Annual Report on Danube Navigation in Austria | viadonau

## Key data on Danube navigation 2020<sup>1</sup>

Transport volumes	
8.2 million tons (-3.1%)	• Import: 4.0 million tons (-4.9%)
	• Export: 2.1 million tons (–8.8%)
	• Transit: 1.6 million tons (-11.3%)
	• Domestic: 0.6 million tons (+134.5%)
Transport performance	
7.5 billion tkm (–10.2%)	• Within Austria: 1.6 billion tkm (–6.3%)
8,071 transportations (–0.3%)	• Outside Austria: 5.9 billion tkm (–11.2%)
Waterside transhipment at Austri	ian ports and transhipment sites
7.2 million tons (+4.0%)	• Ores and metal waste: 2.1 million tons (+4.7%)
	Crude and manufactured minerals, building materials:
	1.4 million tons (+96.5%)
	<ul> <li>Petroleum products: 1.3 million tons (–17.6%)</li> </ul>
	Agricultural and forestry products: 0.9 million tons (-7.8%)
	• Metal products: 0.6 million tons (–12.6%)
	• Fertilisers: 0.6 million tons (-3.0%)
	• Other goods: 0.3 million tons (-6.8%)
	ian Danuka laaka
52.076 vessel units <sup>2</sup> (–47.0%)	Freight transport: 44.575 units (-2.9%)
	• Passenger transport: 7,501 units (-85.7%)
Passenger transport (including es	stimation)
0.2 million passengers (–88.0%)	• Liner services: 100,000 passengers (–86.5%)
	• River cruises: 50,000 passengers (–90.7%)
	Non-scheduled services: 15,000 passengers (-85.7%)
Accidents	
15 traffic accidents with damage	• Personal injuries: 0 death, 0 serious injured, 0 slightly injured
	• Damage to property: 7 grounding incidents, 6 incidents
	with damage to riverbanks and facilities, 3 ship to ship, 0 ship sunk
Availability of the waterway	
364 days	Closures due to high water: 2 days
15 year average: 357 days	Closures due to ice: 0 days

<sup>1</sup> Changes from 2019 are given as percentages in brackets <sup>2</sup> Convoys and individual vessels

Source: Statistics Austria; Supreme Navigation Authority at the Federal Ministry for Climate Action, Environment, Energy Mobility, Innovation and Technology; miscellaneous passenger transport operating companies; viadonau

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### With a view to the future Bouncing back from the corona crisis

The most serious health crisis of the last 100 years has affected almost every area of society. But nevertheless, the measures to contain the corona pandemic go hand in hand with the conviction that a powerful comeback will follow. In view of the dramatic consequences for passenger navigation in particular, it was and is important for the Ministry of Climate Action to look to the future, to maintain close ties with all stakeholders interested in using the Danube in close cooperation with viadonau and to indicate clearly that we are both open to their concerns as the parties responsible for the waterway and its operation. We are unwavering in our firm commitment to a safe future for the Danube as an area for life, nature and commerce. And although the pandemic has often forced us into the digital realm to pursue these goals, the true dimensions of the Danube have remained our principal concern – its nature, the safe flow of traffic, its economic prospects and how best to deal with the corona crisis.

The European Strategy for the Danube Region and the National Danube Action Programme, along with the goals enshrined therein, help us to combine safety, nature conservation and economic interests within an integrative framework. We will continue to ensure holistic development of the Danube, protecting its ecological diversity and strengthening its infrastructure. By ensuring uniform information standards for the waterway at international level, we are leveraging its importance as an economic factor as well as a tourist magnet for visitors from all over the world. In doing so, we are creating the dynamic opportunity to tap into its full potential in the period after the pandemic. After all, in the same way that the Danube can only flow in one direction, there is only one direction in which we should be looking: forward and towards the common goal of a comeback, a resurgence of passenger navigation and even stronger use of environmentally friendly inland waterway vessels.



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

### Continuity and a fresh start on the Danube Towards a stable and buoyant future

The corona pandemic had mixed effects along the Danube in 2020. While passenger navigation ground to a standstill, cargo shipping remained almost unchanged compared to last year. The crisis impressively demonstrated the force of nature and showed at the same time the importance of the Danube as an essential supply artery in these extraordinary times and how important it is that we dedicate ourselves to the daily demands placed in the safety, reliability and sustainable development of the waterway. It was also a stark reminder that our experts continue to show their extraordinary commitment, despite the profound impairment of personal and professional life. With continuity and steadfast focus, we ensure the safe and high-quality transport of goods and in doing so provide the best possible conditions along the Danube to support the resurgence of tourist shipping.

It is the nature of the Danube to keep moving. We are determined to reflect this intrinsic trait of the river in every aspect of our work. Moreover, we are sending a strong and encouraging signal of stability and confidence to our customers on the Danube with the launch of construction in "LIFE+ Auen-wildnis Wachau" – one of the largest renaturation projects of recent years – the reconnection of the Spittelau branch as part of the Austrian-Slovakian project "Dynamic LIFE Lines Danube" and continuous modernisation of the waterway infrastructure, for example as part of the international "FAIRway Danube" project and its promising follow-up projects. Also and especially during the crisis, we are a reliable and forward-looking partner – for life, commerce and nature along the river.



Hans-Potos Horarhile

HANS-PETER HASENBICHLER Managing Director of viadonau

## Costs per core tasks and impact scope viadonau 2020



BALANCE SHEET VIADONAU

## Successful year for nature fewer navigation barriers

The Danube Year 2020 was marked by many successes in Austria, especially ecological ones, despite the sweeping effects of the corona pandemic. With watercourse networks and riverbank restoration in large-scale and cross-border projects such as "LIFE+ Auenwildnis Wachau" and "Dynamic LIFE Lines Danube", important habitats were returned to the fauna and flora along the free-flowing stretches of the river. Important – also international – milestones were also achieved for the waterway, among them the introduction of new uniform border control forms (DAVID) in numerous Danube riparian states.

New riverbanks for the Fischa estuary. viadonau completed revitalisation of the Fischa estuary into the Danube at the beginning of 2020 as part of the transnational Interreg project "Alpine Carpathian River Corridor". Around 250 metres of hard riverbank structures were removed or lowered along the Danube. In addition, the foundation stone for the development of a new biotope was laid in autumn, which will benefit the typical river fauna in particular.

All-year water restored for Spittelau branch. viadonau started work on reconnecting the tributary system close to the town of Hainburg in spring 2020 as part of the "Dynamic LIFE Lines Danube" project. The approximately four-kilometre stretch of the Spittelau branch was separated from the main river during the large-scale Danube regulation in the 19th century. Reconnecting the formerly lost habitats will give nature space to grow again.

Even more life for Wachau. Construction work began on the "LIFE+ Auenwildnis Wachau" project between Rossatz and Rührsdorf in autumn 2020. A key objective is to restore a 1.6-kilometre tributary and a protected alluvial forest island as a new diverse habitat complex for biodiversity on the river.

Border control forms harmonised at international level. Once Hungary, Croatia and Serbia legally introduced the new "Danube Navigation Standard Forms" (DAVID) in spring, Bulgaria and Ukraine followed in August and December as the fourth and fifth countries, respectively.

The "Land Power" project was launched on the initiative and on behalf of the Federal Ministry for Climate Action, in line with the Austrian Federal Government's 2020– 2024 government programme, which envisages the construction of mandatory land power facilities. viadonau took on the lead planning and coordination of this important modernisation project, which is being implemented jointly and in coordination with the federal provinces of Upper Austria, Lower Austria and Vienna as well as the network operator, electricity supplier, berth operator and the shipping companies.



makes us more aware of the responsibility we carry every day - for ourselves as well as for fellow human beings and colleagues. With our conscientious implementation of a comprehensive set of internal rules, we remain unwaveringly true to our course and continue to achieve important successes for nature, safety and the economy along the Danube."

**JÜRGEN TRÖGL** Crisis Manager viadonau

# Freight transport on the Austrian Danube 2016–2020

8,246,781 t

2020



## Minimum continuously available fairway depths on the free-flowing stretches of the Danube 2020



## Wachau





-

of the

## East of Vienna



# Locked-through vessel units 2016–2020



CUSTOMER SATISFACTION: INFRASTRUCTURE

## Average rating "good" Proactive maintenance

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 winter 2020/21 customer survey yielded feedback from 58 members of the navigation sector in total (+38.1% compared to the last survey). 46.6% of the responses were from ship captains, 31.0% from ship owners and 22.4% from others – with freight transport accounting for a 37.0%, passenger transport for 27.8% and others for 35.2%. The chart on the opposite side illustrates the detailed results of the current customer survey.

The customer survey collects data on, among other things, the quality of fairway maintenance in the Austrian section of the Danube, that is maintenance dredging operations carried out by viadonau. The average rating in the current survey was 1.7 on a school grade scale of 1 to 5, with 92.9% of respondents awarding a grade of "very good" or "good". viadonau believes that the once again very pleasing result can be attributed to continuous, proactive maintenance dredging work, along with the hydraulic engineering optimisation at crucial shallow points, made in recent years.

The customer survey also returned a grade of 1.7 for the visibility of fairway marks (fairway buoys) and for the friendliness and competence of the lock staff. 85.5% of respondents rated fairway marking using floating marks (visibility and positioning of fairway buoys) as "very good" or "good".

An assessment of the availability and the equipment of public berths owned by the Federal Government is also included in the viadonau customer survey. They were awarded the mean grade of "satisfactory" in the current survey. Prompted not least by the results of surveys in recent years, viadonau has recognised a need for action and has already carried out or initiated several projects for the refurbishment and upgrading of these public berths. In the Linz area, for example, construction started in 2020 on upgrading and refurbishing the Mitte dry cargo berth (southern part) and on redeveloping the Lower Danube berth. Detailed planning to expand the public berth at Wildungsmauer to accommodate large vessels was completed, and the project has since been submitted to the competent authorities.

- Users give viadonau a "good" rating for the quality of waterway services
- Proactive maintenance combined with targeted hydraulic engineering measures are the key to success

# Waterway infrastructure quality in Austria 2020



## Freight traffic on the Austrian Danube 2005–2020



Transport volumes in tons	Import	Export	Transit*	Domestic	Total
2020	3,989,282	2,060,982	1,601,604	594,913	8,246,781
2019	4,193,338	2,258,611	1,805,896	253,708	8,511,553
2018	3,793,364	1,776,694	1,355,563	276,747	7,202,368
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

\* There is no complete record for transit data in 2005 due to an absence of legal basis. Under-coverage of transit since June 2005; values extrapolated by Statistics Austria since 2005. Source: Statistics Austria, adapted by viadonau TRANSPORT VOLUMES

### Dip in transport volume by 3.1% Transport performance dropped by 10.2%

As expected, the unfavourable general circumstances, below-average fairway conditions in the first half of the year and a reduced demand for goods due to the economic impairments in connection with the corona crisis led to a decline in the volume of goods transported on the Austrian Danube. 8.2 million tons of cargo were transported in total, which corresponds to a decline of 0.3 million tons or 3.1%.

Imports, which continue to dominate transports, fell from 4.2 million tons in 2019 to 4.0 million tons in 2020 (-4.9%). In a year-on-year comparison, export volumes fell by 8.8% (to 2.1 million tons), while transit volumes declined by 11.3% (to 1.6 million tons).

These reductions were cushioned by the strong rise in domestic transport volumes. Although still the weakest transport sector, it was able to more than double its transport volume compared to the previous year, rising by 0.3 million tons to 0.6 million tons (+134.5%).

Contrasting with the decline in cross-border transports, this strong increase can be explained by the excavated material accumulated and shipped during infrastructure construction work in Linz. The volume of transported gravel also quadrupled compared to the previous year in connection with preservation measures along the Danube. The amount exceeded 0.2 million tons in 2020.

Nevertheless, the transport volumes shipped across the border accounted for 92.8% of the total volume, which illustrates the persistently strong importance of international transports for the Austrian Danube. Import transports alone were responsible for 48.4% of total volumes in 2020, while the shares of export and transit transports were 25.0% and 19.4%, respectively.

Compared to 2019, the total transport performance in 2020, so the product of transported cargo volume and the transport distance, fell by 10.2% (to 7.5 billion ton-kilometres), while the foreign share in this outstripped the domestic share by a factor of 3.7. The average transport distance per ton was 891 kilometres in 2020, which is equivalent to a year-on-year decline of 8.4%.

- Total transport volume drops to 8.2 million tons
- Strong increase in volumes transported in domestic traffic

#### PORT TRANSHIPMENT

### Increase in total volume also 2020 Rise in waterside transhipment volume

In 2020, Austria's Danube ports and transhipment sites handled a total of over 7.2 million tons of goods on the waterside. This is equivalent to growth of 4.0% or just under 0.3 million tons compared to last year. Waterside transhipment therefore countered the difficult general conditions in the pandemic year 2020.

Once again, the voestalpine industrial port in Linz recorded the largest transhipment volume of all ports along the Austrian Danube. The port handled just under 2.7 million tons, which is equivalent to a year-on-year drop of 1.1%. 36.8% of the total volume was transhipped on the waterside in the voestalpine industrial port.

The other ports and transhipment sites (Aschach, Schwerlasthafen Linz, Pöchlarn, Pischelsdorf, Korneuburg and a transhipment site in Linz built in connection with infrastructure work) registered the strongest growth in waterside port transhipment and therefore advanced to second place in the ranking. Volumes handled in the other ports amounted to more than 1.5 million tons, which is equivalent to an increase of 25.3% in a year-on-year comparison.

The Port of Enns also climbed to third spot in the ranking, based on the transhipment volume. Around 0.9 million tons were handled here in 2020, which means an increase of 18.2%. The Port of Enns therefore reflected the positive trend, recording the third highest growth in handled volumes.

The Port of Vienna comprises the ports of Freudenau, Lobau and Albern as well as the two transhipment sites Lagerhaus and Zwischenbrücken. Waterside transhipment in this group of ports amounted to slightly over 0.9 million tons in 2020. This means that the Port of Vienna ranked fourth, narrowly trailing the Port of Enns. Transhipment volumes declined by 26.4% in a year-on-year comparison.

Handling volumes in the ports of Linz AG (commercial and oil terminal) amounted to around 0.8 million tons, an increase of 14.3% compared to 2019.

The Port of Krems also experienced a positive trend in regard to the transhipment volumes, recording the second strongest growth (+23.4%). Loading and unloading in Krems rose by just short of 90,000 tons compared to last year.

In summary, a positive trend can be observed for the Austrian ports and transhipment sites: Only the voestalpine industrial port in Linz and the Port of Vienna experienced a drop in transhipment volumes. The other ports, the Port of Enns, Linz AG and the Port of Krems, generated moderate to strong growth. The rise in domestic transports is reflected in the increased transhipment volume within the group of other ports and transhipment sites, as well as in the ports of Enns and Krems.

- Increase in waterside transhipment, despite the pandemic
- The voestalpine industrial port is still Austria's most important Danube port
- The other ports rank second

## Waterside transhipment at Austrian Danube ports and transhipment sites 2020



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

<sup>2</sup>Other ports and transhipment sites include: Aschach, Schwerlasthafen Linz, Pöchlarn, Pischelsdorf, Korneuburg and the transhipment site in Linz (the latter is connected to the infrastructural building work in Linz).

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

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

Source: Statistics Austria, adapted by viadonau

## Transport volumes by commodity groups on the Austrian Danube 2020



Goods classification according to NST/R*	Domestic	Import	Export	Transit	Total 2020	Change
Agricultural and forestry products	5,234	816,466	109,852	919,617	1,851,169	-8.8%
Foodstuffs and animal fodder	325	143,958	81,411	42,648	268,342	-6.5%
Solid fuels	-	24,935	-	1,600	26,535	-50.7%
Petroleum products	78,871	562,071	570,006	18,866	1,229,814	-11.6%
Ores and metal waste	-	2,045,092	13,205	21,904	2,080,202	+5.0%
Metal products	-	158,126	489,064	175,635	822,825	-14.6%
Crude and manufactured minerals, building materials	508,861	172,805	187,110	157,310	1,026,086	+31.8%
Fertilisers	1,463	47,720	582,991	124,573	756,747	-9.9%
Chemical products	-	-	-	29,123	29,123	-0.1%
Machinery, vehicles and other articles	160	18,109	27,341	110,328	155,938	-1.7%
Total	594,913	3,989,282	2,060,982	1,601,604	8,246,781	-3.1%

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

Source: Statistics Austria, adapted by viadonau

COMMODITY GROUPS

### Ores and metal waste dominate Crude and manufactured minerals grow

Just under 8.2 million tons were transported on the Austrian Danube in 2020. This is equivalent to a slight decline of 3.1% compared to last year. Import, export and transit transports fell overall, while domestic transports recorded an increase of around 134% due to the strong growth in the group of mineral raw materials.

Despite the decline in total volume, ores and metal waste experienced a 5.0% increase in transport volume. This commodity group therefore came top in terms of total volume, repeating the performance of 2018 and the previous years. Ores and metal waste accounted for 25.2% of the total volume transported on the Austrian Danube. Like last year, just under 98% of this volume was transported domestically.

The share of agricultural and forestry products dropped to second place in 2020. This commodity group accounted for 22.4% of the volumes transported on the Austrian Danube and recorded an 8.8% decrease in transported volume.

Petroleum products are in third place based on transport volume, as was the case last year as well. In total, the commodity group experienced a drop of 11.6%.

The largest increase in transport volume was recorded in the commodity group of crude and manufactured minerals. In 2020, almost 1 million tons were transported on the Austrian Danube, which is equivalent to growth of 31.8% or 257,449 tons. A noteworthy factor is the striking increase of 885.5% or 457,226 tons in domestic transports. This commodity group climbed the ranking from sixth to fourth place.

The transport volume for metal products dropped by 14.6%. Accounting for a total share of 10.0%, they were pushed down the ranking to fifth place. In total, just over 0.8 million tons of metal products were shipped on the Austrian Danube.

756,747 tons of the commodity group of fertilisers were transported, placing them just behind metal products in regard to volumes. Foodstuffs and animal fodder followed the general trend and, at minus 6.5%, posted a decrease in transport volumes. Nevertheless, this commodity group accounted for an 81.7% increase in terms of export volume.

Transport volumes for machinery, vehicles and other articles fell by a moderate 1.7% to just under 0.2 tons. Chemical products were only transported for transit purposes in 2020. At 50.7%, solid fuels suffered the strongest decline in transported volumes and accounted for the smallest share in movements of all commodity groups.

- Slight decline in total transport volume due to difficult general conditions
- About 32% growth in transport volumes of crude and manufactured minerals

#### PASSENGER TRANSPORT

### Collapse in passenger transport 88% drop in passenger numbers

- 90.7% fewer passengers on river cruises
- Decline of 86.5% for liner services and 85.7% for non-scheduled services
- Four new cruise ships in operation on the Danube

After the strong growth of the past years, passenger transport recorded a dramatic slump as a direct consequence of the pandemic and the associated strict regulations. Only around 165,000 passengers were carried on the Austrian stretches of the Danube in 2020, which is equivalent to a decline of 88.0% in comparison to 2019.

River cruises suffered the most severe drop, carrying only around 50,000 passengers (-90.7% compared to 2019). The number of cabin vessels operating on the Austrian section decreased to 59 (-69.3%) in 2020, of which four were new vessels. In total, they completed 1,007 trips (-83.1%). Ten Danube cruise ships moved their services westwards in 2020. 133 ships were taken out of service due to the pandemic and its repercussions. They were only used occasionally for training or bunker trips.

Liner services carried around 100,000 passengers (-86.5%) in 2020. DDSG Blue Danube Schiffahrt GmbH reported a total of 49,300 passengers (-82.3%) on its liner services in the Wachau region and Vienna. The two Twin City Liners carried 13,614 passengers (-91.5%) between Vienna and Bratislava, and Fähre Dürnstein GmbH & Co. KG reported 19,036 passengers (-7.8%) on its Danube Taxis in the Wachau region. Another 1,679 people (-42.3%) used the services of Donauschiffahrt Ardagger GmbH, travelling on the MS Donaunixe and the MS Maria.

Non-scheduled services accounted for only around 15,000 passengers (-85.7%) in 2020. DDSG Blue Danube Schiffahrt GmbH carried 7,400 passengers (-84.6%) on its themed, special and charter cruises, and 1,624 passengers (+4.6%) took the non-scheduled services of the MS Carnuntum operated by Event-Schifffahrt Haider e. U. Donauschiffahrt Ardagger GmbH reported 1,087 passengers (-82.0%), and 1,072 persons (+17.5%) travelled with Fähre Dürnstein GmbH & Co. KG.

Passenger numbers are not reported separately for companies that carried fewer than 1,000 passengers on liner services or non-scheduled services in 2020. No statistics are available for other companies operating liner and non-scheduled services on the Austrian section of the Danube during the reporting period.

С

D

50,000

15,000

## Passengers on the Austrian Danube 2020\*

А

А Total 165,000 В Liner services 100,000

> С D

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

Sources: 1. Wiener Bootstaxi, Ahoi Wachau – Ahoi Reichl Geith OG, Central Danube Region Marketing & Development GmbH, DDSG Blue Danube Schiffahrt GmbH, Donauschiffahrt Ardagger GmbH, Donauschifffahrt Wurm & Noé GmbH & Co. OHG, Donau-Taxi Wachau – Fähre Dürnstein GmbH & Co. KG, Event-Schifffahrt Haider e. U., Motorboottaxi Wachau, Motoryacht Wachau, Naufahrt Wolfgang Speckner, Nostalgie Tours – Video & Consulting GesmbH, viadonau, WGD Donau Oberösterreich Tourismus GmbH



# Navigational closures due to high water and ice 2006–2020



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

#### AVAILABILITY OF WATERWAY

## Danube navigable on 364 days Two-day closure due to high water

Over a 15-year annual average from 2006 to 2020, the availability of the Austrian section of the Danube waterway was 97.7%, or approximately 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 high water with an average duration of around seven days.

Two minor incidents of high water were recorded on the Danube at the beginning of February and at the beginning of August in 2020 (exceeding the highest navigable water level 2010). The high water wave in February rendered the Struden stretch between Tiefenbach and St. Nikola impassable for about half a day. The entire Austrian stretch of the Danube was closed due to high water for around one and a half days at the beginning of August. By contrast, it was not necessary to close the Austrian Danube section due to ice in 2020. This means that the Danube waterway was available on 364 days or for 99.5% of the year.

Weather-related closures can be imposed 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 water tends to occur during 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, lock malfunctions, water pollution, construction work or events. Total lock closures (the parallel closure of both lock chambers) accounted for a duration of 18.8 hours in 2020 and affected four of the ten lock facilities on the Austrian Danube section. In addition, several short-term closures had to be ordered in the Linz area due to the bridge construction site for the western bypass (A 26). Passenger shipping on the Danube was banned completely between mid-March and the start of May as part of the measures to contain the corona pandemic.

- Long-term availability of the Danube at 97.7%
- Two brief closures due to high water in 2020

#### LOAD FACTOR

### Low water levels in the first half-year Average load factor drops to 57.1%

- LNWL reached or undercut on 34 days
- Highest load factor of 68.3% in March
- 673 transportations per month on average

Unusually low water levels for the spring months led to an atypical curve at the Wildungsmauer gauge of reference in the first half of 2020. But from June onwards, the water conditions showed the typical high water levels for the summer months, followed by the characteristic decline in autumn.

The highest water level of 617 cm was reached on 5 August, with the minimum recorded level of 134 cm coming on 22 December. In total, the highest navigable water level (HNWL) in 2020 was exceeded on two days, and the low navigable water level (LNWL) was reached or undercut on 34 days.

The fairway conditions were less favourable than in 2019: The LNWL was only reached or undercut on 31 days last year. The average daily mean value at the Wildungsmauer gauge of reference was 252 cm in 2020, 20 cm lower than in 2019.

A total of 8.2 million tons of goods were carried on the Austrian Danube with 8,071 transportations in 2020. This is equivalent to an average load factor of 57.1% per loaded trip. When correlated with the less favourable water conditions, this value is slightly below the average load factor of 59.9% from last year.

March featured the highest average load factor of 68.3% in 2020, as only 629 transportations with 0.7 million tons of cargo were shipped in this month. By contrast, the lowest average load factor of 48.9% was recorded in December, when 681 transportations were needed to carry 0.6 million tons.

Although May 2020 saw the highest transport volume of 0.8 million tons, the average load factor remained below average at 56.1% due to the moderate water conditions. This meant that 798 transportations were necessary to ship the transport volume, which was the largest number of transportations over the course of the year.

An average of 673 transportations per month were registered in 2020.

## Water levels and resulting load factors of cargo vessels in 2020 using the Wildungsmauer gauge of reference



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

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





## Minimum continuously\* available fairway depths in days on the free-flowing stretches of the Danube 2020

FIGURES DATA FACTS

Oct

Dec

FAIRWAY DEPTHS

### 2.5 m for ten continuous months Availability above 92%

From a hydrological point of view, the Danube had a good average water flow in the months of February to mid-November of 2020, which repeatedly fluctuated around mean water in February and March as well as from mid-June to mid-September. By contrast, January and December were characterised by low water levels. For instance, daily mean values below the 2010 low navigable water level were recorded at the Wildungsmauer gauge (reference gauge for the free-flowing section east of Vienna) on 17 days in the second half of January, on two days at the end of November and on 13 days in December. This means that low water was recorded on 32 days (8.7% of the year). Conversely, the highest navigable water level 2010 was exceeded at the Wildungsmauer gauge on one day each at the beginning of February and the beginning of August, which led to brief closures for navigation.

In the two free-flowing stretches of the Austrian Danube, fairway depths of more than 2.5 m were consistently available in the deep channel during the ten months from February to November, with the exception of a single day. In total, minimum fairway depths of 2.5 m were available in the deep channel of the Wachau region on 355 days or 97.0% of the year (+0.8% compared to 2019). Minimum fairway depths of 2.5 m were guaranteed in the free-flowing stretch east of Vienna on 337 days or 92.1% of the year (+3.3%). Only on five days in 2020, fairway depths fell below 2.3 m in the crucial shallow sections in the Wachau area and east of Vienna. Conversely, fairway depths of at least 2.7 m were available for navigation on 294 days.

The minimum available fairway depths for the two free-flowing sections of the Austrian Danube were determined using all hydrographic surveys of the riverbed published by viadonau in 2020. They were evaluated in combination with the respective gauge hydrographs (mean daily water levels at the Kienstock and Wildungs-mauer gauges of reference). The reference was the continuous availability of a deep channel inside the fairway, representing the required fairway width for a 4-unit pushed convoy travelling downstream without encountering other vessels.



"At viadonau, our goal of ensuring the all-year Danube navigability always goes hand in hand with perfectly processed waterway data. Our tailored, modern and comprehensive information services guarantee clear visibility along the Danube."

PETRA MARKTL Head of Geoinformation Services

#### TRANSPORT DENSITY

## Imports and eastward traffic dominate 6.3 million tons east of Vienna

Despite a dip in total transport volume to 7.7 million tons\* in 2020 compared to the previous year, the proportions of total transported amounts, the individual transport sectors and the transport directions within the individual Danube sections remained largely constant.

The gradually increasing density of transport from left to right or from west to east clearly indicates the greater importance of eastern traffic in regard to volumes, even in 2020. Accounting for 6.3 million tons, the total volume transported on the Danube stretch between Vienna and the Austrian-Slovakian border was over twice as much as the total amounts carried on the section between the German-Austrian border and Aschach (3.0 million tons).

The ratio between volumes transported upstream and downstream and the ratio between transport sectors also reflect the dominance of eastbound traffic: Import was responsible for by far the largest transport activity, accounting for 4.0 million tons in total. Of this amount, 3.3 million tons (81.7%) were carried upstream, imported from the Danube riparian states to the east of Austria.

Eastward transport takes the lead in the transport sectors of export and transit as well: Of the 2.1 million tons that were exported in total, 1.4 million (68.9%) were transported downstream, i.e. to the Danube riparian states to the east of Austria. In regard to transit, 1.4 million tons (85.5%) out of a total of 1.6 million tons of cargo were shipped from east to west and only 0.2 million tons were shipped from west to east.

The significance of the port location of Linz – which includes the commercial and oil port, the industrial port of voestalpine AG and a heavy duty port – for the composition of transport volumes in the Austrian section of the Danube is also plainly evident: Of the 3.3 million tons imported into Austria in 2020 from the countries bordering the Danube to the east, 2.0 million tons were handled in Linz alone, which corresponds to a share of 60.2%.

In total, 21,126 tons were shipped via the Austrian Danube in 2020. This amount is theoretically equivalent to the daily deployment of 845 heavy goods vehicles (à 25 net tons) or 528 rail wagons (à 40 net tons).

- Transport volume on the easternmost section of the Danube more than twice as high as on the westernmost section of the Danube
- 68.9% of exports were shipped to eastern Danube countries
- 60.2% of imports from the east transhipped in Linz

<sup>\*</sup> Excluding gravel transports intended for maintenance measures along the Danube and transports within a port location.

## Density of freight traffic on the Austrian Danube 2020



Section	Length	Import	Import	Export	Export D	omestic D	omestic	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	731	651	0	0	0	1,369	233	2,020	964	2,984
Aschach-Linz	31.30	103	688	629	7	2	1	1,369	233	2,103	929	3,032
Linz–Enns	16.87	2,065	382	172	694	38	2	1,369	233	3,644	1,311	4,955
Enns-Pöchlarn	67.63	2,298	122	136	782	39	3	1,369	233	3,842	1,140	4,982
Pöchlarn-Krems	46.20	2,309	100	136	782	39	3	1,369	233	3,853	1,118	4,971
Krems-Pischelsdorf	26.30	2,430	52	111	837	37	3	1,369	233	3,947	1,125	5,072
Pischelsdorf-Korneuburg	29.60	2,825	39	26	848	38	0	1,369	233	4,258	1,120	5,378
Korneuburg-Vienna	23.64	3,125	39	25	849	46	0	1,369	233	4,565	1,121	5,686
Vienna-Border AT/SK	45.76	3,258	0	0	1,439	0	0	1,369	233	4,627	1,672	6,299

Source: Statistics Austria, adapted by viadonau

## Overview of the Austrian Danube fleet\* according to vehicle type 2020



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

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

AUSTRIAN DANUBE FLEET

## Size of the Danube fleet stays stable Freight barges strongest group

The Austrian Danube fleet comprised 251 vehicles in 2020 (–3 compared to the previous year) with an average age of 43 years. The effects of the corona pandemic were therefore not yet evident in the fleet size. The Danube fleet includes approved vehicles in category 1 according to Section 3 of the Vessel Technology Regulation, which are registered in Austria. Vehicle categorisation takes place according to the vehicle types defined in UNECE Recommendation 28.

Slightly over half of the vehicles can be assigned to the category of non-motorised freight barges (127 vehicles or 50.6%). On average, their age is 39 years, their length 68.2 m, their breadth 10.0 m, their draught 2.5 m and their loading capacity is 1,392.5 tons.

Accounting for 43 units or 17.1%, the second largest category consists of work vehicles such as construction site vehicles and floating equipment with an average age of 46 years.

Third place went to passenger ships with 32 vehicles or 12.7% of the Austrian Danube fleet. These are mainly day-trip vessels. Only one cruise vessel with 164 passenger beds is registered in Austria. The passenger vessels have an average age of 46 years and a transport capacity of 267 persons.

17 push boats are registered in Austria (6.8% of all vehicles). On average, their age is 46 years, their length 31.6 m, their breadth 8.8 m, their draught 1.6 m and their engine power is 1,190 kW.

In the group of tank barges, eleven units are registered in Austria (4.4%). On average, their age is 32 years, their length 78.1 m, their breadth 10.4 m, their draught 2.8 m and their loading capacity is 1,641.3 tons.

Another nine vehicles (3.6%) are grouped under the category "Other vehicles". Among them are sports boats over 20 m or ferries.

The Austrian Danube fleet also includes seven motor tankers or bunker boats with an average age of 60 years, an average loading capacity of 414.7 tons and an engine power of 341 kW.

Finally, five motor cargo vessels are also registered in Austria. On average, their age is 33 years, their length 74.6 m, their breadth 10.3 m, their draught 2.4 m, their loading capacity is 1,426.4 tons and their engine power is 864 kW.

- In 2020, the Austrian Danube fleet comprised 251 vehicles with an average age of 43 years
- Freight barges the most frequent vehicle group with 50.6%
- Work vehicles come second, accounting for 17.1%, followed by passenger and day-trip vessels with 12.7%

LOCKED-THROUGH VESSEL UNITS

## 52,000 units locked through Collapse in passenger transport

- Decline by 2.9% in lockedthrough freight vessels compared to last year
- Corona-related drop of 85.7% in passenger traffic

A total of 52,076 passenger and freight vessel units, travelling both upstream and downstream, were locked through the nine Austrian lock facilities in 2020 (excluding the Jochenstein power station on the Austrian-German border). Included in this number were 29,768 motor cargo vessels and motor tankers (–2.0% compared to 2019), 14,807 pushers (–4.8%) and 7,501 passenger vessels (–85.7%). A total of 33,613 cargo and tank lighters or barges (–5.4%) 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 decrease of 47.0% compared to 2019.

2020 was severely impaired by the corona pandemic, which is clearly reflected in the locked-through passenger vessel numbers. Freight transport on the Austrian Danube saw a comparatively moderate decline in locked-through vessel units (by 2.9% or 1,340 units). By contrast, there was a dramatic drop in passenger traffic (by 85.7% or 44,818 vessel units). In 2020, freight transport had a share of 85.6% of total shipping volumes (+38.9 percentage points), with passenger traffic accounting for 14.4% (-38.9%).

In relation to 2020 as a whole, the average number of vessels passing through an individual Austrian Danube lock facility amounted to 5,786 convoys or individual vessels (a drop of 5,129 vessel units). This is equivalent to 482 vessel movements per month (-427) or 16 per day. As in previous years, the highest volume of vessels was once again recorded at the Freudenau lock (Vienna) with 7,299 vessels units (-45.8%), followed by the Abwinden lock with 6,625 units. Aschach lock recorded the smallest number of locked-through vessels with 4,598 units.

In addition to commercial freight and passenger vessel units, 10,750 small sports and leisure crafts also passed through lock facilities on the Austrian Danube in 2020 (+11.5%), together with a further 1,542 vessels, for instance public authority and rescue crafts.

# Vessel units\* in freight and passenger transport locked through Austrian Danube locks in 2020



	Freight traffic	% to previous year	Passenger traffic	% to previous year	Total	% to previous year
2020	44,575	-2.9	7,501	-85.7	52,076	-47.0
2019	45,915	+7.8	52,319	+11.0	98,234	+9.5
2018	42,597	-16.7	47,147	+7.1	89,744	-5.7
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

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

Source: viadonau

## Availability of Austrian Danube locks 2020



■ Lock chamber operational ■ Maintenance/overhaul ■ Other closures RC Right lock chamber → Utilisation in % LC Left lock chamber

Source: viadonau

#### AVAILABILITY OF LOCK CHAMBERS

### 99.4% continuous availability Mean chamber utilisation around 21%

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 89,7% of all closure days of the 18 lock chambers in 2020. The average duration of overhauls carried out in the winter half year 2019/20 and completed by the spring of 2020 was 202 days per chamber.

Other reasons for lock closures included repairs caused by technical defects during the year. They led to 5.6% of all closure days in total. In addition, 2.8% of closure days were attributed to scheduled modification or maintenance work, dredging in and around lock facilities and surveying. A brief high water-related closure at the majority of the lock facilities was also recorded in 2020. This elementary event was responsible for 1.9% of all closure days.

The 18 lock chambers on the Austrian Danube were continuously available on almost 364 days (99.4%) in 2020. In the months of April to October, which are the busiest for passenger, sports and leisure navigation, a large part of the Danube locks were completely closed for about 35 hours – at the beginning of August – due to a brief high water event. Apart from this, only one other short-term complete closure was recorded at the Altenwörth lock, which was caused by a power failure in the power plant lasting just under five hours. In the low-traffic months of November to March only three lock chambers were out of operation simultaneously. This was due to urgently needed work and repair measures while the second lock chamber was undergoing an overhaul. The work lasted three hours on average.

Capacity utilisation of the individual lock chambers averaged at around 21% in 2020. The distribution of utilisation differs quite widely from a geographical perspective. As in previous years, the Freudenau lock reported the highest average utilisation of about 34%, while the Ottensheim lock recorded the lowest utilisation of around 15%. In this regard, the degree of lock chamber utilisation corresponds to its "occupancy time", i.e. the entire period from the entry of the first to the exit of the last jointly locked-through vessel, assuming 24/7 availability of the lock chambers and taking into account the lock closures.

- 99.4% continuous availability of the Austrian locks in 2020
- Lock overhauls are carried out during the low-traffic period from November to March in order to avoid waiting times

WAITING TIMES AT LOCKS

### Only 4.6% of the vessels waited Average waiting time 27 minutes

In 2020, an average of 4.6% of all vessel units (commercial freight and passenger vessels) on the Austrian section of the Danube were required to wait at the nine lock facilities; the mean waiting time for these 4.6% was 27 minutes over the entire year.

Lock availability and traffic volumes are the principal factors that influence waiting times. Around 77% of the waiting times incurred can be attributed to the unavailability of lock chambers due to overhauls and repairs/disruptions. The remaining roughly 23% are primarily caused by traffic circumstances, unusual events and regular operations.

A detailed consideration of the evaluation reveals the following situation. The majority of the waiting times (56.8%) were attributable to overhauls of the lock chambers in Wallsee, Persenbeug and Greifenstein. About one fifth (19.9%) resulted from repairs/disruptions and closures due to dredging or surveying during the year. Merely 15.8% of waiting times (2019: around 30%) were due to increased traffic as a result of the slump in passenger shipping caused by the corona pandemic. This includes situations in which more vessels are waiting at a lock than can be accommodated in one chamber. Accounting for 4.0% of the waiting times, a statistical survey on transit volumes had an impact on navigation, and only 3.2% of the waiting times fell within the lock supervisory staff's direct sphere of influence.



"It is vital to maintain reliable waterway operations, especially during a crisis. Our highly-qualified, specialist staff use a prudent approach, competence and a sense of responsibility to ensure that the Austrian Danube locks remain a significant factor for stability and safety along the river in 2020 as well."

MICHAEL STUMPFER Lock Supervision Melk

## Causes of waiting times at Austrian Danube locks 2020



# Traffic accidents according to type of damage on the Austrian Danube 2020



Source: Supreme Navigation Authority within the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology, adapted by viadonau

ACCIDENTS

## Drop in number of accidents Groundings most frequent type

In regard to accident statistics, Danube navigation is an unbeatably safe transport mode, compared to land transportation by road or rail. A total of 15 accidents involving commercial passenger ships, freight vessels or convoys resulting in damage to property and/or personal injury occurred during the course of 2020 on the Austrian section of the Danube. 14 accidents with cargo vessels were recorded, while another two incidents resulted in damage to passenger ships. The latter statistic is due to the reduced traffic of passenger vessels as a result of the corona pandemic.

Broken down according to type of accident, there were seven groundings (due to excessive loading depths, insufficient water depth or navigating outside the fairway) and four collisions with other facilities. Vessels collided during service in three other cases. One incident respectively involved a collision with the riverbank and a collision with a lock facility. One accident led to a grounding, as well as a collision with a facility (buoy).

No-one was injured during accidents in freight and passenger traffic on the Austrian Danube section in 2020. There were also no incidents of water pollution or leakage of cargo.

Most of the accidents in 2020 occurred on free-flowing sections. A total of nine accidents were recorded here, six of them on the free-flowing section of the Danube east of Vienna and three on the free-flowing section between Melk and Krems (Wachau). These were seven groundings, one collision of vessels in service and one collision with a facility. Five accidents occurred in 2020 on impounded sections, including two vessel collisions, two collisions with facilities and one collision with the riverbank. Only one collision with a lock facility occurred (while passing the lock or in the headwater and tailwater of the lock).

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 one accident involving damage on the Austrian section of the Danube in 2020. This was a grounding. In a second incident, a fire brigade service vehicle sank.

- Groundings the most frequent type of accident in 2020
- No personal damage
- Cargo vessels were involved in 14 accidents, passenger vessels in two

#### MODAL SPLIT

## Dip in transport volume along Danube Varying impacts on transport modes

In 2020, the decline in production and demand for goods caused by the pandemic impacted the Danube corridor with a reduction in total cross-border transport volume of around 7% or 6.4 million tons (to 85.0 million tons) in a year-on-year comparison. Although all three transport modes – road, rail and Danube – experienced a decline in transport volumes, this trend was reflected differently in the percentage shares in the modal split accounted for by each mode.

While the share of cargo transported by rail along the Danube corridor dropped by one percentage point to around 27% from 2019 to 2020, heavy goods vehicle transports were able to increase their share in the transport volumes by around one percentage point to roughly 64%, despite a dip in quantities by 3.8 million tons. The cargo carried along the waterway by inland vessels maintained its share of approximately 9%, despite a drop of 0.6 million tons.

During 2020, downstream transit transports experienced the most severe reduction in cross-border transports of 9.6%. Only import transports across the eastern border of the Danube corridor managed to increase volumes by 1.1% or 0.1 million tons, despite the overall downward trend.

Imports across the eastern border also saw the greatest change in the percentage shares of the transport modes: While rail transports decreased year-on-year by 3 percentage points to about 27% and inland waterway transports by 2 percentage points to around 25%, heavy goods vehicle transports increased their share by 5 percentage points to approximately 48%.

Despite this decline in 2020, the Danube continued to have its greatest importance in regard to the modal split in the Danube corridor for imports transport via the eastern border. Its smallest contribution of just 2% was in the segment of downstream transit transports.

There were also more considerable changes compared to the previous year in regard to export transports across the western border, where the share of road transports rose by 2 percentage points to around 73%, while the share of rail transports dropped by 2 percentage points to roughly 22%. The Danube was able to maintain its share of approximately 5%.

The proportion of volumes transported upstream by rail fell by 2 percentage points, namely to around 35%. The two other transport modes – road and Danube – bene-fited from this decline and were each able to increase their share by one percentage point (to around 52% and 13%, respectively).

Although the western border of the Danube corridor, accounting for 60.4 million tons, was also used to transport a significantly larger volume of goods in 2020 than the eastern border, the decline in transport volume was greater here: While the volume of goods transported via the western border was 9.2% lower than in 2019, the corresponding decline at the eastern border was 5.1%.

- 85.0 million tons of crossborder transports in total
- Imports account for the largest change in the modal split across the eastern border
- Greater drop in volumes transported via the western border

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FIGURES DATA FACTS

## Cross-border freight traffic in the Austrian Danube corridor 2020



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



In millions of tons	DE	AT	SK	HU	HR	BA	RS	RO	BG	MD	UA*
Export	0.51	2.07	1.56	2.87	0.27	0.13	3.65	6.38	1.41	0.03	3.38
Import	1.28	4.18	0.15	2.46	0.37	0.05	5.31	5.71	1.43	0.39	0.14
Transit	2.20	1.94	5.38	3.09	5.61	0.00	4.41	2.89	11.88	0.00	n.a.
Domestic	0.19	0.25	0.03	0.12	0.07	0.00	2.17	8.60	1.07	0.00	n.a.
Total	4.18	8.44	7.12	8.54	6.32	0.18	15.54	23.58	15.79	0.42	3.52

\* Data on transit and domestic traffic on the Ukrainian section of the Danube is not available. Therefore, the sum total as stated only includes export and import volumes. Sources: Eurostat, national traffic statistics, adapted by viadonau

#### FREIGHT TRANSPORT ON THE ENTIRE DANUBE 2019

## 36.2 million tons in the Danube region Largest transport volume in Romania

As expected, the significant improvement in fairway conditions in 2019 compared to the year before led to an increase in transport volumes shipped in the Danube region. A total of 36.2 million tons were transported by inland waterway between Kelheim and the mouth of the Danube, including the volumes shipped both to and from Bosnia-Herzegovina via the Sava River.

Viewed at national level, Romania again recorded the highest volume of transports (23.6 million tons), an increase of 20.3% compared to 2018. Romania enjoyed its most vigorous growth in the area of import and export traffic, which experienced a year-on-year rise of 28.5% and 49.0%, respectively.

The second largest volume, namely 15.8 million tons, was carried in Bulgaria, which benefited in particular from strong growth in transit transports. Serbia ranked just behind Bulgaria, recording a transport volume of 15.5 million tons.

Trailing significantly behind were Hungary with 8.5 million tons, Austria with 8.4 million tons, Slovakia with 7.1 million tons, Croatia with 6.3 million tons, Germany (local government districts of the Upper Palatinate/Lower Bavaria) with 4.2 million tons, Ukraine with 3.5 million tons (without transit and domestic transports), Moldova with 0.4 million tons and finally Bosnia-Herzegovina with 0.2 million tons.

The dominant position of transit transports is noticeable in Germany, Slovakia, Croatia and Bulgaria, where they accounted for between 52.6% and 88.8% of total transport volumes. Import transports are of overriding importance in Austria and Moldova, contributing 49.5% and 92.9% to overall transports in 2019.

By contrast, export was the most important transport segment for Bosnia-Herzegovina (72.2%) and Ukraine (96.0%). Hungary, Serbia and Romania reported a more balanced composition of transport volumes.

5.5 million tons of cargo were shipped on the Sulina arm, the middle of the three main arms of the Danube Delta, in 2019, which is equivalent to a 23.6% increase compared to 2018. In total, 16.7 million tons of cargo were transported on the Danube-Black Sea Canal and its northern arm – 18.6% more than in the previous year – of which 16.6 million tons were moved by inland waterway vessel and 0.1 million tons by seagoing vessel.

- Over 15 million tons of cargo in Romania, Bulgaria and Serbia
- Austria ranks fifth in terms of transport volume
- 16.7 million tons on the Danube-Black Sea Canal

"Reliability is the most powerful incentive for using the waterway. Working with riparian states of the Middle and Lower Danube, international projects such as FAIRway Danube are enabling us to successfully harmonise fairway information services and establish quality waterway services at the highest technical level."

**LUCIA KARPATYOVA** Project Manager Action Programmes & Projects FAIRWAY CONDITIONS ALONG THE ENTIRE DANUBE

## Fairway conditions improved compared to previous years

Throughout 2020, hydrological conditions along the entire Danube were favourable, and although water discharge was below average in some parts of the Lower Danube, water levels remained above low navigable water level (LNWL) for much of the year. Only in January and early February and in September and October a few days with water levels below LNWL were recorded.

Likewise, fairway conditions along the entire Danube were much more favourable compared to the last three years. Especially on the Lower Danube, where the worst nautical bottlenecks are usually located, fairway conditions have been gradually improved in recent years through maintenance dredging and extensive fairway marking activities. In 2020 the most critical bottlenecks were located on the Hungarian Danube stretch, in particular the locations Nyergesújfalu and Solt, where the minimum fairway depth of 2.5 m was not achieved for 80 days and 81 days, respectively.

The chart provides a status overview of the most important critical locations on the Danube in 2020. For each critical location, the figure illustrates the situation regarding fairway availability (inner circle) in relation to reference water levels (outer circle). The maintenance target is to provide fairway depths equal to or exceeding 2.5 m on at least as many days per year as the daily average water level exceeds the low navigable water level (LNWL). This situation corresponds to the inner blue circle reaching the level of the outer dark brown circle. In 2020, this maintenance target was achieved in several critical locations along the Danube.

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

Since the endorsement of the "Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries" in 2014, significant steps have been taken for its implementation. Considerable investments have been made by many riparian countries through EU co-financed projects within the Connecting Europe Facility, the national Operational Programmes and the Instrument for Pre-Accession (IPA). The Master Plan and the project FAIRway Danube, both coordinated by viadonau, as well as various national project initiatives are crucial elements of the joint effort to achieve optimal fairway conditions along the entire length of the Danube waterway. Over the last few years, the intensified operative use of new equipment for targeted rehabilitation and maintenance measures has gradually improved the physical fairway conditions, especially on the Lower Danube.

## Fairway conditions at critical locations along the Danube 2020



For Germany, no data is currently available. In the free flowing section between Straubing and Vilshofen a fairway depth of 2.5 m is neither developable nor maintanable. In this section the objective is to maintain the fairway depth of 2 m related to low navigable water level.

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 2021. Individual framework conditions at critical sections need to be taken into account. The severity of the critical sections, along with reasons for failing to meet the maintenance targets, differ and may change over the course of time.

Sources: "Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries" and the National Action Plan Update May 2021, which have been prepared within the framework of the EU Danube Region Strategy (www.navigation.danube-region.eu) and the FAIRway Danube project. Chart adapted by viadonau.





## Imprint

A project within the scope of the BMK Action Programme for the Danube until 2022

#### Publisher

via donau – Österreichische Wasserstraßen-Gesellschaft mbH Donau-City-Strasse 1, 1220 Vienna, Austria Tel.: +43 50 4321-1000 www.viadonau.org

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**Design** Jana Hadam

Photos Johannes Zinner, viadonau/Thomas Bierbaumer, BMK

Print

Druckerei Janetschek GmbH www.janetschek.at

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produced according to the Austrian Eco-Label criteria
 UZ 24 "Iow pollutant printed products"
 Druckerei Janetschek GmbH · UWNr. 637

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