scheduled services 95,000

Locked-through vessel units
2015–2018



CUSTOMER SATISFACTION: INFRASTRUCTURE

Proactive maintenance
viadonau once again scores top marks

- Users rate viadonau as the number one provider of high-quality waterway services in the Danube region
- Proactive maintenance combined with targeted hydraulic engineering measures are the key to success

For viadonau, the ongoing monitoring of customer satisfaction is an important indicator of effective service provision. That is why annual customer surveys are carried out among commercial waterway users (freight and passenger shipping), and their feedback is analysed in order to further improve the services provided by viadonau.

The customer survey assesses, among other things, the quality of the maintenance of the fairway in the Austrian section of the Danube, i.e. maintenance dredging operations carried out by viadonau. For the current customer survey, feedback was received from a total of 81 members of the navigation sector (74% of which were ship's captains, 15% ship owners and 11% others; 25% freight transport, 48% passenger transport and 27% others).

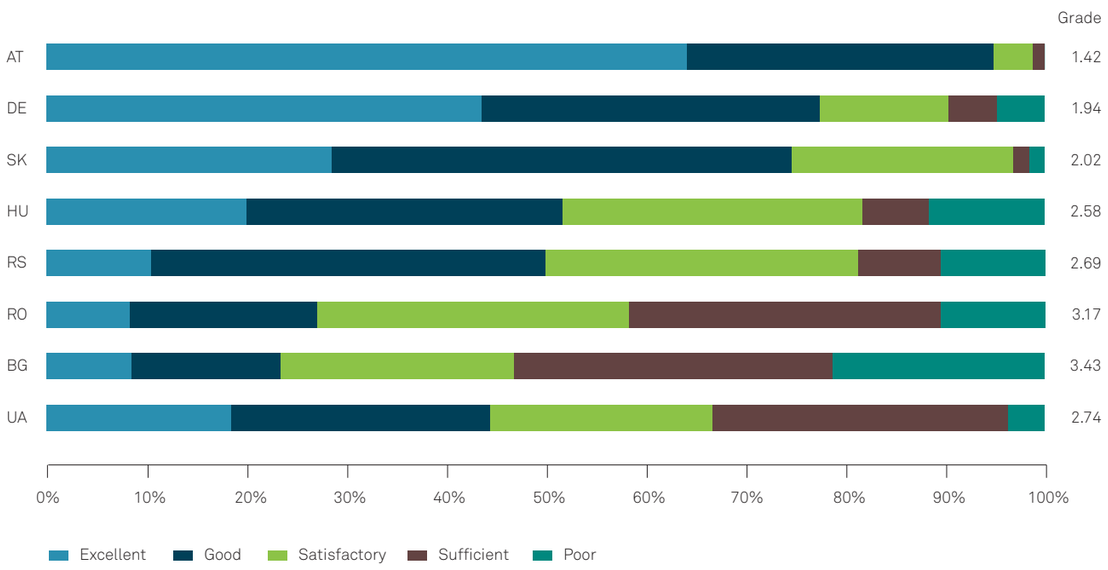
In 2018, the quality of maintenance of the Austrian section of the Danube was rated with an average grade of 1.42. This result was arrived at by using a grading system whereby 1 is the best and 5 is the worst. Despite historic low water levels in the second half of 2018, customer satisfaction with the infrastructure increased slightly compared to 2017 (rating 1.46). From the waterway users' point of view, viadonau is, as in 2017, the top-rated waterway infrastructure operator of all of the ten Danube riparian states. The chart on the opposite side illustrates the detailed results of the current customer survey.

From viadonau's point of view, the excellent results that were once again achieved in Austria can be attributed to continuous maintenance dredging work, along with the hydraulic engineering improvements made in recent years. viadonau pursues a proactive maintenance philosophy: Aggradation at crucial shallow sections of the river is removed by dredging before the start of any potential low water period. This ensures that navigation has the required minimum loading depth of 2.50 metres, even in low water periods.

viadonau has been using the comprehensive WAMS (Waterway Asset Management System) since 2015 to facilitate the efficient and effective planning and implementation of maintenance measures in the Danube's fairway. This operating system has been developed over a period of several years in cooperation with the Technical University of Vienna. With digital support, viadonau will continue to pursue this course of proactive maintenance in combination with hydraulic engineering measures, thereby also ensuring future high levels of customer satisfaction with the waterway infrastructure on the Austrian section of the Danube.

FIGURES DATA FACTS

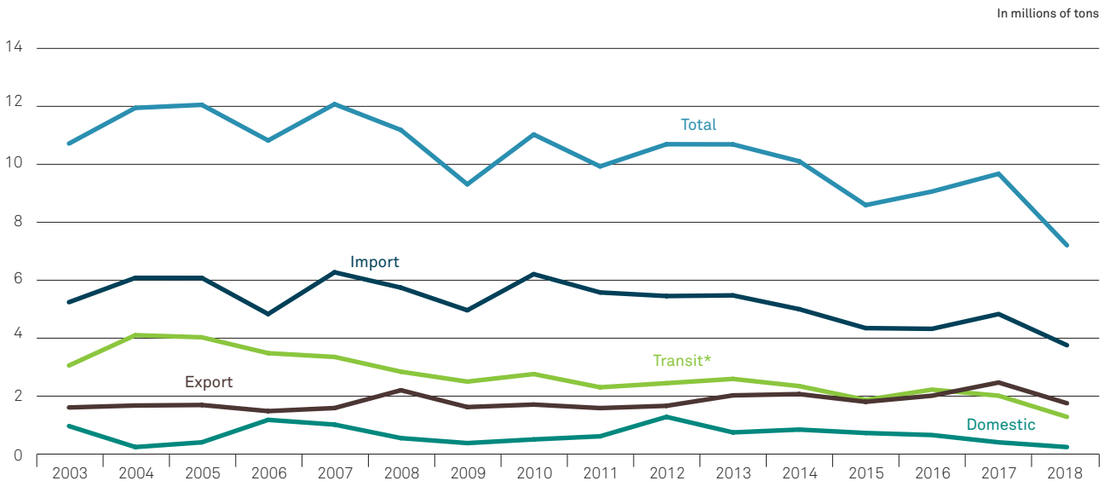
Waterway infrastructure quality in the Danube countries



Source: viadonau

FIGURES DATA FACTS

Freight traffic on the Austrian Danube 2003–2018



Transport volumes in tons	Import	Export	Transit*	Domestic	Total
2018	3,793,364	1,776,694	1,355,563	276,747	7,202,368
2017	4,822,231	2,380,773	2,027,367	389,148	9,619,520
2016	4,299,854	1,975,592	2,187,190	608,842	9,071,478
2015	4,325,020	1,763,975	1,830,024	680,335	8,599,354
2014	4,982,130	2,031,587	2,309,212	798,797	10,121,726

* Due to a lack of statutory resources, there are no complete records for transit data for the years 2004 and 2005. Since 2005 figures have been extrapolated by Statistics Austria.

Source: Statistics Austria, adapted by viadonau

TRANSPORT VOLUMES

Massive decline in transport volume
Low water levels caused severe difficulties

In 2018, barely more than 7.2 million tons of goods were transported on the Austrian section of the Danube. The exceptional dry spell and the associated low water levels in the second half of the year led to a massive decline in the volume of goods transported by 25.1% or 2.4 million tons.

The impact of the low water level is also evident when looking at the results over the course of the year. For example, the first quarter of 2018 still saw a marked increase in transport volumes of 54.1% or 0.9 million tons compared with the same quarter of the previous year. For the following three quarters, however, only decreases were reported. In addition to the low water level, a two-week closure caused by an accident on the Bavarian Danube led to severe obstructions of shipping traffic on the westbound route in July.

The total transport performance (the product of transport volume and distance travelled) within the Austrian federal territory fell by 26.4% to just under 1.5 billion ton-kilometres. The total transport capacity, both within and outside of Austria, fell by 28.4% to just under 7 billion ton-kilometres. The number of trips made by loaded vessels on the Austrian section of the Danube declined by 14.7% (from 8,932 to 7,622).

In percentage terms, the largest decline in transport volume on the Austrian section of the Danube occurred in transit (–33.1% or about 671,800 tons). In terms of volume, imports recorded the sharpest decline in the volume of goods transported – by 21.3% or roughly 1.0 million tons to 3.8 million tons. Cross-border freight traffic (the sum of exports, imports and transit) contracted by 25.0% or slightly less than 2.3 million tons. In total, only just over 6.9 million tons were transported across borders.

Exports on the Danube waterway also fell in 2018 by 25.4%, or approximately 604,000 tons. Domestic traffic accounted for the smallest share of the total transport volume. It decreased by 28.9% or just over 112,400 tons.

- Transport volume down by a quarter in 2018
- The westbound route in particular was strongly affected by the low water level
- Declines in all transport sectors

PORT TRANSHIPMENT

Low water has a noticeable impact
Decline in waterside transhipment

- Low water in the last two quarters resulted in a massive decline in the waterside transhipment volume against 2017
- With around 2.6 million tons, the voestalpine industrial port remained the most significant port on the Austrian Danube

The year 2018 was impacted by low water in the Danube over the course of several months. The resulting reduction in transhipment volume was noticeable at all Austrian Danube ports and transhipment sites.

A total of 6.1 million tons were handled in 2018, which corresponds to a decrease of 23.3% or 1.9 million tons compared to 2017. Regarding the individual ports, the decline in transhipment volumes ranged from –7.7% to –35.3%.

As in the previous year, voestalpine's industrial port in Linz recorded the highest waterside transhipment volume of all Austrian Danube ports with a total volume of around 2.6 million tons. In total, around 42.6% of the total transhipment volume in Austria was therefore handled at this port. The difficult conditions during the year under review led to a decrease by approximately 1.0 million tons.

With 18.0% of the total volume, the other private ports and transhipment sites (Aschach, the heavy-cargo port at Linz, Pöchlarn, Pischelsdorf, Korneuburg and Bad Deutsch Altenburg) rank second among the Austrian ports and transhipment sites. In total, 1.1 million tons were handled waterside, which corresponds to a decline of approximately 0.3 million tons against the previous year.

The Port of Vienna with the associated ports of Freudenau, Lobau and Albern along with the transhipment sites Lagerhaus and Zwischenbrücken increased its share in the total Austrian transhipment volume. In 2018, waterside transhipment amounted to more than 1.0 million tons, which corresponds to 17.0% of the total volume. In 2017, this figure had been at 14.1%. At 7.7%, the Port of Vienna recorded the smallest decline in transhipment volume in Austria.

At the ports of Linz AG (industrial port and oil port), the cargo handling volumes declined by 15.3% to approximately 540,000 tons during the year under review. Compared to the previous year, it stands out that the two Linz AG ports handled more goods on the waterside than the port of Enns, which recorded a total volume of around 480,000 tons in 2018. The latter recorded a 28.3% reduction in waterside transhipment volumes.

The Port of Krems had to take the biggest percental decline in waterside transhipment. With 347,882 tons of goods handled waterside, the share of the total cargo handling volume decreased by 35.3% to 5.7%.

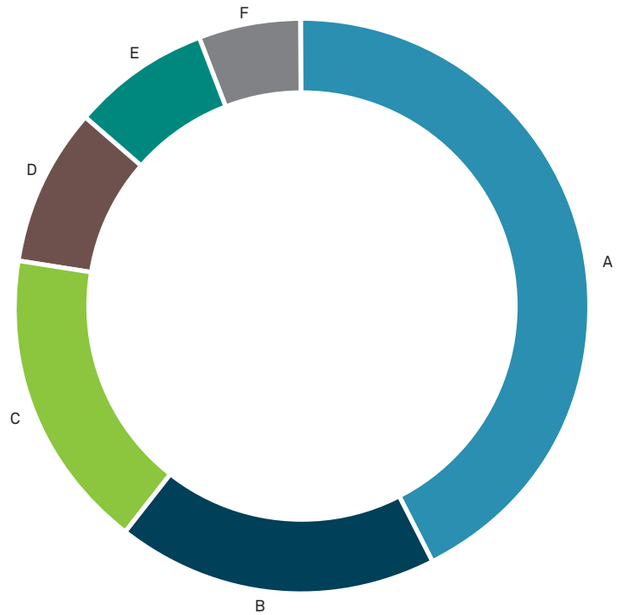
FIGURES DATA FACTS

Waterside transhipment at Austrian Danube ports and transhipment sites 2018

F
Krems
5.7%
347,882 tons
(–35.3%)

E
Enns
7.9%
483,340 tons
(–28.3%)

D
Linz AG[4]
8.8%
535,947 tons
(–15.3%)



A
Linz voestalpine[1]
42.6%
2,612,851 tons
(–27.3%)

B
Others[2]
18.0%
1,101,422 tons
(–22.0%)

C
Port of Vienna[3]
17.0%
1,042,111 tons
(–7.7%)

[1] Including waterside transhipment at Industrie Logistik Linz GmbH.
[2] Other ports and transhipment sites include: Aschach, Schwerlasthafen Linz, Pöchlarn, Pischelsdorf, Korneuburg, Bad Deutsch Altenburg.
[3] The three ports of Freudenau, Albern and Lobau (oil port) and the two transhipment sites Lagerhaus and Zwischenbrücken have been grouped together to compile the total turnover figures for the Port of Vienna.
[4] Data from both the commercial port and the oil port in Linz have been grouped together to compile the total turnover figures for the Port of Linz.

Source: Statistics Austria, adapted by viadonau

FIGURES DATA FACTS

Transport volumes by commodity groups on the Austrian Danube 2018

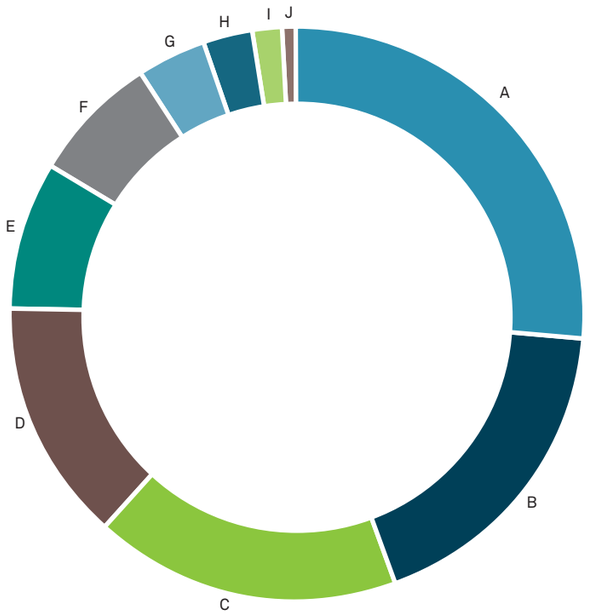
J
Chemical products
0.4%

I
Solid fuels
1.4%

H
Machinery, vehicles, and other articles
2.8%

G
Foodstuffs and animal fodder
3.8%

F
Fertilisers
7.3%



A
Ores and metal waste
26.7%

B
Petroleum products
18.0%

C
Agricultural and forestry products
17.3%

D
Metal products
14.0%

E
Crude and manufactured minerals
8.3%

Goods classification according to NST/R*	Domestic	Import	Export	Transit	Total 2018	Change
Agricultural and forestry products	3,495	583,645	79,723	578,281	1,245,144	–25.4%
Foodstuffs and animal fodder	1,988	150,884	43,324	76,505	272,701	–33.1%
Solid fuels	424	80,466	–	23,845	104,735	–63.3%
Petroleum products	188,877	563,538	537,131	10,365	1,299,911	–5.0%
Ores and metal waste	–	1,912,590	7,943	–	1,920,533	–25.5%
Metal products	1,686	212,469	551,733	243,093	1,008,981	–18.4%
Crude and manufactured minerals, building materials	77,262	224,403	204,313	88,267	594,245	–31.4%
Fertilisers	2,995	50,717	327,983	143,144	524,839	–40.8%
Chemical products	–	0	–	26,354	26,354	–39.9%
Machinery, vehicles and other articles	20	14,652	24,543	165,710	204,925	–25.9%
Total	**276,747**	**3,793,364**	**1,776,693**	**1,355,564**	7,202,368	**–25.1%**

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

Source: Statistics Austria, adapted by viadonau

COMMODITY GROUPS

Ores and metal waste strongest group
Petroleum products defy low water

- Declines in transport volumes across all commodity groups due to low water levels
- Petroleum products register smallest decreases

In 2018, ores and metal waste remained the largest commodity group with just under 1.9 million tons. Compared to the previous year, the transport volume within the product group dropped by 25.5% due to low water levels.

With a 5.0% decline in transport volumes, petroleum products showed a relatively high resilience under these difficult conditions. In terms of export volume, this product group even recorded an increase of 64,600 tons, an increase by 13.7% over the previous year. Overall, the group of petroleum products came second in terms of percentage share.

Agricultural and forestry products were the third-strongest commodity group in terms of transport volume, accounting for 17.3% of the total volume as in the previous year. A total of around 1.2 million tons were shipped on the Austrian Danube within this product group. Compared with the previous year, the volume of agricultural and forestry products transported declined by 25.4% or 423,005 tons.

Imports of metal products increased by 15,203 tons compared with the previous year, which corresponds to a change of 7.7%. Here too, however, the total volume of goods transported fell by 18.4% to just over 1 million tons. In terms of percentage, metal products came in fourth.

Domestic transport of crude and manufactured minerals suffered a sharp decline. The additional losses in imports, exports and transit led to an overall decrease in transport volumes of 31.4%.

Declines in transport volumes against the previous year were also observed for foodstuffs and animal fodder as well as machinery, vehicles and other articles. These, too, were attributable to the difficult overall conditions. There was a slight increase in domestic shipments of fertilisers. This was offset, however, by a decline in imports, exports and transit traffic.
Solid fuels suffered the strongest decline in freight transport. Overall, the decrease in the transport volume amounted to 63.3%.

In 2018, 26,354 tons of chemical products were transported exclusively in transit. In terms of volume, they therefore continue to represent the smallest group of goods transported on the Austrian Danube.

PASSENGER TRANSPORT

Number of passengers slightly declining
River cruises continue to boom

- 3.3% more passengers on river cruises
- Six new cruise ships in operation on the Danube
- Liner and non-scheduled services declining

For the first time in four years, passenger transport on the Austrian Danube section recorded a decline in 2018. A total of approximately 1,260,000 passengers were transported, representing a decrease of 0.4% against 2017.

The number of river cruises continued to rise in 2018, exceeding last year's record with 465,000 passengers transported (+3.3 % against 2017). A total of six newly constructed vessels were brought into service on the Austrian section of the Danube, thereby increasing the number of operational cabin vessels to 182 (+4.6%). In total, 5,197 journeys (+4.4%) were completed. Due to the continuing growth of the existing fleet, the capacity for river cruises increased to 37,000 passengers (+7.6 %), which corresponds to an average of 203 passenger places per ship.

In 2018, liner services carried approximately 700,000 people (–0.7%). DDSG Blue Danube Schiffahrt GmbH recorded a total of 272,300 passengers (+9.1%) transported in the Wachau and Vienna. A total of 147,777 passengers (±0.0%) were transported between Vienna and Bratislava on the two Twin City Liners. 41,338 passengers (–18.8%) took advantage of the services offered by Donau-Schifffahrts-Gesellschaft mbH (formerly known as Donau Touristik). The Slovakian hydrofoils operating between Vienna and Bratislava recorded the largest decrease due to the low water level, carrying only 3,627 passengers (–80.4%) in 2018.

Non-scheduled services carried approximately 95,000 passengers (–13.6 %) in 2018. DDSG Blue Danube Schiffahrt GmbH carried 46,600 passengers (–19.9 %) on theme, special and charter cruises, while MS Kaiserin Elisabeth (owned by the Donau-Schiffahrts-Gesellschaft mbh) recorded 10,680 (+8.0 %) passengers on non-scheduled trips. MS Donaunixe and MS Maria, owned by Donauschiffahrt Ardagger GmbH, recorded approximately 5,543 passengers (–6.6%).

Passenger traffic volumes for companies which carried less than 5,000 passengers in 2018 are not reported separately here. There are no figures available for this reporting period for other scheduled and non-scheduled services operated on the Austrian section of the Danube.

FIGURES DATA FACTS

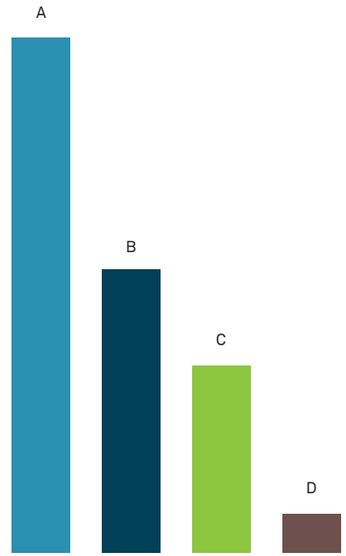
Passengers on the Austrian Danube 2018[1]

A
Total
1,260,000

B
Liner services
700,000

C
River cruises
465,000

D
Non-scheduled services
95,000



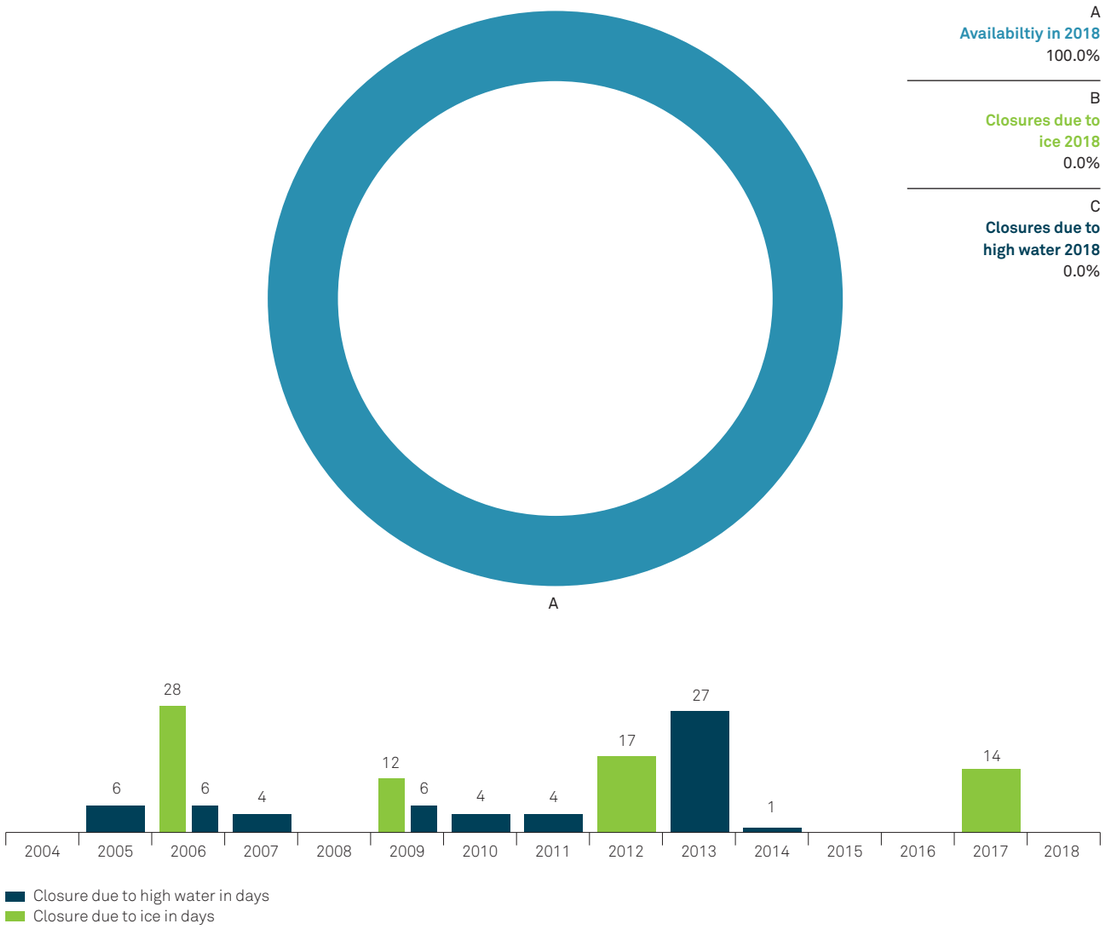
Dockings and passengers at passenger ports in Vienna[2]	Dockings ships	% to previous year	Passengers processed	% to previous year
2018	7,606	+1.6	709,185	+2.1
2017	7,484	+2.0	694,848	+3.9
2016	7,337	+7.8	668,805	+6.6
2015	6,805	–1.6	627,194	+4.6

1 Due to the fact that passenger traffic on the Danube ceased to be statistically compiled in Austria in 2003 (due to a change in legislative 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.
2 Landing stages at Handelskai, Danube Canal and Nussdorf, including cabin vessels and the Twin City Liners.

Sources: 1. Wiener Bootstaxi, Brigitte Wilhelm, Central Danube Region Marketing & Development GmbH, DDSG Blue Danube Schiffahrt GmbH, Donauschiffahrt Ardagger GmbH, Donauschifffahrt Wurm & Noé GmbH & Co. OHG, DSGL – Donau-Schifffahrts-Gesellschaft mbH, Event-Schifffahrt Haider e. U., Genuss-Schiffahrt GmbH/Donauparadies Gierlinger, MAHART PassNave Ltd., Nostalgie Tours Video & Consulting GesmbH, ÖGEG Österreichische Gesellschaft für Eisenbahngeschichte GmbH, Schiffahrtsunternehmen Wilhelm Stift GmbH, Slovak Shipping and Ports – Passenger Shipping JSC (SPaP-LOD, a. s.), viadonau, WGD Donau Oberösterreich Tourismus GmbH, Wiener Donauraum Länden und Ufer Betriebs- und Entwicklungs GmbH, Wikingerabenteuer – Koblmüller Alois

FIGURES DATA FACTS

Navigational closures due to high water and ice 2004 to 2018



Source: Supreme Navigation Authority at the Federal Ministry for Transport, Innovation and Technology; viadonau

AVAILABILITY OF WATERWAY

Danube navigable all year round in 2018
No closures due to high water or ice

Over a 15-year annual average from 2004 to 2018, the availability of the Austrian section of the Danube waterway was 97.7%, or 357 days per year. During this period, four closures due to ice were recorded with an average duration of just under 18 days, while the waterway had to be closed in eight of these years due to floods with an average duration of around seven days.

In 2018, the Austrian section of the Danube was not subject to official closures due to ice or high water. The availability of the waterway in 2018 was therefore 365 days or 100% of the year. In early January and around Christmas, the water levels at the Wildungsmauer gauge only reached the highest navigable water level for a few hours at a time, so that no official high-water closures had to be imposed. Even the extreme low water period in the second half of 2018 did not result in navigation being closed, so that the waterway was available all year round. However, the reduced loading depths of the cargo vessels due to the low water levels resulted in massive economic losses.

Weather-related closures can be implemented by the relevant authorities on the Austrian section of the Danube waterway in extreme situations, such as high water or ice. While closures due to ice are normally confined to the winter months of January and February, high waters and flooding generally tend to occur in the spring or summer months.

Apart from closures due to high water and ice, official closures of the waterway can also occur due to traffic accidents, water pollution, construction work or events. In 2018, such closures had a total duration of 20.6 hours and had to be arranged on a total of 13 days of the year. The average duration of a closure was just under 1.5 hours. Total lock closures (the parallel closure of both lock chambers) included in the above numbers accounted for a duration of 11.0 hours and affected four of the ten lock facilities on the Austrian Danube section.

“The ‘low water year’ 2018 was primarily a challenge for freight navigation. The fact that the Austrian Danube was still navigable all year round is thanks to the experience and know-how of our waterway management. With need-based dredgings – pro-actively and precisely – we kept the traffic flowing.”

CHRISTIAN LAG
Captain Waterway Management

LOAD FACTOR

Unfavourable fairway conditions
Load factor at only 56%

- Average daily mean value of the water level at the Wildungsmauer gauge 27 cm below that of the previous year
- 7,622 loaded vessel journeys
- Significant decline in loaded vessel journeys and load factor in the second half

Due to an unusually long and intensive drought period, the year 2018 brought unfavourable fairway conditions. At 236 cm, the average daily mean value of the Wildungsmauer gauge in 2018 was 27 cm lower than in the previous year. In addition, 92 days with water levels below the low navigable water level (LNWL) were counted in the second half of the year.

These hydrological conditions had a noticeable impact on both the number of loaded vessel journeys and the average load factor of the vessels. As a result, only 7,622 loaded vessel journeys were registered on the Austrian Danube in 2018, a decrease of 14.7% compared to the previous year. At the same time, an average load factor of the vessels of only 55.5% was achieved in 2018, compared with 61.4% in 2017.

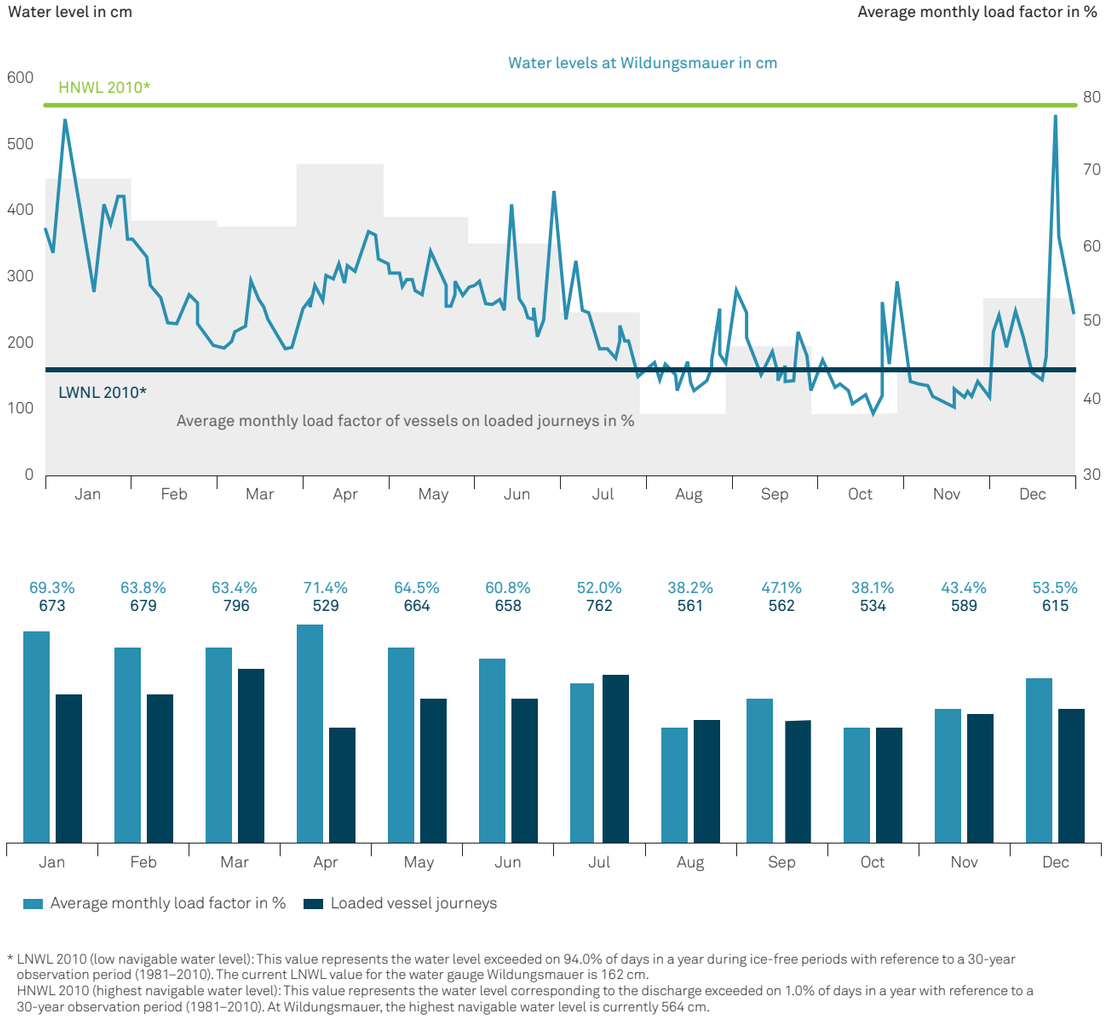
The relatively favourable fairway conditions in the first half of the year contributed to the fact that relatively high load factors of over 60% were achieved throughout the period from January to June. The sharp decline in water levels from July onwards, which remained at a very low level until the end of November, led to a reduction in the number of loaded vessels on the one hand and to a significant reduction in the average load factor to 38% (August and October) on the other.

The months of June and July offer a particularly clear illustration of the link between fairway conditions and load factors: The volume of goods carried in the two months was approximately the same (750,661 and 747,754 tons respectively). Due to favourable fairway conditions – the average daily mean value of the water level at Wildungsmauer gauge was 282 cm – only 658 journeys were required in June with an average load factor of 60.8%. In July, however, the transport of almost the same volume already required 762 loaded trips, since an average daily mean value of only 220 cm at the Wildungsmauer gauge meant that an average load factor of only 52.0% could be achieved.

The figures for the month of April stand out. While on the one hand the lowest monthly figure was recorded with only 529 loaded vessel journeys, the load factor of 71.4% represented the peak for 2018. The high load factor in April was due to the relatively favourable fairway conditions. The sharp decline in the number of loaded trips, on the other hand, is due to the lock overhaul carried out from 10 to 30 April 2018 along the Bavarian Danube, the Main-Danube Canal and the Main, resulting in a closure within the section of the Rhine-Main-Danube axis west of Austria for almost three weeks.

FIGURES DATA FACTS

Water levels and resulting load factors of cargo vessels in 2018 using the Wildungsmauer gauge of reference

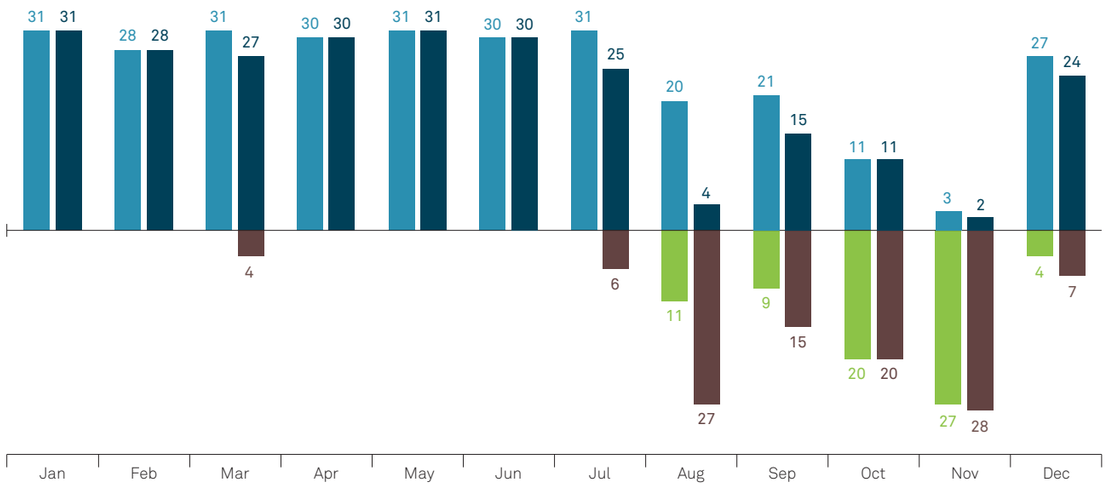


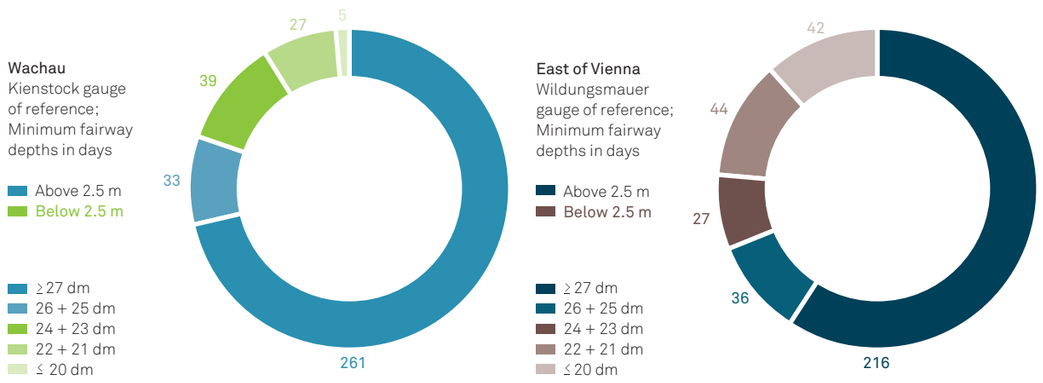
* LNWL 2010 (low navigable water level): This value represents the water level exceeded on 94.0% of days in a year during ice-free periods with reference to a 30-year observation period (1981–2010). The current LNWL value for the water gauge Wildungsmauer is 162 cm.
HNWL 2010 (highest navigable water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

Source: Statistics Austria, adapted by viadonau

FIGURES DATA FACTS

Minimum continuously* available fairway depths in days on the free-flowing stretches of the Danube 2018





* 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

2.5 m only on 252 days
Record low water level as of August

From a hydrological point of view, the Danube had a good water level in the first half of 2018, whereas the drought in summer and autumn greatly reduced the discharge over almost the entire second half of the year. In a statistically "average" year, there are 22 days with water levels below the regulatory low navigable water level (LNWL); due to the record low water level in the second half of 2018, the water level in the free-flowing section east of Vienna was below the defined low navigable water level (Wildungsmauer gauge) on 92 days; in the Wachau 58 such days were recorded (Kienstock gauge). Therefore, low water prevailed on about 25% of the days in 2018. The last similarly poor low water year was 15 years ago (2003).

With the exception of ten days, water depths of more than 2.5 m in the fairway's deep channel were continuously available in the two free-flowing stretches of the Austrian Danube (Wachau and east of Vienna) during the first half of 2018 (January to July). With the onset of the extreme dry period in summer, a pronounced low-water period with historically low levels occurred between mid-July and early December. In two thirds of the month of October and almost throughout all of November, fairway depths of less than 2.5 m were available for navigation in the two free-flowing sections.

Overall, the Wachau recorded the availability of a minimum depth of 2.5 metres in the deep channel on 294 days or 80.6% of the year (–13.1% compared to 2017). In the free-flowing section east of Vienna, a minimum navigable depth of 2.5 metres was available on only 252 days or 69.0% of the year (–17.8%).

Despite the exceptionally low water levels in the second half of the year, navigation on the Austrian Danube never came to a complete standstill in 2018. In order to remove aggradation from the shallow sections of the river proactively, eight maintenance dredgings were carried out during the year, resulting in the removal of approximately 151,000 cubic metres of material. Almost all dredging operations (approximately 99%) had to be carried out on the section east of Vienna.

The lowest available navigable water depths for the two free-flowing stretches were calculated based on all hydrographical surveys of the riverbed published by viadonau in 2018. 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 four-unit pushed convoy travelling downstream without encountering other vessels.

- Water depths of 2.5 m in the deep channel east of Vienna available on 252 days or 69.0% of the year.
- Availability of 2.5 m in the Wachau available on 294 days or 80.6% of the year.

TRANSPORT DENSITY

Upstream transports most important
Highest frequency at border AT/SK

- 4.9 million tons of goods upstream
- Import dominates with 3.8 million tons
- With 3.2 million tons of transhipment, the port location Linz represents a noticeable break in the transport density

A total of 7.2 million tons of goods were transported along the approximately 351 kilometre long section of the Austrian Danube in 2018.

The transport density illustrates that the majority of the transported volumes (4.9 million tons) were shipped upstream. The dominant position of imports is also evident, exceeding exports as well as transit and domestic transports by a clear margin at 3.8 million tons.

The port location Linz continues to represent a noticeable break in the transport density. A total of 3.2 million tons were handled in the Linz ports in 2018, with the industrial port of the voestalpine AG making the most significant contribution at 2.6 million tons.

The characteristic composition of the transport density is primarily due to the very high volume of 1.7 million tons imported by voestalpine AG from the eastern Danube riparian states and the approximately 1.1 million tons of goods transported from east to west via the Austrian Danube in transit traffic.

Overall, however, exports exceeded transit traffic by 31.1% with a volume of 1.8 million tons. Here, too, at 1.2 million tons, the largest quantities were shipped to ports of destination east of Austria.

The important position of Eastern traffic is also illustrated by the comparison between the volume of goods shipped via the Austrian-Slovak border and the volume of goods shipped via the Austrian-German border: At 5.7 million tons, the volume shipped across the eastern border exceeded the volume shipped across the border with Germany by 120.2%.

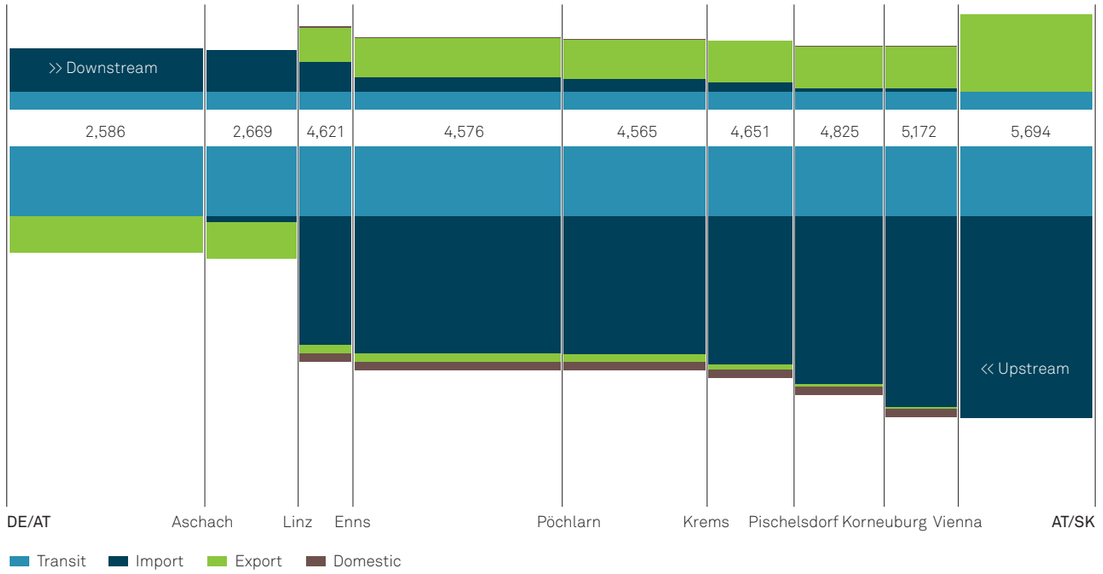
Accordingly, in 2018, the Danube section between Vienna and the Austrian-Slovak border was again the section with the highest volume of goods shipped on the Austrian Danube, while the section between the German-Austrian border and Aschach once again recorded the lowest transport volumes.

Finally, transport density illustrates the subordinate importance of domestic traffic within Austria.

Calculated on a daily basis, an average of 19,347 tons of goods were carried on the Austrian Danube, corresponding to the load carried by 774 lorries (25 net tons per vehicle) or 484 railway wagons (40 net tons per wagon).

FIGURES DATA FACTS

Density of freight traffic on the Austrian Danube 2018

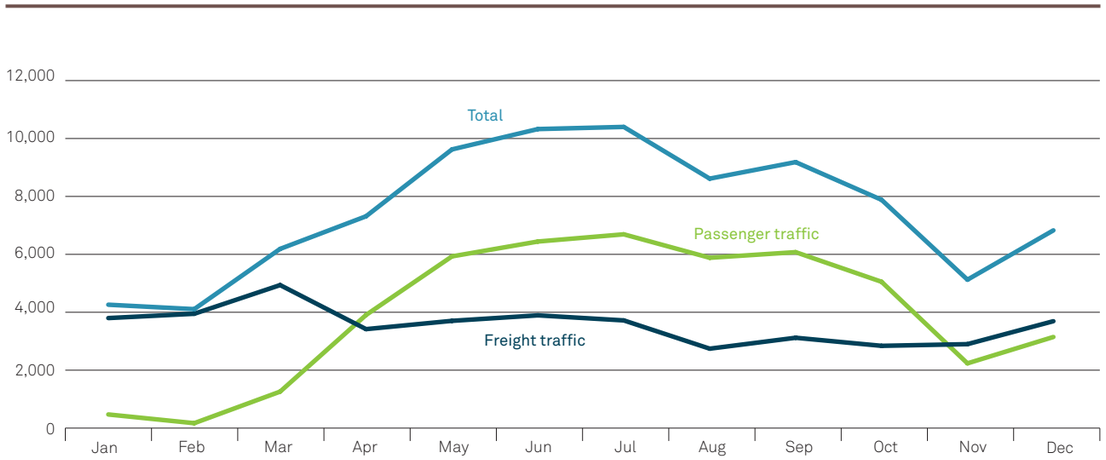


Section	Length	Import	Import	Export	Export	Domestic	Domestic	Transit	Transit	Total	Total	In sum
in 1,000 tons	in km	upstr.	d'str.	upstr.	d'str.	upstr.	d'str.	upstr.	d'str.	upstr.	d'str.	
Border DE/AT–Aschach	63.21	0	669	562	0	0	0	1,079	276	1,641	945	**2,586**
Aschach–Linz	31.30	108	644	562	0	0	0	1,079	276	1,749	920	**2,669**
Linz–Enns	16.87	2,011	464	133	526	123	9	1,079	276	3,346	1,275	**4,621**
Enns–Pöchlarn	67.63	2,138	219	123	616	123	2	1,079	276	3,463	1,113	**4,576**
Pöchlarn–Krems	46.20	2,149	197	123	616	123	2	1,079	276	3,474	1,091	**4,565**
Krems–Pischelsdorf	26.30	2,303	147	81	639	123	3	1,079	276	3,586	1,065	**4,651**
Pischelsdorf–Korneuburg	29.60	2,611	46	33	656	123	1	1,079	276	3,846	979	**4,825**
Korneuburg–Vienna	23.64	2,963	46	24	660	123	1	1,079	276	4,189	983	**5,172**
Vienna–Border AT/SK	45.76	3,124	0	0	1,215	0	0	1,079	276	4,203	1,491	**5,694**

Source: Statistics Austria, adapted by viadonau

FIGURES DATA FACTS

Vessel units in freight and passenger transport locked through Austrian Danube locks in 2018*



	Freight traffic	% to previous year	Passenger traffic	% to previous year	Total	% to previous year
2018	42,597	–16.7	47,147	+7.1	89,744	–5.7
2017	51,164	–0.9	44,020	+5.6	**95,184**	+2.0
2016	51,603	+1.6	41,695	+6.0	**93,298**	+3.5
2015	50,781	–18.7	39,347	+1.6	**90,128**	–10.9
2014	62,449	–1.1	38,716	+19.8	**101,165**	+6.0

* 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). Passenger vessels include day-trip vessels and cabin vessels.

Source: viadonau

LOCKED–THROUGH VESSEL UNITS

90,000 units locked through
Decrease in freight transport

A total of 89,744 passenger and cargo vessel units, travelling both upstream and downstream, were locked through the nine Austrian lock facilities in 2018 (excluding the Jochenstein power station on the Austrian-German border). Included in this number were 26,919 motor cargo vessels and motor tankers (–15.9% compared to 2017), 15,678 pushers (–18.2%) and 47,147 passenger vessels (+7.1%). A total of 34,851 cargo and tank lighters or barges (–21.4%) were also locked through as part of coupled and pushed convoys. Taking all types of vessels and convoys into consideration, the total number of locked-through vessel units in freight and passenger transport showed a decline of 5.7% against 2017.

Freight transport on the Austrian Danube saw a significant decrease in locked-through vessel units (–16.7% or 8,567 units). In passenger transport, on the other hand, a substantial increase was recorded (+7.1% or 3,127 vessel units). In 2018, freight transport had a share of 47.5% of total shipping volumes (–6.3%) with passenger traffic accounting for the remaining 52.5% (+6.3%).

In relation to 2018 as a whole, the average number of vessels passing through an individual Austrian Danube lock facility amounted to 9,972 convoys and individual vessels (–604 vessel units). This is equivalent to 831 (–50) vessel movements per month and an average of 28 locked-through vessels per day. As in previous years, the highest volume of vessels was once again recorded at the Freudenau lock in Vienna with 11,972 vessels and convoys passing through the lock (–6.8%), followed by the Greifenstein lock with 10,729 units. Aschach lock recorded the smallest number of locked-through vessels with 8,551 units.

In addition to commercial freight and passenger vessel units, 11,071 (+7.8%) small sports and leisure crafts also passed through lock facilities on the Austrian Danube in 2018, together with a further 1,697 vessels, which included public authority and rescue crafts.

“Each of thousands of ships that pass the locks every year with passengers from all over the world shows us the significant importance of education and the high sense of responsibility in our job. To be close to the river and in the middle of Danube navigation and to ensure an optimal traffic regulation – these are parts of the most beautiful sites of my profession as a lock supervisor.”

MARKUS SIEGER
Lock Supervision Freudenau

AVAILABILITY OF LOCKS AND WAITING TIMES

99.9% continuous availability
Waiting times for only 6.7% of vessels

- 99.9% continuous availability of the Austrian locks in 2018
- Lock overhauls are carried out during the low-traffic period from November to March in order to avoid waiting times
- 37 minutes average waiting time for 6.7% of the vessels

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 so-called lock overhauls, along with necessary large-scale repairs, accounted for approximately 83% of all closure days of the 18 lock chambers in 2018. The average duration of overhauls carried out in the winter half year 2017/18 and completed by the spring of 2018 was 127 days per chamber.

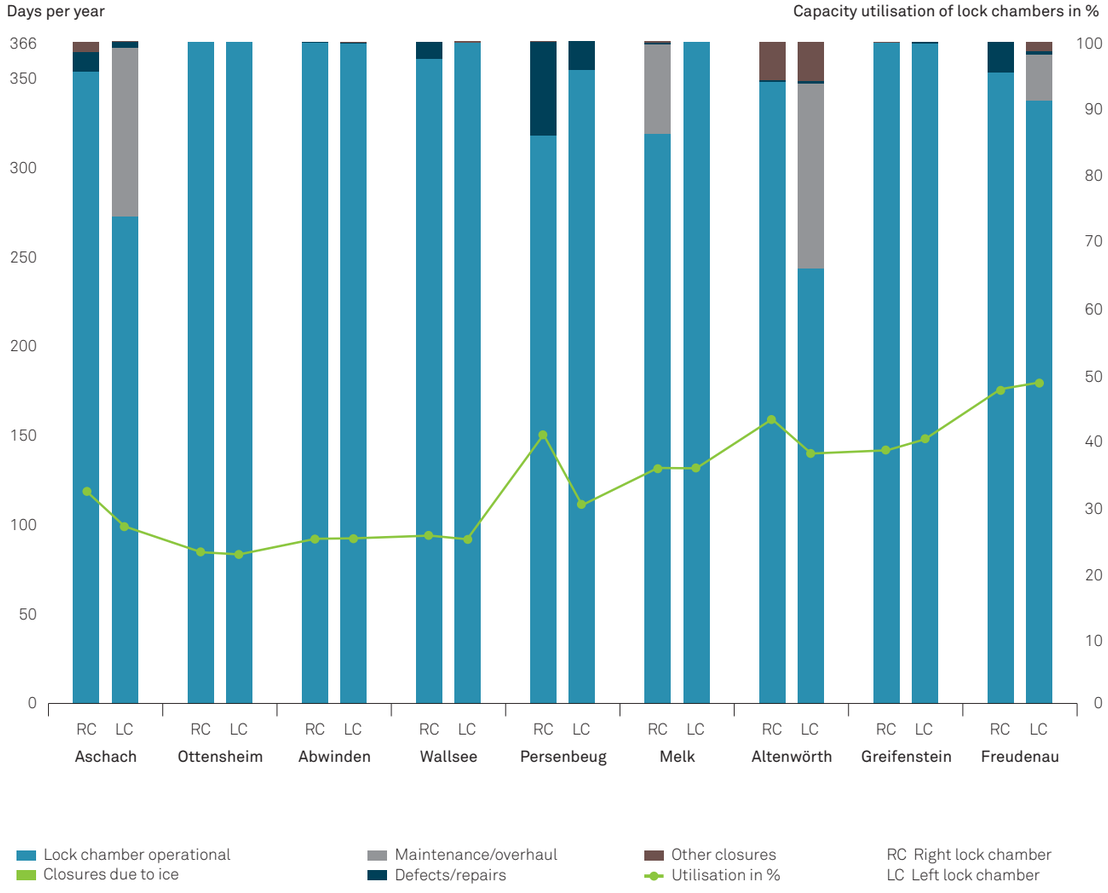
Other reasons for lock closures included periodic repairs caused by technical defects and damage to lock facilities caused by vessels. These accounted for approximately 5% of all closure days. In addition, approximately 12% of closures were attributed to modification or maintenance work, dredging in and around lock facilities and surveying, the majority of which was due to necessary conversion work on the Altenwörth lock. With the exception of a short closure due to ice at the Aschach lock, there were no weather-related locks closures in 2018.

The continuous availability of the 18 lock chambers on the Austrian Danube amounted to almost 365 days (99.9%) in 2018. Complete closures were primarily caused by unforeseen disruptive events at three lock installations as well as a case of water pollution in the vicinity of a lock, resulting in a complete non-availability of about eleven hours.

Lock availability also has an influence on waiting times. On average, 6.7% of all shipping units (commercial freight and passenger vessels) experienced waiting times on the Austrian section of the Danube in 2018. The average waiting time for these vessels amounted to approximately 37 minutes for the year as a whole.

FIGURES DATA FACTS

Availability of Austrian Danube locks 2018



Source: viadonau

FIGURES DATA FACTS

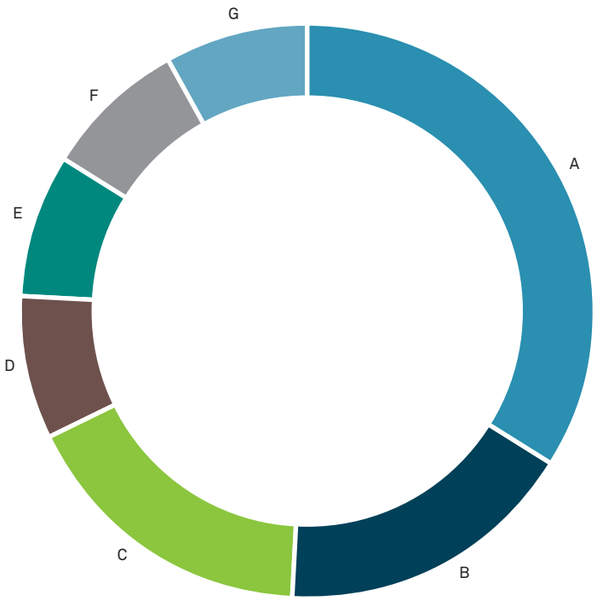
Traffic accidents according to type of damage on the Austrian Danube 2018

G
1 collision with structures (excluding lock facilities)
8 %

F
1 grounding
8%

E
1 bridge strike
8%

D
1 riverbank collision
8%



A
4 collisions with lock facilities
34%

B
2 collisions of ships in service
17%

C
2 collisions of ships in locks
17%

Source: Supreme Navigation Authority in the Federal Ministry of Transport, Innovation and Technology, adapted by viadonau

ACCIDENTS

Strong decrease in traffic accidents
No personal injuries in 2018

Danube navigation has an unbeatable safety and accident record when compared to the land transportation modes of rail and road. A total of 12 accidents involving commercial passenger ships, freight vessels or convoys resulting in damage to property and/or personal injury occurred during the course of 2018 on the Austrian section of the Danube. Six accidents involving cargo vessels were recorded, another six incidents resulted in damage to passenger ships.

When split into accident types, four incidents were vessel collisions. Two cases involved vessels colliding with each other whilst in service and two cases involved vessel collisions within the confines of a lock facility. Another four incidents involved collisions with the lock facilities. There was one incident with a vessel running aground due to navigating outside the fairway, one collision with the river bank and one collision causing damage to a facility. Finally, one vessel was involved in a collision with a bridge.

No personal injuries were recorded for freight and passenger ships on the Austrian section of the Danube in 2018. There were also no incidents of water pollution or load spillages recorded.

The majority of accidents in 2018 occurred within the vicinity of lock facilities (whilst being locked-through or in either the headwater or tailwater area of the lock). In total, six such accidents were registered, including four accidents involving vessels colliding with a lock facility and two incidents involving vessels colliding with each other within the confines of a lock facility. Five accidents occurred on the impounded sections of the Danube, including two ship collisions, one incident with damage to facilities, one collision with a bridge and one collision with the riverbank. One accident due to a vessel running aground occurred on the free-flowing section of the Danube east of Vienna. On the free-flowing section of the river between Melk and Krems (Wachau), there were no incidents in 2018.

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 2018. One involved a collision with the riverbank, the other one a collision of two leisure crafts. Neither incident resulted in injury or death.

- Collisions with lock facilities and ship collisions were the most frequent types of accidents in 2018
- No personal injuries
- Six accidents involving freight vessels and another six accidents involving passenger ships

MODAL SPLIT

Cross-border transport on the rise again
Danube's share of modal split down

- Road transport on the rise
- Danube suffers highest decline in share in western traffic
- Danube continues to be of great importance for eastern traffic

Within the Austrian Danube corridor, approximately 91.5 million tons of freight were transported in 2018, excluding purely domestic traffic. This corresponds to an increase of 3.4 % over 2017.

However, due to the severe low water situation during the second half of 2018, the environmentally-friendly transportation mode Danube was not able to benefit from the continuing increase in transport volume. The Danube's share of the total transport volume across all modes declined from 10 % to 8 %.

The share of rail also declined from 29% in the previous year to 28%. Accordingly, the proportion of road transport by truck increased from 61% to 64%. The unfavourable water conditions in 2018 had a particularly severe impact on the quantities of goods transported by inland waterway vessels across the border with Germany for export and import as well as in transit traffic to the west. Although the volume of exported and imported goods transported across the western border of the Danube corridor increased against 2017 by 1.2% to 42.5 million tons, the share of the Danube as a mode of transport halved to 3.9% in exports and 2.4% in imports.

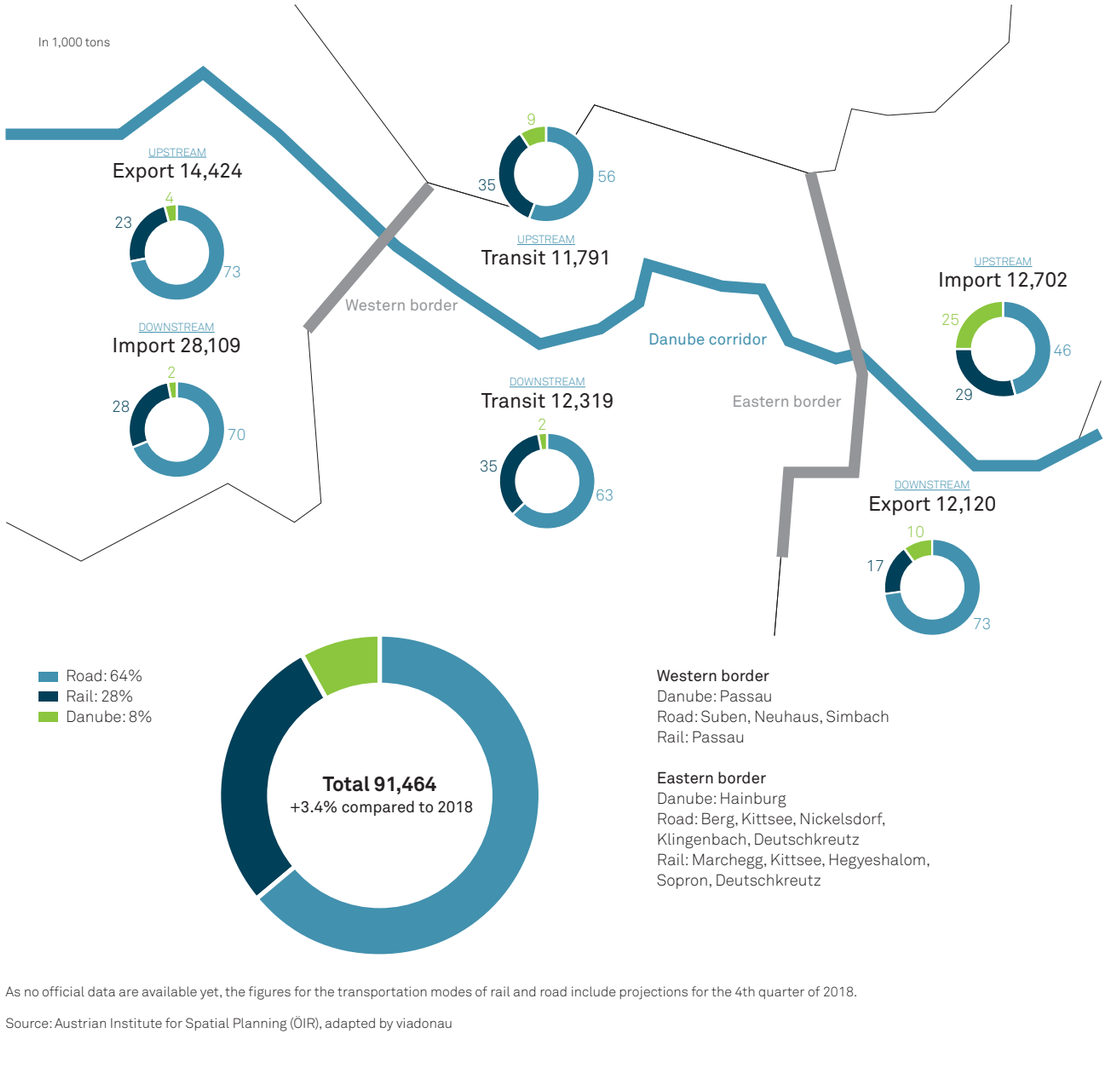
At the same time, the share of goods transported by rail across the western border of the Danube corridor decreased slightly in proportion to the volume of goods transported, so that road transport recorded a significant increase to 73.4% of exports and 69.7% of imports. In upstream transit traffic, shipping also experienced a significant decline from 14.4% to 9.2% of the transport volume.

In 2018, the Danube made the highest contributions to the modal split in exports and imports across the eastern border of the Danube corridor. Despite a declining trend, 10.0% in exports and 24.6% in imports were achieved here, which underlines the unbroken importance of the Danube in eastern traffic.

From a cross-modal perspective, however, the figures in the chart also illustrate that the western border of the Austrian Danube corridor is of greater significance to transport than its eastern border. Whereas in 2018 a total of 66.6 million tons were transported across the western border in export, import and transit traffic, only 48.9 million tons were transported across the eastern border.

FIGURES DATA FACTS

Cross-border freight traffic in the Austrian Danube corridor 2018

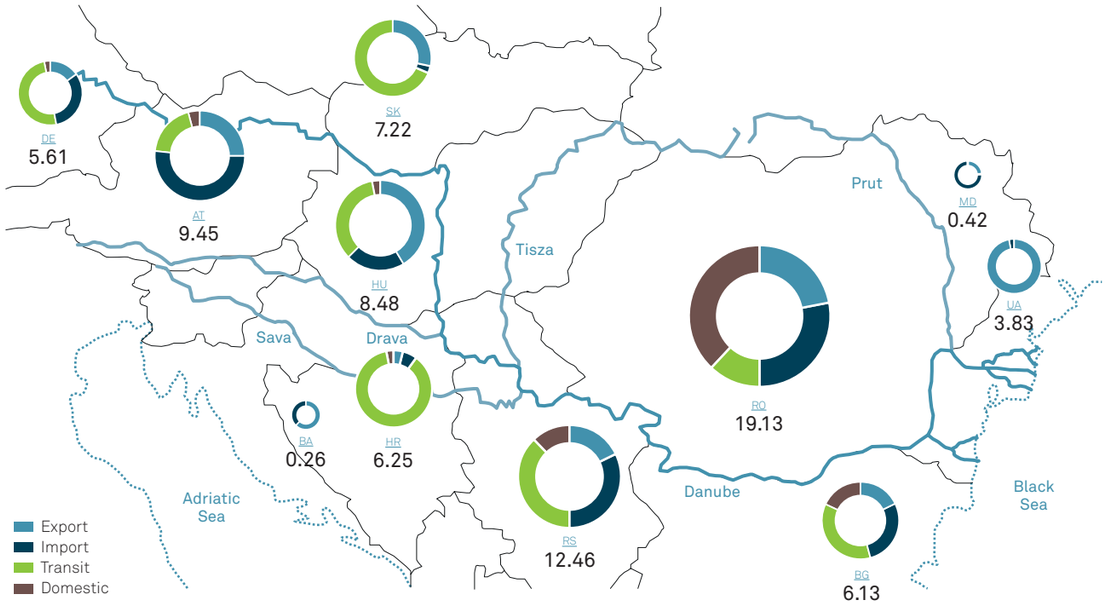


As no official data are available yet, the figures for the transportation modes of rail and road include projections for the 4th quarter of 2018.

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

FIGURES DATA FACTS

Freight transport on the entire Danube 2017



In millions of tons	DE	AT	SK	HU	HR	BA	RS	RO	BG	MD	UA
Export	0.84	2.40	2.09	3.50	0.19	0.17	2.30	4.21	1.11	0.10	3.67
Import	1.81	4.82	0.10	1.81	0.33	0.09	3.96	5.40	1.73	0.32	0.15
Transit	2.78	1.84	5.01	2.92	5.67	0.00	4.76	2.20	2.20	0.00	0.00
Domestic	0.18	0.39	0.02	0.25	0.06	0.00	1.44	7.32	1.09	0.00	0.01
Total	**5.61**	**9.45**	**7.22**	**8.48**	**6.25**	**0.26**	**12.46**	**19.13**	**6.13**	**0.42**	**3.83**

Source: Eurostat, national traffic statistics, viadonau, adapted by viadonau

FREIGHT TRANSPORT ON THE ENTIRE DANUBE 2017

39.3 million tons in 2017
Increase in maritime Danube transport

The most current available figures regarding the volume of freight transport on inland waterways in the Danube region are from the year 2017. This year saw 39.3 million tons of goods transported on the Danube waterway and its tributaries – a slight decrease of 0.8% or approximately 300,000 tons compared to 2016.

In a separate analysis of inland waterway transport on the Danube (including tributaries) and river-sea transport on the maritime Danube route, however, the development of the quantities of goods transported presents itself differently: Cross-border traffic between the Danube countries decreased by 5.6% or almost 2 million tons compared to 2016, while the maritime traffic on the lower Danube recorded a remarkable increase of 40.2% or almost 1.7 million tons – from 4.2 to 5.8 million tons.

The decline in the volume of cross-border traffic between Danube riparian countries compared to 2016 results from an average decrease in the volume of goods transported by inland waterway in the countries of the middle and lower Danube downstream from Hungary by 9.3%. By contrast, the volume of goods transported on the upper Danube and in Hungary increased by an average of 4.6%.

As in previous years, Romania again recorded by far the largest transport volume on the Danube in 2017 with just over 19 million tons, followed by Serbia with 12.5 million tons and Austria with 9.5 million tons.

With 4.2 million tons of goods shipped (+1.9%), Romania was the largest exporter on the Danube in 2017, followed by the Ukraine with 3.7 million tons (–13.0%) and Hungary with 3.5 million tons (+2.6%).

In terms of imports, Romania is also in the lead with 5.4 million tons (–23.8%). In second and third place are Austria (+10.6% or 4.8 million tons) and Serbia (–2.0% or 4.0 million tons).

On the Romanian Danube-Black Sea Canal (including its side channel), a total of 13.8 million tons were transported in 2017 (including river-sea traffic of around 57,000 tons). Compared to 2016, this represents a decrease of 5.4% or around 0.8 million tons of goods transported.

In maritime transport on the Danube via river-sea vessels or sea-going vessels, 4.3 million tons of goods were transported via the Romanian Sulina Canal (+14.4% compared to 2016) and 1.5 million tons via the Ukrainian Kilia-Bystroe arm – a remarkable increase of 362.1% compared to 2016.

- Total transport volumes on the Danube at the level of 2016 (–0.8%)
- Romania was the most important exporter and importer on the waterway
- Approximately 5.8 million tons of goods in maritime transport on the Danube (+40.2% compared to 2016)

FAIRWAY CONDITIONS ALONG THE ENTIRE DANUBE

Unfavourable fairway conditions due to extreme drought

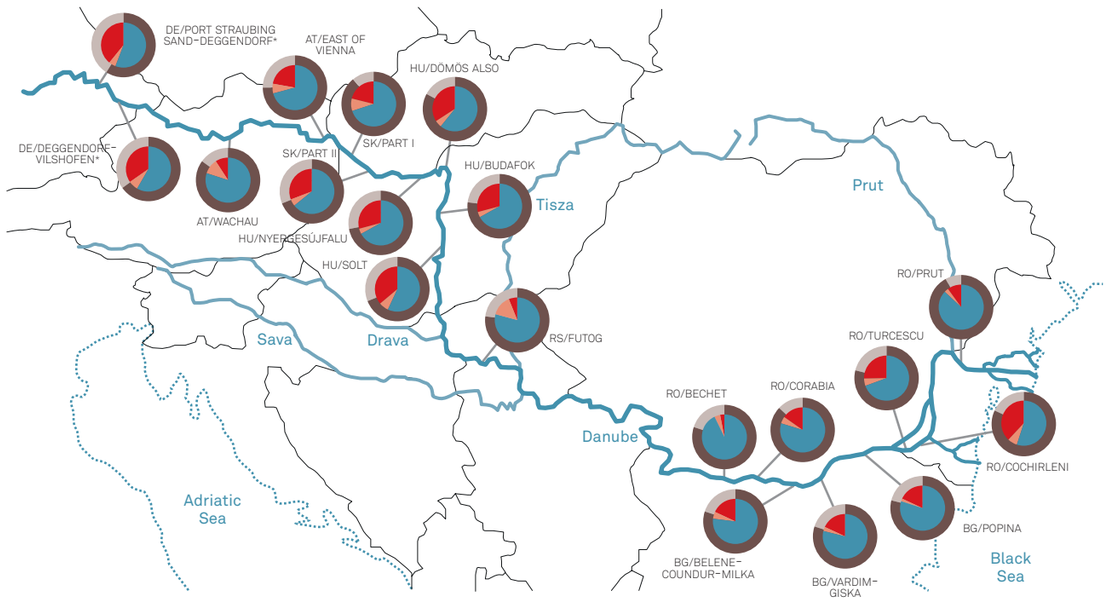
“Together with other Danube riparian states we want to show what the Danube waterway can do beyond national borders. In the framework of projects like FAIRway Danube and Danube STREAM we are working on improvements regarding infrastructure and waterway management along the entire Danube – for a greater waterway in the future European transport network. ”

GUDRUN MAIERBRUGGER
Project Manager Strategy & Action Programmes

Fairway conditions were extremely unfavourable in 2018 along the entire Danube, compared to the previous two years. Due to extreme heat and low rainfall in the second half of 2018, water discharge was significantly below the multi-annual average on the Upper, the Central and the Lower Danube.
From January to July 2018 minimum fairway depths were mostly exceeded along the entire Danube. The water levels remained above Low Navigable Water Level (LNWL) for the first seven months, resulting in fairly good navigation conditions. At the end of July and beginning of August water levels dropped rapidly and remained below LNWL mostly until December. These extreme hydro-meteorological conditions in the second half of the year caused fairway depths far below 2.5 m at most critical sections along the entire Danube.
It is noteworthy that despite these exceptionally unfavourable hydrological circumstances fairway conditions on the Lower Danube were slightly improved, compared to previous years. In Romania and Bulgaria dredging works were carried out in 2018, amongst others in Bechet (RO), Cochirleni (RO), Vardim (BG) and Belene (BG). Without these measures fairway conditions would have been much worse. The most critical location was again Cochirleni (Romania), where the minimum fairway depth of 2.5 m was not achieved from September until December.
The chart provides a status overview of the most important critical locations on the Danube in 2018. 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 (2.0 m on the German stretch of the Danube) 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 2018, this maintenance target was achieved only at some 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.
Many riparian countries have made considerable investments in recent years in order to increase their technical capacities and the efficiency and effectiveness of their maintenance programmes. Most of these investments are co-financed by the EU. The “Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries” and the project FAIRway Danube, both coordinated by viadonau, are crucial elements of the joint effort to achieve optimal fairway conditions along the entire length of the Danube waterway. It is expected that these ongoing initiatives will further improve fairway conditions in the coming years.

FIGURES DATA FACTS

Fairway conditions at critical locations along the Danube 2018



* In the free flowing section between Straubing and Vilshofen a fairway depth of 2.5 m is neither developable nor maintainable. In this section the objective is to maintain the fairway depth of 2 m related to Low Navigable Water Level. Depicted values in Germany therefore refer to 2 m fairway depth.

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 May 2019. 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.

Source: “Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries”, which has been prepared within the framework of the EU Danube Region Strategy (www.danube-navigation.eu) and the FAIRway Danube project. Chart adapted by viadonau.

Germany

Czech Republic

Upper Austria

Lower Austria

Vienna

Burgenland

Slovakia

Styria

Danube

Inn

Große Mühl

Kamp

Traun

Enns

Ybbs

Erlauf

Donau

Traisen

Thaya

Morava

Danube Canal

2,250

2,225

2,200

2,175

2,150

2,125

2,100

2,075

2,050

2,025

2,000

1,975

1,950

1,925

1,900

1,875

Jochenstein
River km 2,203
2 chambers
of 227 × 24 m

Kachlet
River km 2,231
2 chambers
of 226.5 × 24 m

Passau

Aschach
River km 2,163
2 chambers
of 230 × 24 m

Service Centre
Upper Danube Valley

Aschach

**Industrial port
Oil port
voestalpine
Felbermayr**

Linz

Ottensheim
River km 2,147
2 chambers
of 230 × 24 m

Abwinden
River km 2,120
2 chambers
of 230 × 24 m

Enns

Wallsee
River km 2,096
2 chambers
of 230 × 24 m

Grein

Ybbs-Persenbeug
River km 2,060
2 chambers
of 230 × 24 m

Ybbs

Pöchlarn

Melk
River km 2 038
2 chambers
of 230 × 24 m

Kienstock
River km 2,015
LNWL 2010: 164 cm
HNWL 2010: 618 cm

Dürnstein
River km 2,009
LNWL 2010: 258 cm
HNWL 2010: 638 cm

Krems

Service Centre
Wachau

Altenwörth
River km 1,980
2 chambers
of 230 × 24 m

Pischelsdorf

Greifenstein
River km 1,949
2 chambers
of 230 × 24 m

Korneuburg

Nussdorf (Danube Canal)
1 chamber
of 70 × 13 m

Head office

Freudenau
River km 1,921
2 chambers
of 275 × 24 m

**Freudenau
Albern
Lobau**

Wildungsmauer
River km 1,895
LNWL 2010: 162 cm
HNWL 2010: 564 cm

Service Centre
Carnuntum

Hainburg

Service Centre
March-Thaya

Thebnerstraßl
River km 1,879
LNWL 2010: 132 cm
HNWL 2010: 598 cm

Bratislava

The Austrian section of the Danube

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

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