17

Annual Report on Danube Navigation in Austria | viadonau

Key data on Danube navigation 2017[1]

Transport volumes

9.6 million tons (+6.0%)

- Import: 4.8 million tons (+12.2%)
- Export: 2.4 million tons (+20.5%)
- Transit: 2.0 million tons (–7.3%)
- Domestic: 0.4 million tons (–36.1%)

Transport performance

9.7 billion tkm (+4.8%)
8,932 loaded journeys (+5.7%)

- Within Austria: 2.0 billion tkm (+3.1%)
- Outside Austria: 7.7 billion tkm (+5.3%)

Waterside transhipment at Austrian ports and transhipment sites

8.0 million tons (+6.5%)

- Ores and metal waste: 2.6 million tons (+6.6%)
- Petroleum products: 1.5 million tons (–0.8%)
- Metal products: 1.0 million tons (+25.2%)
- Crude and manufactured minerals, building materials: 0.9 million tons (–12.3%)
- Agricultural and forestry products: 0.7 million tons (+11.4%)
- Fertilisers: 0.6 million tons (–5.4%)
- Other goods: 0.7 million tons (+58.0%)

Vessel units locked through Austrian Danube locks

95,184 vessel units[2] (+2.0%)

- Freight transport: 51,164 units (–0.9%)
- Passenger transport: 44,020 units (+5.6%)

Passenger transport (including estimation)

1.3 million passengers (+2.8%)

- Liner services: 705,000 passengers (±0.0%)
- River cruises: 450,000 passengers (+8.4%)
- Non-scheduled services: 110,000 passengers (±0.0%)

Accidents

21 traffic accidents with damage

- Personal injuries: 0 death, 1 serious, 1 slightly injured
- Damage to property: 4 ship to ship, 1 grounding incident, 16 incidents with damage to riverbanks and facilities, 0 ship sunk

Availability of the waterway

351 days
15 year average: 357 days

- Closures due to high water: 0 days
- Closures due to ice: 14 days

[1] Changes from 2016 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

Contents

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

Profiting from advantages
Modernising for the future

NORBERT HOFER
Federal Minister for Transport,
Innovation and Technology

The Danube is Europe's second-longest river, connecting some 80 million people in ten countries and plays a major role in shaping one of the most important economic regions on the continent. Yet its potential as an efficient transport alternative is still to be utilised to its fullest extent. The international trend is towards environmentally friendly modes of transport and the role of inland shipping is growing steadily. It is therefore important to make targeted use of its strengths, such as high load capacity and beneficial performance ratios for greenhouse gas emissions. The encouragement of a shift in transport modes from land to inland waterway and the promotion of its significance in multimodal transport is thus a matter of major importance to us.

Both viadonau and the Federal Ministry of Transport, Innovation and Technology (bmvit) have for a long time realised the growing importance of efficient inland navigation. With bmvit's Action Programme Danube, we are promoting the waterway as a safe and environmentally friendly transport route. At the same time, we are working within the framework of the European transport minister's Maintenance Master Plan for the entire Danube to establish harmonised high standards of conservation, maintenance and information at an international level. In doing so, we continue to rely on state-of-the-art digital solutions in order to constantly improve the Danube's quality of use, with one clear objective: a reliable waterway that is fit for the future and serves as a sustainable and strong economic factor, not only in Austria, but also throughout the whole Danube region.

Consistently digitalising the waterway
Modern methods for modern services

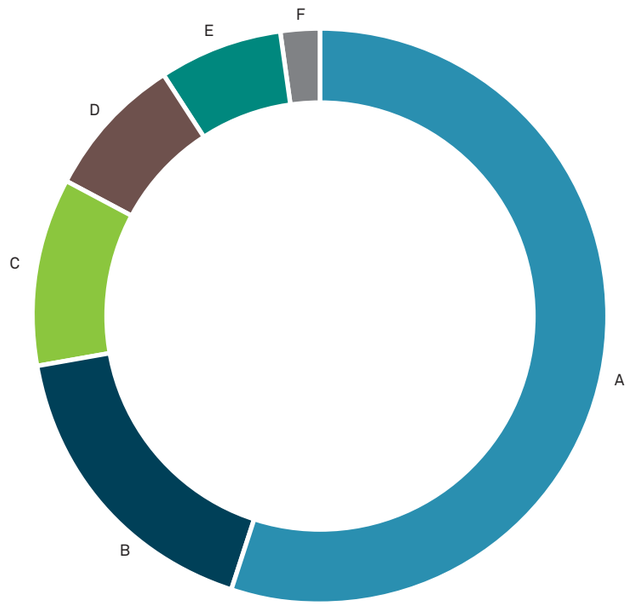
For us, maintaining and developing the waterway and its natural environment successfully means not only knowing the Danube, but also understanding it. With the help of modern software, we can create a digital image of the river that allows us to continuously expand our knowledge base. Modern working methods for modern services are especially important for us; digitalisation of the waterway also needs to be accessible to its users.

As an ecological and economic lifeline for Europe, the Danube deserves to be protected and preserved by us for the future at the highest technical level. viadonau therefore relies on state-of-the-art integrative solutions to continue to provide its customers on the waterway with the comprehensive range of activities that it has been providing for many years. These include daily maintenance and repair work, renaturation measures and information services.
With our Waterway Asset Management System (WAMS), we use customised digital tools to analyse the waterway on a daily basis and optimise it in the most precise way possible. At the same time, we are engaging with national and international partners in projects such as RIS COMEX and FAIRway Danube to ensure a Europe-wide harmonisation of fairway information. Together, we are creating the modern and holistic conditions in which nature, the economy and people can develop in harmony over the long term in one of the most important residential areas in Europe.

HANS-PETER HASENBICHLER
Managing Director
of viadonau

FIGURES_DATA_FACTS

Cost of core tasks viadonau 2017



F
Other
2.2%
726,890 Euros

E
Real estate
6.9%
2,239,745 Euros

D
Flood control
8.1%
2,617,864 Euros

A
Infrastructure management
55.2%
17,897,077 Euros

B
Traffic management
17.2%
5,576,125 Euros

C
Development and innovation
10.4%
3,386,060 Euros

The Austrian waterway operator viadonau ...

- maintains 350 kilometres of waterways
- locks through more than 90,000 vessels per year
- maintains 500 kilometres of towpaths
- cares for 800 kilometres of riverbank
- manages around 15,000 hectares of real estate
- operates the navigation information system DoRIS (Donau River Information Services) on the Austrian Danube with 23 base stations and a central control point
- manages 300 kilometres of flood protection dams
- protects more than 600,000 inhabitants with flood protection facilities between Vienna and the Slovakian border

BALANCE SHEET VIADONAU

Charting a modern course
Top services for the entire Danube

Digitalisation is at the very heart of the viadonau's modernisation of the waterway. In line with the company's philosophy, viadonau continues to pursue a holistic development approach – from the maintenance of the fairway to an international commitment to providing uniform high standards of conservation and information along the entire Danube.

Make way for the fish. During a period of around one and a half years, a unique fish migration aid was constructed in the 20th district of Vienna at the weir of the Nussdorf power plant in the centre of the Austrian capital. With a total of 37 vertical slot pools and a length of 320 meters, it even tunnels under the historic Schemerl bridge which was built in 1898. The opening ceremony for the fish ladder took place on 4th April 2017.

Precision measures for nature. Since 2017, viadonau's numerous environmental services have been bundled into the company's Natural Resources Management System. The goal: to accurately focus resources on projects that have the greatest benefits for the Danube region. The system is based on a small number of easily measurable key figures which are compiled and documented on an annual basis.

Modernisation international. Since 2015, partners from the FAIRway Danube project have been committed to providing uniform real-time information on the waterway. This joint project is simultaneously striving to harmonise maintenance of the Danube and its navigable tributaries. On 25th October 2017, the first survey ship built as part of the FAIRway Danube project was christened "Connecting Europe 1" in Vukovar (Croatia).

Optimal synergies on the Danube. Construction of a new service centre for the Upper Danube Valley began in May 2017 at Aschach an der Donau. This state of the art building is designed to meet the increasing demands of the Upper Danube. The new building will not only provide viadonau employees with modern workplaces; the navigation supervisory authority of Engelhartszell will also share the building, thereby creating optimal conditions for on-site cooperation.

Charting the right course. At the end of 2017, viadonau once again carried out a survey regarding waterway user's satisfaction. The results show that the company is on the right track. Lock authorities and information services for the Danube are particularly popular. For the first time, the issue of berths was also evaluated. Both in Vienna and Linz, as well as in the waiting areas at locks, respondents were predominantly satisfied with the available berths.

"The Danube is the lifeline for a species-rich natural environment. An overview of the bigger picture is therefore essential for its sustainable protection. The Natural Resources Management System has been helping us to achieve just this since 2017. Using simple parameters, we can measure the success of our environmental activities, allowing us to accurately target our measures on areas where they are most effective."

BARBARA BECKER
Ecologist

Passengers on the Austrian Danube 2017

Total **1,265,000**

705,000 Liner services

450,000 River cruises

110,000 Non-scheduled services

Navigational closures due to high water and ice 2017

Days of Availabiltiy

351

Freight transport on the Austrian Danube 2014–2017

2017 — 9,619,520 tons

2016 — 9,071,478 tons

2015 — 8,599,354 tons

2014 — 10,121,726 tons

CUSTOMER SATISFACTION: INFRASTRUCTURE

Top waterway management viadonau scores points for infrastructure

- 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

The ongoing assessment of customer satisfaction is an important indicator for viadonau in terms of effective service provision. Regular customer surveys of commercial waterway users (freight and passenger shipping) are therefor carried out and customer feedback analysed in order to further improve the services provided by viadonau.

The latest customer survey conducted in December 2017 assessed, among other things, the quality of the maintenance of the fairway in the Austrian section of the Danube (maintenance dredging operations carried out by viadonau). In total, customer feedback was received from 114 members of the shipping sector (75% of which were ship's captains, 21% ship owners and 4% others; 50% cargo shipping, 36% passenger transport and 14% others).

The quality of maintenance of the Austrian section of the Danube was rated with an average grade of 1.46. This result was arrived at by using a grading system whereby 1 is the best and 5 is the worst. From the water users' point of view, viadonau is therefore the top rated waterway infrastructure operator of all of the ten Danube riparian states. The chart on the opposite page illustrates the detailed results of this customer survey.

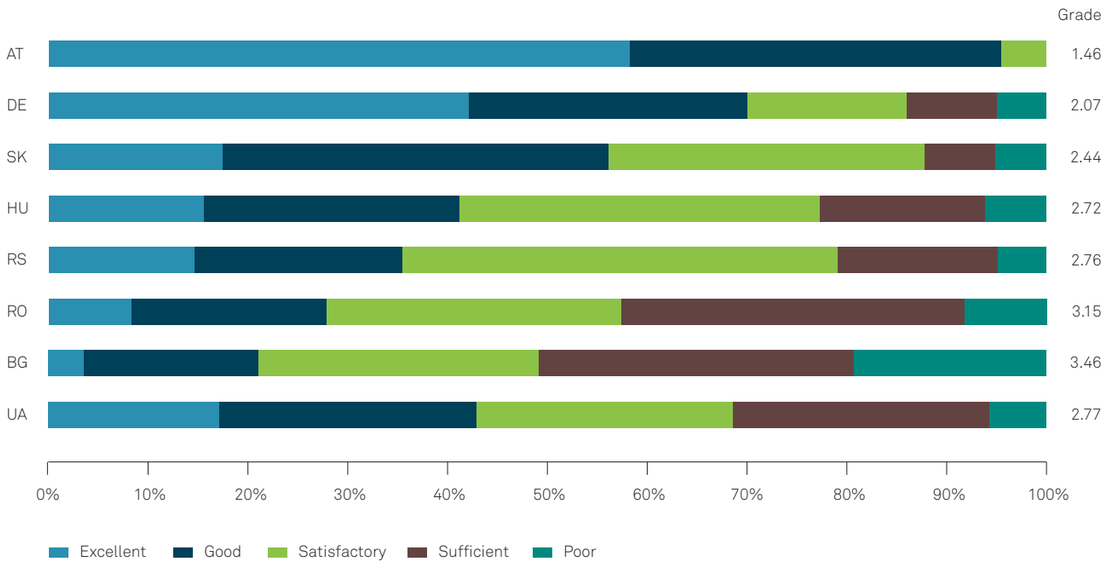
From viadonau's point of view, the excellent results for Austria can be attributed to continuous and proactive maintenance dredgings, along with the hydraulic engineering improvements made in recent years. viadonau is pursuing a proactive, longterm maintenance philosophy, whereby aggradation at crucial shallow sections of the river is removed by dredging before the start of any potential low water period. This ensures that shipping 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 and is unique in Europe in the field of waterway administration. In 2017, it was nominated for the Federal Ministry of Transport, Innovation and Technology's (bmvit) State Mobility Award.

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

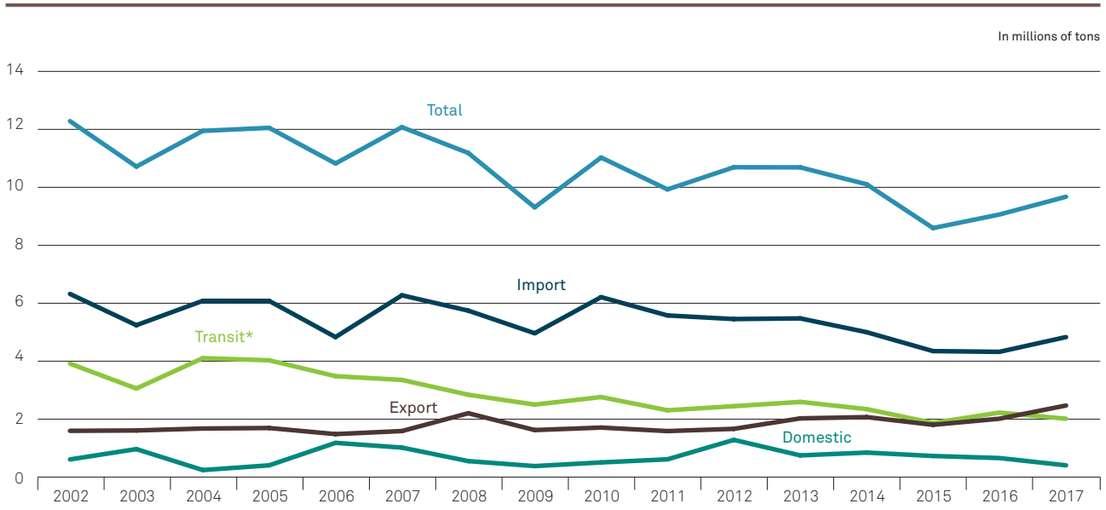
Waterway infrastructure quality in the Danube countries 2017



Source: viadonau

FIGURES_DATA_FACTS

Freight traffic on the Austrian Danube 2002–2017



Transport volumes in tons	Import	Export	Transit*	Domestic	Total
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**
2011	5,461,830	1,987,404	2,559,494	701,119	**10,709,847**

* 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

More goods on the Danube
Strong growth for imports and exports

In 2017 more than 9.6 million tons of goods were transported on the Austrian section of the Danube. Despite a lengthy closure due to ice at the beginning of the year, good fairway conditions throughout the rest of the year led to an increase of 6.0% or 0.5 million tons in comparison to the previous year. These effects are also evident when looking at the results over the course of the whole year. In 2017, significantly more goods than in the previous year were transported in three quarters. This trend was only interrupted by the ice closure in the first quarter.

The total transport performance (the product of transport volume and distance travelled) in the federal territories increased by 3.1% to over 2 billion ton-kilometres. The entire transport capacity, both within and outside of Austria, rose by 4.8% to 9.7 billion ton-kilometres. The number of trips made by loaded vessels on the Austrian section of the Danube rose by 5.7% (from 8,448 to 8,932).

Cross-border freight traffic (the sum of export, import and transit) recorded an increase of 9.1% or nearly 0.8 million tons compared to 2016. The strongest increase in transport volumes on the Austrian Danube was recorded for export (20.5% or approximately 405,200 tons). Imports also saw an increase in the volume of goods transported of 12.2% or just under 522,400 tons).

In contrast, domestic traffic and transit traffic decreased: domestic traffic on the Danube waterway, which had the smallest share of total transport volume in 2017 with 4.0%, fell by a substantial 36.1% or almost 219,700 tons to 389,148 tons. Transit volumes fell marginally by 7.3% or just under 159,800 tons to approximately 2.0 million tons and now represents the third largest share of total goods transported.

“Despite to ice-closures at the beginning of the year, 2017 was a successful year for freight transport. The positive trend in cross-border freight traffic and waterside transhipment at Austrian Danube ports demonstrates the competitiveness of inland waterway transport, motivating us to continue developing new potentials in cooperation with the business community.”

BETTINA MATZNER
Project Manager
Transport Development

PORT TRANSHIPMENT

Significant increase in total volumes
Growth in waterside cargo handling

- Strong growth in cargo volumes transhipped waterside in comparison to 2016
- The industrial port of voestalpine was the most significant port on the Austrian Danube with around 3.6 million tons

In 2017, a total of 8.0 million tons of goods were handled waterside at Austrian Danube ports and transhipment sites. This represents a significant increase of 6.5% or 0.5 million tons compared to the previous year.

The most significant Danube port in Austria 2017, in terms of volume, was once again the industrial port of voestalpine Linz. With a total handling volume of around 3.6 million tons and an increase of 10.6% compared to 2016 (345,790 tons), this port accounted for 45.1% of the total waterside transhipment of all ports and transhipment sites on the Austrian Danube.

The other private ports and transhipment sites (Aschach, the heavy-cargo port at Linz, Pöchlarn, Pischelsdorf, Korneuburg and Bad Deutsch-Altenburg) rank second with more than 1.4 million tons and 17.7% of the total volume of goods handled at Austrian loading and unloading points. With 1.4% or just under 19,000 tons, these ports once again recorded a slight increase compared to the previous year. A detailed analysis of the individual ports and transhipment sites is not possible due to data protection laws.

This generally positive trend was experienced by most of the public Danube ports in Vienna, Krems and Enns.
The Port of Vienna (Freudenau, Lobau and Albern along with the transhipment sites Lagerhaus and Zwischenbrücken) recorded a total of over 1.1 million tons in waterside transhipment in 2017. This corresponds to an increase of 5.8% or around 62,000 tons. The Port of Vienna accounted for 14.1% of total waterside transhipment volumes on the Austrian section of the Danube.
With a substantial increase of 13.1%, or more than 670,000 tons in comparison to 2016, the Port of Enns achieved a share of 8.5% of total goods handled waterside in Austria.
The Port of Krems registered the strongest percentage increase of all ports. Waterside handling volumes increased by 15.0%, or around 70,000 tons, compared to the previous year. This represents a handling volume of 537,484 tons and a share of around 6.7% of the total volume of cargo transhipped.

Only the two ports of Linz AG (industrial port and oil port) recorded a significant drop in cargo handling volumes, with a fall of 12.1% compared to the previous year (86,839 tons). With 632,422 tons of goods handled waterside, the share of the total cargo handling volume decreased to 7.9%.
In general, 2017 witnessed a positive trend. Overall increases in total transport and waterside transhipment volumes were recorded across the sector with an increase of around 500,000 tons compared to 2016.

FIGURES_DATA_FACTS

Waterside transhipment at Austrian Danube ports and transhipment sites 2017

F
Krems
6.7%
537,484 tons
(+15.0%)

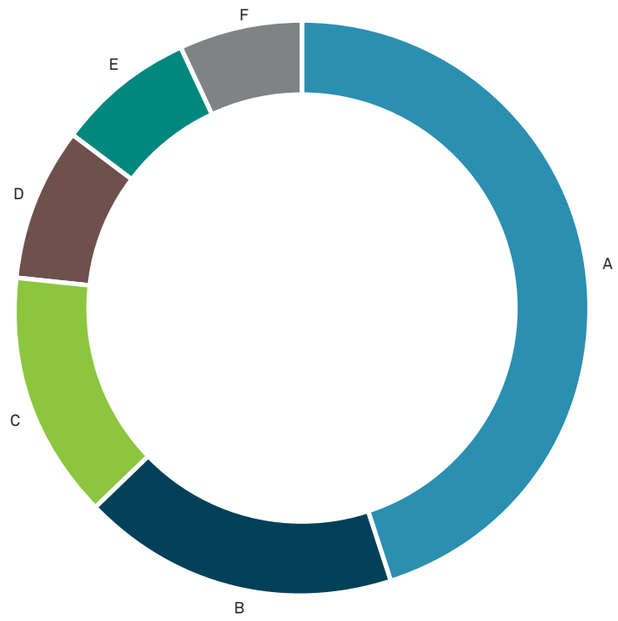
E
Linz AG[4]
7.9%
632,422 tons
(–12.1%)

D
Enns
8.5%
674,435 tons
(+13.1%)

A
Linz voestalpine[1]
45.1%
3,596,038 tons
(+10.6%)

B
Others[2]
17.7%
1,411,666 tons
(+1.4%)

C
Port of Vienna[3]
14.1%
1,129,254 tons
(+5.8%)

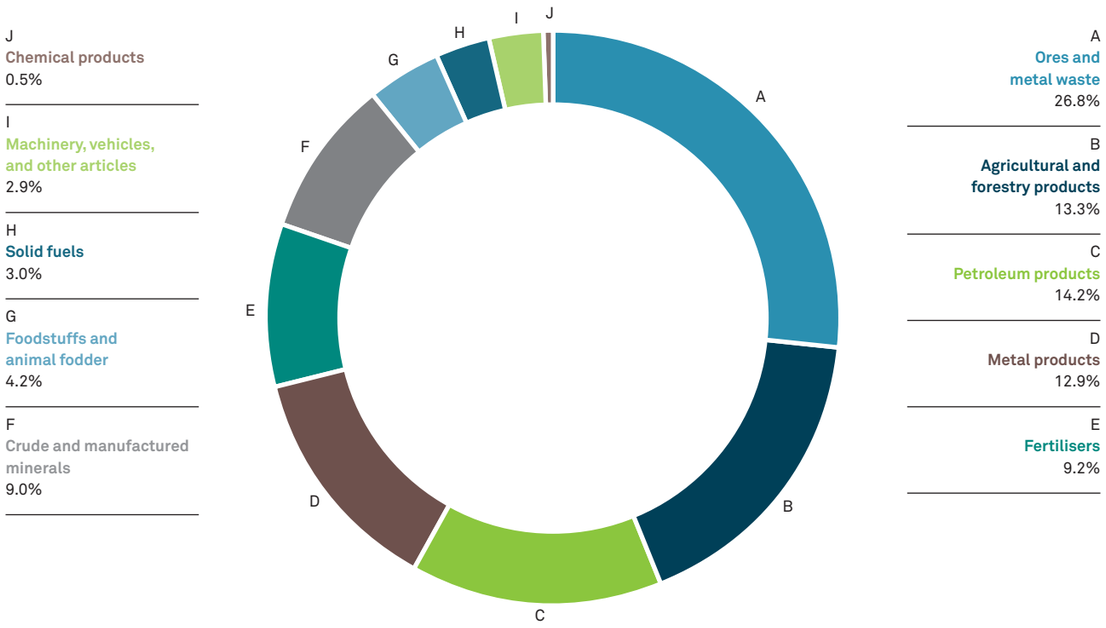


[1] Including waterside transhipment at Industrie Logistik Linz GmbH.
[2] Other ports and transhipment sites include: Aschach, Schwerlasthafen Linz, Pöchlarn, Pischelsdorf, Korneuburg, Bad Deutsch Altenburg.
[3] The three ports of Freudenau, Albern and Lobau (oil port) and the two transhipment sites 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 2017



Goods classification according to NST/R*	Domestic	Import	Export	Transit	Total 2017	Change
Agricultural and forestry products	–	601,501	98,708	967,940	1,668,149	–3.4%
Foodstuffs and animal fodder	3,200	191,819	108,205	104,623	407,847	17.9%
Solid fuels	2,260	269,147	221	13,822	285,450	119.2%
Petroleum products	206,003	640,628	472,531	48,832	1,367,994	3.3%
Ores and metal waste	–	2,563,651	15,631	–	2,579,282	6.6%
Metal products	–	197,266	753,543	286,128	1,236,937	18.3%
Crude and manufactured minerals, building materials	173,588	233,858	354,989	103,971	866,406	1.0%
Fertilisers	2,096	105,175	513,393	266,324	886,988	–7.8%
Chemical products	1,500	1,522	3,502	37,327	43,851	27.2%
Machinery, vehicles and other articles	501	17,665	60,051	198,400	276,617	22.2%
Total	**389,148**	**4,822,232**	**2,380,774**	**2,027,367**	9,619,521	**6.0%**

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

Source: Statistics Austria, adapted by viadonau

COMMODITY GROUPS

Significant increase in solid fuels
Ores and metal waste strongest group

- Significant increase in solid fuels, as well as foodstuffs and animal fodder
- Decline in agricultural and forestry products and also fertilisers

Ores and metal waste once again accounted for the largest share of total volumes with 26.8% in 2017. At nearly 2.6 million tons, this commodity group recorded an increase of 6.6% over the previous year.
Agricultural and forestry products were the second largest group in terms of total volume, accounting for 17.3%. Lower export volumes led to a decline of 3.4% compared to 2016.

A slight increase of 3.3% was recorded for petroleum products. With a total volume of around 1.4 million tons in 2017, on a pro rata basis this group was in third place. Metal products increased their share by 18.3% compared to the previous year. This increase is attributable to exports, which increased by 161,946 tons.

After a slight increase in 2016, transportation of fertilisers decreased by a total of 7.8% in 2017. Exports increased by 10,552 tons, but imports fell over the same period by more than 46,000 tons.
2017 saw an increase of 1.0% in the volume of crude and manufactured minerals transported compared to the previous year. Domestic transport fell sharply, but an increase in imports and exports compensated for this decline.

Foodstuffs and animal fodder accounted for approximately 4.2% of the total transport volume for the year. This corresponds to an increase of 17.9% compared to 2016. This increase was primarily attributable to an increase in export volumes of 50,546 tons, which was almost double that of the previous year.
The most significant change was recorded by solid fuels. Following a decline of 41.5% in 2016, transport volumes for this group increased by 119.2% to 285,450 tons in 2017. Import and transit volumes were principally responsible for this massive increase.

Machinery and vehicles transported on the Austrian Danube in 2017 amounted to 276,617 tons, which represents a share of 2.9% of total volume. This means an increase of 22.2% compared to the previous year. This commodity group also showed a strong increase in exports with 31,980 tons.
The commodity group with the smallest share of total volumes was once again chemical products in 2017. Nevertheless, with an increase of 27.2%, this group still managed to record the second strongest level of growth.

PASSENGER TRANSPORT

Again increase in passenger numbers
Boom in river cruises

- 8.4% more passengers on river cruises
- Six new cruise ships in operation on the Danube
- Numbers for liner and non-scheduled services stagnate

Passenger transport on the Austrian stretch of the Danube was able to record an increase in numbers for the fourth year running in 2017. A total of approximately 1,265,000 passengers were transported, representing a plus of 2.8% in comparison to 2016.

The number of river cruises also continued to rise in 2017, exceeding last year's record with 450,000 passengers transported (+8.4%). 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 174 (+3.6%). In total, 4,977 journeys (+7.8%) were completed. Due to the continuing growth of the existing fleet, the capacity for river cruises increased to 34,382 passengers (+10.6%), this corresponds to an average of 198 passenger places per ship.

In 2017, liner services carried approximately 705,000 people (±0.0%). The DDSG Blue Danube Schiffahrt GmbH recorded a total of 249,700 passengers (+0.6%) transported in the Wachau and Vienna. A total of 147,801 passengers (+2.4%) were transported between Vienna and Bratislava on the two Twin City Liners. 50,929 passengers (+11.4%) took advantage of the services offered by Donau-Schifffahrts- Gesellschaft mbH (formerly known as Donau Touristik). The Slovakian hydrofoils operating between Vienna and Bratislava transported 18,534 passengers (–31.2%). The liner service between Vienna and Budapest was discontinued by the Hungarian operator in 2017.

Non-scheduled services carried approximately 110,000 passengers in 2017 (±0.0%). The DDSG Blue Danube Schiffahrt GmbH carried 58,200 passengers (+8.4%) on theme, special and charter cruises and the MS Kaiserin Elisabeth (owned by the Donau-Schiffahrts-Gesellschaft mbh) recorded 9,885 (–23.9%) passengers on non-scheduled trips. The MS Donaunixe and the MS Maria, owned by Donauschiffahrt Ardagger GmbH, recorded approximately 5,937 passengers (+12.0%).

Passenger traffic volumes for companies which carried less than 5,000 passengers in 2017 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

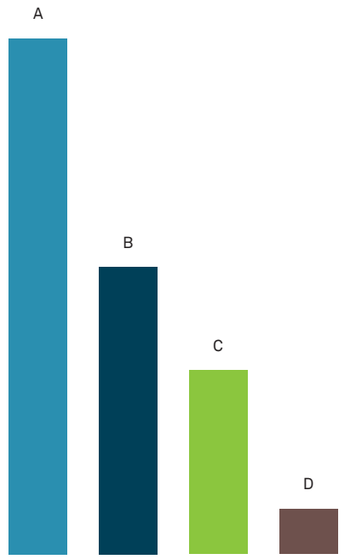
Passengers on the Austrian Danube 2017[1]

A
Total
1,265,000

B
Liner services
705,000

C
River cruises
450,000

D
Non-scheduled services
110,000



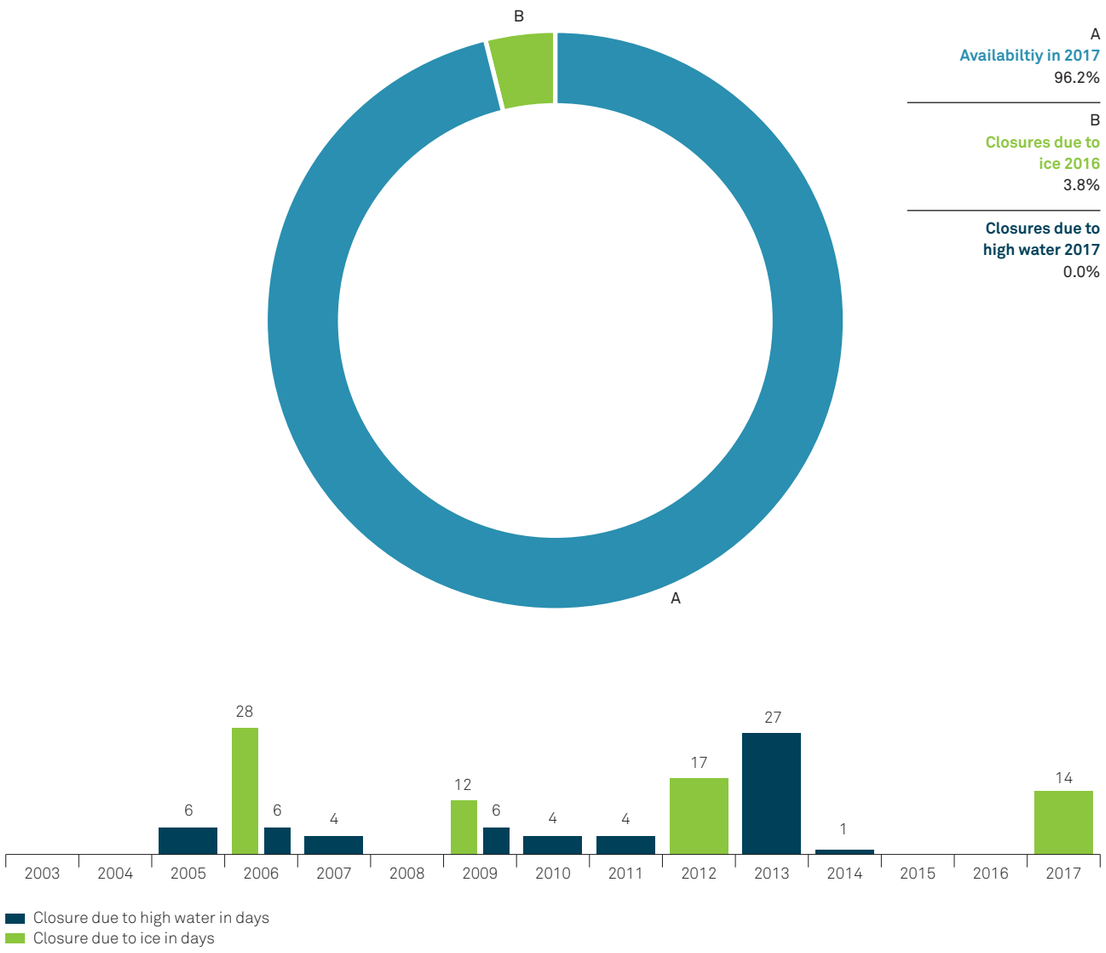
Dockings and passengers at passenger ports in Vienna[2]	Dockings ships	% to previous year	Passengers processed	% to previous year
2017	7,484	+2.0	694,848	+3.9
2016	7,337	+7.8	668,805	+6.6
2015	6,805	–1.6	627,194	+4.6
2014	6,916	–	599,549	–

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 2003 to 2017



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

AVAILABILITY OF WATERWAY

Danube navigable on 351 days in 2017 14 days of closure due to ice

Over a 15 year annual average from 2003 to 2017, the availability of the Austrian section of the Danube waterway was 97.6%, 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 2017, shipping on the Danube at the German-Austrian border had to be suspended for a total of 14 days between January 25 and February 8 due to critical ice formation. On the rest of the Austrian Danube, closures due to ice amounted to an average duration of four days during this period. Daily mean values of water levels recorded at the reference gauges relevant for shipping show that the highest navigable water level (HNWL) was not exceeded during the course of the year. This means that no closures of the fairway due to high water were issued on the Austrian section of the Danube in 2017. The availability of the Danube waterway in 2017 was therefore 351 days or 96.2% of the year.

Weather-related closures in extreme situations, such as high water or ice, can be implemented by the relevant authorities on the Austrian section of the Danube waterway. 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, construction work or events. In 2017, such closures amounted to 19.5 hours and took place on seven days of the year, each with an average duration of 3.25 hours. In addition to the aforementioned closures due to ice, the total closure of locks (the parallel closure of both lock chambers) in 2017 accounted for a total duration of almost eight hours.

The lock at Nussdorf on the Danube Canal was closed for maintenance work between the middle of February and the beginning of March for a total of 18.5 days.

- Long-term annual availability of the Danube at 97.6%
- 14 days of closures due to ice in 2017

LOAD FACTOR

Good conditions continue
Load factor remains constant at over 61%

- Difficult conditions in January and February
- Load factor for cargo vessels 61.4% in 2017
- Average daily level of 263 cm at the Wildungsmauer gauge

Fairway conditions on the Danube were relatively favourable in 2017, allowing for an average monthly load factor for cargo ships of 61.4%. Only in January and mid-February the daily average values recorded at the Wildungsmauer gauge fell below the regulatory low navigable water level (LNWL 2010) on several days.

The daily average in the last quarter of 2017 showed an improvement on previous years. LNWL 2010 values were consistently exceeded during this period and were therefore able to compensate for the poor fairway conditions during the first two months of the year. The lowest load factor, with an average value of 45.1%, was recorded in January. This was 5% below the lowest level of the previous year.

Water levels for the month of March and the last quarter of 2017 were among the best comparative values recorded in recent years. March also recorded the best load factor for 2017 with 68.9%.

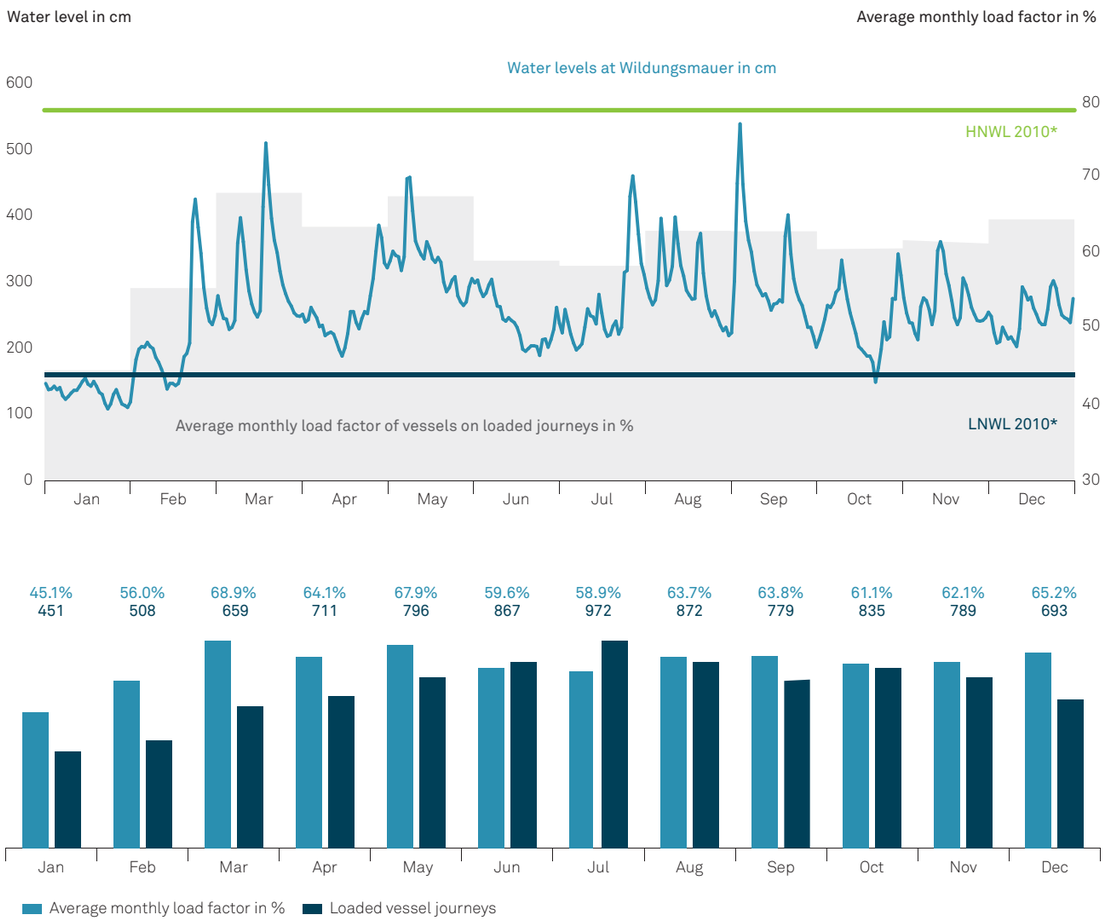
The average daily level at the Wildungsmauer gauge was 263 cm in 2017, slightly less than 12 cm below the average level recorded in the previous year. This was due to the lower fluctuation range of daily average levels with the highest navigable water level (HNWL 2010) not being reached on any single day of the year.

The load factor of cargo vessels operating on the Danube is directly influenced by water conditions and the resulting water levels. During the months with the lowest water levels, January and February, a load factor of 45.1% and 56.0% respectively was recorded. Load factor levels for eight months of the year were over 60%, with the months of June and July falling slightly below this with 59.6% and 58.9%, respectively.

Higher water levels allow for better loading capacity for cargo vessels. This means that vessels can take on more cargo and thus achieve a better load factor. Whereas in January 451 loaded trips were required to transport 320,000 tons, in August it was possible to transport three times the same amount of goods with just twice the number of loaded journeys.

FIGURES_DATA_FACTS

Water levels and resulting load factors of cargo vessels in 2017 using the Wildungsmauer gauge of reference

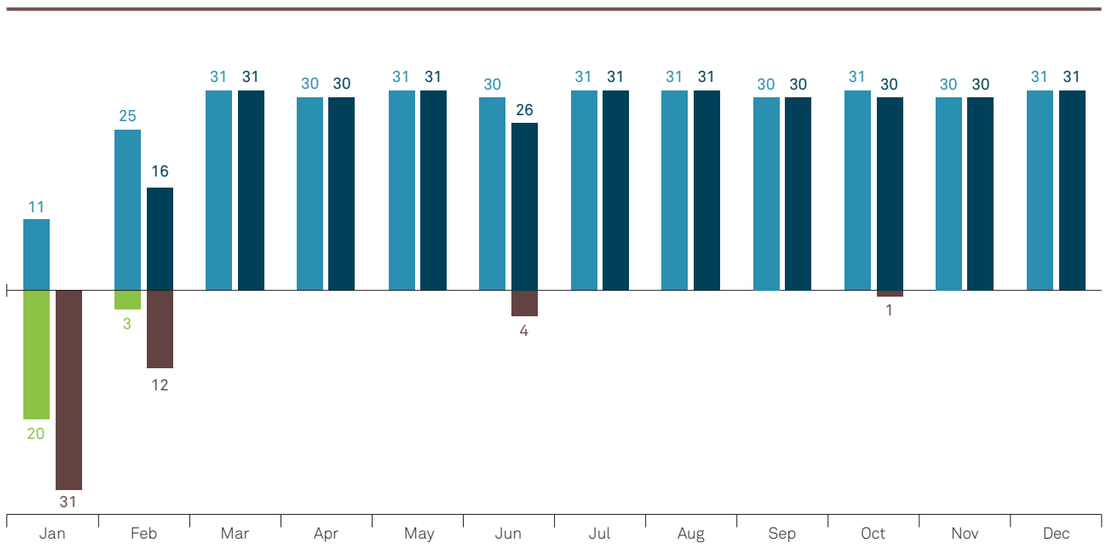


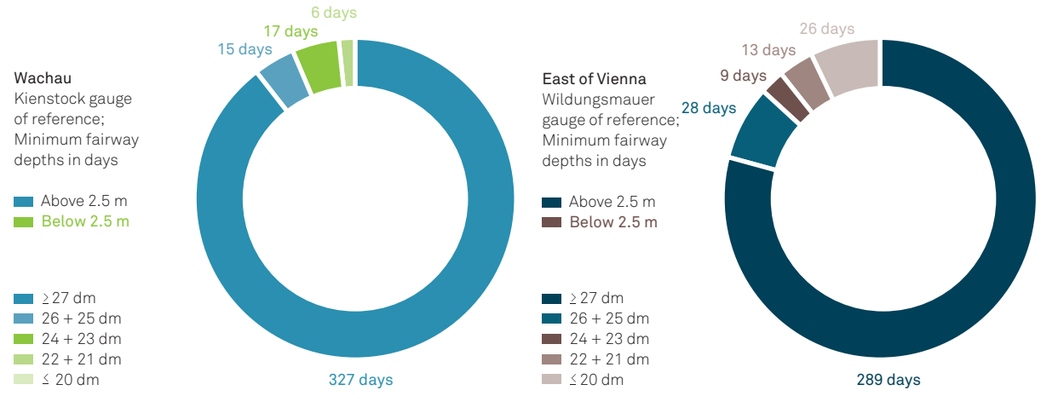
* LNWL 2010 (low navigable water level): This value represents the water level exceeded on 94.0% of days in a year during ice-free periods with reference to a 30-year observation period (1981–2010). The current LNWL value for the water gauge Wildungsmauer is 162 cm.
HNWL 2010 (highest navigable water 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 2017*





* 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

Continuous depth of 2.5 m for 10 months
Low water at the beginning of the year

From a hydrological point of view, in 2017 the Danube had very low water levels throughout all of January and the first half of February, as well as from mid-June to mid-July. In contrast, very good water levels were recorded throughout the second half of the year (August to December). On 30 days in January and six days in February, the daily average value of the Danube gauge Wildungsmauer (reference gauge for the free flowing stretch of the Danube east of Vienna) dropped below the defined low navigable water level (LNWL) 2010. A total of 10.1% of all days recorded low water levels in 2017. Details of water flow conditions can be found in the chapter 'Load factor'.

In 2017, with the exception of just five days, water depths of more than 2.5 m in the deep channel of both free-flowing sections of the Austrian Danube were continuously available for ten months of the year (from March to December). The months January and February recorded days with water levels below 2.5 metres due to the low water discharge: the stretch of the river east of Vienna recorded all 31 days in January and twelve days in February. In the Wachau, water levels below 2.5 metres were recorded on 20 days in January and three days in February.

Overall, the Wachau recorded the availability of a minimum depth in the deep channel of 2.5 metres on 342 days or 93.7% of the year (–4.4% compared to 2016). In the free-flowing section east of Vienna a minimum navigable depth of 2.5 metres was available on 317 days or 86.8% of the year (–2.2%). To remove aggradation from the shallow sections of the river proactively, a total of 15 maintenance dredgings were carried out in 2017, resulting in the removal of approximately 220,000 cubic metres of material. Nearly 95% of this dredging activity took place in the stretch of the river to the east of Vienna.

The lowest available navigable water depths for both free-flowing stretches of the Austrian Danube (Wachau and east of Vienna) were calculated based on all hydro-graphical surveys of the riverbed carried out in 2017. Figures for the periods between measurement dates were interpolated and evaluated in combination with the respective gauge hydrographs (mean daily water levels at the Kienstock and Wildungsmauer gauges of reference). The reference for these calculations was a deep channel located inside the fairway and representing the required fairway width for a four-unit pushed convoy travelling downstream without encountering other vessels, whereby the width of the fairway depends on the river bend radii involved.

"Adequate fairway depths are the unconditional basis for the growing transport industry on the Danube. Proactive maintenance of the Danube is therefore essential. Precise predictive maintenance dredgings, especially on the free-flowing stretch of the river east of Vienna, once again ensured optimal availability of the waterway in 2017."

CHRISTOPH BAUER
Project Manager
Waterway Management

TRANSPORT DENSITY

Traffic from the east dominant
26,000 tons of goods transported daily

- Linz continued to dominate traffic density with 4.2 million tons of cargo
- Highest volume of goods transported between Vienna and the Austrian–Slovakian border
- 67.6% more goods transported over the eastern border than over the western border

A total of 9.6 million tons of goods were transported along the 350.51 kilometre long Austrian section of the international Danube waterway in 2017. Total transport volumes by segment ranged from approximately 4.2 million tons (between the German–Austrian border and Aschach) to around 7.1 million tons (between Vienna and the Austrian–Slovakian border).

With more than 4.8 million tons, import traffic once again generated the most significant flow of goods in 2017. The volume of goods imported from the East was more than triple that of volumes imported from the West.

The industrial port of voestalpine in Linz made by far the largest contribution to import volumes and was responsible for the transportation of more than 2.6 million tons. This consisted predominantly of cross-border traffic from the East.

Export traffic was in second place in 2017 with a total of approximately 2.4 million tons of goods shipped, thus exceeding transit traffic by around 0.4 million tons. The industrial port of voestalpine in Linz, which alone accounted for 1 million tons, also had the largest share of export volumes.

Approximately 2 million tons were transported in transit on the Austrian Danube, with the volume of traffic from the East more than quadruple that of the volume of traffic from the West.

With just 0.1 million tons transported, domestic traffic played a clearly subordinate role.

Linz handled a total of over 4.2 million tons and continued to play a major role in terms of the volume of goods transported in 2017.

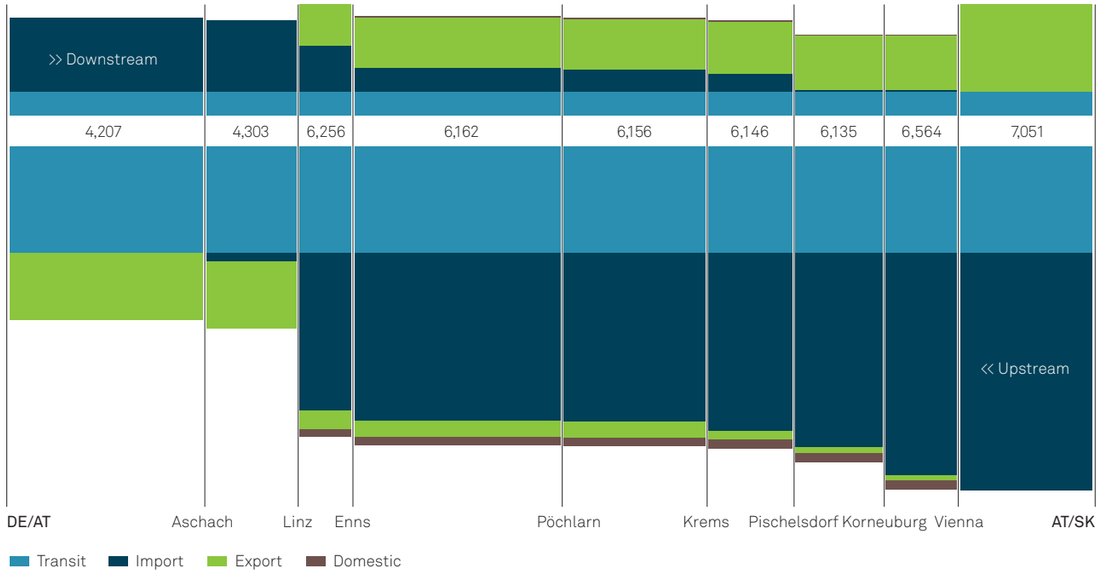
The unequal significance of traffic in the East compared to traffic in the West on the Austrian Danube is highlighted by the fact that the volume of goods transported across the border with Slovakia exceeded the volume of goods transported across the border with Germany by approximately 67.6%.

The average daily volume of goods transported on the Austrian Danube in 2017 was 25,668 tons. This is equivalent to 1,027 fully loaded lorries (25 net tons per vehicle) or 642 railway wagons (40 net tons per wagon) per day.

The most heavily used section of the Danube in the past year was the 46 kilometre long stretch between Vienna and the Austrian–Slovakian border, which saw an average of 19,319 tons of goods transported on a daily basis.

FIGURES_DATA_FACTS

Density of freight traffic
on the Austrian Danube 2017

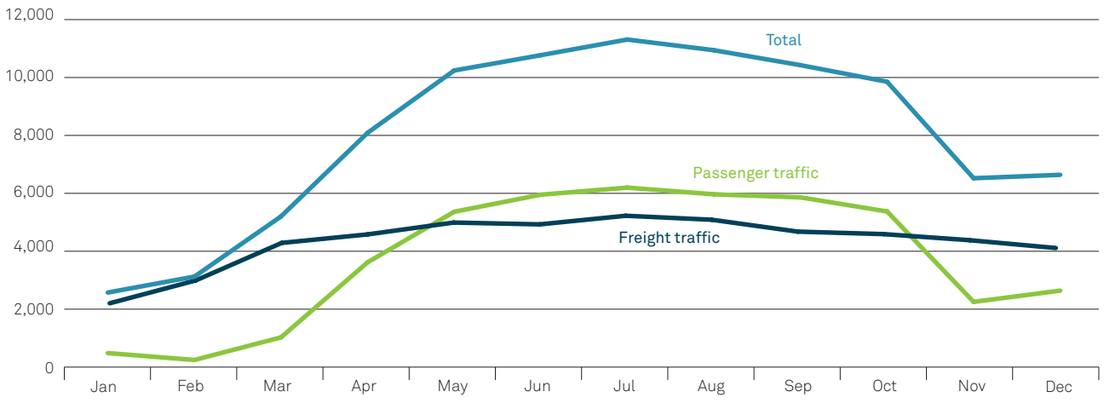


Section	Length	Import	Import	Export	Export	Domestic	Domestic	Transit	Transit	Total	Total	In sum
in 1,000 tons	in km	upstr.	d'str.	upstr.	d'str.	upstr.	d'str.	upstr.	d'str.	upstr.	d'str.	
Border DE/AT–Aschach	63.21	0	1,145	1,035	0	0	0	1,668	359	2,703	1,504	**4,207**
Aschach–Linz	31.30	132	1,112	1,032	0	0	0	1,668	359	2,832	1,471	**4,303**
Linz–Enns	16.87	2,449	712	286	650	132	0	1,668	359	4,535	1,721	**6,256**
Enns–Pöchlarn	67.63	2,599	366	248	784	136	2	1,668	359	4,651	1,511	**6,162**
Pöchlarn–Krems	46.20	2,615	344	248	784	136	2	1,668	359	4,667	1,489	**6,156**
Krems–Pischelsdorf	26.30	2,762	271	134	813	136	3	1,668	359	4,700	1,446	**6,146**
Pischelsdorf–Korneuburg	29.60	3,022	28	80	839	137	2	1,668	359	4,907	1,228	**6,135**
Korneuburg–Wien	23.64	3,451	28	80	839	137	2	1,668	359	5,336	1,228	**6,564**
Wien–Border AT/SK	45.76	3,678	0	0	1,346	0	0	1,668	359	5,346	1,705	**7,051**

Source: Statistics Austria, adapted by viadonau

FIGURES_DATA_FACTS

Vessel units in freight and passenger transport locked through Austrian Danube locks in 2017*



	Freight traffic	% to previous year	Passenger traffic	% to previous year	Total	% to previous year
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
2013	63,141	+6.2	32,329	–3.7	**95,470**	+2.6

* 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

95,000 units locked through
Passenger traffic increases again

- Decrease of 0.9% in locked-through cargo vessels in comparison to the previous year
- Increase of 5.6% in passenger traffic

A total of 95,184 passenger and cargo vessel units, travelling both upstream and downstream, were locked through the nine Austrian lock facilities in 2017 (excluding the Jochenstein power station on the Austrian-German border). Included in this number were 31,994 motor cargo vessels and motor tankers (–3.6% compared to 2016), 19,170 pushers (+4.2%) and 44,020 passenger vessels (+5.6%). A total of 44,340 cargo and tank lighters or barges (+4,6%) were also locked through as part of coupled and pushed convoys. When taking all types of vessels and convoys into consideration, the total number of locked-through vessel units in freight and passenger transport showed a plus of 2.0% over 2016.

Freight transport on the Austrian Danube saw a slight decrease in locked-through vessel units (–0.9% or 439 units). Once again, there was a significant increase in passenger traffic (+5.6% or 2,325 more locked-through units than in 2016). In 2017, freight transport had a share of 53.8% of total shipping volumes (–1.5% compared to 2016) with passenger traffic accounting for the remaining 46.2% (+1.5%).

Over the whole of 2017, the average volume of vessels passing through an individual Austrian Danube lock facility amounted to 10,576 convoys and individual vessels (a plus of 210 vessel units compared to 2016). This is equivalent to 881 (+17) vessel movements per month and an average of 29 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 12,848 vessels and convoys passing through the lock (–3.7%), followed by the Greifenstein lock with 10,896 units. Aschach lock recorded the smallest amount of locked-through vessels with 9,196 units.

In addition to commercial freight and passenger vessel units, 10,274 (+7.5%) small sports and leisure crafts also passed through lock facilities on the Austrian Danube in 2017, together with a further 1,795 vessels, which included public authority and rescue crafts. These figures are not included in the current statistics for locked-through freight and passenger traffic.

AVAILABILITY OF LOCKS AND WAITING TIMES

98.3% continuous availability
Average waiting time of 35 minutes

“Safety first – above all when it comes to traffic regulation at the nine Danube locks in Austria. For this reason, our lock personnel undergo thorough and comprehensive training to ensure reliable transportation on the waterway and the safe flow of traffic on the Austrian Danube. In doing so, we are providing a quality service for our customers.”

HEINZ MÜHLBÖCK
Lock Manager

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 77% of all closure days of the 18 lock chambers in 2017. The average duration of overhauls carried out in the winter half year 2016/17 and completed by the spring of 2017 was 164 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 13% of all closure days. Repair to damage resulting from another vessel collision at the Aschach lock facility in the fourth quarter of 2017 accounted for the majority of these closure days with around 10% of closure time. In addition, approximately 1% of closures were attributed to modification or maintenance work, dredging in and around lock facilities and surveying. Another 9% of closure days were due to an ice event at the end of January 2017.

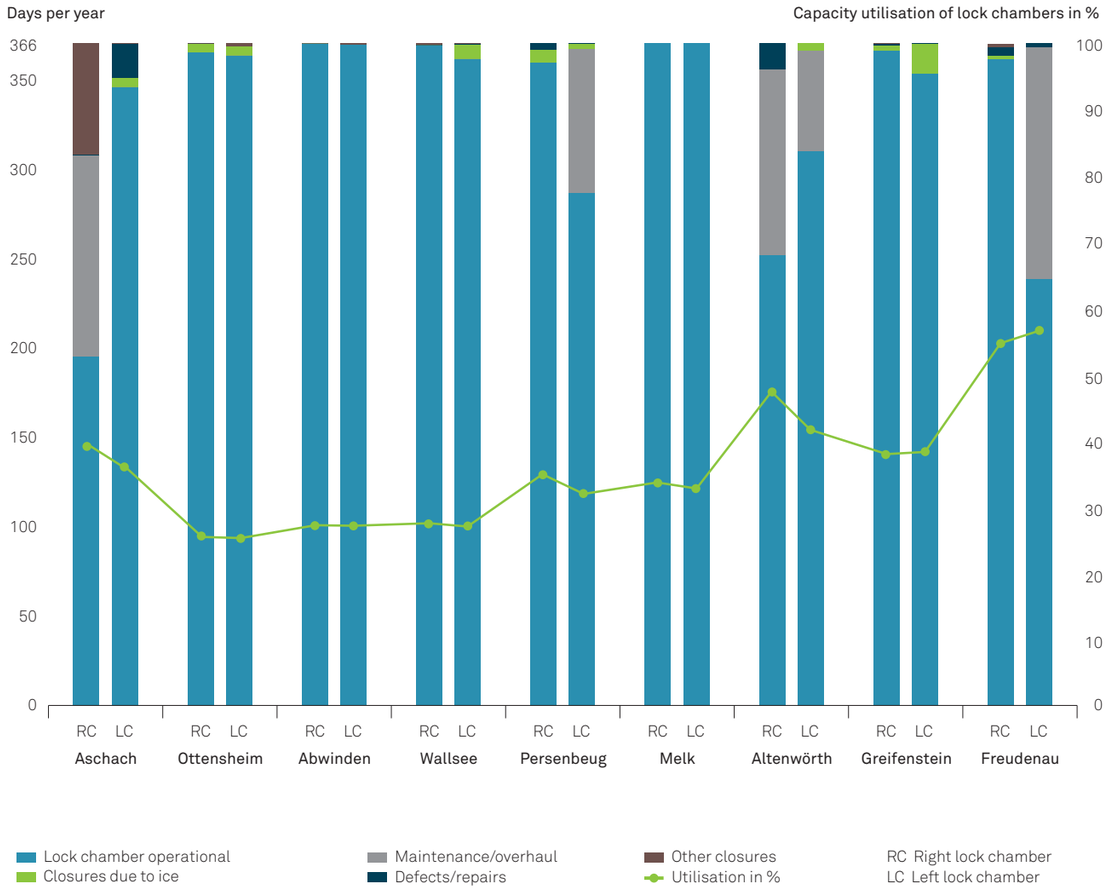
The continuous availability of the 18 lock chambers on the Austrian Danube amounted to almost 359 days (98.3%) in 2017. Complete closures were primarily caused by ice formation, which shut down 13 lock chambers simultaneously for around six days. In addition, unforeseen disruptive events at two lock installations undergoing maintenance or repair work led to their unavailability for a period of around 7.5 hours.

Lock availability also has an influence on waiting times. On average, only 8.3% of all shipping units (commercial freight and passenger vessels) experienced waiting times at the nine locks on the Austrian section of the Danube in 2017. Average waiting time throughout the whole year amounted to 35 minutes.

In the heavy traffic months from April to October, the average waiting time was with 37 and 40 minutes longer than the average. This was due to closures at some lock installations due to long-term maintenance work. The longest waiting times occurred at the lock Altenwörth with an average of more than 60 minutes, where 15% of vessels were affected by delays.

FIGURES_DATA_FACTS

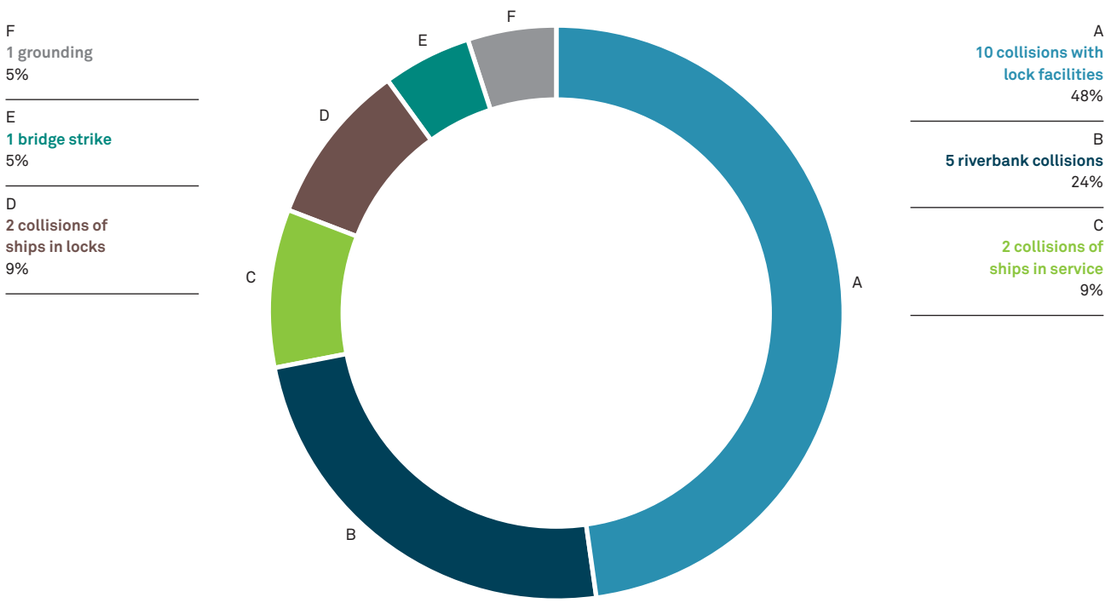
Availability of Austrian Danube locks 2017



Source: viadonau

FIGURES_DATA_FACTS

Traffic accidents according to type of damage on the Austrian Danube 2017



ACCIDENTS

Decrease in traffic accidents
Locks facilities are hotspots

Danube navigation has an unbeatable safety and accident record when compared to the land transportation modes of rail and road. A total of 21 accidents involving commercial passenger ships, freight vessels or convoys resulting in damage to property and/or personal injury occurred during the course of 2017 on the Austrian section of the Danube. Fourteen accidents involving cargo vessels were recorded, while eight incidents of damage to passenger ships were reported.

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. One incident of a vessel running aground due to overloading was also recorded. Five incidents involved damage to riverbanks and a further ten collisions occurred within the confines of lock facilities. Finally, one vessel was involved in a collision with a bridge.

Two accidents resulting in personal injury were recorded for freight and passenger ships on the Austrian section of the Danube in 2017. A collision between a cargo ship and a roll-on roll-off ferry resulted in one passenger being slightly injured. In addition, an unsuccessful lock manoeuvre resulted in one serious injury. As in the previous year, no deaths occurred on the waterway. There were also no incidents of water pollution or load spillages recorded.

The majority of accidents in 2017 occurred within the vicinity of lock facilities (whilst being locked-through or in either the headwater or tailwater area of the lock). In total, 12 such accidents were registered: ten accidents involving vessels approaching 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: three collisions with riverbanks and two ship collisions. One collision with the riverbank occurred on the free-flowing section of the Danube east of Vienna. Three accidents were recorded on the free-flowing section of the river between Melk and Krems (Wachau) in 2017: one bridge strike, one collision with the riverbank and one incident of a vessel running aground.

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 2017. The first involved a vessel colliding with a storage tank facility, and the second involved two leisure crafts colliding with one another. Neither incidents resulted in injury or death.

- Collisions with lock facilities and riverbanks, along with ship collisions were the most frequent types of accidents in 2017
- Personal injuries: one slight injury, one serious injury, no deaths
- 14 accidents involving freight vessels and eight accidents involving passenger ships

MODAL SPLIT

Slight increase for rail and the Danube
Increase in westbound traffic on Danube

- Rail and the Danube increase their shares
- Strongest increase on the Danube in exports at the western border

The trend of rising traffic volumes in the Austrian Danube corridor continued in 2017. With around 88.4 million tons, it recorded an increase of 5.6% compared to 2016. This represents a total increase of 4.7 million tons for all three modes of transport. (Data on road transport for 2017 is based on estimates by the Austrian Institute for Spatial Planning, as official data is still pending).

The chart shows the cross-border transport volumes (net tons) for the three transport modes of rail, road and waterway in the Austrian Danube corridor according to transport type. 2017 saw the western border once again dominate transport volumes in the Austrian Danube corridor. With 64.6 million tons, it also recorded a slight increase of 5.1% compared to 2016. More than 46.4 million tons of goods, including transit, were transported across Austria's eastern border during the course of the year. This represents an increase of 6.3% on the previous year.

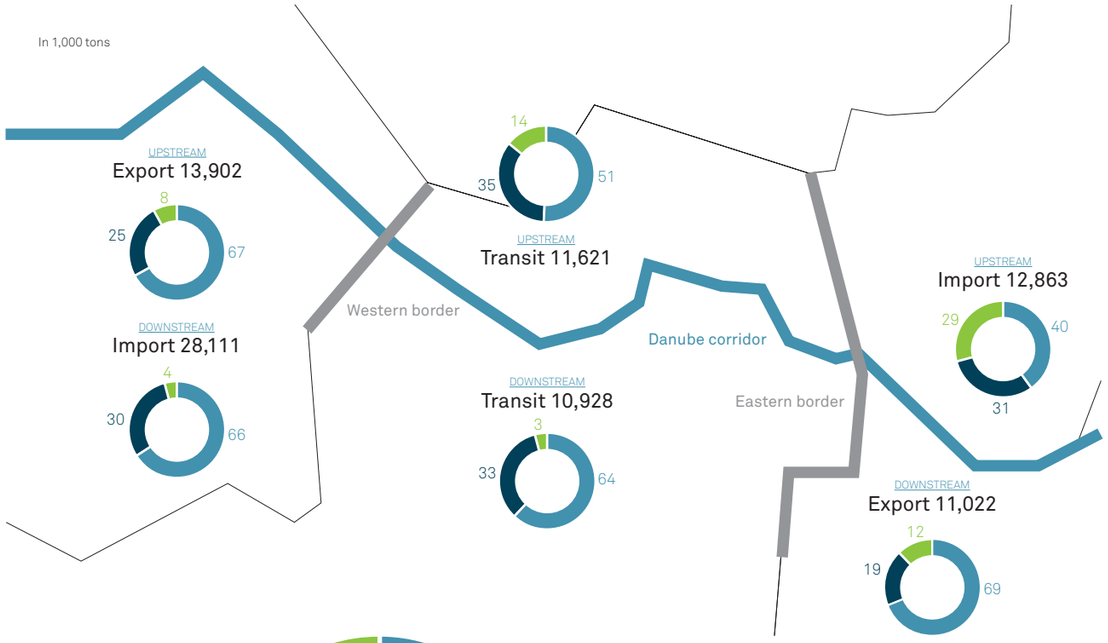
With regard to the modal split, 2017 saw a slight increase in the environmentally friendly transportation modes of rail and the Danube. Rail transport accounted for 29.1% (+0.2%) of all goods transported, while traffic on the Danube increased by 0.3% to 10.4%. For the first time in a number of years, road traffic declined slightly in 2017, but nevertheless remained the dominant mode of transport in the Danube Corridor with 60.5% of total traffic volumes.

The Danube achieved in 2017 the largest share of transport volumes in imports on the eastern border (28.6%) and in upstream transit traffic (14.4%). The largest pro rata increase was recorded by exports on the Danube's western border, with an increase of 2.1% compared to 2016.

Overall, cross-border freight traffic on the Danube increased by 9.1% in 2017. The slight decline in transit traffic was more than offset by growth in imports and exports.

FIGURES_DATA_FACTS

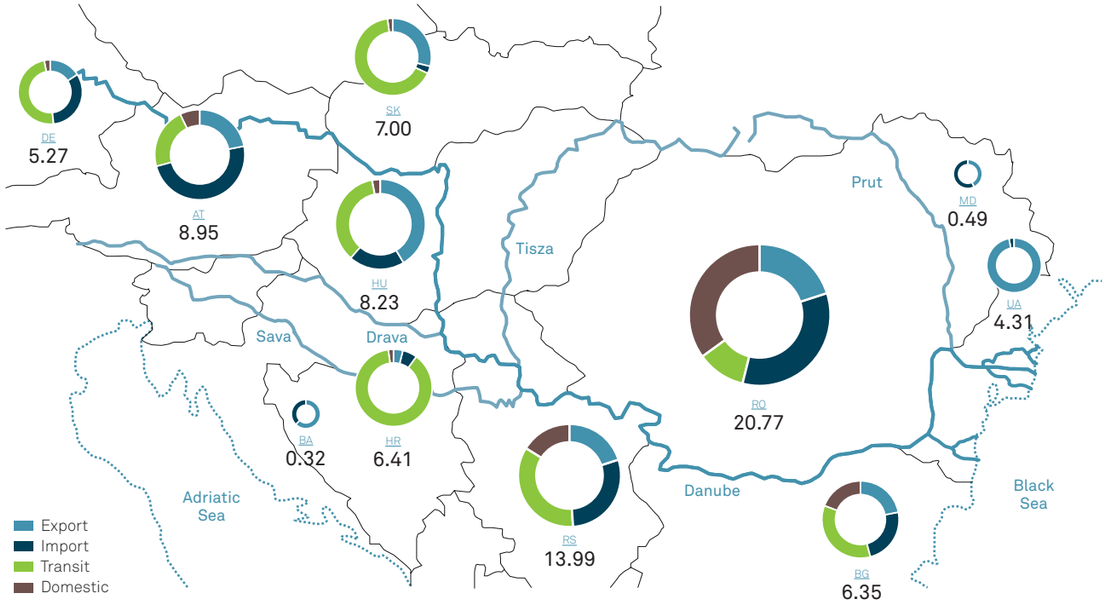
Cross-border freight traffic in the Austrian Danube corridor 2017



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

FIGURES_DATA_FACTS

Freight transport on the entire Danube 2016



In millions of tons	DE	AT	SK	HU	HR	BA	RS	RO	BG	MD	UA
Export	0.82	2.00	2.09	3.41	0.22	0.20	2.79	4.13	1.39	0.21	4.22
Import	1.74	4.36	0.13	1.68	0.41	0.12	4.04	7.09	1.54	0.28	0.08
Transit	2.56	1.98	4.74	2.94	5.68	0.00	4.88	2.20	2.20	0.00	0.00
Domestic	0.15	0.61	0.04	0.20	0.10	0.00	2.28	7.35	1.22	0.00	0.01
Total	**5.27**	**8.95**	**7.00**	**8.23**	**6.41**	**0.32**	**13.99**	**20.77**	**6.35**	**0.49**	**4.31**

Source: Eurostat, National Traffic Statistics, viadonau, adapted by viadonau

FREIGHT TRANSPORT ON THE ENTIRE DANUBE

39.6 million tons in 2016
Plus 3.2% compared to 2015

The most current available figures regarding the volume of freight transport on inland waterways in the Danube region are from the year 2016. This year saw 39.6 million tons of goods transported on the Danube waterway and its tributaries – an increase of 3.2% or approximately 1.2 million tons compared to 2015. The figures for inland waterway transport on the Danube (including tributaries) are laid out in the following paragraphs and the chart opposite. River-sea transport is dealt with further below.

As in previous years, in 2016 Romania once again recorded by far the largest transport volume on the Danube with almost 21 million tons, followed by Serbia with almost 14 million tons and Austria with around 9 million tons. While the increase in freight traffic on the Danube in Slovakia, Serbia, Moldova and the Ukraine was in the double-digit percentage range, compared to 2015, a moderate increase was also recorded in Austria and Romania. Only in Hungary, Croatia and Bulgaria a decline in freight traffic on the Danube was recorded; this was, however, less than 5 per cent.

With 4.2 million tons of goods shipped (+24.7% compared to 2015), the Ukraine was, for the first time in a number of years, able to outperform Romania and Hungary as the largest exporter on the Danube. Romania exported 4.1 million tons (+3.7%), while in Hungary waterway exports amounted to 3.4 million tons (–20.5%).

With 7.1 million tons (–4.8%), Romania once again recorded the highest level of imports on the Danube in 2016, followed by Austria with 4.4 million tons (–1.5%). Serbia recorded a surprisingly strong increase in imports with 32.1% or 4.0 million tons, making it the third largest import country on the Danube.

On the Romanian Danube-Black Sea Canal (including its side channel), a total of 14.5 million tons were transported in 2016 (including river-sea shipping of around 80,000 tons). Compared to 2015, this represents an increase of 3.6% or around 0.5 million tons of goods transported.

In 2016, maritime transport on the Danube, i.e. transport by river-sea vessels or by sea-going vessels, accounted for a total of nearly 4.2 million tons – a decrease of 4.3% or around 0.2 million tons compared to 2015. The majority of this traffic, nearly 3.8 million tons of goods, was shipped via the Romanian Sulina canal (–2.2% compared to 2015).

- An increase in overall transport volumes on the Danube (+3.2 % compared to 2015)
- Ukraine was the most important exporter in 2016, Romania was once again the largest importer on the waterway
- Almost 4.2 million tons of maritime traffic on the Danube (–4.3 % compared to 2015)

FAIRWAY CONDITIONS ALONG THE ENTIRE DANUBE

Unfavourable fairway conditions, on the Lower Danube

“Responsible development of the Danube waterway is an international concern. With the EU-funded FAIRway Danube project, in cooperation with the partner countries, we are supporting dynamic development throughout the whole Danube region and promoting the use of modern surveying equipment to ensure reliable and harmonised fairway data.”

VIKTORIA WEISSENBURGER
Project Manager
Strategy & Action Programmes

Fairway conditions were less favourable in 2017 than in the previous year. January and early February were characterised by very low water levels and a period of cold weather that caused the formation of ice on the Danube. This led to the closure of navigation on the Upper, Central and Lower Danube. In Romania, the fairway had to be closed to navigation for a total of 42 days. These extreme hydro-meteorological conditions in January caused fairway depths of well below 2.5 m at the most critical sections along the entire Danube. From mid-February until the end of the year, minimum fairway depths were generally exceeded on the Upper and the Central Danube. On the Lower Danube, water levels started to decrease in June, dropping below the LNWL on several days. This, combined with insufficient maintenance work and the required capital intervention, led to unfavourable fairway conditions at several critical locations on the Lower Danube in summer 2017. In Bulgaria for example no dredging was carried out in 2017 due to a lack of budget and suitable dredging equipment. The most critical location was once again Cochirleni (Romania), where the minimum fairway depth was not achieved in July, August, September and most of October.

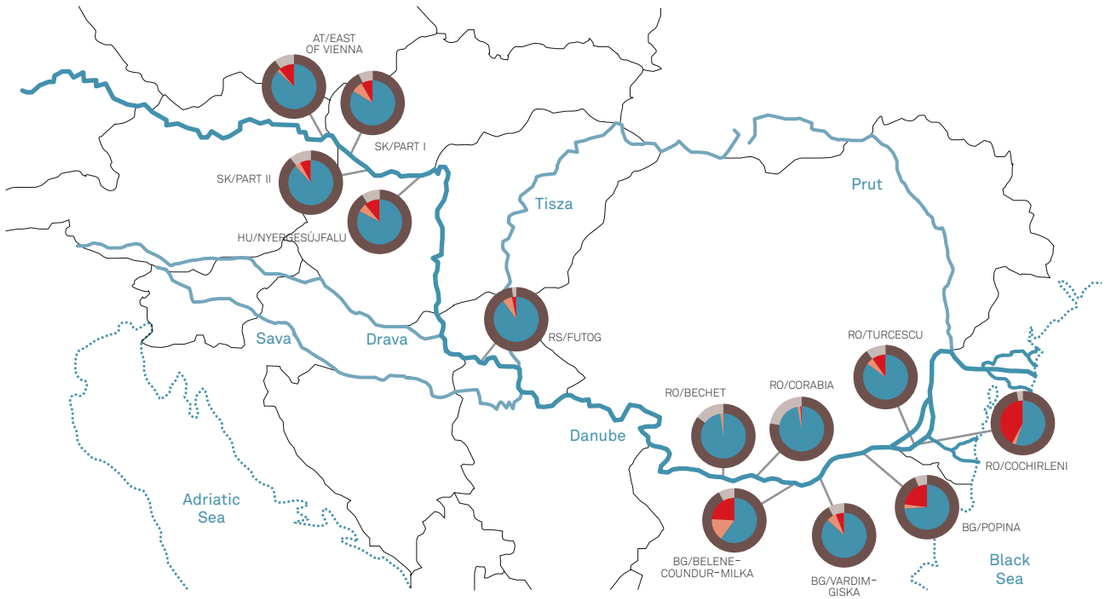
The chart provides a status overview of the most important critical locations on the Danube in 2017. For each critical location, the figure illustrates the situation regarding fairway availability (inner circle) in relation to reference water levels (outer circle). The maintenance target is to provide fairway depths 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 2017, this maintenance target was only achieved 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, despite 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 a number of days.

Many riparian countries have made considerable investments in recent years in order to increase 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.

FIGURES_DATA_FACTS

Fairway conditions at critical locations along the Danube 2017



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 2018. 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 maintenance targets, differ and may change over the course of time. Germany and Hungary did not participate in the update in May 2018 and are accordingly not considered in the map above.

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

Traisen

Donau

Erlauf

Ybbs

Enns

Traun

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

Engelhartszell

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

Aschach

Service Centre
Upper Danube Valley

**Handelshafen
Tankhafen
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

Traun

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**

Service Centre
March-Thaya

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

Hainburg

Bratislava

Service Centre
Carnuntum

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

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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