



KEY DATA ON DANUBE NAVIGATION 2011

Changes from 2010 are given as percentages in brackets

TRANSPORT VOLUME	
9.9 million tons (-10.0%)	Import: 5.6 million tons (-10.3%) Export: 1.5 million tons (-7.3%) Transit: 2.3 million tons (-16.8%) Domestic: 0.6 million tons (+23.8%)

TRANSPORT PERFORMANCE	
9.6 billion tkm (-16.2%)	Within Austria: 2.1 billion tkm (-10.6%)
10,325 loaded journeys (-0.6%)	Outside Austria: 7.5 billion tkm (-17.6%)

WATER TRANSHIPMENT AT AUSTRIAN PORTS AND TRANSHIPMENT SITES	
8.2 million tons (-6.2%)	Ores and metal waste: 2.9 million tons (-16.0%) Petroleum products: 2.3 million tons (-0.4%) Fertilisers: 0.8 million tons (-0.6%) Agricultural and forestry products: 0.7 million tons (+41.9%) Metal products: 0.5 million tons (-8.6%) Other goods: 1.0 million tons (-10.4%)

VESSEL UNITS LOCKED THROUGH AUSTRIAN DANUBE LOCKS	
98,036 vessel units* (-1.2%)	Freight transport: 63,792 units (-4.9%) Passenger transport: 34,244 units (+6.5%)

PASSENGER TRANSPORT (INCL. ESTIMATION)	
1.1 million passengers (+4.6%)	Liner services: 700,000 passengers (+2.3%) River cruises: 270,000 passengers (+10.2%) Non-scheduled services: 120,000 passengers (+6.1%)

ACCIDENTS	
21 traffic accidents with damage	Personal injuries: 0 dead, 0 slightly injured Damage to property: 6 vessel-vessel, 0 grounding incidents, 15 incidents with damage to bank and facilities

AVAILABILITY OF THE WATERWAY	
361 days	Closing due to high water: 4 days
15-year average: 359 days	Closing due to ice: 0 days

Source: Statistics Austria; Supreme Navigation Authority at the Federal Ministry for Transport, Innovation and Technology; Federal Office of Transport; diverse companies active in passenger transport

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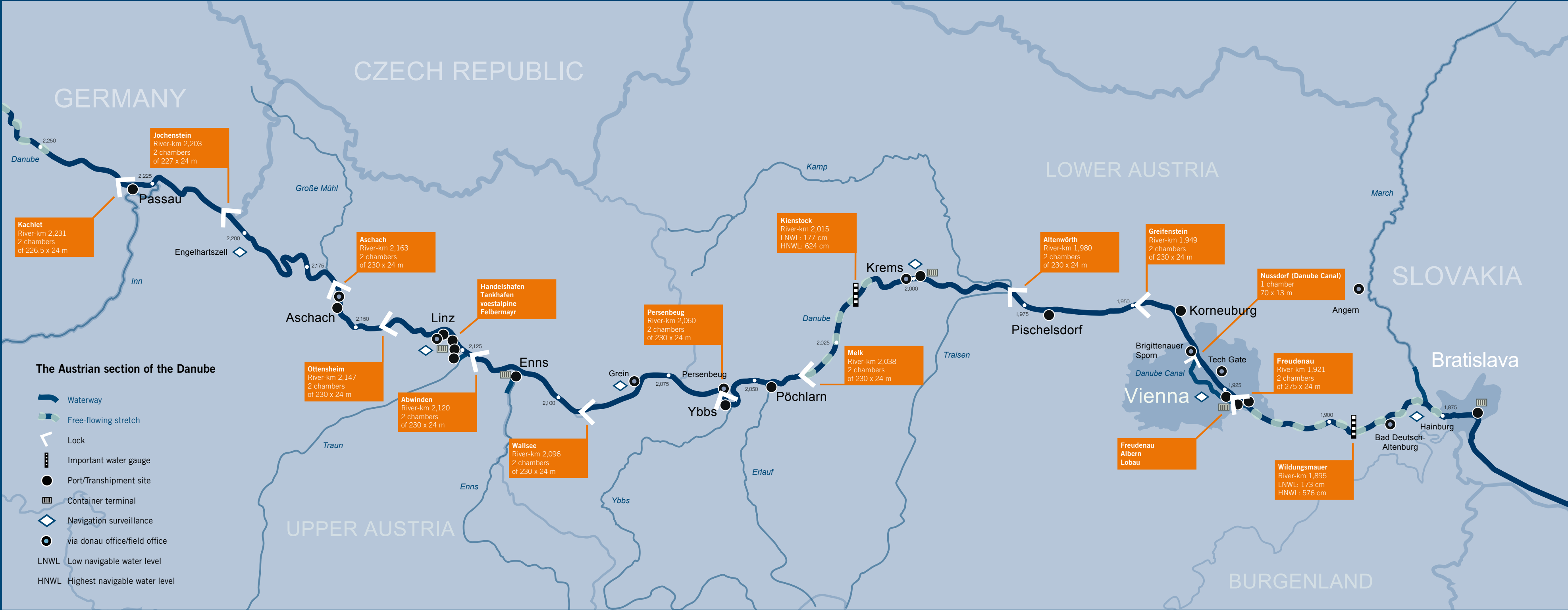
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AN EVENTFUL YEAR NEW CHALLENGES

For via donau as a waterway infrastructure operator, 2011 was both an eventful and challenging year: On the one hand, we succeeded in fully establishing a customer-oriented waterway management in the company, on the other, fairway conditions proved extremely difficult for navigation – low water levels prevailed on the Danube in spring and late autumn, and a sunken dredging barge created an additional obstacle to navigation east of Vienna. Together with difficult overall conditions afflicting European economies, these factors resulted in a decrease of the volume of goods transported on the Austrian Danube.

On the plus side, the implementation of the European Danube Region Strategy began in 2011 as well. The priority area Danube navigation included in this strategy is coordinated by the Federal Ministry for Transport, Innovation and Technology together with via donau and the Romanian Ministry of Transport. Another highlight was the launch of the Bad Deutsch-Altenburg pilot project east of Vienna in late 2011. This project will help generate important insights with regard to ecologically-oriented hydraulic engineering.



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DANUBE NAVIGATION IS THE FUTURE HUGE COMMERCIAL POTENTIAL

The Danube connects ten countries and shapes one of Europe's major living and economic environments. The Danube has always been inseparably linked to the history of our country and of Europe and has become a popular recreational area, a provider of clean energy as well as a major international transport route today. And, what's more, Danube navigation is an environmentally friendly and energy-efficient mode of transport which my Ministry is devoting particular attention to.

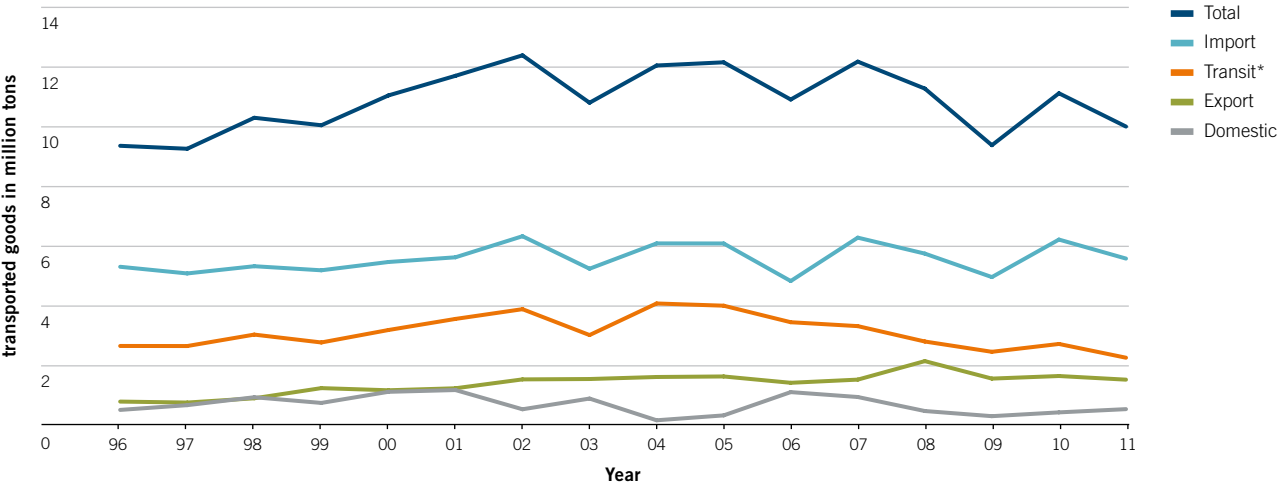
Almost 10 million tons of goods were transported on the Danube in Austria in 2011 despite challenging overall conditions. This Annual Report has been prepared to give you an overview over the figures, facts and initiatives regarding Austria's Danube navigation. It also illustrates the high commercial importance of environmentally friendly inland navigation for Austria as a business location. Together with via donau, the Federal Ministry for Transport, Innovation and Technology is therefore striving to increase the Danube's usefulness as a transport route in harmony with the environment. Making use of environmentally friendly inland navigation while at the same time ensuring and improving the ecological condition of the Danube region as both a social and natural environment by means of targeted measures is a special concern for me.



DORIS BURES
Federal Minister for
Transport, Innovation
and Technology

und Technologie
Verkehr, Innovation
und Technologie

Doris Bures



TRANSPORT VOLUME (TONS)	Import	Export	Transit ^{*)}	Domestic	Total
2011	5,564,222	1,545,722	2,268,157	565,187	9,943,288
2010	6,199,870	1,667,805	2,727,772	456,632	11,052,080
2009	4,945,292	1,581,387	2,465,668	329,463	9,321,810
2008	5,730,621	2,166,354	2,809,508	502,228	11,208,711
2007	6,264,069	1,547,234	3,323,081	972,156	12,106,540

*) 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.

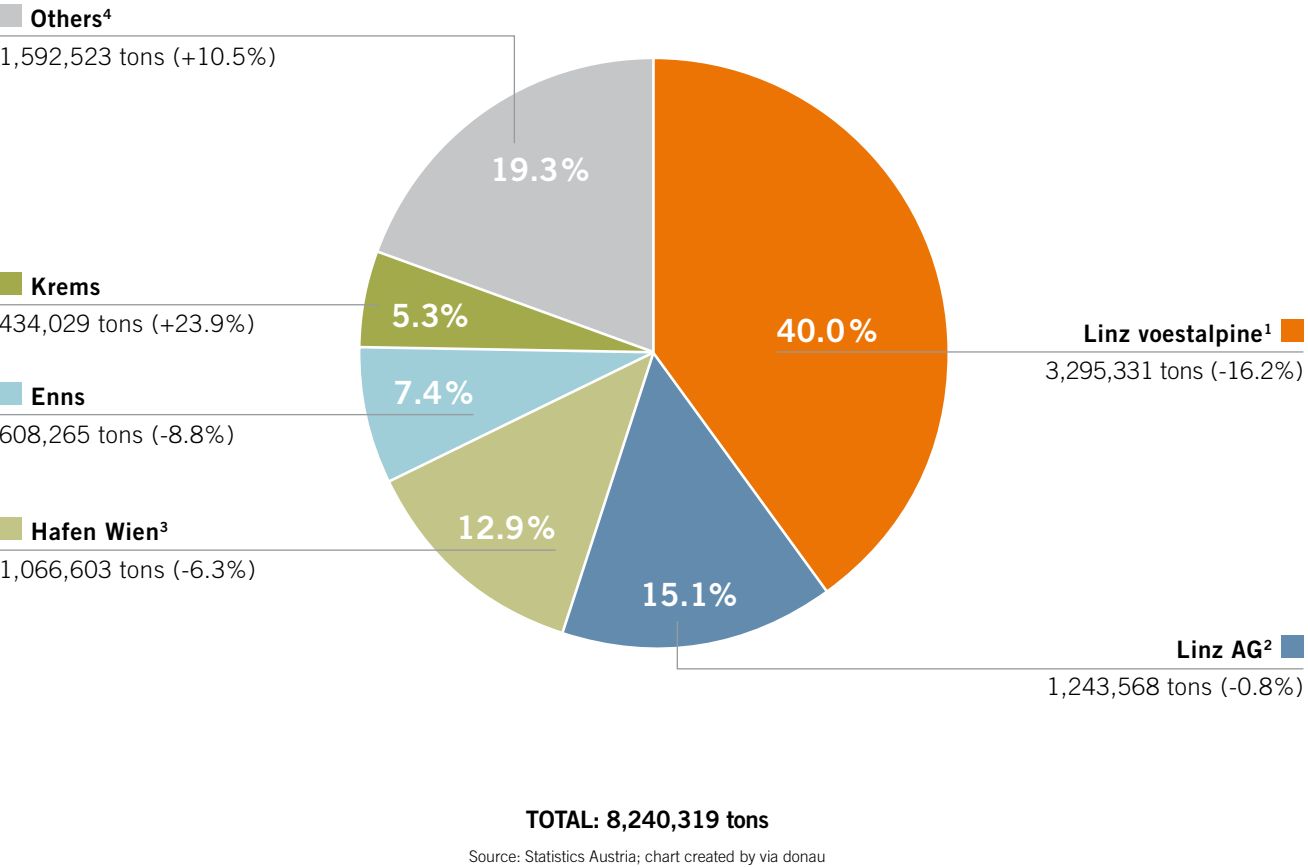
Source: Statistics Austria; chart and table created by via donau

TRANSPORT VOLUME

EURO CRISIS AND LOW WATER LEVELS
ABOUT 10 MILLION TONS ON THE DANUBE

Once the European economy had somewhat recovered in 2010 from previous year’s crisis, the Euro debt crisis hit and dominated 2011. On top of the general economic development, other exacerbating factors were several substantial low-water periods in the second half of 2011, even leading to a total disruption of traffic on the lower Danube. Due to these unfavourable overall conditions, **transport volumes** on the Austrian section of the Danube dropped in almost every commodity group over 2010. In 2011, about 9.9 million tons of goods were transported on the Austrian Danube, corresponding to a decrease of 10.0% or 1.1 million tons as compared to 2010. This figure is higher by only 6.7% or 621,478 tons than the results achieved in the crisis year of 2009. Accordingly, **transport performance** within Austria’s borders shrank by 10.6% to 2.1 billion ton-kilometres over 2010. Total transport performance decreased by 16.2% to 9.6 billion ton-kilometres. The number of loaded journeys undertaken on the Austrian section of the Danube, however, only sank by 0.6% to 10,325. The **average transport distance per ton** was 938 kilometres for imports, 793 kilometres for exports, 1,351 kilometres for transit transports and 155 kilometres for domestic shipping. As far as **imports** were concerned, transport volumes decreased by 10.3% or 635,648 tons to 5.6 million tons, with 78% of the goods reaching Austrian territory from the East. The largest quantitative drop in imported goods volumes was observed in the commodity groups ores and metal

waste (-526,633 tons) as well as petroleum products (-156,824 tons). In **exports**, 1.5 million tons of goods were transported by inland vessels in 2011, corresponding to a reduction by 7.3% or 122,083 tons over 2010. In this transport segment, 49% of the goods crossed the eastern border and 51% crossed the western border of the Austrian territory. Here, the sharpest decline was in crude and manufactured minerals and building materials (-77,740 tons) and petroleum products (-46,658 tons). In 2011, the most extreme slump in transport volumes on the Austrian Danube was seen in **transit transport**: In this segment, the quantity of transported goods sank by 16.8% or 459,615 tons to 2.3 million tons, with 82% of the goods being carried upstream and 18% downstream. The transport volume reported for transit journeys represents an extrapolated figure since Statistics Austria uses an estimation model to compensate for the current underreporting of transit traffic. Finally, **domestic freight traffic** on the Austrian section of the Danube waterway increased by 23.8% or 108,555 tons to 565,187 tons. These transports, however, involve almost exclusively intra-company or stock-transfer haulage without any commercial effects. The **shares of the individual transport segments** in total waterway freight transport in 2011 are as follows (changes over 2010 are indicated as percentages in brackets): 56.0% imports (-0.1%), 22.8% transit transport (-1.9%), 15.5% exports (+0.4%) and 5.7% domestic traffic (+1.6%).



1) Including water transshipment at the transshipment facility of Industrie Logistik Linz GmbH
2) The figures for the Linz site combine the transshipment volumes of the commercial port and the oil port.
3) The figures for the Vienna site combine the transshipment volumes of the three ports of Freudenau, Albern and the Lobau oil port.
4) Other ports and transshipment sites: Aschach, Linz heavy cargo port, Wallsee, Ybbs, Pöchlarn, Moosbierbaum, Pischelsdorf and Korneuburg

PORT TRANSHIPMENT

DECLINE OF ABOUT 6.2%
SLIGHT INCREASE FOR PRIVATE PORTS

The overall economic conditions as well as the unfavourable fairway conditions prevailing on the entire Danube in the second half of 2011 also had a negative effect on the water transshipment of goods in Austrian ports and transshipment sites: In total, approximately **8.2 million tons of goods** were transhipped at waterside loading and unloading facilities on the Austrian section of the Danube, corresponding to a downturn of 6.2% or 540,621 tons over 2010.

With handling figures amounting to **3.3 million tons**, the **private corporate port of voestalpine** in Linz remains Austria's most important Danube port in terms of waterside handling of goods. In spite of a decrease in water transshipment of 16.2% or 635,471 tons compared to 2010, this port holds a 40.0% share of the water transshipment activities of all ports and transshipment sites located on the Austrian section of the Danube.

Other Austrian ports and transshipment sites (including Aschach, the Linz heavy cargo port, Wallsee, Ybbs, Pöchlarn, Moosbierbaum, Pischelsdorf and Korneuburg) were able to increase water transshipment figures by 10.5% or 150,926 tons to **1.6 million tons**. In sum, they boasted a share of 19.3% of the entire water transshipment of all Austrian transshipment sites. (Regrettably, a more detailed description of the waterside handling of goods of these ports and transshipment sites is not possible due to statutory data privacy provisions).

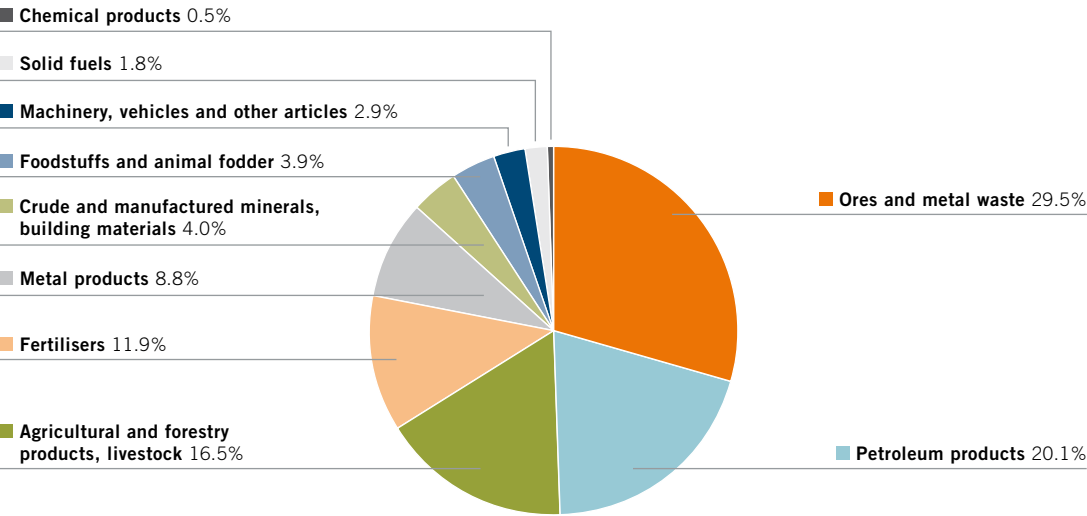
In 2011, the port of **Krems** recorded a large increase in transshipment percentages over 2010, with a plus of 23.9% or 83,811 tons compared to the previous year and thus reaching water transshipment volumes amounting to **434,029 tons**. These numbers, however, include 93,856 tons of gravel from high-water compensation dredging of the Danube riverbed which were unloaded at the Krems port.

In addition to the private corporate port of voestalpine in Linz, the ports in Enns and Vienna were also forced to take losses in 2011. While water transshipment at the **Vienna port** reached **1.1 million tons**, equalling a drop of 6.3% or 71,186 tons, **608,265 tons** were transhipped at the port of **Enns**, which amounts to a decline of 8.8% or 58,686 tons.

Water transshipment at the ports of **Linz AG** remained almost stable when compared to 2010, reaching **1.2 million tons** and suffering a slight decrease of 0.8% or 10,015 tons.

In total, the **four public Danube ports** in Linz, Enns, Krems and Vienna handled about 40% of all goods transhipped at Austrian waterside facilities in 2011. In addition to the 40.0% share of the voestalpine Linz port and the 19.3% share of the group of other ports and transshipment sites in the total water transshipment volume recorded by Austrian Danube ports and transshipment sites in 2011, the quantitative shares achieved by the remaining ports and transshipment sites are as follows: 15.1% Linz AG, 12.9% Vienna, 7.4% Enns and 5.3% Krems.

Classification of commodities by NST/R*	Domestic	Import	Export	Transit	Total 2011	Change over 2010
Transport volume in tons						
0 Agricultural and forestry products, livestock	10,652	557,639	94,921	979,027	1,642,239	-8.01%
1 Foodstuffs and animal fodder	–	295,069	33,448	59,598	388,115	-18.82%
2 Solid fuels	–	173,838	–	9,300	183,138	-15.44%
3 Petroleum products	431,298	997,307	403,186	163,321	1,995,112	-7.35%
4 Ores and metal waste	204	2,930,486	4,327	–	2,935,017	-16.20%
5 Metal products	26,586	188,488	322,377	340,240	877,691	-8.58%
6 Crude and manufactured minerals, building materials	93,856	193,114	30,649	78,308	395,927	-16.24%
7 Fertilisers	2,366	190,956	618,928	372,019	1,184,269	+10.67%
8 Chemical products	–	28,312	8,248	15,612	52,172	-51.50%
9 Machinery, vehicles and other articles	225	9,014	29,637	250,732	289,608	-5.32%
Total	565,187	5,564,222	1,545,722	2,268,157	9,943,288	-10.0%



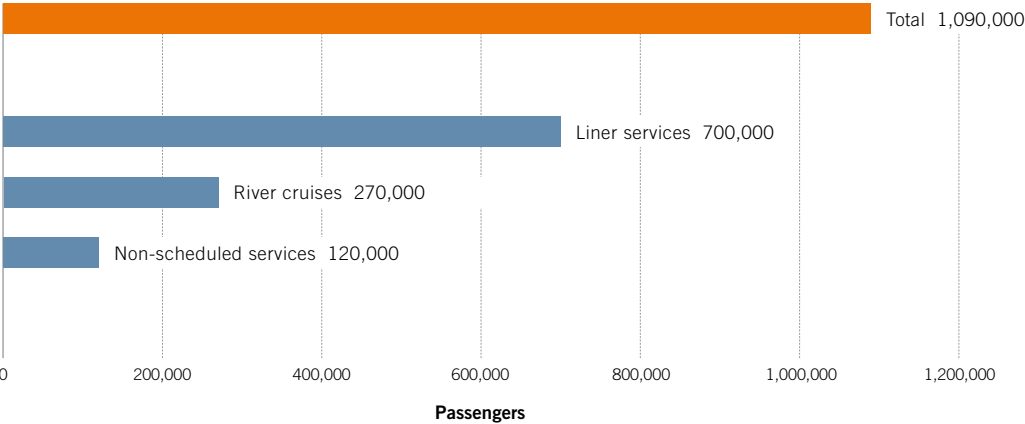
*) NST/R = Standard Goods Classification for Transport Statistics/Revised
Source: Statistics Austria, table and diagram created by via donau

TRANSPORT VOLUME BY COMMODITY GROUPS

ORES AND PETROLEUM PRODUCTS IN THE LEAD
FERTILISERS CONTINUE TO INCREASE

The year 2011 saw a decline in almost every group of commodities carried on the Austrian section of the Danube. Only the fertiliser NST/R group (NST/R = Standard Goods Classification for Transport Statistics/ Revised) showed an increased transport volume over 2010. The amount of **agricultural and forestry products** transported sank by 8.0% or 143,066 tons over 2010, most of which are still transit shipments. With a total of 1.6 million tons transported in 2011, agricultural and forestry products took the third-largest share in the total volume of transports on the Austrian Danube. As in previous years, the 2.9 million tons of **ores and metal waste** hauled in 2011 accounted for the largest share (approximately 30%) of the entire volume of goods transported on the Austrian stretch of the Danube. Nevertheless, this group of commodities suffered a downswing of 16.2% or 567,512 tons as compared to 2010. 99% of these ores and metal waste were imports to Austria. Similar percentage losses occurred in the NST/R group of **crude and manufactured minerals and building materials**: A reduction by 16.2% meant a decline by 76,763 tons to 395,927 tons of goods which were predominantly imports. There was also a marked drop of **solid fuels** amounting to 15.4% or 33,429 tons, reducing these transports to a total of 183,138 tons in 2011. Only the commodity group **fertilisers** showed an increase in transport volume in 2011, making fertilisers the fourth largest group of commodities

transported on the Austrian section of the Danube thanks to an increase of 10.7% or 114,136 tons, amounting to a total of 1.2 million tons. While some of these goods were carried in transit transport, most of them were exports. Despite a loss of approximately 7.3% or 158,176 tons over 2010, **petroleum products** continued to remain the second-largest commodity group on the Austrian Danube, reaching a transport volume of 2.0 million tons. The majority of these transports were imports to Austria, followed by domestic transport and exports. In relative terms, the 51.5% decline in the group of **chemical products** in 2011 marked the largest drop in transport volume, although in absolute terms only corresponding to a moderate decrease by 55,404 tons over 2010. There was also a decrease in the NST/R commodity groups of **metal products** amounting to -8.6% or 82,345 tons (2011: 877,691 tons) and **foodstuffs and animal fodder** amounting to -18.8% or 89,968 tons (2011: 388,115 tons). Transport volumes in the group of **machinery, vehicles and other articles** fell by 5.3% or 16,265 tons as compared to 2010. This group of commodities also includes intermodal transports, mainly consisting of roll-on roll-off transports of vehicles, agricultural machinery and loaded trailers as well as of empty containers. With 289,608 tons of goods transported, this group accounted for a share of about 3% in the total volume of transports carried on the Austrian section of the Danube.



NUMBER OF LANDINGS AND PASSENGERS AT VIENNA PASSENGER PORT*	Vessel landings	% over previous year	Passengers handled	% over previous year
2011	3,585	-1.5	361,565	-0.3
2010	3,641	-9.1	362,655	+2.8
2009	4,007	-9.6	352,793	-7.3
2008	4,434	+1.4	380,529	+24.8
2007	4,371	-6.6	304,836	+15.0

Numbers since 2007 incl. Twin City Liner
*) Landing stages at Handelskai, Nussdorf and Danube Canal, incl. cabin vessels and Twin City Liner

Source: DDSG Blue Danube Schifffahrt GmbH, Donauschifffahrt Wurm + Köck GmbH & Co. OHG, DSGL – Donau-Schifffahrts-Gesellschaft mbH, MAHART PassNave Shipping Ltd., MS-Schiff Tulln, Nostalgie Tours Wachau, Austrian Society for Railway History, schiffART Linz–Donau, Slovak Shipping and Ports – Passenger Shipping JSC (SPaP-LOD, a.s.), via donau, Werbegemeinschaft Donau OÖ, Wiener Donaunraum Länden und Ufer Betriebs- und EntwicklungsgesmbH

PASSENGER TRANSPORT

NEW RIVER CRUISE RECORD

1.1 MILLION DANUBE PASSENGERS

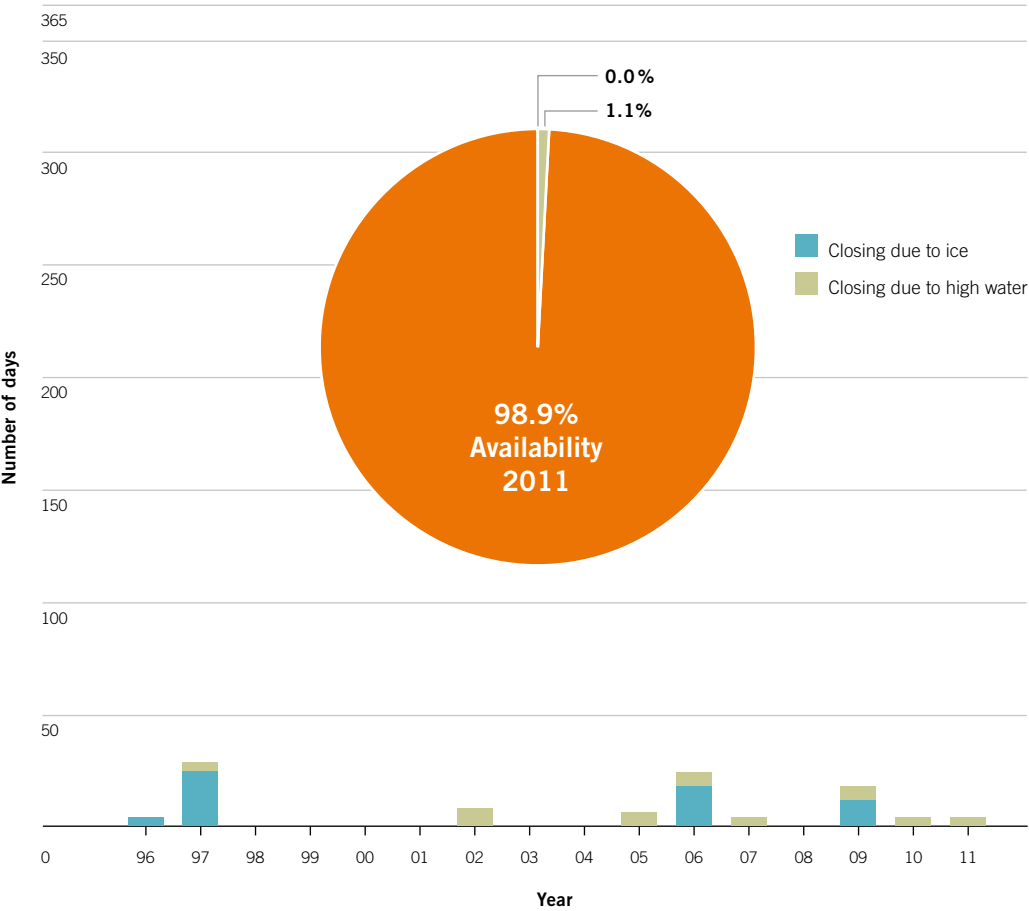
In sum, **1.1 million passengers** travelled on the Austrian Danube in 2011, corresponding to a plus of 4.6% or approximately 48,000 passengers compared to 2010. The majority of them were about 700,000 persons carried on liner services (+2.3% over 2010). Cabin vessels carried about 270,000 cruise passengers, marking a striking increase by 10.2% in this segment when compared to 2010. Some 120,000 casual passengers enjoyed theme voyages, special trips and charter voyages (+6.1%). In 2011, a total of **124 cabin vessels** with an overall capacity of 19,300 passengers operated on the Austrian section of the Danube, corresponding to an increase of 10.7 % or 12 vessels over 2010. While three cabin vessels which are normally travelling on Western European waterways were also operating on the Austrian Danube, nine newly built vessels were put into service as well. 2011 river cruises accounted for 3,635 journeys (+9.5% over 2010) carrying a total of about 270,000 passengers (+10.2%) on the Austrian section of the Danube. Seen from a long-term perspective, this means an increase in passenger numbers by an impressive 127% since 2002.

In 2011, **liner services** on the Austrian Danube involved a total of 26 vessels with an overall capacity of 8,400 passengers. DDSG Blue Danube reported 223,000 passengers (+8.3% over 2010) travelling on its liner services in the Wachau region and in Vienna. The two Twin City Liners carried 139,031 passengers (+10.6%) on the route between Vienna and Bratislava. Donau-Touristik reported that it had carried 48,958 passengers on its liner services (-3.6%). Slovakian and Hungarian hydrofoils

operating on the Bratislava-Vienna-Bratislava and Budapest-Vienna-Budapest routes recorded 35,425 passengers (-14.1%), while Bavarian operator Wurm + Köck carried a total of 31,000 passengers (-11.4%) on its liner services on the Linz-Schlögen-Linz and Linz-Vienna-Linz routes in 2011.

Non-scheduled services were carried out by 41 passenger vessels (including vessels primarily operated on liner services) with a total capacity of about 12,000 passengers. DDSG Blue Danube transported 67,000 casual passengers (+3.1%) on non-scheduled voyages. Other operators of non-scheduled voyages included schiffART Linz~Donau with 13,000 passengers, Donau-Touristik (Linz) with 10,065 passengers, the steamer Schönbrunn with approximately 4,000 passengers, Nostalgie Tours Wachau (Krems) with 3,606 passengers and the MS Stadt Wien (Tulln) with 1,472 passengers carried. Finally, Slovakian and Hungarian hydrofoils recorded 2,221 passengers travelling on non-scheduled voyages on the Austrian Danube in 2011.

No figures regarding other companies operating liner services or organising non-scheduled voyages on the Austrian Danube are available for the period under review. Due to a change in legislation, passenger transport data on the Danube in Austria ceased to be statistically recorded in 2003. As a result, the figures for liner services and non-scheduled voyages given above also include estimates based on an average capacity utilisation of 40% on passenger vessel journeys.



Source: Supreme Navigation Authority at the Federal Ministry for Transport, Innovation and Technology; Federal Water and Navigation Administration (Germany); via donau

AVAILABILITY OF THE WATERWAY

361 NAVIGABLE DAYS IN 2011 AVAILABILITY AT 98.9% OF THE YEAR

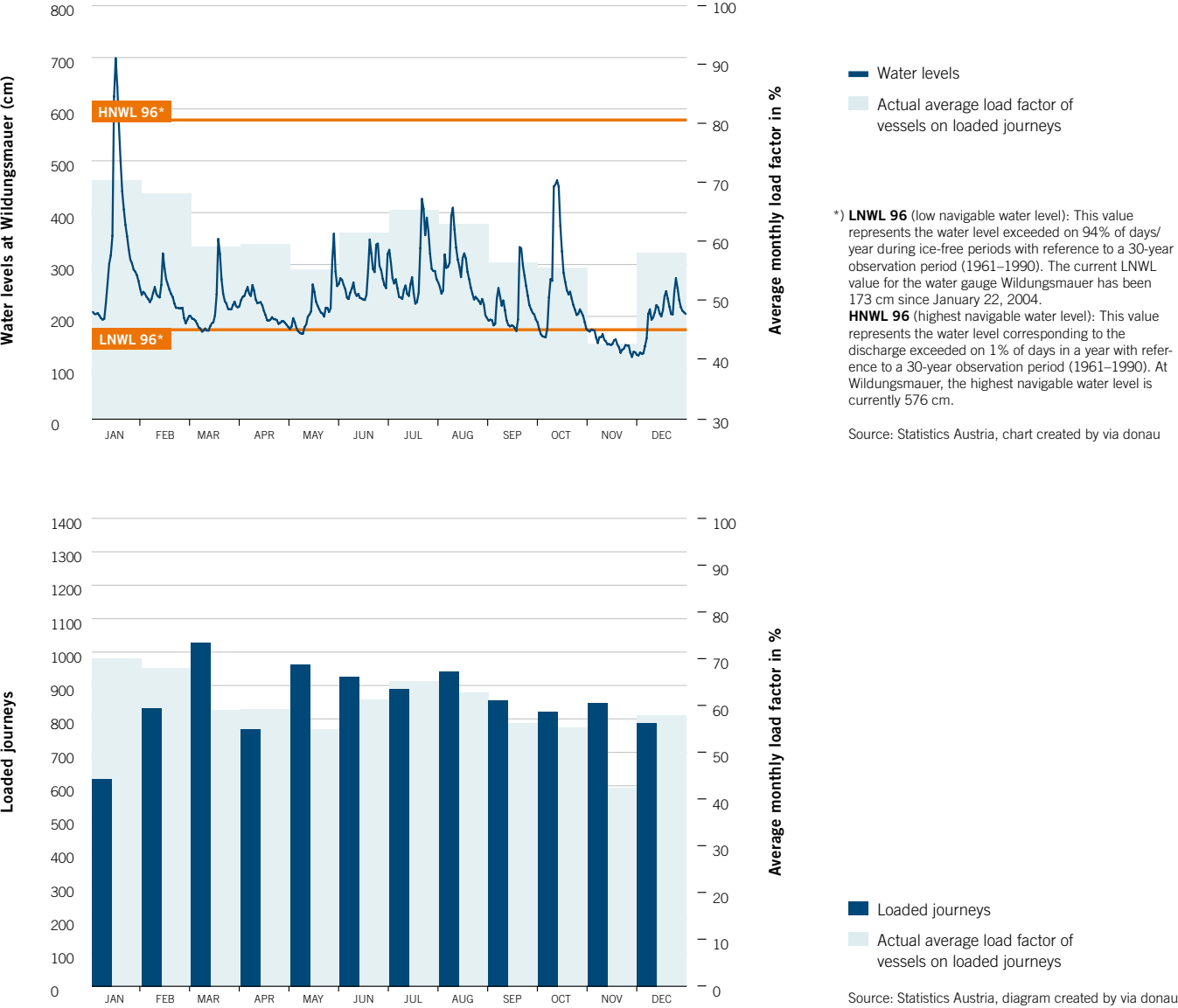
In times of extreme weather conditions such as **high water** or extensive **ice formation** on the Danube, all river navigation may be shut down by the authorities. High water conditions mostly arise in early spring as a result of rapid snow melts or due to heavy rainfall in midsummer. Extensive ice formation may occur due to long periods of low temperatures well below freezing point. As a rule, obstructions owing to ice formation arise in the months of January and/or February.

During such **official weather-related closings**, navigation on the Danube is prohibited on affected sections of the Austrian Danube waterway. There are no closings in **low-water conditions**; cargo vessels, however, can sometimes use the waterway only to a very limited degree in terms of economic efficiency during such periods. The relationship between the potential capacity utilisation of cargo vessels and available fairway depths is described in greater detail in the following chapter entitled «Fairway Conditions».

In the **15 year period** between 1996 and 2011, **average navigability** on the Austrian section of the Danube waterway has been **98.2% of days** or **359 days per year**.

2011 saw no obstruction of river traffic due to ice formation, although the Danube waterway had to be closed by the authorities for four days due to unseasonally **high water levels** in mid-January. As a consequence, the Austrian Danube was navigable on **361 days** or **98.9% of 2011**.

Transports to and from the West not only depend on the Austrian and German sections of the Danube waterway but also rely heavily on the navigability of the **Main-Danube Canal** linking the Danube with the Main and the Rhine waterways. In 2011, the canal had to be closed for ten days due to ice but was nevertheless navigable for **93.6% of the year** or **342 days**. Additionally, maintenance works were performed in April, forcing the authorities to close the canal for 13 days.

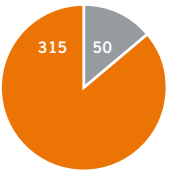
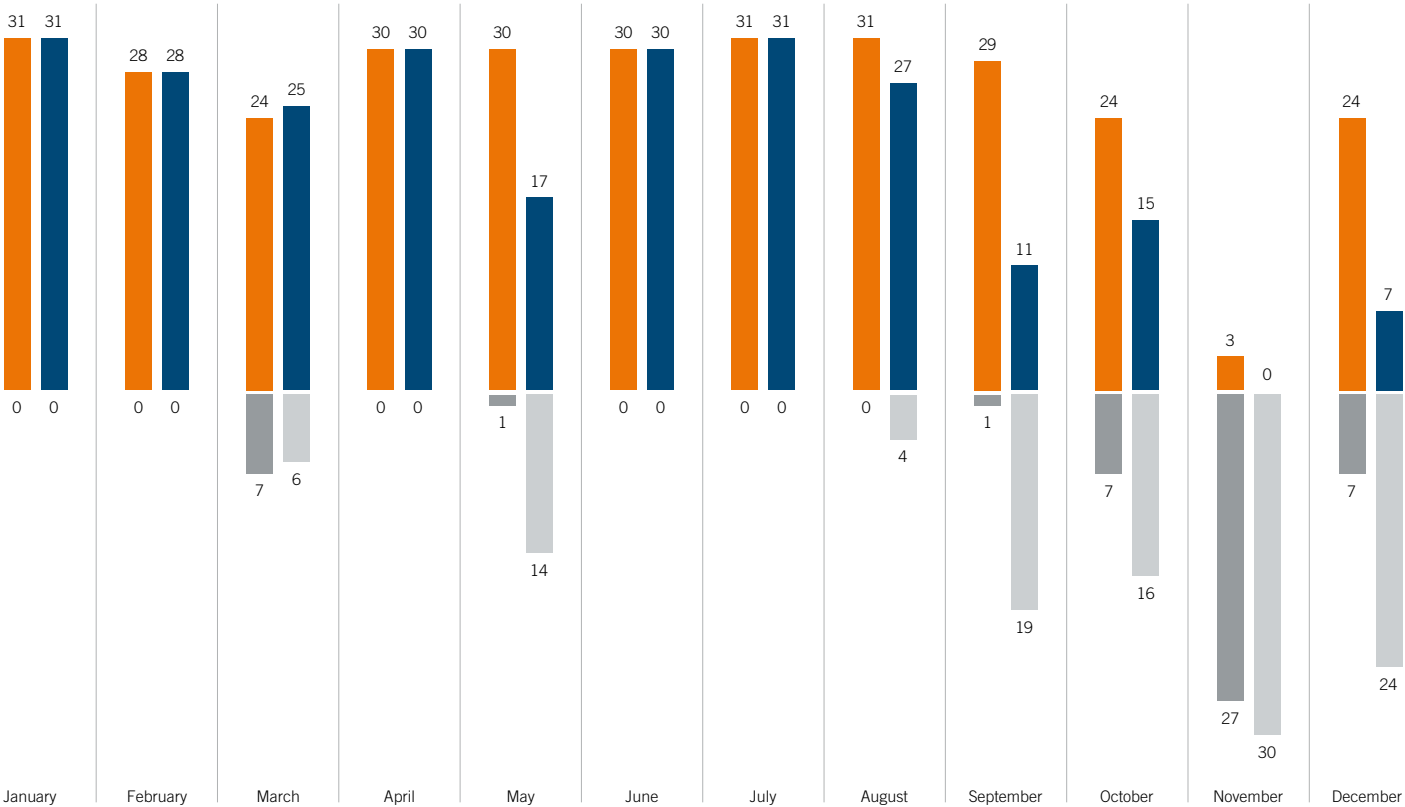


FAIRWAY CONDITIONS

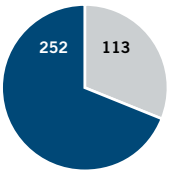
LOW WATER LEVELS IN SPRING AND AUTUMN
VESSEL LOAD FACTOR AT ABOUT 60%

Due to unusual hydrological conditions, **fairway conditions in the free-flowing stretches** of the Austrian Danube (Wachau and east of Vienna) were slightly below the long-term statistical average in 2011. In the **winter months** of 2011 (January, February and December), a period usually characterised by low water levels from a statistical point of view, as well as in the **summer months** between June and August, favourable fairway conditions prevailed. During these months, however, water levels at the Wildungsmauer gauge (gauge of reference for the river stretch east of Vienna) exceeded the medium (i.e. 316 cm) navigable water mark on only about 18% of all days. When comparing the usually low water levels of the Danube in the months between **October and December**, it must be said that the mean daily water levels at the Wildungsmauer gauge of reference were lower by a remarkable 24 cm in 2011 when compared to 2010. The main reason for this was an extreme low-water period in November and in the beginning of December 2011, with Danube water levels plunging under LNWL 96 by more than half a metre on single days during these months. Hydrologically speaking, shorter low-water periods in the spring months between **March and May** 2011 were unusual, too. In these months, the 2011 mean daily water levels measured at Wildungsmauer were lower by about 60 cm when compared to the same 2010 period; on eight days within that period, water levels even fell below LNWL 96. Over the entire year of 2011, the **average monthly load factor** for cargo vessels reached **59.6%** and was therefore lower than in previous years

(2010: 64.2%; 2009: 60.0%; 2008: 61.3%). This value reflects the Danube's low discharge in the months between March and May as well as between September and November when an average load factor of merely 54.8% (2010: 64.8%) was recorded. With inland waterway transport, it is mostly the available fairway depth which determines the **draught loaded** of a vessel and hence the quantity of goods which can be loaded. Higher transport quantities per vessel or convoy also improve the relation between freight revenues and costs and thus general Danube navigation **competitiveness**. When loading their vessels, ship operators often have to estimate available fairway depths at critical river stretches for days in advance before passing them by means of so-called reference gauges. The **Wildungsmauer gauge** shown in the graph is the decisive indicator for fairway conditions in the free-flowing stretch of the Austrian Danube between Vienna and Bratislava. This means that there is a direct relationship between fairway conditions and the **load factor of vessels**. The general rule is that if relatively large draughts loaded can be achieved, the average load factor of vessels increases and vessel operators require fewer trips to transport the same volume of goods. This correlation can be clearly seen from the second diagram: in January 2011, the average load factor was at a favourable 70.4%, with 622 journeys being required to convey some 705,000 tons of goods. In November, however, the average load factor per vessel was only 42.7%; in this month, a total of 851 journeys were made to transport approximately 560,000 tons of goods.



Wachau
Kienstock gauge of reference
Minimum fairway depths in days:
■ above 2.50 m
■ below 2.50 m



East of Vienna
Wildungsmauer gauge of reference
Minimum fairway depths in days:
■ above 2.50 m
■ below 2.50 m

*) Based on the required fairway width for a four-unit pushed convoy travelling downstream without encountering other vessels. Fairway widths depend on the river bend radii involved. Source: via donau

FAIRWAY DEPTHS

2.50 METRES DURING 69% OF THE YEAR

EXTREME SITUATION IN AUTUMN

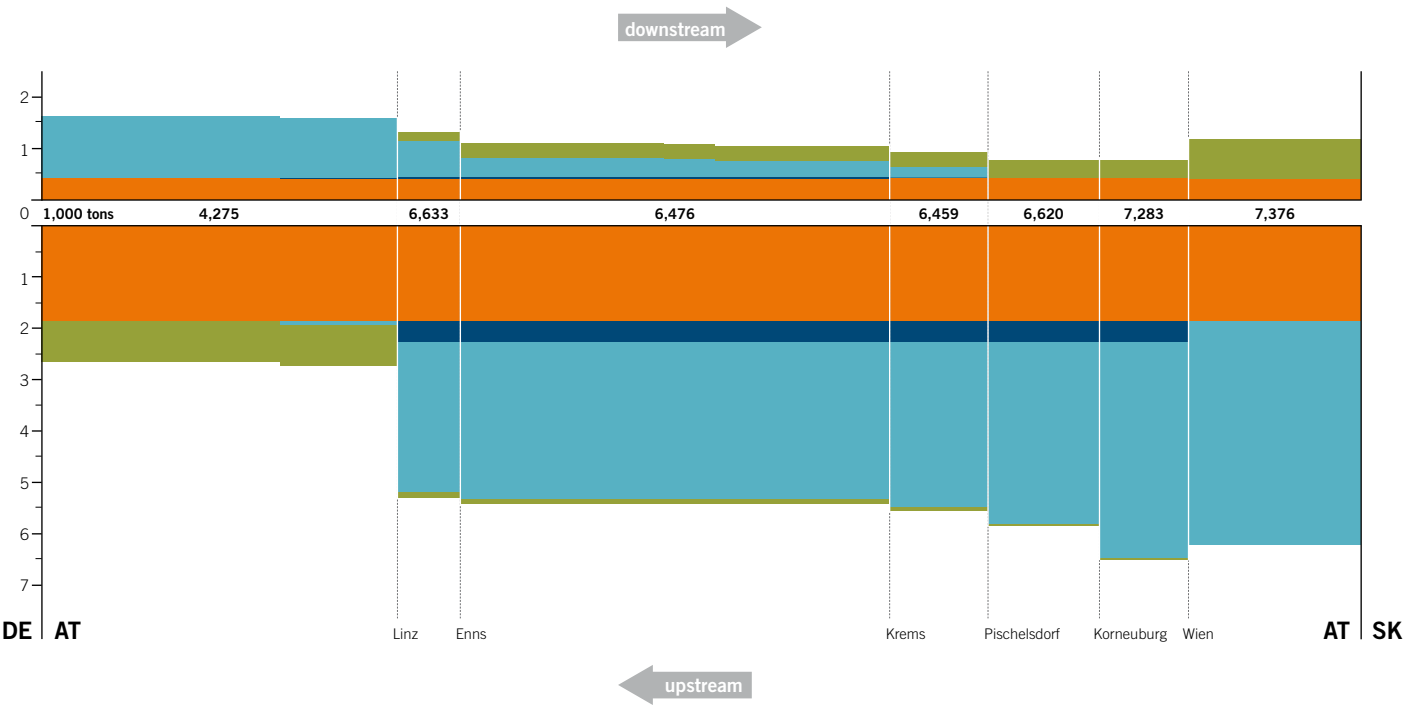
For both free-flowing stretches of the Austrian Danube (Wachau and east of Vienna), the lowest fairway depths were calculated for 2011 (figures for the periods between measurement dates were interpolated) based on all **hydrographic measurements of the riverbed** and evaluated in combination with the 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 representing the required fairway width for a four-unit pushed convoy travelling downstream without encountering other vessels; the width of the fairway depending on the river bend radii involved.

For six months in 2011, fairway depths exceeding 2.50 m over the deep channel prevailed during the whole month (January, February, April and June to August). Extremely low water levels in November 2011 led to fairway depths of less than 2.50 m in both free-flowing stretches of the Austrian Danube over the whole month.

Seen from the perspective of the entire year 2011, a minimum fairway depth of 2.50 m was reached in the **Wachau** stretch (between river kilometres 1,998 and 2,038) in the deep channel on 315 days or 86% of the year; on 50 days, it was less than 2.50 m. The Kienstock gauge at river kilometre 2,015.21 is used as the gauge of reference for this free-flowing stretch of the Danube.

In the river stretch **east of Vienna** (i.e. between river kilometres 1,872.70 and 1,921), a minimum fairway depth of 2.50 m was detected in the deep channel on 252 days or 69% of the year; on 113 days, fairway depths of less than 2.50 m in the deep channel prevailed in this free-flowing stretch of the Danube. The Wildungsmauer gauge at river kilometre 1,894.72 is used as the gauge of reference here.

In addition to the low water levels observed in the spring and autumn of 2011 (see preceding double page), a **dredging barge that had sunk in May** within the fairway at river kilometre 1,898.30 and could not be salvaged by the end of 2011 due to unfavourable water levels as well as engineering issues posed another aggravating factor for the free-flowing stretch east of Vienna. This accident made it necessary to relocate the fairway route at Regelsbrunn. Owing to local hydromorphological conditions, only a fairway depth of 2.20 m at low navigable water level (LNWL 96) could be maintained. 15 multi-beam sonar measurements were performed between late July and late December in order to be able to take urgent measures for maintaining the temporary fairway in case the situation should deteriorate.



SEGMENT	Length in km	Import		Export		Domestic		Transit		Total		In sum
		upstr.	d'str.	upstr.	d'str.	upstr.	d'str.	upstr.	d'str.	upstr.	d'str.	
DE/AT border – Linz	94.51	24	1,197	785	0	0	0	1,859	410	2,668	1,607	4,275
Linz – Enns	16.87	2,937	720	114	170	393	30	1,859	410	5,303	1,330	6,633
Enns – Krems	113.83	3,071	355	80	277	393	31	1,859	410	5,403	1,073	6,476
Krems – Pischelsdorf	26.30	3,230	200	66	291	399	4	1,859	410	5,554	905	6,459
Pischelsdorf – Korneuburg	29.60	3,548	27	35	347	394	0	1,859	410	5,836	784	6,620
Korneuburg – Wien	23.64	4,215	27	27	351	394	0	1,859	410	6,495	788	7,283
Wien – AT/SK border	45.76	4,347	0	0	760	0	0	1,859	410	6,206	1,170	7,376

Transport quantities in 1,000 tons

Source: Statistics Austria; chart and table created by via donau

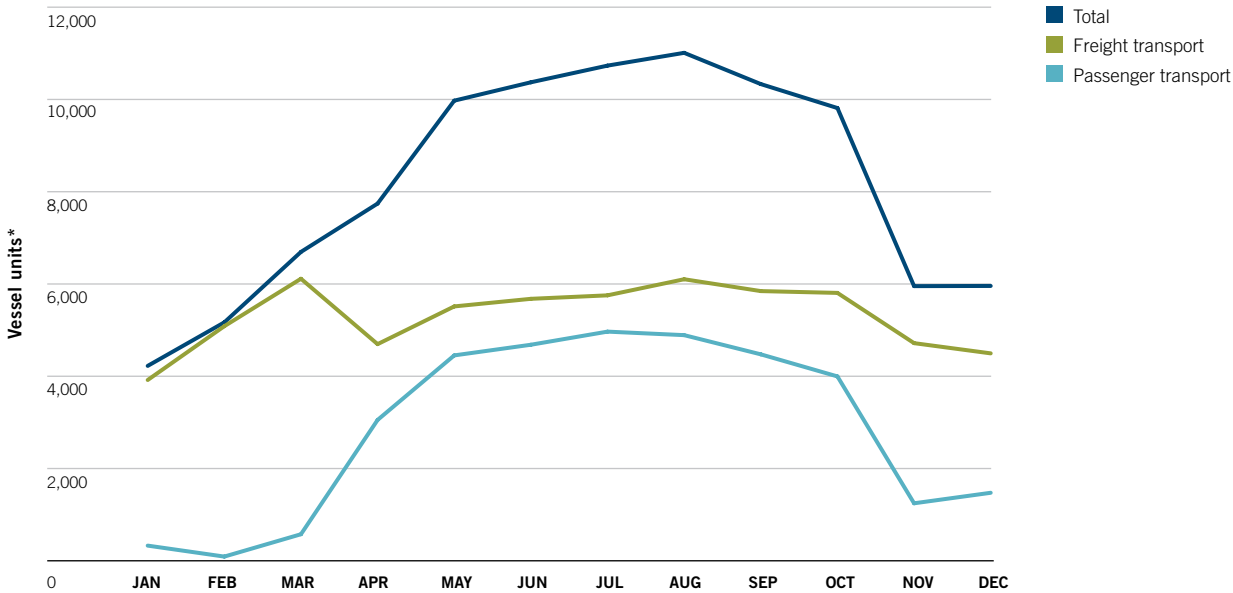
TRANSPORT DENSITY

350 KILOMETRES OF WATERWAY

ABOUT 10 MILLION TONS OF GOODS

In 2011, a total of 9.9 million tons of goods were carried on the Austrian section of the Danube waterway spanning a length of 350.51 km in total. **Total transport volumes by segment** ranged from 4.3 million tons (-15% over 2010) in the Upper Austrian segment between the German-Austrian border and Linz, to 7.4 million tons (-11%) in the free-flowing stretch between Vienna and the Austrian-Slovakian border. Because it boasts by far the largest water transshipment location on the Austrian Danube, the industrial port of the voestalpine steelworks in Linz stands out among all other ports and transshipment sites due to its quantity of goods handled on the waterside. **Import** statistics reveal that voestalpine obtained 2.5 million tons of ores from Eastern Europe in 2011, mainly from Slovakia (Bratislava port) and the Ukraine (ports of Izmail and Reni). The largest quantities imported from Western Europe were recorded at the Linz voestalpine port with 0.4 million tons and at the Enns port amounting 0.3 million tons. As a result, the upstream Danube section running from Linz to the Austrian-German border showed a significantly lower freight traffic density than the downstream section between Linz and the Austrian-Slovakian border.

Exports were once again dominated by the ports of Linz (voestalpine and Linz AG). 0.6 million tons were transported upstream and 0.2 million tons downstream from these ports, while 0.4 million tons of goods were carried from Vienna (Lobau port) downstream. As far as **transit transports** were concerned, a comparison of transport flows by transport direction shows a ratio of 4.5:1 (upstream/downstream); in 2010, this ratio amounted to 5.3:1 and was as high as 6.3:1 in 2009. On the stretch between Linz and the Austrian-German border, transit transport accounted for 53% of the overall transport volume (-1.0% over 2010). The **volume of transported goods per day** amounted to 17,493 tons (-9.9% or -1,915 tons against 2010) for all cross sections. In the most heavily used cross section (compared to average Austrian figures) of the free-flowing Danube stretch east of Vienna, an average of **20,206 tons of goods** were transported **per day** in 2011, i.e. the equivalent of 808 fully loaded lorries (25 net tons per vehicle) or 505 railway wagons (40 net tons per car) or close to 25 block trains. Over the total length of the Austrian section of the Danube, an average of **17,327 tons of goods** were carried **per kilometre** in 2011 (-10.6% or -2,052 tons against 2010).



YEAR	Freight transport	% over previous year	Passenger transport	% over previous year	Total	% over previous year
2011	63,792	-4.9	34,244	+6.5	98,036	-1.2
2010	67,114	+4.5	31,153	+1.3	99,267	+3.5
2009	64,220	-6.1	31,728	+2.2	95,948	-3.5
2008	68,388	-7.3	31,057	+2.6	99,445	-4.4
2007	73,769	+6.6	30,284	+0.8	104,053	+4.9

*) 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.

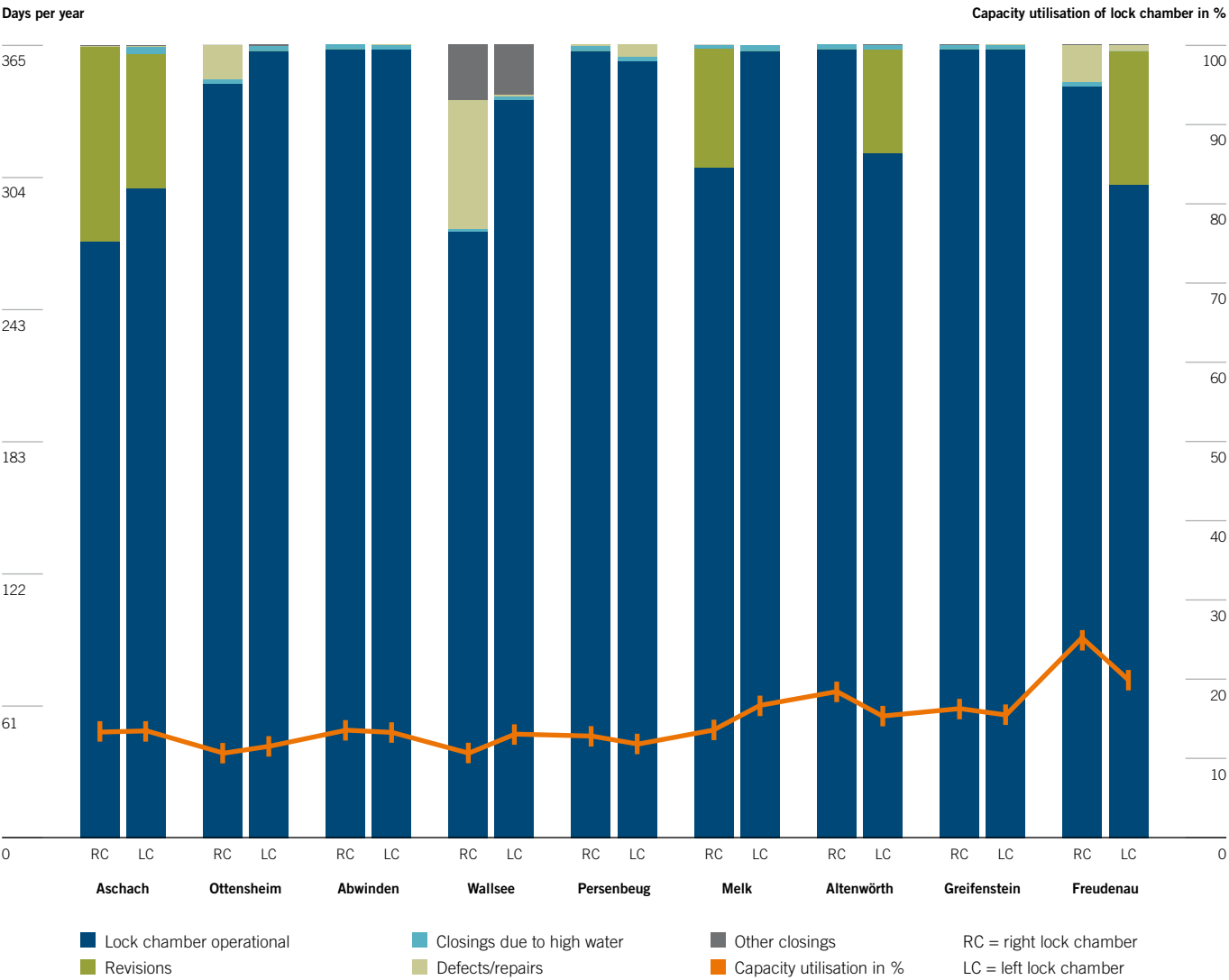
Source: via donau

LOCKED-THROUGH VESSEL UNITS

MORE THAN 98,000 LOCKAGES
PLUS IN PASSENGER TRANSPORT ONCE AGAIN

In 2011, a total of **98,036 cargo and passenger vessel units** were locked through the nine Austrian Danube locks (excluding the Jochenstein power station on the Austro-German border) upstream and downstream. 43,021 of these units were motor cargo vessels and motor tankers (-4.5% compared to 2010), 20,771 were pushers (-5.9%) and 34,244 were pas-senger vessels (+6.5%). 51,180 cargo and tank lighters or barges (-2,7%) were locked through as part of convoys. In sum, the total number of locked-through vessel units in freight and passenger transport including all types of vessels and convoys suffered a decrease of 1.2%. Compared to 2010, the number of **cargo vessel units** that passed through the locks on the Austrian section of the Danube sank by 4.9%, while the number of locked-through **passenger vessels** rose by 6.5%. The number of locked-through passenger vessels has steadily increased over the last ten years (2002–2011), which means that a substantial increase by about 70% or 14,000 locked-through vessel units could be observed. In 2011, freight traffic accounted for 65.1% (-2.5% over 2010) and passenger traffic for 34.9% (+2.5%) of the total vessel volume. Over the whole of 2011, the **average volume of vessels** passing through an Austrian lock reached 10,893 convoys and individual vessels (a de-cline by 137 vessel units over 2010). This amounts to 908 (-11) shipping movements per month and an average of almost 30 locked-through units per day and lock.

The **highest shipping volume** in 2011 was again recorded at the Freudenau lock in Vienna with 13,830 vessel units passing through (-1.3% over 2010), followed by the Abwinden lock with 11,061 and the Greifenstein lock with 10,930 units. The lowest volume, i.e. 9,646 vessel units (-0.6%), was again reported by the Aschach lock, the westernmost Danube lock in Austria. As far as **vessel configurations** were concerned, freight transport passing through the Freudenau lock, the Austrian lock with the largest number of vessels locked through, showed a ratio of 46% to 54% between individual vessels and convoys in 2011 (3,744 and 4,392 journeys respectively). The ratio for the overall sizes of vessel units (number of cargo-carrying units) was 29% to 71% (individual vessels to convoys). The majority of the locked-through **pushed convoys** (pushers + lighters) were two-unit convoys (74%); 16% of the pushed convoys included one lighter, 8% comprised four lighters and 2% consisted of three lighters. The figures for **coupled formations** (motor cargo vessel or motor tanker + lighters) show that 92% travelled with one lighter, 5% with three lighters and 3% with two lighters. Apart from freight and passenger transport vessel units passing through locks on the Austrian Danube in 2011, 9,617 **small sports and leisure vessels** as well as 1,052 **other vessel units** such as official and emergen-cy vehicles were locked through. These vessels are not included in this analysis which solely focuses on freight and passenger transport.



Source: via donau

AVAILABILITY OF LOCK CHAMBERS

LONGER CLOSING PERIODS ONLY IN WINTER

AVERAGE CAPACITY UTILISATION AT 15%

As locks are large-scale installations, the nine Austrian Danube locks need be to serviced and maintained regularly to ensure operational functionality and safety and thus also navigational fluidity. These so-called **lock revisions as well as necessary large-scale repairs** accounted for approximately 74% of all closing days of lock chambers in 2011. Revisions and large-scale repairs were required at the Aschach (both lock chambers), Wallsee, Melk, Altenwörth and Freudenau locks. On average, revisions took about 140 days per chamber. Since 2008, revisions of locks on the Austrian Danube have only been performed in the low-traffic season between November and March according to an agreement between power plant operator Verbund Hydro Power AG and the Federal Ministry for Transport, Innovation and Technology in order to prevent long waiting times at locks during the high-traffic summer months.

Other causes for lock closings include **short-term repairs in the course of the year** due to technical defects or damage to facilities caused by vessels which accounted for 9% of all closing days in 2011. Beyond that, 7% of all closing days could be attributed to **high water** in mid-January 2011, while the remaining 10% of the total number of closing days were the result of renovation and maintenance works, fairway maintenance dredging and the like.

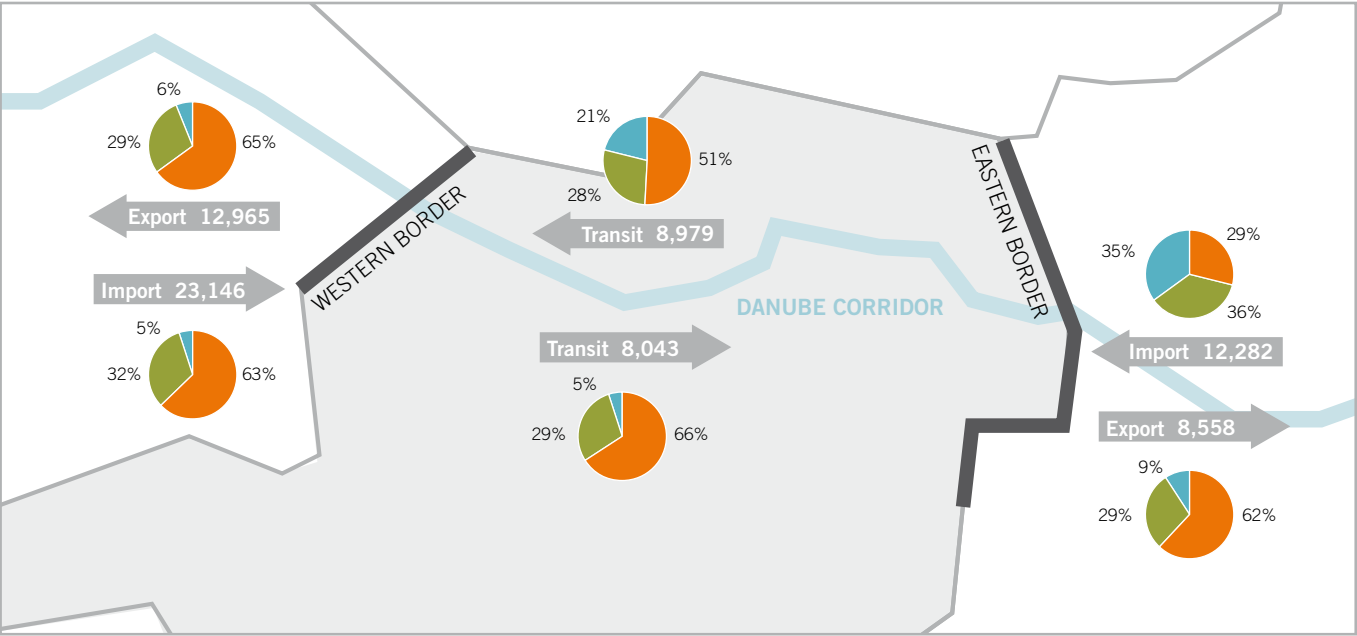
In the **months between April and October**, a time when river traffic is at its busiest due to passenger, sports and leisure navigation, all 18 lock chambers of the nine Austrian Danube locks (double chambers) were continuously available with only a few exceptions. While individual chambers had to be closed for short periods only, as a rule for six hours

on average and mainly due to technical defects and dredging, the left chamber of the Persenbeug lock suffered the longest closing period and was inoperable for more than five days as a result of a defect.

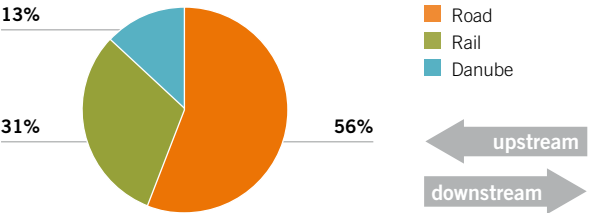
An average of three lock chambers remained closed simultaneously in the low-traffic **winter months between November and March**, mostly due to revisions and large-scale repairs. Such longer repairs of individual chambers were recorded during these months at the Ottensheim lock (closed for 16 days in November), the Wallsee lock (closed for 58 days in February/March) and the Freudenau lock (closed for 16 days in November/December). Additionally, sand-blasting work had to be carried out at the Wallsee lock, forcing operators to shut down both locks in turns for 20-odd days.

In 2011, the average **capacity utilisation** of all 18 lock chambers of the nine Danube locks was close to 15%. The highest utilisation rate of 30% was recorded by the Freudenau lock in the month of August, while the lowest rate of 9% was observed at the Ottensheim lock in January. In this context, the capacity utilisation rate of a lock chamber refers to the time the chamber is occupied, i.e. the entire period between the first vessel jointly being locked through and the last jointly locked-through vessel exiting the chamber, always assuming a maximum lock chamber operability of 24 hours a day and seven days a week. Accordingly, the utilisation rates given here neither include the lock closings described above nor the «rate of occupancy» of a lock chamber during the locking-through process, i.e. the number of locked-through vessels with relation to the possible maximum occupancy of a given lock chamber.

FREIGHT TRANSPORT IN 1,000 TONS/YEAR



Total: 73,973 (+3.4% against 2010)



Western border

Danube: Passau
Road: Suben, Neuhaus, Simbach
Rail: Passau

Eastern border

Danube: Hainburg
Road: Berg, Kittsee, Nickelsdorf, Klängenbach, Deutschkreutz
Rail: Marchegg, Kittsee, Hegyeshalom, Sopron, Deutschkreutz

MODAL SPLIT

SHARE OF DANUBE AT 13% CLEAR DOMINATION OF ROAD TRANSPORT

Transport volumes in the **Austrian Danube corridor** have increased rapidly since the mid-1990s. In 2011, they amounted to approximately 74 million tons, which is equivalent to a massive growth of 68% observed over the last 15 years (1997–2011). (Official data on road transport for 2011 is based on estimates by the Austrian Institute for Regional Studies and Spatial Planning and is still pending.) Compared to 2010, transport volumes in the corridor increased by 3.4% or 2.4 million tons in 2011 but, with a total amount of about 74 million tons, clearly failed to reach the volume of goods transported in the pre-crisis year 2008 which totalled approximately 79 million tons.

The chart shows the **cross-border transport volume** (net tons) for the three transport modes of rail, road and waterway in the Danube corridor between Passau and Hainburg according to traffic type (import, export and transit). A look at the figures for all transport modes reveals that the quantity of **goods transported to and from the west** was significantly higher than the volume of **goods crossing the eastern** border of Austria: In 2011, about 53 million tons of goods including transit transport passed the western border of the Austrian Danube corridor (+4.7% or +2.4 million tons over 2010) while on the eastern border approximately 38 million tons (+2.2% or +0.8 million tons) were recorded, corresponding to a ratio of 1.4 to 1.

At about 57 million tons, the level of **bilateral transport** (western and eastern borders taken together) was still considerably higher in 2011 than transit transports with 17 million tons. However, transit transport has increased considerably over the last 15 years; today, its volume is 1.8 times

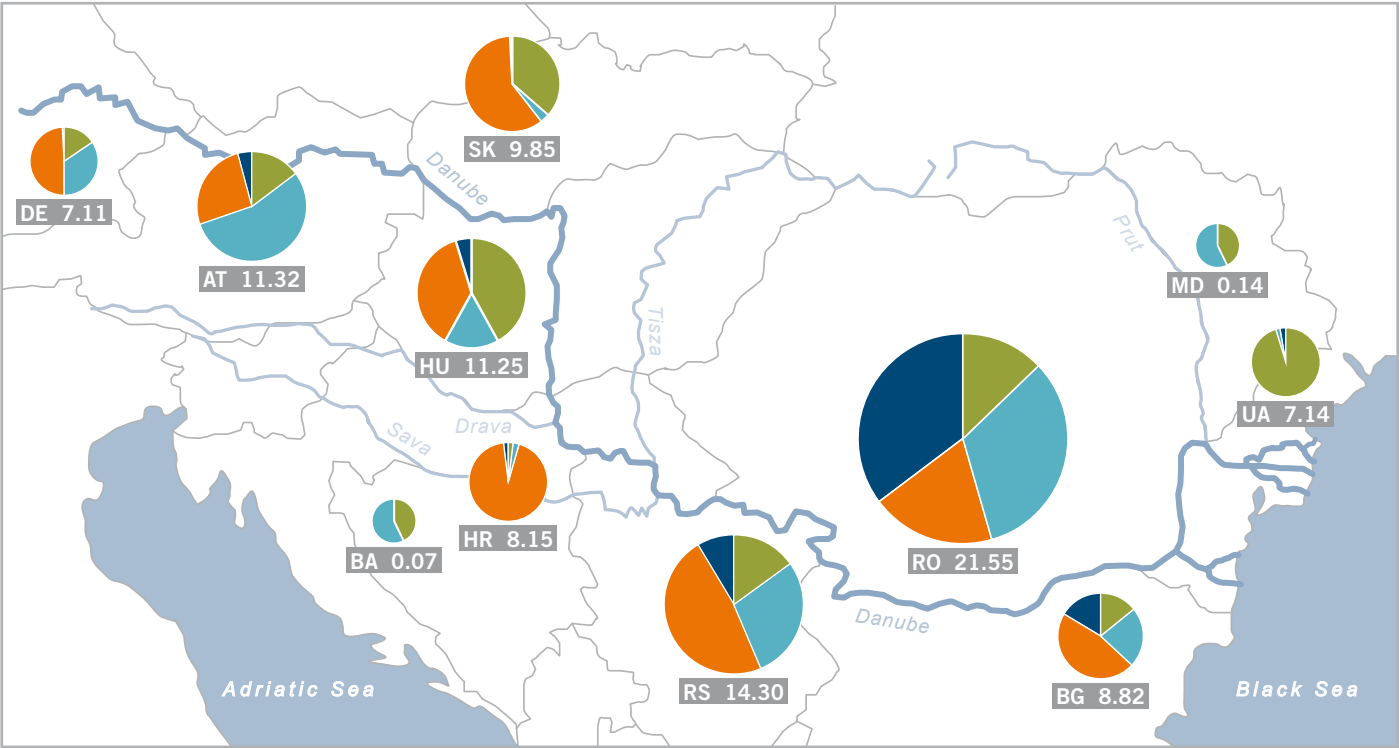
higher than in 1997. Transit road transport has even increased by a factor of approximately 2.9. Accordingly, road transport holds the largest modal-split share (66%) when it comes to downstream transit transports through Austria.

Road transport dominated the modal split in the Danube corridor with a share of approximately 56%. This means that the quantity of goods transported on the road was higher than the volume of goods carried by the other two transport modes combined. Over the past 15 years, rail transport has lost large import volumes to road transport at the eastern border of the corridor, with losses in export volumes reaching even higher, whereas the modal-split share of Danube navigation has remained roughly stable. Conversely, **rail transport** was able to improve its modal-split share in exports to the west by approximately ten percentage points at the cost of transport on the Danube.

Despite the dominant position of road transport, **Danube navigation** plays an important part in transports passing through the corridor. Its significance is particularly reflected in 2011 **upstream transport** volumes; Danube navigation held an impressive share of 35% in the import sector and 21% in transits, which means that inland navigation and rail import volumes were equal in the upstream direction and even exceeded road transport by six percentage points. Only when it came to imports and exports on the western border did the importance of inland navigation appreciably decrease, lagging behind road transport holding a modal-split share of more than 60% in both categories.

Source: Austrian Institute for Regional Studies and Spatial Planning (ÖIR); chart created by via donau

FREIGHT TRANSPORT IN MILLION TONS/YEAR



Million tons	DE	AT	SK	HU	HR	BA	RS	BG	RO	MD	UA
Export	1.12	1.67	3.60	4.73	0.16	0.03	2.17	1.27	2.78	0.06	6.82
Import	2.44	6.25	0.31	1.83	0.20	0.04	4.08	2.00	7.09	0.08	0.13
Transit	3.49	2.94	5.87	4.17	7.64	0.00	6.84	4.12	4.12	0.00	0.00
Domestic	0.06	0.46	0.07	0.52	0.15	0.00	1.21	1.43	7.56	0.00	0.19
Total	7.11	11.32	9.85	11.25	8.15	0.07	14.30	8.82	21.55	0.14	7.14

Source: Eurostat, national transport statistics, via donau; diagram and table prepared by via donau

FREIGHT TRANSPORT ON THE ENTIRE DANUBE

A WATERWAY FOR EUROPE
43 MILLION TONS IN 2010

On its navigable total length of 2,414 km reaching from Germany to the Black Sea, the Danube waterway connects ten Danube riparian states. The most current available figures regarding total freight transport volumes on inland waterways in the Danube region date back to **2010**. In total, more than **43 million tons** of goods were carried on the Danube waterway and its tributaries that year, an increase of 21.7% or about 7.8 million tons compared to the 2009 crisis year. These figures as well as all other of the following data include both transports on inland vessels and river-sea traffic on the maritime Danube (Sulina and Kilia branches) up to the Romanian port of Brăila (river kilometre 170) as well as on the Danube-Black Sea Canal.

In 2010, the largest transport volume by far was achieved by **Romania**, amounting to **21.6 million tons** (+38.4% over 2009), followed by Serbia and Austria with 14.3 million tons (+23.6%) and 11.3 million tons (+19.5%) respectively.

The **largest exporter** on the Danube was once again the **Ukraine**, with a total of **6.8 million tons** having been shipped from that country in 2010. This figure includes 1.2 million tons of ores delivered to the voestalpine steelworks in Linz by inland vessel. With a transport volume of 4.7 million tons, Hungary was the second largest exporting country on the Danube, followed by Slovakia with 3.6 million tons.

With **7.1 million tons** of goods, **Romania** accounted for the **largest import volume** of all Danube riparian states in 2010, the bulk of which came from Hungary, Serbia and the Ukraine. The second strongest importing country

on the Danube was Austria, taking delivery of 6.3 million tons of goods. Serbia took third place with imports amounting to 4.1 million tons of goods. The largest volume in **transit transports** carried out on the Danube were recorded in **Croatia (7.6 million tons)**, followed by Serbia's 6.8 million tons and Slovakia's 5.9 million tons.

With its **7.6 million tons** conveyed, **Romania** was once again the most important country by far when it came to **domestic transport**. Bulgaria came in second (1.4 million tons), followed by Serbia with 1.2 million tons.

On the **Danube-Black Sea Canal** linking the sea port of Constanța with the Danube river as well as on its northern branch, **12.4 million tons** were conveyed in 2010 (including river-sea traffic amounting to approximately 0.3 million tons), representing a plus of 33.3% or 3.1 million tons over 2009.

Regarding **transports to the Main-Danube Canal** from the Danube and **vice versa**, the Kelheim lock recorded a total volume of **5.2 million tons** (+9.6% or 0.5 million tons over 2009), 2.6 million tons of which were carried downstream towards the Danube (+22.9%) and 2.6 million tons upstream towards the Rhine (-1.3%).

In 2010, **maritime traffic**, i.e. transports by river-sea ships or by sea-going vessels, on the Danube accounted for a total of **4.8 million tons** (+25.4% or 1.0 million tons over 2009). Most of this volume (2.9 million tons) of transported goods was carried via the Romanian Sulina Canal, while 1.6 million tons were conveyed on the Ukrainian Bystroe and Kilia branches.

A close-up, low-angle shot of a blue and white barge docked at a wooden pier. The barge's side is white with a blue stripe. The name 'viadonau' is written in large, blue, lowercase letters. Above it, in smaller blue letters, is 'Österreichische Wasserstraßen-Gesellschaft'. To the right of the name, the number 'N-10.189' is written in white on the blue stripe. The pier is made of wooden planks and has several blue bollards with white tops. A blue rope is tied to one of the bollards. In the background, there are trees and a grassy area.

viadonau

Österreichische Wasserstraßen-Gesellschaft
N-10.189

PROJECTS AND ACTIVITIES



▲ THE STRATEGY FOR THE DANUBE REGION AIMS AT IMPROVING THE OVERALL CONDITIONS FOR DANUBE NAVIGATION

◀ FIRST MEETING OF THE PRIORITY AREA COORDINATORS OF THE DANUBE REGION STRATEGY IN THE HUNGARIAN TOWN OF GÖDÖLLŐ IN MAY 2011

DANUBE REGION STRATEGY

INTENSIFIED COOPERATION JOINING FORCES FOR THE DANUBE

In 2011, the realisation of the **European Union Strategy for the Danube Region** began. The implementation of its eleven strategic priority areas is ensured by coordinators, with Austria and Romania jointly coordinating Priority Area 1a – **To improve mobility and multimodality: Inland waterways**. In Austria, the Federal Ministry for Transport, Innovation and Technology is responsible for the coordinating part while the operative realisation is the task of a Joint Technical Secretariat run by via donau and the Romanian Ministry of Transport.

At the core of the Strategy for the Danube Region lies an Action Plan defining **fields of action** and respective measures for all priority areas. As far as inland navigation is concerned, the following measures will be taken:

- Improvement of **waterway infrastructure** of the Danube and its navigable tributaries
- Integrated and internationally coordinated **waterway management**
- **Development of ports** into multimodal logistics nodes
- Promotion of sustainable inter- and **multimodal freight transport**
- Modernisation of the **Danube fleet** and improvement of its environmental performance
- Implementation of harmonised **River Information Services** on the Danube and its tributaries
- **Basic and advanced training** of qualified Danube navigation personnel (nautics & logistics)
- **Development strategies** for promoting inland navigation in the Danube region

By realising these fields of action, the following **five targets** agreed between the Danube riparian states and the European Commission are

hoped to be achieved: Increase the **cargo transport** on the river by 20% by 2020 compared to 2010; solve **obstacles to navigability**, taking into account the specific characteristics of each section of the Danube and its navigable tributaries and establish effective **waterway infrastructure management** by 2015; develop efficient **multimodal terminals** at river ports along the Danube and its navigable tributaries to connect inland waterways with rail and road transport by 2020; implement harmonised **River Information Services** (RIS) on the Danube and its navigable tributaries and ensure the international exchange of RIS data preferably by 2015; solve the shortage of **qualified personnel** and harmonise education standards in inland navigation in the Danube region by 2020, taking duly into account the social dimension of the respective measures.

Five thematic **Working Groups** as well as a **Steering Group** were established in the first year, charged with accompanying the implementation of these measures. The Steering Group is composed of representatives of the ministries of transport of all 14 Danube countries, the European Commission, the river commissions as well as of other major international organisations. Over 90 projects to improve Danube navigation were identified in 2011, with some of them already under way.

FURTHER INFORMATION

- www.danube-navigation.eu
- www.danube-region.eu
- ec.europa.eu/regional_policy/cooperate/danube/index_en.cfm



▲ THE WASTE COLLECTION VESSEL «BILGENENTÖLER 8» OPERATING ON THE HUNGARIAN DANUBE AS PART OF THE WANDA PROJECT

► THE FLOATING INFORMATION AND TRAINING CENTRE «INFO DANUBE» IN THE ROMANIAN CITY OF GALAȚI

◄ KEEPING TRACK OF PUSHED LIGHTERS ON ELECTRONIC NAVIGATIONAL CHARTS



DANUBE REGION

SUCCESSFUL COOPERATION INTERNATIONAL DANUBE PROJECTS

In the realm of **transnational cooperation in the Danube region**, a great many results were achieved in projects included in the South East Europe Programme co-financed by the EU in 2011 in which via donau is participating.

For example, **cooperation between Danube waterway management authorities** was successfully continued in the NEWADA project. As a part of this project, national strategies for an optimisation of waterway infrastructure maintenance were developed and a Danube-wide information portal for navigation was implemented (www.danubeportal.com), amongst other things.

In the field of education and knowledge transfer, the NELI project achieved its aim of establishing a cooperation network of institutions for basic and advanced training in subjects related to inland navigation along the Danube and of creating specialised training courses and teaching materials. Furthermore, four **Danube Information and Training Centres** were established along the waterway in Enns (Austria), Budapest (Hungary), Sisak (Croatia) and Galați (Romania).

As part of the WANDA project, pilot activities regarding the **collection and disposal of ship borne waste** on the Danube were successfully realised.

In Austria, Hungary, Bulgaria and Romania, for example, waste oil and bilge water was collected and disposed of on a cross-border level free of charge, with a mobile waste collection vessel operating on the upper Danube.

The European Commission set the course for a relaunch of the **European Action Programme for Inland Waterway Transport** (NAIADES) in 2011.

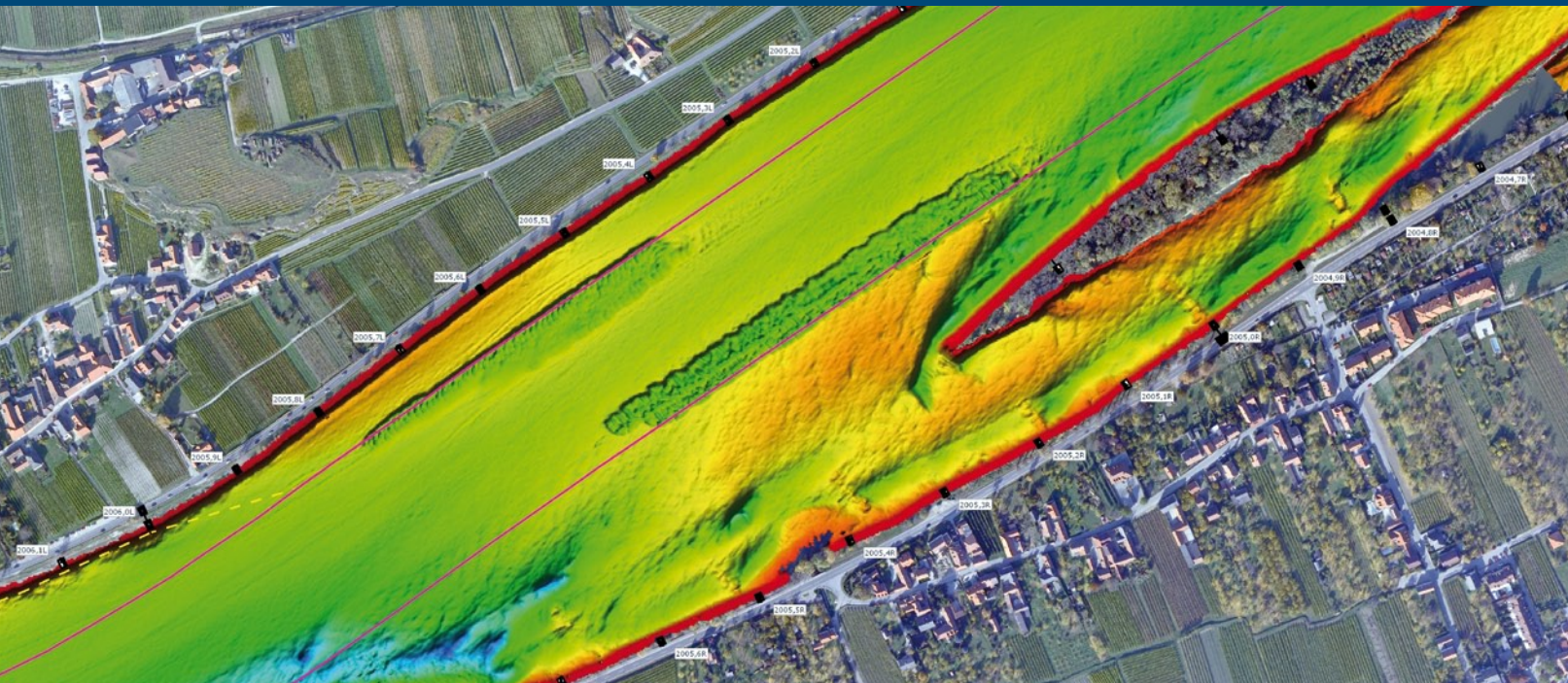
To this end, a public hearing and consultation of all participating and

interested organisations took place in July 2011. Among other measures, a special «Good Practices» online database (www.naiades.info/good-practices) was set up as a part of the Platform for the Implementation of NAIADES (PLATINA) which is coordinated by via donau. The database is aimed at introducing the general public to the benefits and manifold practical applications of inland navigation.

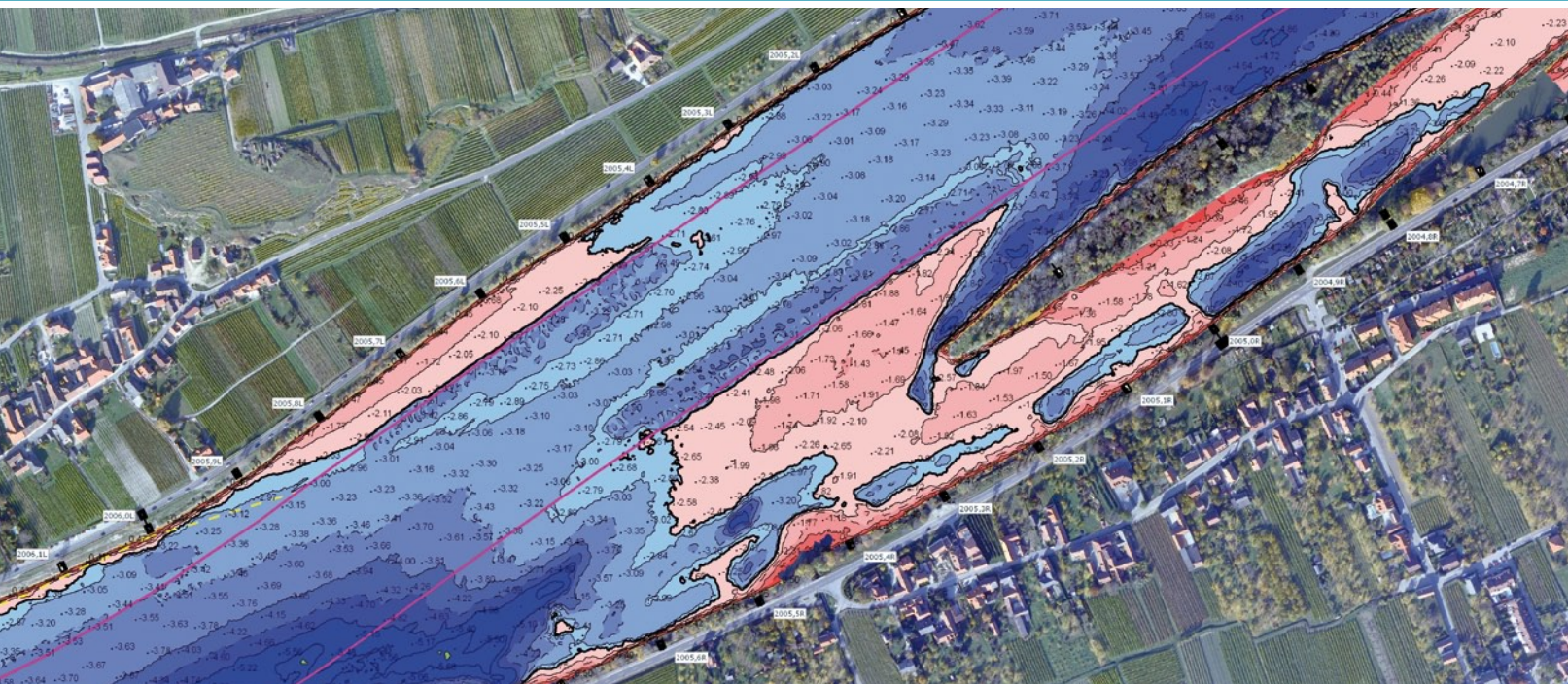
In the field of **River Information Services** (RIS), the IRIS Europe II project launched in 2009 was successfully completed in 2011. This project helped to expand RIS in the Danube and Rhine riparian countries both functionally and geographically. Many services such as a water surface model or the tracking of pushed lighters could be put into operation successfully. The project also produced valuable new insights regarding the operation and standardisation of RIS, a requirement for the development of future international services. An associated follow-up project was successfully submitted for funding approval in 2011 and is expected to seamlessly build on work already begun in the past.

FURTHER INFORMATION

- www.newada.eu
- www.nelipproject.eu
- www.wandaproject.eu
- www.naiades.info
- www.naiades.info/platina
- www.iris-europe.net



MULTI-BEAM SONAR IMAGE OF THE ROTHENHOF FORD AFTER DREDGING: ▲ RELIEF REPRESENTATION ▼ STRATIFICATION MAP



WATERWAY

PRO-ACTIVE INFRASTRUCTURE MAINTENANCE SERVICES FOR INLAND NAVIGATION

In 2011, a working group especially established for these purposes extensively discussed the core tasks of via donau's **Customer-Oriented Waterway Management** (KWSM) project – i.e. observing, planning, carrying out and finally providing information – with a view to increasing the benefits for its clients. By the end of the year, a strategy report approved by the Supreme Navigation Authority (OSB) at the Federal Ministry for Transport, Innovation and Technology had been finalised which will form the basis for optimised waterway infrastructure maintenance on the Austrian stretch of the Danube.

Apart from the biannual **surveying of the riverbed** in both free-flowing sections of the Austrian Danube (east of Vienna and in the Wachau region), all shallow sections marked on the digital ECDIS map as «caution areas» are now also being surveyed in July, preferably using multi-beam sonar equipment. These measurements formed the basis for the **dredging briefing** first held in the beginning of August 2011 in the course of which a priority list defining dredging areas for 2011/2012 was prepared in collaboration with the Supreme Navigation Authority. Thanks to this **pro-active dredging interventions**, planners hope to create optimum infrastructure conditions for navigation as early as the beginning of the low-water period in autumn. Hydrographic measurements of the dredging and dumping zones are carried out shortly before and after dredging in order to monitor the success of these measures and to preserve technical evidence.

In the **online shallow sections reports** published on the DoRIS website, information regarding measured minimum fairway depths at low navigable water level has been supplemented by minimum fairway depth data related to the current water levels at the respective gauges of reference.

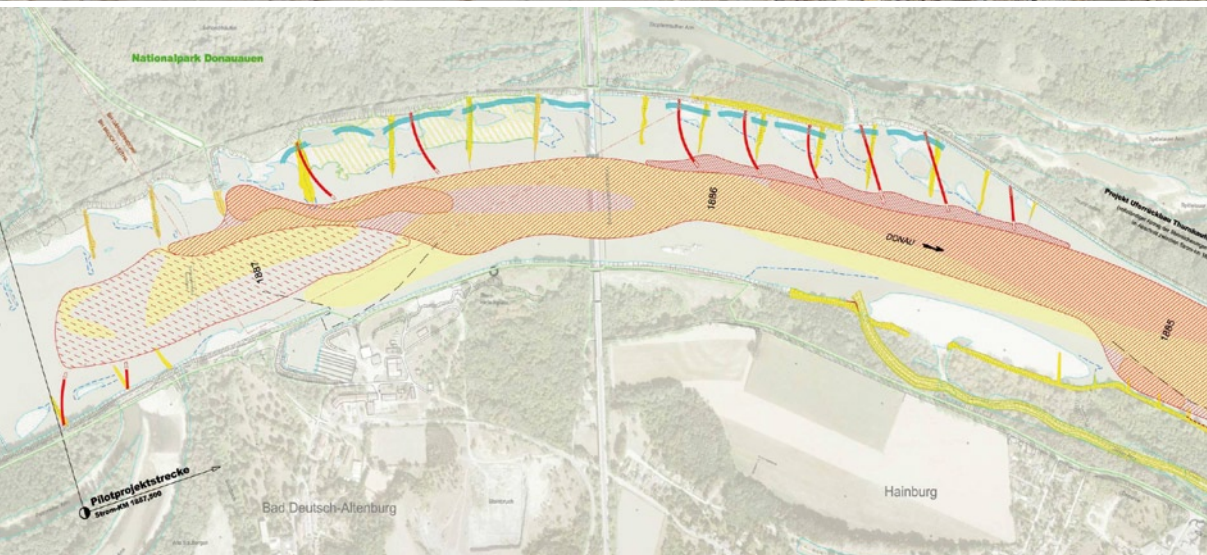
Additionally, vessel operators will find it easier to plan their transports thanks to a 24-hour fairway depth forecast.

In cooperation with the Supreme Navigation Authority at the Austrian Federal Ministry for Transport, Innovation and Technology, the **fairway in the common border sections of the waterway** was harmonised with the neighbouring states of Germany and Slovakia in 2011. Several significant improvements were made in 2011 with regard to the **Electronic Navigational Charts** (the so-called Inland ENC's) published by via donau. The biannual depth data for the two free-flowing sections of the Austrian Danube were integrated into the charts, and depth data for several reservoirs of hydroelectric power stations have been updated as well. Many new objects (Danube ferries, high-voltage power lines, bridges and groynes) were integrated into the topographical data, and riverbank lines were adjusted according to the latest aerial photographs. Finally, Waterway Police information was updated as well.

Notices to Skippers advise vessel operators as to closings, traffic limitations, delays and other events relevant to navigation and thus make a significant contribution to transport safety and improved travel planning. In 2011, these Notices were completely revised and have been online since March 2011. The new version has a more user-friendly and clearer search mask as well as better e-mail subscriber management.

FURTHER INFORMATION

- www.doris.bmvit.gv.at/en/water_levels_low_sections
- www.doris.bmvit.gv.at/en/inland_ecdis
- nts.doris.bmvit.gv.at



▲ IN SEVERAL RIVER ENGINEERING PROJECTS VIA DONAU IS ENDEAVOURING TO CREATE NEAR-NATURAL RIVERBANKS ALONG THE DANUBE

◀ BAD DEUTSCH-ALTENBURG PILOT PROJECT: BOTH THE ENVIRONMENT AND NAVIGATION ARE PROFITING FROM INTEGRATED PLANNING

ENVIRONMENT

EMPHASIS ON SUSTAINABILITY WIN-WIN FOR ENVIRONMENT AND NAVIGATION

via donau has become a **trailblazer in ecologically oriented hydraulic engineering** on navigable rivers and has gained the required experience and competency regarding the improvement of ecological conditions as a result of numerous projects accomplished over the past years.

Seen against this background, the **Bad Deutsch-Altenburg pilot project** is a unique milestone. This EU co-funded project has been designed to test hydraulic engineering measures on a project stretch about three kilometres long which are scheduled to be implemented along the entire section of the Danube between the Freudenu power station and the Slovakian border at a later date:

- **Restoration of river banks:** the removal of stone reinforcements on a stretch approximately 1.2 kilometres long will allow the Danube to form natural banks once again.
- **Lowering of bank structures:** this measure will make it easier for Danube water to flow into the Stopfenreuth floodplain at higher water levels.
- **Reconnection of sidearms:** in this section of the Danube, the over 1.3 kilometre long Johler branch will become the first sidearm through which water will flow through almost all year long.
- **Optimisation of low-water regulation:** all in all, 19 groynes will be completely removed, four will be lowered and ten new ones will be built, including the testing of declining and crescent-shaped structures.
- **Granulometric riverbed improvement** for stabilising the Danube's riverbed: coarse gravel will be used to cover lower riverbed zones which are particularly exposed to the river's current while fords will remain untouched by this measure.

Thanks to **integrated planning**, this project will allow both the environment and navigation to profit from these measures. The accompanying scientific monitoring of this project will ensure that a maximum amount of insights can be gained for follow-up projects.

In 2011, the required approval procedures were successfully completed while a sufficient number of contracts for construction services was awarded to be able to press ahead with **actual construction works** in 2012. Periods that are ecologically sensitive for animal and plant life were taken into consideration when designing the timeline and the manner of implementation of construction works. A special supervisory body will ensure the project's low-impact, ecological realisation.

At the **Christian Doppler Laboratory «Im Fluss»** founded by the Vienna University of Natural Resources and Life Sciences and via donau in the summer of 2010, researchers are trying to ensure more precise forecasts concerning the effects of river engineering measures and to develop innovative hydraulic engineering methods for improving navigation, flood control and the environment. The results of these advanced river engineering methods will be incorporated both in the surveying and maintenance as well as into the continuous ecological monitoring performed by via donau. Insights gained through these efforts will also be included in the Bad Deutsch-Altenburg pilot project.

FURTHER INFORMATION

- www.donau.bmvit.gv.at/en
- cdlabor-imfluss.boku.ac.at
- www.donauauen.at



WHAT ARE THE EFFECTS OF CLIMATE CHANGE AND EXTREME WEATHER EVENTS ON INLAND NAVIGATION? IN ORDER TO ANSWER THIS QUESTION, VIA DONAU IS PARTICIPATING IN SEVERAL INTERNATIONAL RESEARCH PROJECTS



ENVIRONMENT

CLIMATE CHANGE RESEARCH OUTCOMES IMPACTING ON NAVIGATION

Coming to grips with **climate change** by means of international research projects is an important concern for via donau as it may have an effect on the Danube's discharge regime. Results from investigations conducted in 2011 concerning the Austrian and German sections of the Danube indicate that in the medium term (2021–2050) climate change could well have a beneficial effect on inland navigation by favourably balancing the river's discharge conditions throughout the year. Similarly, ice conditions affecting inland navigation have improved, both due to global warming and anthropogenic action.

The ECCONET project is investigating the **impact of climate change on inland navigation in Europe** with an emphasis on the Rhine-Main-Danube corridor. The project involves both the evaluation of already existing research data and the carrying-out of new meteorological as well as hydrological calculations and trend analyses. Based on their results, appropriate adaptation measures are being investigated and identified in the fields of vessel operation, vessel technology, river engineering measures and methods for forecasting water conditions.

The EWENT project is studying the **consequences of extreme weather conditions for the EU's transport system**. Its objectives are to identify potential weather-related risks and consequences for the transport sector and estimate their cost effects. Initial measures for the improved management of extreme weather events have already been developed and recommendations for courses of action formulated for decision-makers in the fields of commerce, infrastructure operations and politics.

The purpose of the SUPERGREEN project is to analyse a number of representative European transport corridors in terms of **measures to improve**

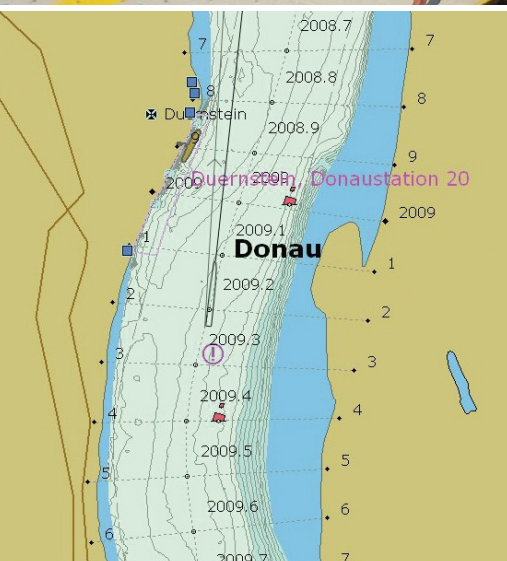
the environmental friendliness of the European transport system.

Selected corridors were subjected to a benchmarking analysis addressing environmental aspects, infrastructural parameters, exhaust gas emissions as well as external and internal costs. After investigating CO₂ emission levels in relation to transport performance, inland navigation emerged as clearly superior when compared to road transport. Accordingly, the application of «green» technologies within the selected transport corridors will be analysed in greater detail.

A project titled **LDS – LNG Propulsion Systems for Danube Inland Navigation** which had been developed by via donau in cooperation with the Vienna University of Technology and Salzburg AG has been successfully completed. The project investigated the sustainable reduction of carbon dioxide, particulate matter and nitrogen dioxide emissions via the use of LNG (liquefied natural methane and biomethane) in Danube navigation. As part of its policy of making inland navigation an integral part of Austria's climate change policy, via donau has been actively participating in the development of a national **Climate Change Adaptation Strategy**, specialising in the area of transport infrastructure. Appropriate recommendations for action are expected to be published in 2012.

FURTHER INFORMATION

- www.econet.eu
- virtual.vtt.fi/virtual/ewent/index.htm
- www.supergreenproject.eu
- www.klimawandelanpassung.at/en
- www.via-donau.org/en/company/projects/project_database



▲ HAZARDOUS GOODS CAN BE TRANSPORTED MOST SAFELY BY INLAND VESSEL

► NAVIGATION SAFETY CAN BE IMPROVED EVEN FURTHER BY MEANS OF INNOVATIVE TECHNOLOGIES

◀ UP-TO-DATE WATER LEVEL INFORMATION ON AN ELECTRONIC NAVIGATIONAL CHART



SAFETY

REACHING DESTINATIONS SAFE AND SOUND INNOVATIONS ACROSS THE WATERS

Compared to other modes of inland transport, the **safety record** of inland navigation is unbeaten: In 2011, a mere 21 traffic accidents involving damage occurred on the Austrian section of the Danube without a single case of personal injury or death. Of these, 18 cases involved damage to cargo vessels and 6 involved passenger ships. When split into accident types, 6 incidents were vessel collisions while the remaining 15 involved damage to riverbanks or facilities or vessels touching ground.

With the aim of making a significant contribution to the **modernisation of the existing inland navigation fleet** and thus raising transport safety on European waterways, the MoVe IT! project (Modernisation of Vessels for Inland Waterway Freight Transport) funded by the EU's Seventh Framework Programme for Research was launched. The project focuses, amongst other things, on the adaptation of the existing inland navigation fleet to the regulatory requirements of dangerous goods transport (as stipulated in the ADN – the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways). This goal can be reached by measures including appropriate design and materials technology. The project also focuses on improving inland waterway transport in terms of energy efficiency, environmental friendliness, the use of alternative fuels instead of diesel and on the development of new markets. In the course of enhancing existing **River Information Services**, activities started in 2009 to further increase waterway transport safety have been completed as part of the IRIS Europe II project co-funded by the EU. Amongst other things, a study was carried out investigating the use of more cost-efficient ship compasses for the exact determination of a vessel's orientation. The pilot operation stage of the electronic system for

reporting the transport of hazardous goods was also launched in 2011. Compared to the present conventional reporting by fax, the advantage of this electronic system is that in the case of an accident, the authorities as well as rescue organisation are supplied with all the data concerning cargo, voyage and vessel in digital form. These data can then be used to plan rescue missions more precisely and to perform them more swiftly. Additionally, a water surface model was established in the free-flowing Wachau section displaying highly accurate current water level information on onboard electronic navigational charts and automatically calculating the clearance height for bridges.

Other national and European projects investigating the safety-related aspects of **navigation systems** and promoting the development of assistance systems were continued in 2011 as well. These projects include a concept study for a navigation support system that will assist ship crews when navigating critical sections of a waterway (NAVWAT) as well as the development of a collision avoidance system using 3D modelling of vessel dimensions and high-risk zones (ARIADNA). Using innovative technologies, both applications are designed to facilitate the more safe and efficient handling of typical navigation situations on inland waterways.

FURTHER INFORMATION

- www.iris-europe.net
- www.teleconsult-austria.at/navwat
- www.ariadna-fp7.eu



▲ PORT OF VIENNA FREUDENAU

◀ PORT OF ENNS

MULTIMODAL PORTS STRENGTHEN THE COMPETITIVENESS OF EUROPEAN INLAND NAVIGATION. THE PORTS OF VIENNA AND ENNS ARE PARTNERS OF EU-FUNDED PORT PROJECTS.

COMMERCE

NETWORKING THE SECTOR FOCUS ON DANUBE NAVIGATION

In 2011, the European Commission charged via donau to conduct an **expert survey focussing on Danube navigation**. Decision makers from the manufacturing industry and the logistics sector were interviewed to determine their needs with regard to subjects such as infrastructure, fleet, personnel and training, River Information Services (RIS), political framework conditions and other topics and services. The results of this survey will be used to set priorities in the EU's NAIADDES II action programme for promoting inland waterway transport which will significantly determine inland navigation policy in the years to come.

Just like in previous years, via donau was represented on the **transport logistic exhibition** held every two years in Munich in 2011 as well. For the first time, via donau shared an exhibition stand with the four public Austrian Danube ports of Linz, Enns, Krems and Vienna (incl. WienCont) to emphasise the presence of public infrastructure operators in the field of Danube logistics. In this way, all exhibition attendees were able to gain an overview over the logistics services offered in Austria. Apart from the presentation of information provided by all exhibition partners, the stand also featured a show programme focussing on such varied subjects as the Danube Region Strategy and high & heavy transports on inland vessels. River Dating by VNF (Voies navigables de France) is an innovative concept for **business-to-business talks** in the field of inland navigation. via donau attended such an event together with other partners in Paris in December 2011 to represent the Danube. Starting in 2012, similar events labelled «Danube Business Dating» will be organised regularly in the Danube region in order to optimise networking between potential Danube navigation customers and the navigation industry.

The continued development and expansion of ports plays an important part in reinforcing inland navigation competitiveness in Europe. As a participant in the international **port development project INWAPO** (Upgrading of Inland Waterway and Sea Ports), via donau is therefore contributing its own professional expertise and reliable Danube navigation data. This project aims at developing and expanding the infrastructure and logistics of participating ports, in particular focussing on the Danube region.

The **DaHar project** (Danube Inland Harbour Development) investigates the ports of small and medium-sized towns along the Danube as to their multi-modal logistics potential. It also emphasises the further development of River Information Services to benefit logistics planning. In this project, via donau supports the port of Enns with technical expertise as an associated partner.

Multimodal transport and logistics chains can be improved by means of intelligent traffic information. **River Information Services** (RIS) also offer actors active in the transport and logistics industries a commercial edge as well as numerous benefits for their own operative processes. As a part of the EU-funded RISING project, new RIS were developed in collaboration with business operators from the Austrian and European inland navigation sector in 2011 which can now be tested and used.

FURTHER INFORMATION

➤ www.via-donau.org/en/economy

➤ www.rising.eu



Danube waterway

UN/ECE Classes

- VII
- Vla, b, c
- Va, b
- IV
- III
- I, II
- Lock
- Chainage (river km)

Ports

- Major
- Other

Cities

- Capital
- Other

Countries

- European Union
- Other
- National border