

MARKET OBSERVATION FOR DANUBE NAVIGATION: RESULTS IN 2023



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Market Observation for Danube Navigation: Results for the Year 2023

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Chapter 1.

Overview of the initial state and dynamics of the Danube transport market in 2023

- 1.1 The initial state of the main market sectors of the Danube navigation market at the beginning of 2023 was determined by the overall negative results in terms of cargo transport volumes at the end of 2022, which was caused primarily by the impact of the full-scale military invasion of Russia into Ukraine, started in February 2022, as well as the emergence of significant risks in the Danube navigation market, including direct security threats, primarily to the Ukrainian Danube port infrastructure, as well as the entire system of navigation on the Lower Danube, including the safety of the Lower Danube ecosystem.

Accordingly, the volumes transported in the first half of (Q1+Q2) 2023 (upstream/downstream in total) were as follows

- in cross-border traffic Germany/Austria (DE/AT) - data from the Jochenstein lock: 1,091 thousand tonnes, or 76 % of the volume in (Q₁ + Q₂) 2022;
 - in cross-border traffic Hungary/Slovakia (HU/SK) – data from the Gabčíkovo lock: 2,087 thousand tonnes, or 76.1% of the volume in (Q₁ + Q₂) 2022;
 - in cross-border traffic Hungary/Croatia/Serbia (HU/HR/RS) - data from the Port of Mohács: 1,619 thousand tonnes, or 66% of the volume in (Q₁ + Q₂) 2022;
 - through the Danube - Black Sea Canal - 10,528 thousand tonnes, or 118% of the volume in (Q₁ + Q₂) 2022.
- 1.2 The creation of sustainable operating conditions for Ukraine's Danube ports in the context of global food security was given special attention due to the termination of the Black Sea Grain Initiative as of 18 July 2023 and the subsequent blockade of Ukrainian seaports by Russia, including air strikes on ports, which resulted in damage to hundreds of port infrastructure facilities and the destruction of significant stocks of grain cargo. Accordingly, the Danube Commission continued to work actively to maximise the promotion of the export of Ukrainian agricultural products as well as the import of goods needed by Ukraine within the framework of the EU-Ukraine Danube Solidarity Lanes initiative, which was adopted in May 2022 in support of the European Union's solidarity measures with Ukraine, namely the establishment, support and development of a logistics regime based on the Danube ports of Ukraine, the Republic of Moldova and Romania, as well as the Danube-Black Sea Canal links.

- 1.3 Numerous special events that have been held include:

- Systematic coordination meetings of maritime administrations with the participation of representatives of the European Commission's DG MOVE and DC;

- Targeted visits to ports, examination of the system of control of arrival/departure of vessels and elimination of unnecessary administrative barriers;
 - Development of the system of pilotage of vessels through the canals, including the implementation of real projects for the creation of additional communication and monitoring centres, as well as the support of the canal navigation environment.
- 1.4 Cargo turnover of the Danube ports of Ukraine in the first half of (Q₁ + Q₂) 2023 amounted to 15,146 thousand tonnes or 297% of the volume of (Q₁ + Q₂) 2022.
- 1.5 The significant increase in cargo turnover in Ukraine's Danube ports in the first half of the year is a logical consequence of the decisive measures taken by the Government of Ukraine, with the support of the European Union and the Danube Commission, to intensify the export of agricultural products through the ports by sea vessels (via the Sulina Canal and the Kiliya branch), as well as by heavy convoys to the port of Constanta via the Danube-Black Sea Canal, with subsequent transshipment to seagoing vessels.
- 1.6 On the night of 24 July 2023, and again in the following months, Russia used drones to attack Ukrainian port infrastructure on the Danube. These attacks resulted in the destruction of grain warehouses, tanks, storage facilities and administrative buildings, and damaged a significant amount of grain cargo in the ports. Despite the consequences of these attacks and the constant threat of them, Ukrainian ports increased cargo turnover by 2.2 times in the first 9 (Q₁ + Q₂ + Q₃) months of 2023 compared to the same period in 2022 (total of 24,705 thousand tonnes).
- 1.7 In addition to a certain reorientation of cargo flows due to security problems caused by Russian attacks on the infrastructure of Ukrainian Danube ports, the dynamics of the freight transport market were also affected by a drop in demand for steel (according to EUROFER, the drop will be more than 1% by the end of the year) and rising prices for energy carriers, including bunker fuel for ships. As a result, transport volumes were also affected in the first 9 months of 2023:
- In cross-border traffic Germany/Austria (DE/AT), a total of 1 663 thousand tonnes were transported in 9 months (Q + Q + Q₁₂₃) 2023, which is 95% of the volume for the same period in 2022.
 - In cross-border traffic Hungary/Slovakia (HU/SK), the total transport volume amounted to 3 137 thousand tonnes, which is 91% of the volume for the same period in 2022.
 - In Hungary/Croatia/Serbia (HU/HR/RS), the total volume was 2 641 thousand tonnes, which is 84% of the volume for the same period in 2022.
 - The volume of goods transported through the Danube-Black Sea Canal in the first 9 months of 2023 amounted to 17,102 thousand tonnes, which is 133% of

the volume for the same period in 2022; accordingly, this increase is mainly due to the intensification of transport from Ukrainian ports to Constanta.

1.8 The ports of the Danube riparian countries, with the exception of the ports of Ukraine, experienced different trends in the handling of goods (Table 1.1).

Table 1.1

Cargo turnover of the Danube ports in 2019-2023

Ports (thousand tonnes)	2019	2020	2021	2022	2022 Q ₁ +Q ₂ +Q ₃	2023 Q ₁ +Q ₂ +Q ₃
Germany	3.274	3.511	2.999	2.410	1.859	1.712
Austria	6.452	6.050	6.356	5.363	4.239	2.766
Slovakia	1.664	1.553	1.846	1.934	1.455	1.214*
Hungary	6.064	6.742	5.715	4.063	3.232	2.748
Croatia	814	948	697	582	456,7	273,3**
Serbia	9.735	8.164	13.610	12.023	8.788	9.330
Bulgaria	5.385	5.431	7.111	7.104	5.242	5.518***
Romania	28.474	27.307	28.457	24.355	18.346	21.097
Republic of Moldova	1.299	1.185	1.819	2.144	1.610	1.954***
Ukraine	5.629	4.055	5.505	16.505	10.646	24.705***

* Ports of Bratislava and Komarno.

** Data of all Croatian ports (<https://dzs.gov.hr>)

*** Data received respectively from the Ukrainian Sea Ports Authority, and the maritime administrations of Bulgaria, and the Republic of Moldova.

1.8.1 The largest increase in cargo turnover in the Danube ports of Ukraine (Table 1.2) was due to the growth of export volumes of agricultural products, with grain cargoes forming the basis (Table 1.3).

Table 1.2

Cargo turnover of Ukrainian Danube ports in 2023 (thousand tonnes)*

Port/period	Izmail	Reni	Ust-Dunaisk
(Q ₁ +Q ₂ +Q ₃) 2023	15.299	7.986	1.419

*Data obtained from the Ukrainian Sea Ports Authority.

Table 1.3

Export of cargo in Ukrainian Danube ports in 2023 (thousand tonnes)

Port/period (Q ₁ +Q ₂ +Q ₃) 2023	Izmail	Reni	Ust-Dunaisk
Grain	7.182,75	4.314,21	713,06
Other bulk	1.717,29	1.276,45	454,23
Bulk (oil)	1.302,00	840,52	0

For all major components of Ukrainian ports' cargo turnover, the volumes were significantly higher than the corresponding values for the comparable period (Q₁+Q₂+Q₃) in 2022 (Table 1.4).

Table 1.4

**Main components of cargo turnover of Ukrainian ports in 2023
(thousand tonnes)**

Period/year	Grain	Other bulk goods	Bulk (oil)
2022	3.507,88	2.217,92	707,78
2023	12.210,02	3.447,97	2.142,52
%	348,1	155,5	302,7

According to operational data, the cargo turnover of Ukrainian Danube ports may reach over 32 million tonnes by the end of 2023 (Chapter 3).

The turnover of the Port of Constanta in river transport amounted to 15,540 thousand tonnes, or 136.8% of the volume in the first 9 months of 2023, while the cargo turnover in international transport amounted to 13,077 thousand tonnes, or 84% of the total volume.

In the passenger transport market, the main Upper Danube cruise lines launched sporadically (and then with a sharp increase) in March 2023; April, May and June saw further increases in number of lines and the number of passengers carried.

The Upper Danube lines carried a total of 443,600 passengers in the first 9 months of 2023, or 121% of the volume carried in 2022.

The situation was different on the lines towards the Danube Delta: the number of passengers carried on these lines in the first half of the year was only 27.5 thousand passengers, which is 42% of the number in the same period of 2022.

Chapter 2.

Overview of the initial state and dynamics of the Danube transport market in 2023

2.1 Navigation conditions on the Danube River in 2023

2.1.1 Navigation conditions in 2023: Overview

At the beginning of 2023, snow reserves in the mountains of the Danube River basin were estimated to be below the multi-year average, but exceeded those at the beginning of 2022. Under these conditions, the maximum water levels during the formation of the spring flood wave characteristic of the Danube were also close to the long-term averages.

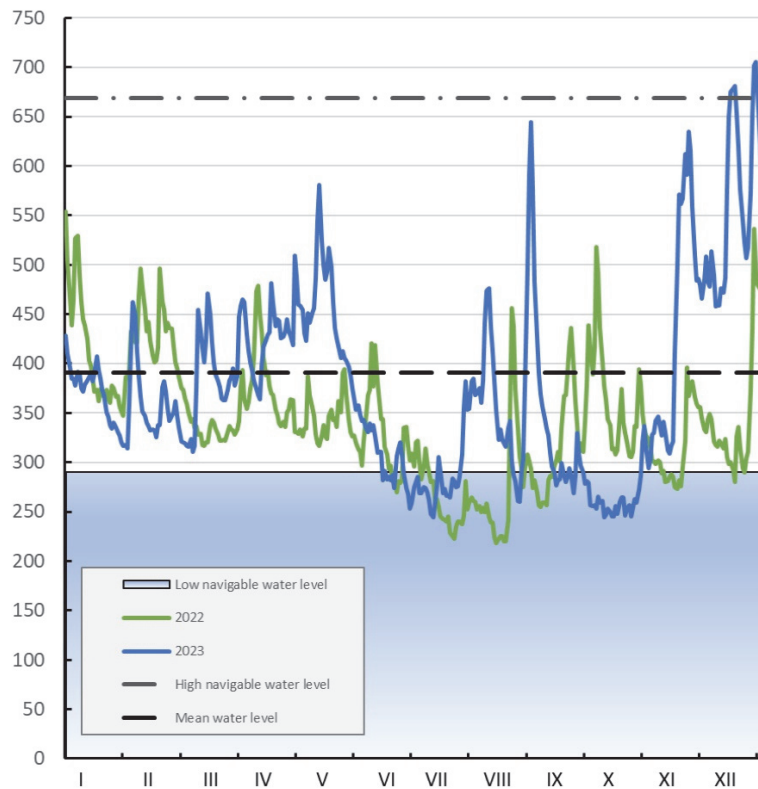
In **January** 2023, water levels on the Upper Danube (Pfelling gauging station, Fig. 1) fluctuated within the range of 30-70 cm from the mean water levels (*MWL*). On the Middle Danube (Vidago gauging station, Budapest, Fig. 2), water levels were 30-80 cm below the *MWL* values at the beginning of the first 10-day period; thereafter, two consecutive rises in levels with amplitude values of 40-60 cm above the *MWL* values were observed during the month, followed by a drop below the *MWL* values by the end of month. On the Lower Danube in January, water levels were 2.5-3.2 m above *MWL* in the first decade, and then 2.6-4.2 m higher until the end of the month.

In the middle of the first 10-day period of **February**, the Upper Danube experienced a short-term rise in water levels by 50-60 cm above *MWL*, followed by a drop below *MWL* until the end of the month. On the Middle Danube, water levels during the month remained below the *MWL* throughout the month with occasional exceedances of 35-45 cm at the beginning of the third decade. On the Lower Danube, water levels were 2.5-3.2 m above the *MWL* during the whole month.

In the second 10-day period of **March**, water levels on the Upper Danube were 70-80 cm above the *MWL* values, then fluctuated in the range of 60-90 cm below the *MWL* value until the end of the month. On the Middle Danube, water levels were consistently 40-80 cm below the *MWL* during the month. On the Lower Danube, water levels were 2.5-3.3 m above the *MWL* during the first ten-day period with subsequent exceedance of the *MWL* by 3.5-4.0 m.

In **April**, water levels on the Upper Danube fluctuated within the range of the *MWL* values with occasional exceedance at the beginning of the first 10-day period and a sharp increase above the *MWL* from the middle of the second ten-day period. On the Middle Danube, water levels fluctuated near the *MWL* during the first ten-day period; from the middle of the second ten-day period, a sharp rise with an amplitude of 1.6-1.7 m above the *MWL* was observed, followed by a decline to the *MWL* level by the end of the month. On the Lower Danube, water levels were 3.2-4.2m above *MWL* throughout the month.

(a)



(b)

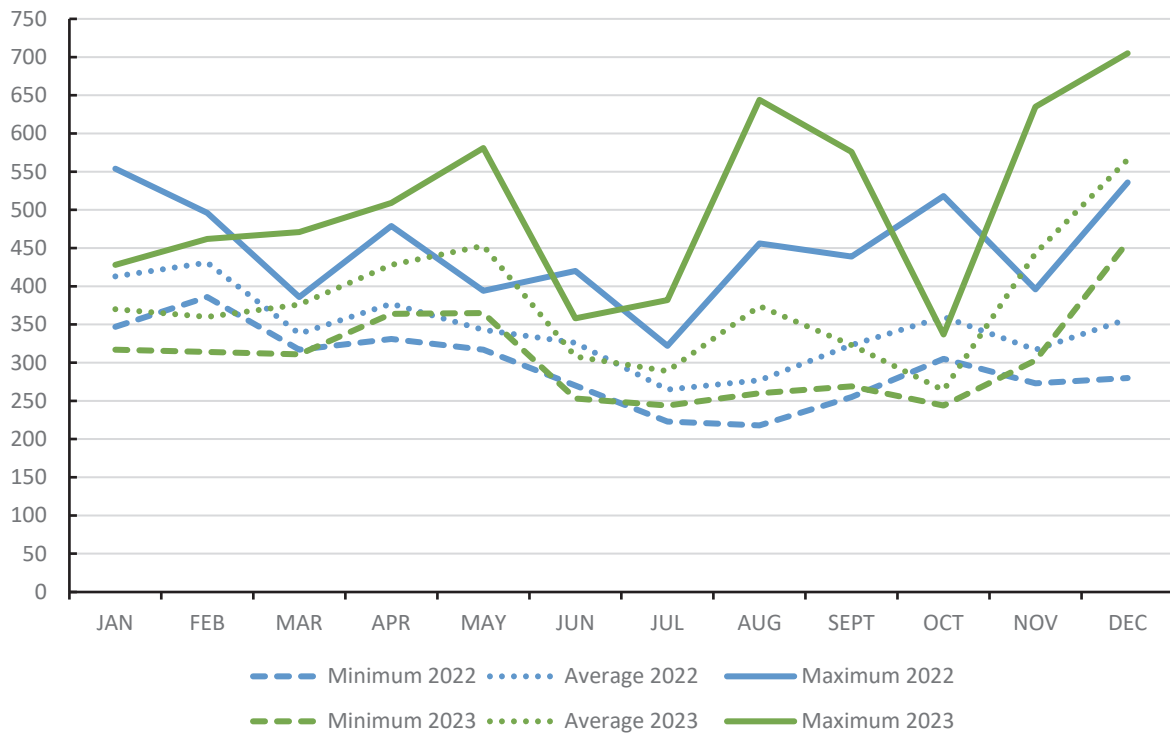
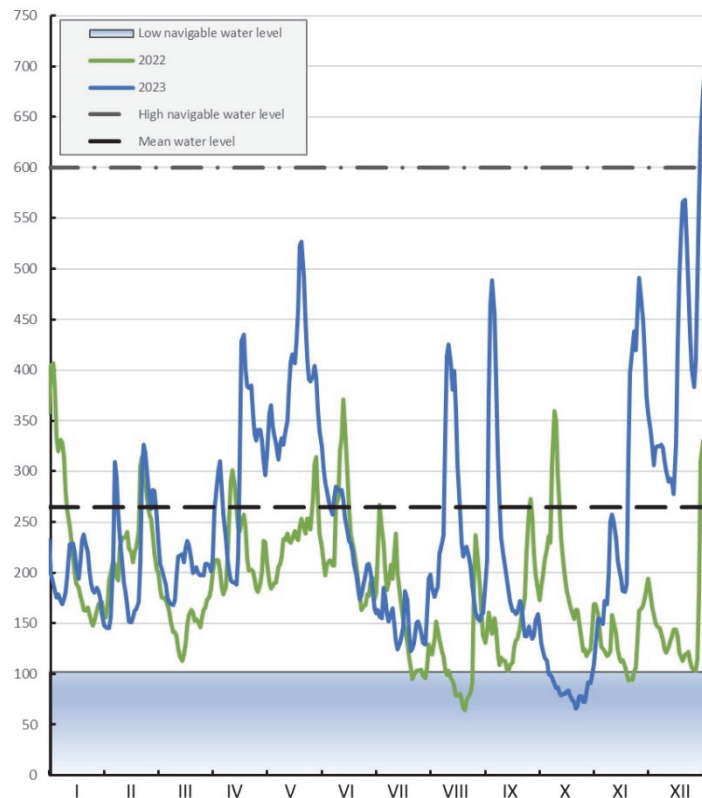


Figure 1. Mean daily (a) and absolute (b) values of water levels for the Pfelling gauging station (DE) (km 2306+530), in cm

(a)



(b)

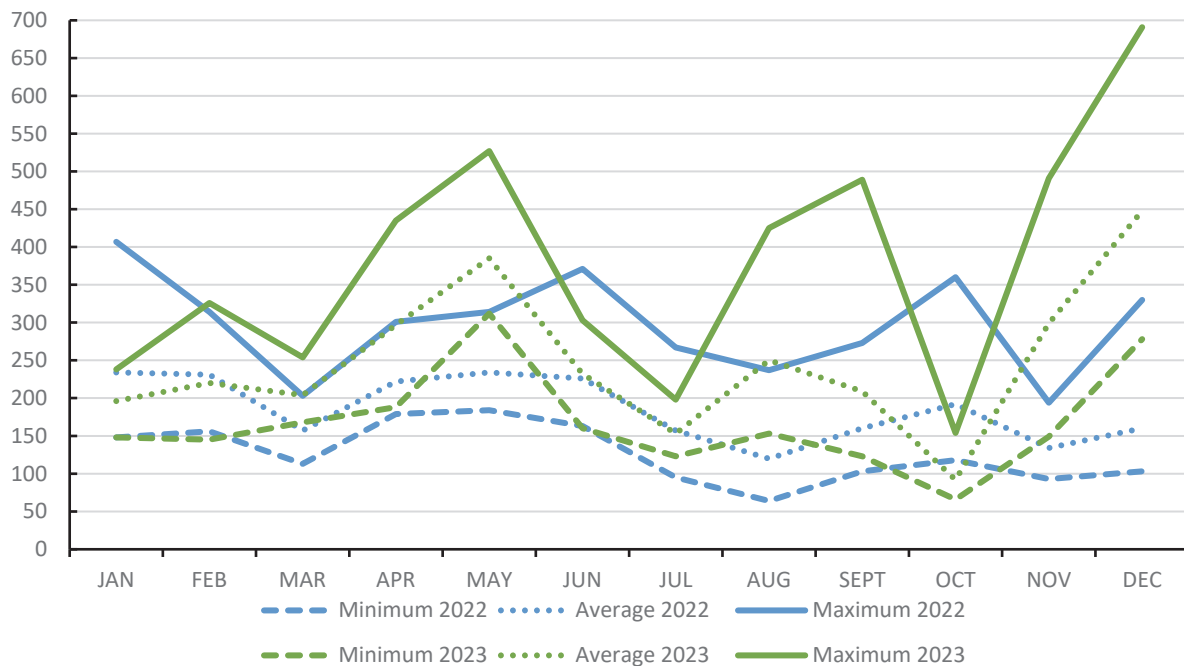


Figure 2. Mean daily (a) and absolute (b) values of water levels for the Budapest Vigadó gauging station (HU) (km 1646+500), in cm

In **May**, water levels on the Upper Danube fluctuated in the range above the *MWL* with occasional maximum exceedance by 1.5-1.8 m in the second ten-day period; by the end of the third ten-day period, a decline to the *MWL* level began. On the Middle Danube, levels remained consistently above the *MWL* with occasional maximum exceedance of 2.0-2.4 m during the second ten-day period; by the end of the third ten-day period, a decline to the *MWL* level began. On the Lower Danube, water levels were 3.5-4.2 m above the *MWL* throughout the month.

In **June**, the water levels on the Upper Danube began a consistent decline and from the middle of the second 10-day period the levels dropped below low navigable water level (*LNWL*) with subsequent fluctuations near this value until the end of the month. On the Middle Danube, water levels during the first and partly the second ten-day period continued to fluctuate close to the value of *MWL*; from the middle of the second ten-day period, a stable drop below *MWL* by 0.8-0.9 m began. On the Lower Danube, water levels remained at a level above or close to the *MWL* values during the first two ten-day periods; by the end of the third ten-day period, a sharp drop in levels began.

In **July** on the Upper Danube, water levels fluctuated within the range of *LNWL* values; at the end of the third decade, levels began to rise from *LNWL* values due to precipitation. On the Middle Danube, levels throughout the whole month were significantly lower (on average by 60-70 cm) than the *LNWL* values. On the Lower Danube, water levels fluctuated at a level 1.3-2.2 m below the *MWL* values during the month.

In **August**, on the Upper Danube, a sharp rise in levels to the values of the *MWL* occurred in the first ten-day period with its exceedance by 60-90 cm, after which they began to decrease again; at the end of the third ten-day period, a sharp rise in levels above the *MWL* was repeated. On the Middle Danube, in the middle of the first ten-day period, there was a sharp rise in levels to the values of the *MWL* with occasional exceedance by 2.2-2.5 m, after which the levels began to decline to the zone below the *MWL*. On the Lower Danube, water levels fluctuated within the range of *MWL* values during the month, with occasional exceedance of 30-70 cm in the second ten-day period.

In **September** on the Upper Danube at the beginning of the first ten-day period there was a sharp rise of levels above the *MWL* with occasional exceedance by 2.0-2.5 m, after which their sharp decrease to the zone of *LNWL* values began. On the Middle Danube there was a sharp rise of levels above the *MWL* at the beginning of the first ten-day period, with occasional exceedance by 2.5-2.8 m, after which their sharp decrease to the zone below the *MWL* by 60-80 cm began. On the Lower Danube, water levels fluctuated in the zone below the *MWL* by 1.4-2.1 m during the month.

In **October** on the Upper Danube water levels were below *LNWL* values in the first and second ten-day periods; at the end of the third ten-day period a slight rise began. In the Middle Danube, water levels were below *LNWL* values during the whole month. In the Lower Danube, water levels were also below the *LNWL* values during the month.

In **November** on the Upper Danube water levels fluctuated in the zone of *LNWL* values in the first and second ten-day periods; from the middle of the second ten-day period due to the past precipitation there was a sharp rise in levels with amplitudes above 2.0

meters. Similarly, on the Middle Danube, there was a sharp rise of levels with amplitudes above 2.0 m from the middle of the second ten-day period, with approaching to the values of *MWL*. On the Lower Danube, water levels were in the range above the *MWL* during the month.

In **December** on the Upper and Middle Danube, water levels episodically (twice), with sharp fluctuations, approached the high water levels (*HWL*). On the Lower Danube, water levels were 1.6-1.8 m above the *HWL* during the month.

2.1.2 Water flow and operating draught of vessels

The absence of river freezing and ice events ensured uninterrupted navigation in the first quarter of 2023. During the first half of the year ($Q_1 + Q_2$) 2023, a stable water flow was ensured, allowing the loading of vessels up to the maximum draught when navigating upstream at levels of 2.5-2.7 m (Table 2.1).

Table 2.1

Draught of cargo vessels during navigation in 2023

Month	Draught in cm, going upstream	Draught in cm, going downstream
January	250 (230*)	220/230 (200/210*)
February	270 (230)	230 (200/210)
March	270 (230/250)	230/240 (210/220)
April	270 (250)	230/240 (220/230)
May	270 (250)	230/240 (230)
June	250 (220)	220 (210)
July	240/250 (190/180)	220/230 (200)
August	230/240 (190/180)	200/210 (190)
September	220/230 (190/180)	190/200 (180/190)
October	210/200 (190/200)	170/180 (190/200)
November	220/230 (210/220)	200/210 (190/200)
December	250/270 (240/250)	230/240 (220/230)

* Figures for the corresponding period of 2022 are shown for comparison.

During the third quarter (Q_3) of 2023, the working draughts of vessels decreased significantly on average. At the same time, on the Lower Danube at the section Izmail - Constanta, draughts remained at about 250 cm.

In November and December, due to significant precipitation (which led to temporary traffic restrictions in some sections), sufficient water flow was ensured along the entire Danube, allowing the fleet to operate with maximum operating draught during these months.

2.2 Observation of ship traffic and cargo transport in 2023

2.2.1 Passenger transport

2.2.3.1 Transport on the Upper Danube

Relatively stable passenger transport on cruise passenger ships with cabins started in May.

Passenger transport on ships with cabins is based on "short" voyages lasting 5-7-8 days (Passau-Vienna-Bratislava-Budapest-Passau, Vienna-Bratislava-Budapest, or voyages from/to the ports on Rhine and Main Rivers, as well as towards the Danube River Delta (Table 2.2).

Table 2.2.

Passenger transport trends¹ (in thousands)

Lines	Year				
	2019	2020	2021	2022	2023
Upper Danube	720,8	56,1	149,1	469,3	561,5
To the Danube Delta	135,04	5,15	34,1	74,08	28,5

- A total of 3,432 vessel passages were recorded through the Jochenstein lock (cross-border traffic Austria/Germany (AT/DE)), which is 89% of the numbers for 2022.
- A total of 4,030 passages were recorded through the Gabčíkovo lock (cross-border traffic Hungary/Slovakia (HU/SK)) (Figure 3), of which 2,012 were upstream, 2,018 - downstream, (in 2019, total vessel passages - 5,141, in 2020 - 557, in 2021 - 1,419, in 2022 - 4.040).
- A breakdown of passenger numbers on the Upper Danube by flag state in 2019 – 2023 is shown in Table 2.3.

¹ As calculated by the Secretariat of the Danube Commission, based on data from Gabčíkovo and Mohács (this refers to upstream/downstream totals).

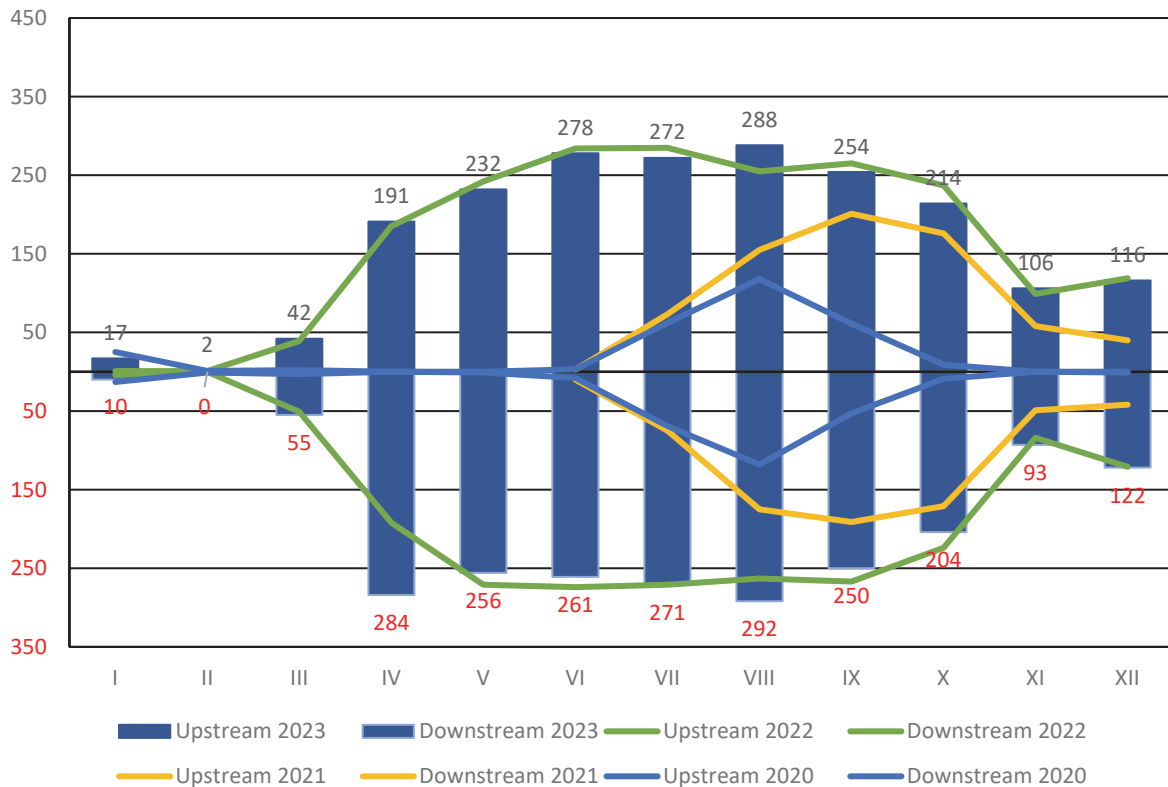


Figure 3. Upstream/downstream passages of the passenger vessels with cabins through the Gabčíkovo lock, by month, in 2020-2023

Table 2.3.

Breakdown of passenger numbers on the Upper Danube by flag state (2019-2023)

Flag state	2019	2022	2023
Germany	18.1%	16.8%	15.5%
Bulgaria	5.2%	4.2%	5.1%
Ukraine	5.0%	3.9%	2.9%
Non-DC member states	68.9%	72.5%	74.8%

A total of 4,030 passenger vessel passages through the Gabčíkovo lock, in 2023, were recorded as follows:

- vessels with the length of 110 m: 1,587 (1,655 - in 2019, 1,655 - in 2020, 343 - in 2020, 676 - in 2021, 1,601 - in 2022) vessel passages;
- vessels with the length of 135 m: 2,354 (2,567 - in 2019, 181 - in 2020, 700 - in 2021, 2,331 - in 2022) vessel passages, of which 86% of the passages are of vessels flying the flags of non-DC countries.

The average number of passengers in the month of June in connection to vessel length:

- 110 m: 120-130 passengers (130 in 2019);
- 135 m: 160-165 passengers (158 in 2019).

2.2.1.2 Transport on the Middle Danube: cross-border traffic Hungary/Croatia/Serbia (HU/HR/RS) (statistics from the Mohács control point)

Passenger transport on cabin ships (based on the lines from Passau and from Vienna towards the Danube Delta): 221 ship passages were made, of which 83–upstream, 138–downstream, (1,017 - in 2019, 58 - in 2020, 328 - in 2021, 726 - in 2022) (Figure 4), carrying 28,500 passengers (Table 2.2).

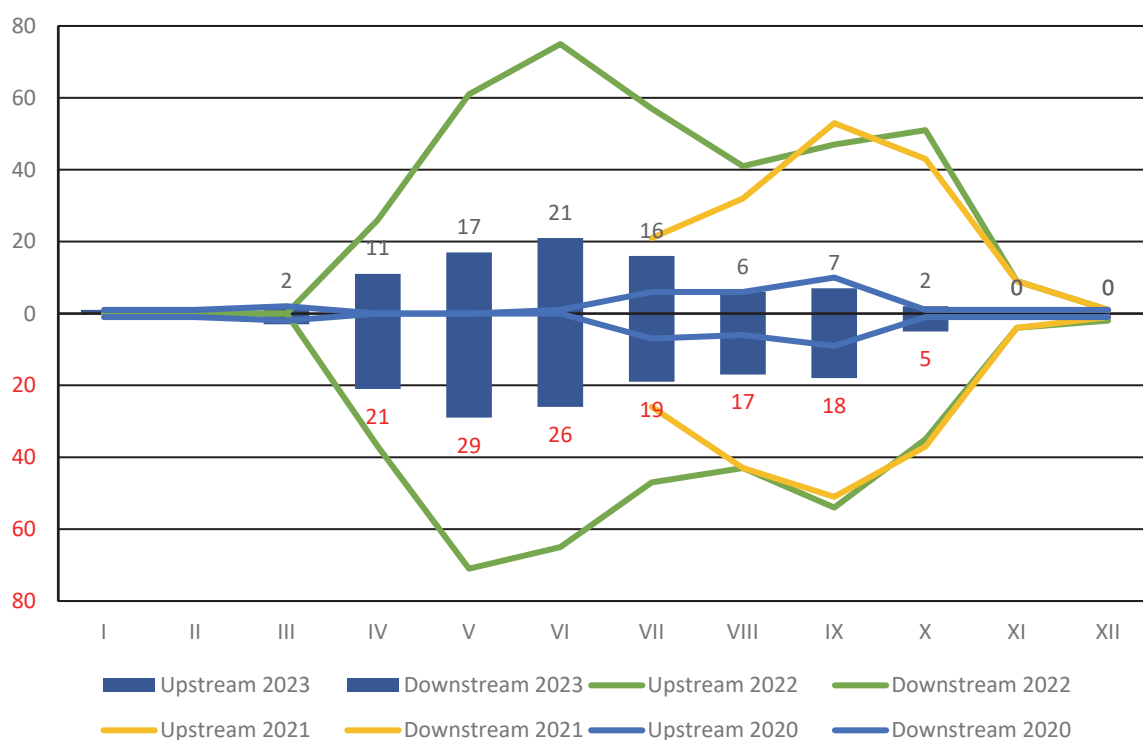


Figure 4. Upstream/downstream passages of passenger cabin ships through Mohacs, by month, in 2020-2023

2.2.2 Cargo transport

2.2.2.1 Transport on the Upper Danube

Transport volume

- a) The volume of goods transported through the Jochenstein lock (cross-border traffic Germany/Austria (DE/AT)) amounted to 2,075 thousand tonnes in 2023, *i.e.* 4.2% less than in 2022.

At the same time, downstream traffic decreased by 0.86% and upstream traffic by 6.42% compared to 2022.

The number of loaded vessel passages in 2023 is 92.5% of the value in 2022.

- b) The volume of registered goods transported through the Gabčíkovo lock (cross-border traffic Hungary/Slovakia (HU/SK)) amounted to 3,985 thousand tonnes in 2023, *i.e.* 92% of the volume in 2022 (Figure 5). The upstream transit amounted to about 2,085 thousand tonnes or 52% of the total volume (in 2019 - 63.3%, in 2020 - 65.8%, in 2021 - 58.9%, in 2022 - 55.2%).

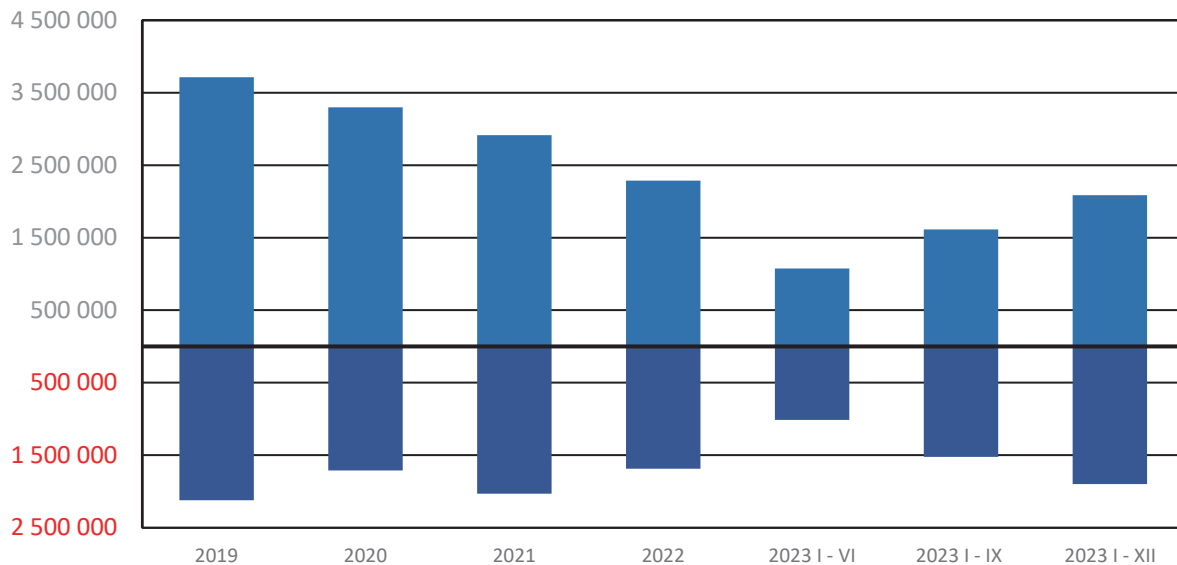


Figure 5. Upstream/downstream cargo transport volume through the Gabčíkovo lock, by years, in tonnes

Dry cargo - 3,293 thousand tonnes transported, of which:

- upstream - 2,027 thousand tonnes;
- downstream - 1,266 thousand tonnes, *i.e.* in the ratio of 1.6: 1 (in 2019 - 2.35 : 1, in 2020 - 2.4 : 1, in 2022- 1.77 : 1). - 2.74: 1, in 2021 - 2.4 : 1, in 2022- 1.77 : 1).

Bulk cargo - 691 thousand tonnes transported, of which:

- upstream - 58.3 thousand tonnes;
- downstream - 633.6 thousand tonnes, *i.e.* in the ratio of 0.09: 1 (in 2019 - 0.33 : 1, in 2020 - 0.1 : 1, in 2022 - 0.14 : 1).

Fleet traffic

Transport by pushed convoys (statistics of the Gabčíkovo lock)

In 2023, a total of 1,931 thousand tonnes were transported by pushed convoys, which is about 93.4% of the volume in 2022 and 48.5% of the total volume of cargo that passed through the Gabčíkovo lock, including liquid cargo (59.4% in 2019, 49.2% in 2020, 49.5% in 2021, and 47.6% in 2022).

a) In terms of transport of dry cargo, pushed convoys transported 1,678 thousand tonnes, of which (Figure 6):

- upstream - 930.5 thousand tonnes, which is 45.9% (in 2019 - 56.4%, in 2020 - 31.8%, in 2021 - 50.2%, in 2022 - 45.6%) of the volume of dry cargo transported upstream;
- downstream - 747 thousand tonnes, which is 59% of the volume of dry cargo transported downstream.

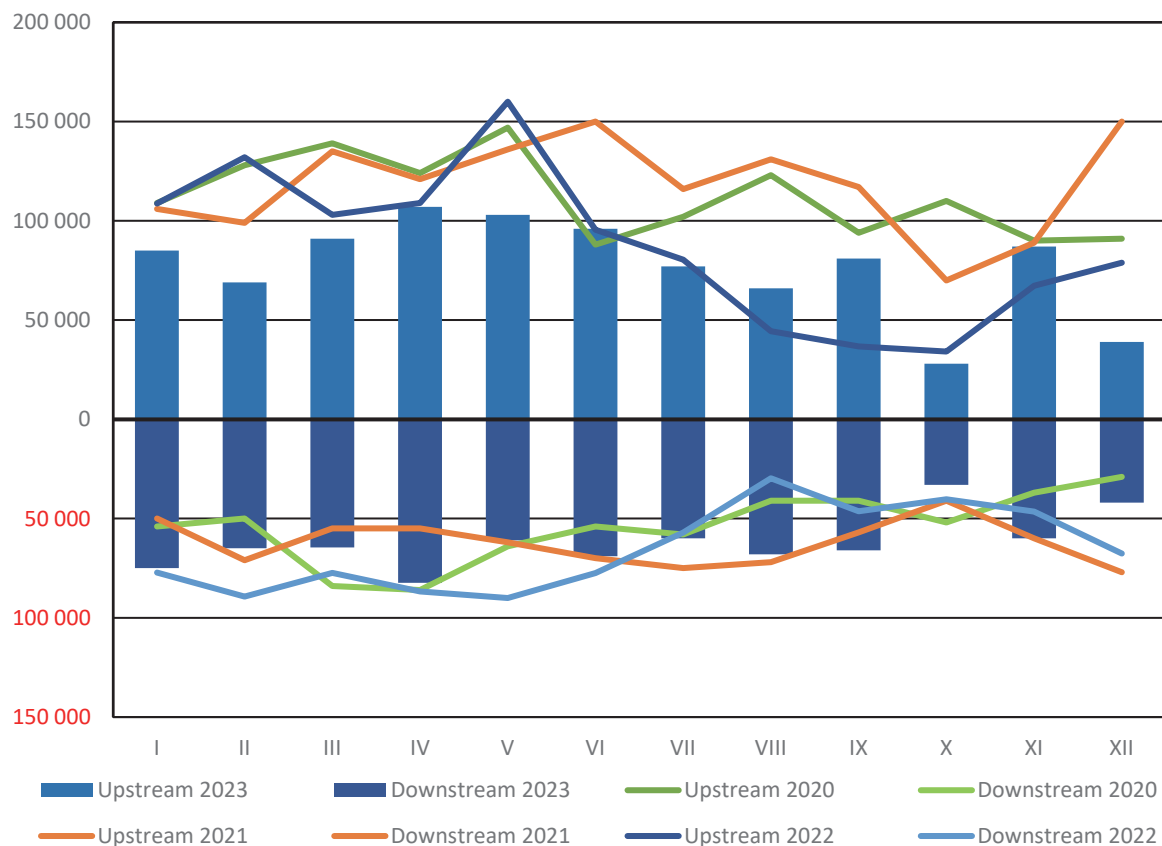


Figure 6.

Upstream/downstream cargo transport volume carried by non-motorized dry cargo barges through the Gabčíkovo lock, by months, in tonnes

A total of 930 (1,193 - in 2020, 1,193 - in 2021, 1,250 - in 2021, 1,004 - in 2022) non-motorized dry cargo barges travelled upstream in pushed convoys, of which only 14% (14.6% - in 2019, 6% - in 2020, 6% - in 2021, 6% - in 2022, 8% - in 2022) in ballast. At

the same time, of the 941 dry cargo barges traveling downstream in convoys, 18.6% are in ballast (in 2019 - 33%, in 2020 - 34%, in 2021 - 31.6%, in 2022 - 17%).

b) In the case of liquid cargo transport by non-motorized barge-tankers as part of convoys, 253.8 thousand tonnes were transported, including:

- upstream - 18.3 thousand tonnes;
- downstream - 235.6 thousand tonnes.

A total of 19 loaded and 207 ballasted non-motorized tankers went upstream in the pushed convoys; 226 loaded and 5 ballasted tankers went downstream.

Transportation by motorized vessels

In 2023, a total of approximately 2,054 thousand tonnes of cargo was transported by motorized vessels, representing 51.5% (40.6% in 2019, 50.5% in 2020, 50.5% in 2021, and 52.4% in 2022) of the total cargo volume and 90.3% of the volume in 2022.

a) Motorized dry cargo vessels transported a total of 1,616 thousand tonnes, which was 91.2% of the volume in 2022, of which:

- upstream - 1.097 thousand tonnes;
- downstream - 519 thousand tonnes.

A total of 1,217 (2020 - 1,794, 2021 - 1,492, 2022 - 1,454) motorized dry cargo vessels (of which 91% loaded) passed upstream in 2023, and downstream 1,334 (2020 - 1,875, in 2021 - 1,504, in 2022 - 1,597) vessels (of which 47% loaded), indicating a stable composition of motorized dry cargo vessels on the Danube.

The traffic indicators (ratio) of motorized dry cargo vessels corresponds to the data in Table 2.4(a).

Table 2.4(a)

Traffic indicators (ratio) of motorized dry cargo vessels on the Upper Danube

Ratio	2019	2020	2021	2022	2023
Loaded upstream/downstream	2,7:1	2,81:1	2,51:1	1,96:1	1,74 :1
Loaded/ballasted upstream	13,8:1	16,3:1	11,9:1	8,6:1	9,87 :1
Loaded/ballasted downstream	0,57:1	0,47:1	0,57:1	0,71:1	0,9 :1

2,551 motorized dry cargo vessels passed through the Gabčíkovo lock, of which:

- 110 m long vessels - 343 loaded units (in 2020 - 276, in 2021 - 330, in 2022 - 289), of which 114 - upstream, 229 - downstream; which transported a total of 408.3 thousand tonnes;
- 135 m long vessels ("big European vessel") - 53 loaded units (35 upstream), which carried a total of 82.5 thousand tonnes and 25 units in ballast;
- specialized vessels ("Ro-Ro", container vessels, *etc.*) - a total of 128 vessels.

b) Motorized tankers transported a total of 438 thousand tonnes of liquid cargo, including:

- upstream - 40,000 tonnes;
- downstream - 398 thousand tonnes.

In 2023, a total of 347 motorized tankers passed upstream, of which 10% were loaded, and 357 tankers passed downstream, of which 90% were loaded.

The traffic ratios of motorized tankers are consistent with the data in Table 2.4(b).

Table 2.4(b)

Traffic indicators (ratio) of motorized tankers on the Upper Danube

Ratio	2019	2020	2021	2022	2023
Loaded upstream/downstream	0,41:1	0,63:1	0,17:1	0,18:1	0,11 :1
Loaded/ballast upstream	0,48:1	0,90:1	0,18:1	0,19:1	0,12 :1
Loaded/ballast downstream	3,6:1	2,33:1	9,36:1	8,93:1	8,64 :1

Nomenclature of cargo (statistics of the Gabčíkovo lock):

The largest volumes of traffic through the Gabčíkovo lock were: food products, iron ore raw materials, liquid (oil products) and grain cargo, chemical products (fertilizers) (Fig.7). The percentage ratio of cargo volumes in upstream and downstream transport (cross-border traffic Hungary/Slovakia (HU/SK) is shown in Tables 2.5 and 2.6).

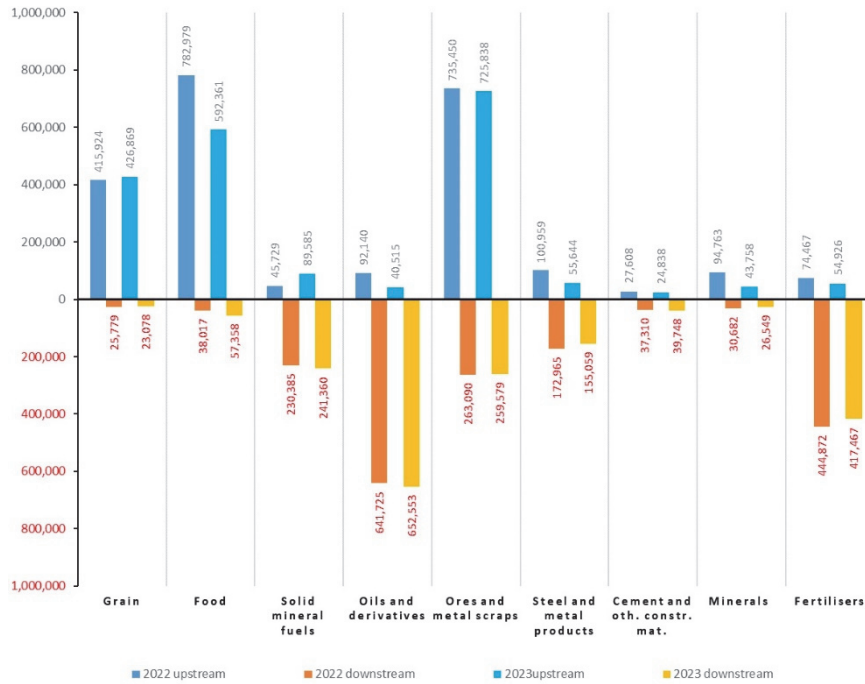


Figure 7. Upstream/downstream cargo transport volume through the Gabčíkovo lock, in tonnes, by groups of goods in 2021 - 2022

Table 2.5

Cargo volumes in upstream HU/SK cross-border transport (by nomenclature)

Commodity group	Year, thousand tonnes				
	2019	2020	2021	2022	2023
Food products and animal feed	1.774 48%*	1.321	879	783	592
Iron ore raw materials	841 22%*	948	969	735	726
Grain	271 7,3%*	352	394	416	427
Metal products	340 9,2%*	117	71	101	55,6
Petroleum products	241 6,5%*	212	86,7	92,1	40,5
Organic and synthetic fertilizers	91,5 2,5%*	75,2	132,8	74,5	54,9

* percentage of volume of goods transported upstream

Table 2.6

Cargo volumes in downstream HU/SK cross-border transport (by nomenclature)

Commodity group	Year, thousand tonnes				
	2019	2020	2021	2022	2023
Organic and synthetic fertilizers	535 25%*	505	464,5	444,9	417,5
Petroleum products	671,3 31,4%*	578	870	642	653
Metal products	380,4 17,8%*	96,5	140	173	155

* percentage of the volume of goods transported downstream

2.2.2.2 Transport on the Middle Danube (statistics from the Mohács checkpoint), cross-border traffic Hungary/Croatia/Serbia (HU/HR/RS)

Transport volume

The volume of registered cargo transported through Mohács in 2023 was about 3,358 thousand tonnes (Figure 8), or 84.5% of the volume of cargo transported in 2022, of which upstream transit was 1,440 thousand tonnes, i.e. 43% (59.4% - in 2019, 42.2% - in 2020, 50% - in 2021, and 57.6% - in 2022).

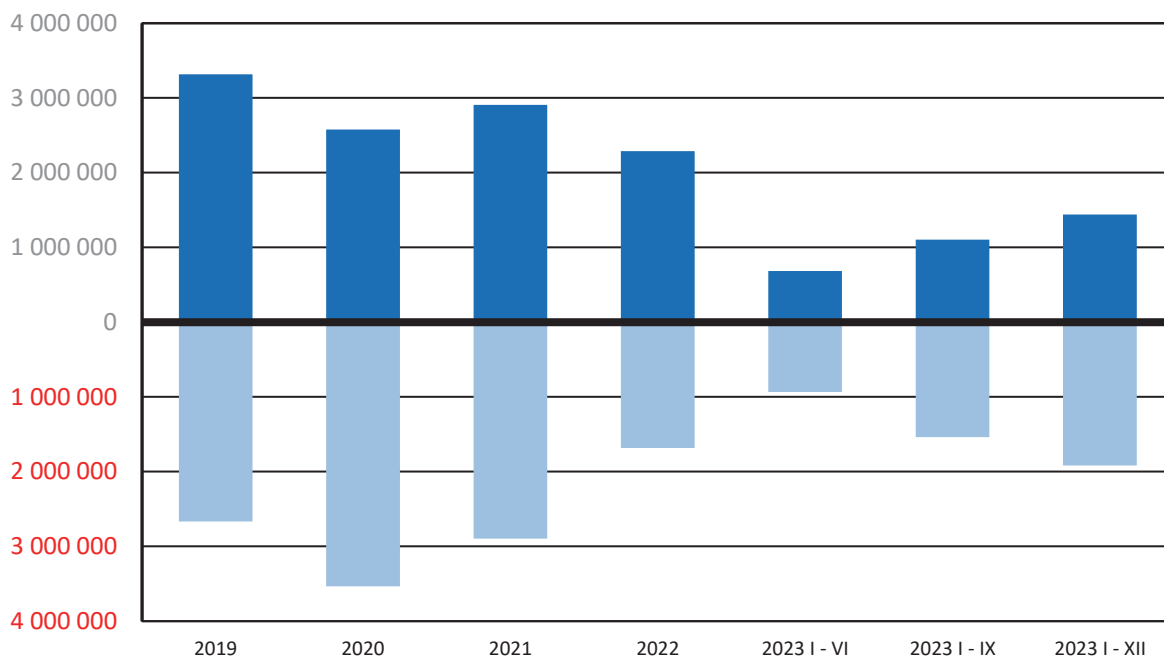


Figure 8. Upstream/downstream cargo transport volume through Mohacs, by years, in tonnes

The volume of transported dry cargo comprised 2,789 thousand tonnes, of which:

- upstream - 1,287 thousand tonnes;
- downstream - 1.502 thousand tonnes.

Transported liquid cargo 562 thousand tonnes, of which:

- upstream - 152.7 thousand tonnes;
- downstream - 409.5 thousand tonnes.

Ship traffic

Transport by pushed convoys

A total of over 2,335,000 tonnes were transported by pushed convoys through the Mohacs control point in 2023, which is 69.5% of the total cargo volume, including liquid cargo (79.5% in 2019, 75.7% in 2020, 78% in 2021, and 73% in 2022).

a) In terms of dry cargo transport by pushed convoys, 2,164 thousand tonnes were transported (Fig. 9), which is 79.6% of the volume in 2022, of which:

- upstream - 1,003 thousand tonnes, which is 77.9% (in 2019 - 79.5%, in 2020 - 43.9%, in 2021 - 83.3%, in 2022 - 78%) of the volume of dry cargo transported upstream;
- downstream - 1,161 thousand tonnes, which is 77.3% (in 2019 - 82.3%, in 2020 - 56.1%, in 2021 - 85.3%, in 2022 - 82.7%) of the volume of dry cargo transported downstream.

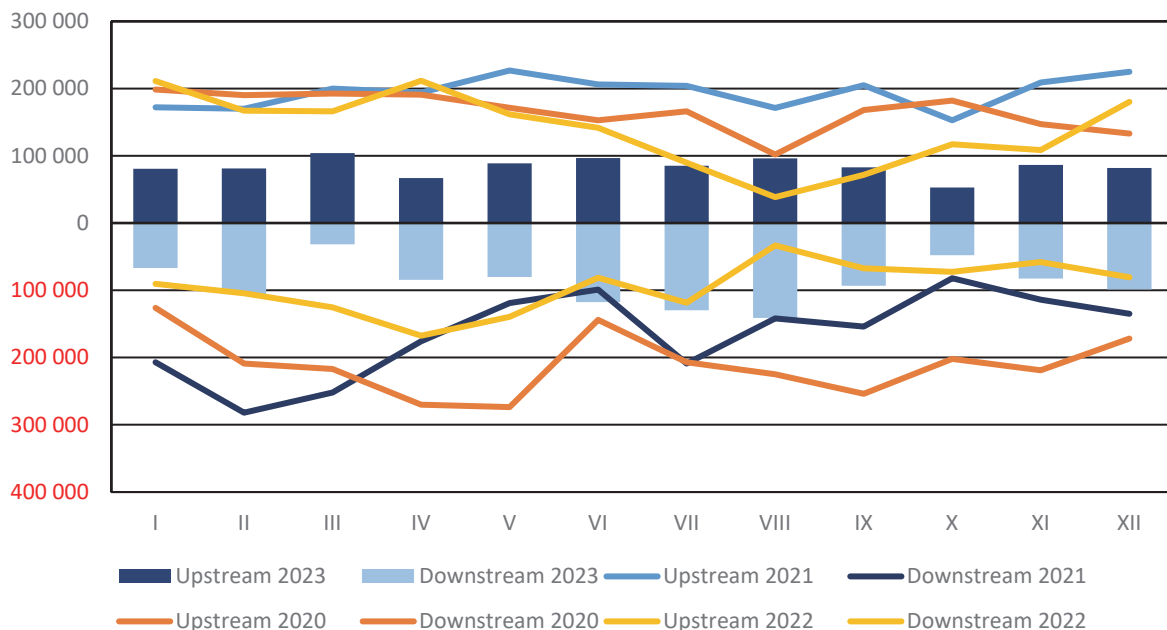


Figure 9. Upstream/downstream dry cargo transport volume carried by pushed convoys through Mohacs, by month, in tonnes

A total of 1,198 (2022 - 1,540) non-motorized dry cargo barges travelled upstream in 2023 in pushed convoys, of which 32% (2019 - 11%, 2020 - 35.4%, 2021 - 35.4%, 2022 - 19%) units travelled downstream carrying ballast. At the same time, of the 1,201 (1,661 in 2022) dry cargo barges traveling downstream in convoys, 9% (33% in 2022) of the units went downstream carrying ballast.

b) In terms of liquid cargo volumes, 171.2 thousand tonnes were transported by non-motorized barge-tankers as part of convoys, including:

- upstream - 26.7 thousand tonnes;
- downstream - 144.5 thousand tonnes.

A total of 142 non-motorized tankers, of which 22.4% were loaded, passed upstream in the pushed convoys; 148 tankers, of which 92% were loaded, traveling downstream.

Transport by motorized vessels

In 2023, a total of 1,023 thousand tonnes were transported by motorized vessels, which is 30.5% (20.5% in 2019, 24.2% in 2020, 22% in 2021, 27% in 2022,) of the total volume transported through the Mohacs control point, of which:

a) Motorized dry cargo vessels (817 ship passages, of which 70% loaded) transported 625 thousand tonnes, including:

- upstream - 284 thousand tonnes;
- downstream - 341 thousand tonnes.

b) Motorized tankers (a total of 492 ship passages, of which 65% were loaded tankers) transported 391 thousand tonnes of liquid cargo (Fig. 10), of which:

- upstream - 126 thousand tonnes;
- downstream - 265 thousand tonnes.

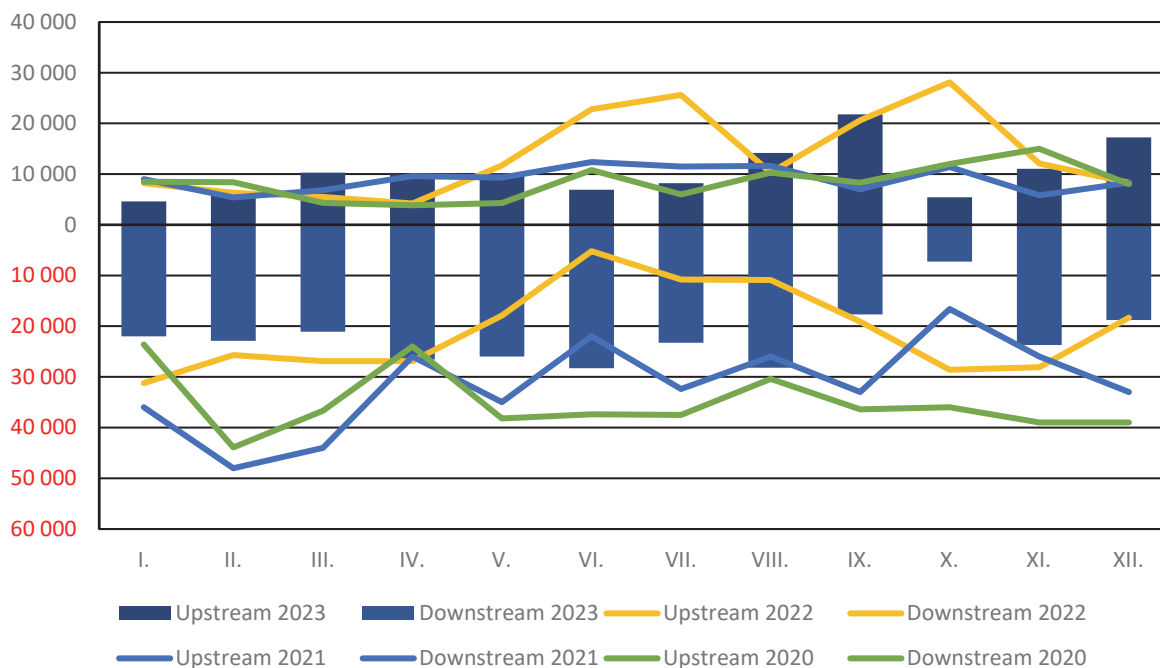


Figure 10. Upstream/downstream cargo transport volume carried by motorized tankers through Mohacs, by month, in tonnes

Nomenclature of cargo

The largest volumes of traffic through Mohács control point were iron ore upstream; grain and foodstuffs, also products of metallurgical and chemical industry (fertilizers) - downstream (Figure 11). The percentage ratio of upstream and downstream cargo volumes (cross-border traffic Hungary/Croatia/Serbia HU/HR/RS) is presented in Tables 2.7 and 2.8.

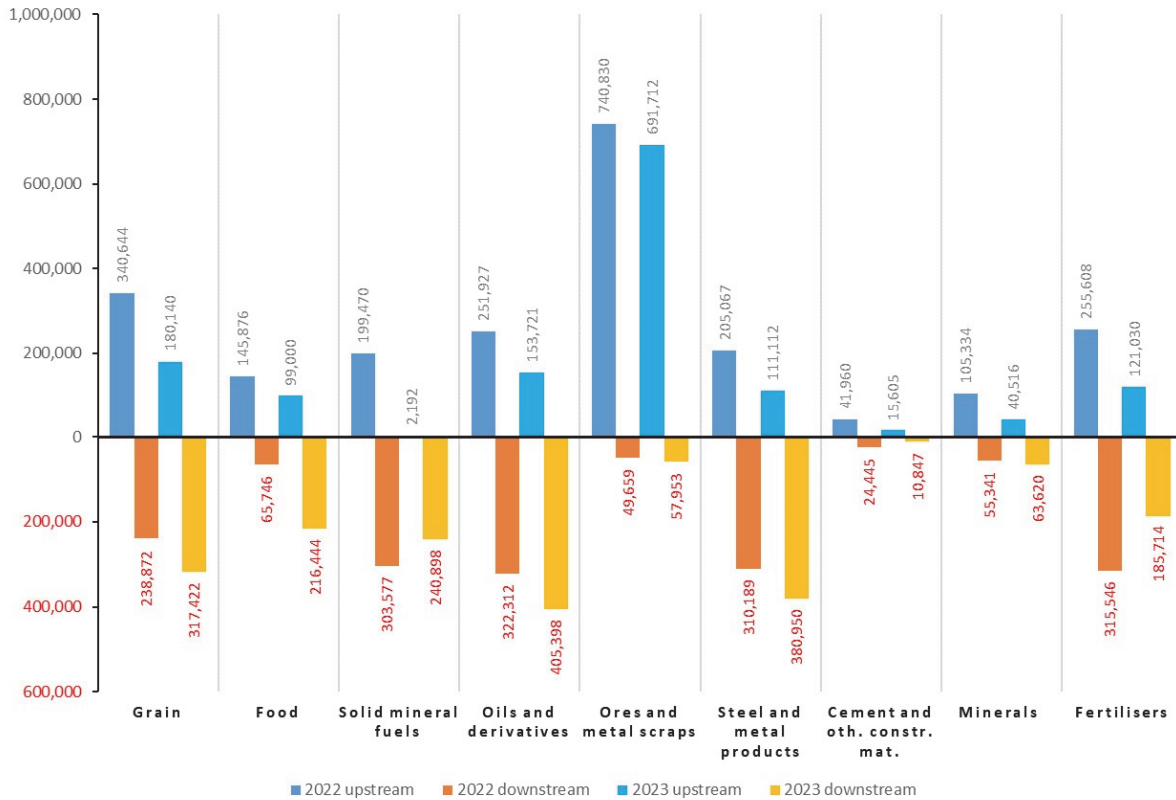


Figure 11. Upstream and downstream cargo transport volume through Mohacs, in tonnes, by groups of goods in 2021 - 2022

Table 2.7

Cargo volumes in upstream HU/HR/RS cross-border transport (by nomenclature)

Commodity group	Year, thousand tonnes				
	2019	2020	2021	2022	2023
Iron ore raw materials	1.247 37,6%*	954	991	741	692
Coal (coke)	479 14,4%*	323	281	199,5	2,2
Fertilizers	392 11,8%*	436	385	255,6	121
Petroleum products	109 3,2%*	106	117	251,9	153,7
Metal products	270 8,1%*	243	249	205	111,1

* percentage of the volume of goods transported upstream

Table 2.8

**Cargo volumes in downstream HU/HR/RS cross-border transport
(by nomenclature)**

Year, thousand tonnes Commodity group	2019	2020	2021	2022	2023
Grain	479 21,1%*	1.471	1.002	238,9	317,4
Petroleum products	428 18,9%*	528	591	322,3	405,4
Metal products	316 13,9%*	295	254	310	381
Food products and animal feed	203 9%*	520	218,5	65	216,4
Fertilizers	272 12%*	364	316	315,5	185,7

* percentage of the volume of goods transported downstream

The peculiarity of the Mid-Danube transport market in 2023 is the absence of upstream transport of coal, while it grows in downstream direction as:

- grain cargo,
- food cargo, and
- petroleum products and metal products.

2.2.3 Inter-basin Transport

2.2.3.1 Transport on the Danube-Black Sea Canal

In 2023, the volume of transport through the Danube-Black Sea Canal amounted to 23,364 thousand tonnes², which is 135% of the same indicator in 2022, of which:

- international transport: 18,794 thousand tonnes (157% vs. 2022);
- domestic transport: 4,570 thousand tonnes (87% of the 2022 figure).

Transport trends by months is shown in Figure 12, while transport dynamics by years is shown in Table 2.9.

² www.acn.ro

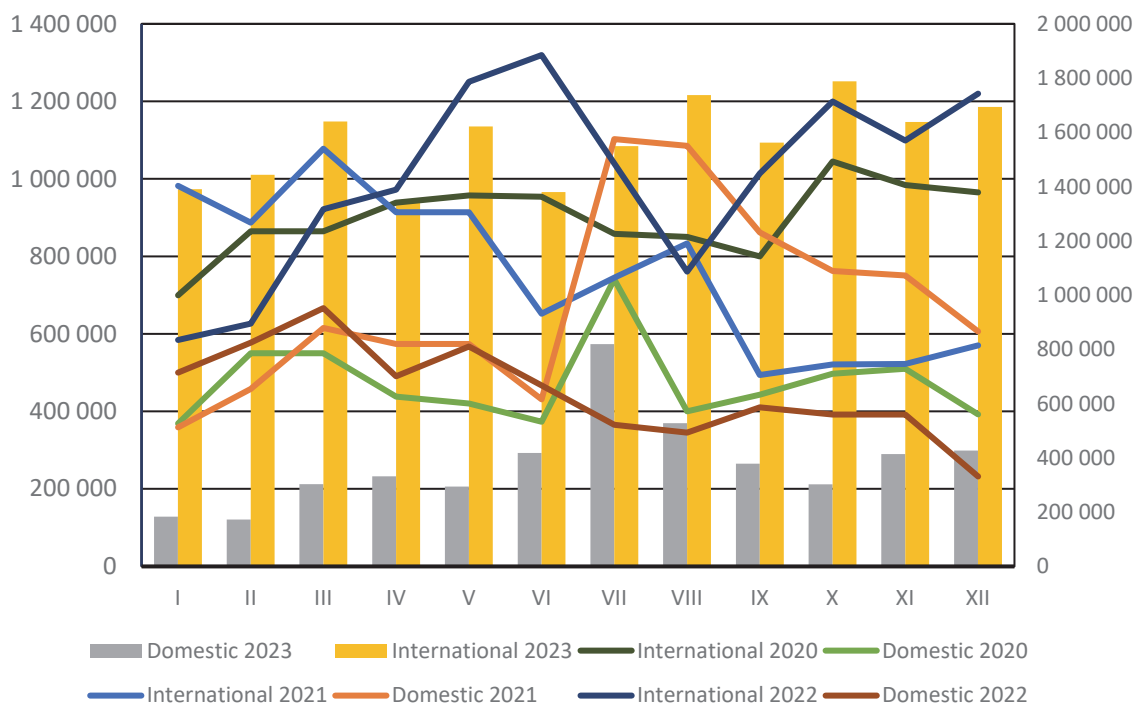


Figure 12. International and domestic cargo transport volume through the Cernavoda-Constanta Canal, by months, in tonnes

Table 2.9

Cargo transport volume through the Danube-Black Sea Canal, by year

Year / million tonnes	2019	2020	2021	2022	2023
Total cargo transport	16,744	16,507	17,289	17,265	23,364
International transport	8,891	10,600	9,108	11,991	18,794
Domestic transport	7,853	5,909	8,181	5,27	4,570

2.2.3.2 Transport on the Sulina Canal

In in 2023³, cargo transport on the Sulina Canal comprised only 16,446 thousand tonnes, *i.e.* 155.6% of the same indicator in 2022 (Table 2.10).

³ www.afdj.ro

Table 2.10

Cargo transport volume on the Sulina Canal, by years

Year, thousand tonnes	2019	2020	2021	2022	2023
Cargo turnover	5.487	4.549	5.070	10.568	16.446
The Danube - Sea	4.331	2.872	3.389	7.217	12.836
Sea – the Danube River	1.156	1.677	1.681	3.351	3.610

Chapter 3.

Overview of cargo handling in Danube ports

3.1 Danube Ports in Germany

3.1.1 The total volume of cargo handled in German Danube ports in 2023⁴ amounted to 2,228 thousand tonnes, or 92, 4% of the cargo volume handled in 2022 (Table 3.1).

Table 3.1

Year (thousand tonnes)	2019	2020	2021	2022	2023
Volume of cargo handled	3.274	3.511	2.999	2.410	2.228

3.1.2 The cargo turnover of the main German Danube ports is shown in Table 3.2.

Table 3.2

Ports (thousand tonnes)	Kelheim	Regensburg	Straubing-Sand	Deggendorf	Passau
2019	369.0	1.387	660.0	216	359
2020	361,5	1.553	660,8	144	473
2021	356,3	1.303	663,4	131,6	250,9
2022	301,6	1.083	551,6	82,9	229,4
2023	251,5	1.021	516,3	47,9	218

Total cargo handling was based on the cargo of the 5 main groups according to NST 2007, taking into account the ports of Bamberg and Nuremberg (Table 3.3).

Table 3.3

Groups (thousand tonnes)	01	03	04	08	10
Unloaded	384,7	222,6	243,6	316,3	81,9
Loaded	454,3	113,5	228,8	36,7	43,2

⁴ www.statistik.bayern.de

3.1.3 The largest cargo volumes by group:

Agricultural products (group 01)

- accepted by ports: Straubing-Sand - 55.8%, Regensburg - 15.6% of the total volume of unloaded cargo of group 01;
- shipped: Regensburg - 37.1%, Straubing-Sand - 6.9%, Kelheim - 19.4% Passau - 7.4% of the total volume of loaded cargo of group 01.

Iron ore raw material (group 03)

- accepted by ports: Kelheim - 17.8%, Regensburg - 40.2%;
- shipped: Regensburg - 73%.

Food products (group 04)

- accepted by ports: Regensburg - 62.2%, Passau - 7.3%, Kelheim -11.4%;
- shipped: Straubing-Sand -76.1%, Regensburg -16.2%.

Chemicals and products (group 08)

- accepted by ports: Regensburg - 37.8%, Kelheim -16.1%, Straubing-Sand - 13.4%.

Finished metal products (group 10)

- accepted by ports: Regensburg - 65.3%, Deggendorf - 25.4%;
- shipped: Regensburg - 91.2%.

3.2 Ports in Austria

3.2.1 The total volume of cargo handled in Austrian ports in 2023⁵ came to 4,760 thousand tonnes, *i.e.* 88.8% of the cargo handled in 2022 (Table 3.4).

Table 3.4

Year (thousand tonnes)	2019	2020	2021	2022	2023
Loaded	2.259	2.061	2.425	1.897	2.018
Unloaded	4.193	3.989	3.931	3.466	2.742
Volume of cargo handled	6.452	6.050	6.356	5.363	4.760

⁵ www.statistik.at

The total volume of cargo transported within the country comprised of 363 thousand tonnes; it forms 7.6% of the total cargo handled by the country's ports.

3.2.2 The volume of cargo handled by Austria's main ports in 2023 is shown in Table 3.5., while dispatch to other countries is presented in Table 3.6.

Table 3.5

Cargo handled by Austria's main ports in 2023

Ports (thousand tonnes)	Vienna	Linz	Krems	Enns
Loaded	544,7	1.293	44,1	68,8
Unloaded	88,4	1.623	151,8	347,3
Cargo handled in 2019	952	3.280	305	776
Cargo handled in 2020	787	3.411	249	616
Cargo handled in 2021	927	3.482	286	672
Cargo handled in 2022	583	2.929	297,6	553,6

Table 3.6

3.2.3 Shipped to ports of other countries

Country (thousand tonnes)	Germany	Hungary	Romania	The Netherlands	Belgium	Serbia
2019	361	784	466	155,5	200,5	135
2020	318,7	731	416	154,8	152,5	145
2021	400	896	413	123,4	256,8	104
2022	902	650	482,7	180,6	180,6	97
2023	232,4	642	498,4	77,6	218,5	84,9

180 thousand tonnes were shipped to the ports of Slovakia:

- 28.8% of the loaded cargo were: metal products (group 10), of which 100% was loaded in the port of Linz;
- 25% - petroleum products (group 07), of which 100% were loaded in the port of Vienna;
- 23.4% - products of the chemical industry (group 08), of which 92.7% were loaded in the port of Linz.

3.2.4 Received from ports of other countries (Table 3.7):

Table 3.7

Volumes arriving from foreign ports

Country (thousand tonnes)	Slovakia	Netherlands	Ukraine	Hungary	Germany	Romania
2019	1.108	539	832	679	285	215
2020	1.245	423	893	784	261	127
2021	1.225	467	847	574	295	244
2022	1.286	400	396,7	920	362	518
2023	822	277,8	10,4	431,1	265,4	757

110 thousand tonnes were received from Serbian ports:

- 64.5% of cargo unloaded in Austrian ports were iron ore raw materials (group 03), in the amount of 1,767 thousand tonnes, of which the port of Linz received about 90.9%;
- 3.9% were petroleum products (group 07), of which the port of Vienna took 13.5% and the port of Linz – 11.8%;
- 19.7% were agricultural products (group 01), of which 23.7% were received by the port of Ens and 72% – by other Austrian ports.

3.3 Ports in Slovakia

3.3.1 The total volume of cargo handled by public ports in Slovakia is determined by the cargo handled by the ports of Bratislava and Komarno (Table 3.8), which amounted to 1,508 thousand tonnes in 2023, or 78% of the cargo handled in 2022.

Table 3.8

Volume of cargo handled by public ports in Slovakia

Year (thousand tonnes)	2019	2020	2021	2022	2023
Loaded	1.515	1.443	1.674	1.769	1.309,5
Unloaded	149	110	172	165,2	199,0
Volume of cargo handled	1.664	1.553	1.846	1.934	1.508,5

3.3.2 Main cargo volume:

- about 48% - iron ore;
- about 26% - petroleum products.

3.4 Ports in Hungary

3.4.1 The total volume of cargo handled in the Hungarian ports in 2023⁶ was 3,604 thousand tonnes, or 88.7% of the 2022 volume (Table 3.9).

Table 3.9

Year (thousand tonnes)	2019	2020	2021	2022	2023
Loaded	3.204	4.489	3.109	1.924	2.062
Unloaded	2.860	2.253	2.606	2.139	1.542
Volume of cargo handled	6.064	6.742	5.715	4.063	3.604

3.4.2 The volume of cargo handled in main ports in Hungary are shown in Table 3.10.

Table 3.10

Ports (thousand tonnes/year)	Baja	Csepel	Győr - Gönyü	Other
2019	505	1.130	225,4	4.204
2020	845	1.192	280	4.424
2021	581	1.199	266,6	3.668
2022	305,7	985	270,6	2.501
2023	350,2	888,8	216,6	2.149

3.5 Ports in Croatia

3.5.1 The total volume of cargo handled in the river ports in Croatia, in 2023⁷, was 363.5 thousand tonnes, or 62.4% of the 2022 volume (Table 3.11).

Table 3.11

Year (thousand tonnes)	2019	2020	2021	2022	2023
Loaded: - export	277	393,3	273,6	124,0	64,6
Uploaded: - import	472	463,1	394,3	420,4	271,8
Volume handled, incl. domestic transport	814	947,8	697,1	582,6	363,5

⁶ www.ksh.hu

⁷ <https://dzs.gov.hr>

3.5.2 6.2% of cargo turnover was agricultural products (group 01), 64.8% - iron ore (group 03), 16.4% - hard and brown coal (group 02), metal products (group 10) - 9.7%.

3.6 Ports in Serbia

3.6.1 The total volume of cargo handled in the Serbian ports⁸ in 2023 was 12,031 thousand tonnes, or 100.1% of the 2022 volume (Table 3.12).

Table 3.12

Year (thousand tonnes)	2019	2020	2021	2022	2023
Loaded - export	3.593	3.752	3.707	1.918	1.926
Unloaded - import	5.061	3.207	5.182	4.992	6.193
Domestic cargo transport	1.081	1.205	4.721	5.113	3.912
Volume of cargo handled	9.735	8.164	13.610	12.023	12.031

- 33.4% of all cargo volumes are construction materials (gravel and sand)⁹;
- 9.24% - iron ore;
- 4.92% - grain cargoes;
- 16.54% - crude oil and petroleum products;
- 10.1% - coal.

3.6.2 The volume of cargo handled in the major Serbian ports⁹ are shown in Table 3.13.

Volume of cargo handled in the major Serbian ports

Table 3.13

Ports (thousand tonnes)	Pancevo	Smederevo	Belgrade	Novi Sad	Prahovo
2019	1.517	4.040	196	1.413	1.109
2020	2.051	2.612	167	1.632	1.198
2021	935	3.176	206	1.435	1.049
2022	1.589	3.053	112	979	933
2023	1.641	2.823	88,5	918	1.054

⁸ www.stat.gov.rs

⁹ Data provided by the Serbian Port Governance Agency

3.7 Ports in Romania

3.7.1 The total volume of cargo handled by Romania's Danube ports is divided by:

- ports located on the "sea" section of the Danube River,
- ports located on the river section of the Danube River;
- ports located on the Danube-Black Sea Canal and the Port of Constanta.

3.7.2 The total cargo turnover of the main Romanian ports located on the "sea" section of the Danube is presented in Table 3.14¹⁰.

Table 3.14

Ports (thousand tonnes)	Braila	Tulcea	Galati
Cargo volume handled: - inland waterway vessels			
2019	397	1.660	3.077
2020	281	1.213	2.831
2021	512	1.329	3.350
2022	825	479	3.054
2023	364	167	915
- maritime vessels			
2019	835	15	2.061
2020	327	12	2.425
2021	340	3	2.496
2022	278	10	2.119
2023	162	-	1.431

The volume of cargo handled by maritime vessels forms a part of the Sulina Canal transport volume. In 2023, cargo transport on the Sulina Canal amounted to 16,446 thousand tonnes, or 155.6% of the 2022 volume.

3.7.3 The total volume of cargo handled by the Romanian ports, including the Port of Constanta by river vessels (21,698 thousand tonnes) amounted to 28,857 thousand tonnes, or 118.5% to the volume of 2022; it is shown in Table 3.15.

¹⁰ www.insse.ro

Table 3.15

Year (thousand tonnes)	2019	2020	2021	2022	2023
Loaded:					
- international cargo transport	5.609	5.112	5.203	5.641	7.003
- domestic cargo transport	8.190	6.602	7.108	3.857	3.059
Unloaded:					
- international cargo transport	5.674	8.217	7.121	8.900	13.463
- domestic cargo transport	9.001	7.376	9.025	5.957	5.331
Volume of cargo handled	28.474	27.307	28.457	24.355	28.857

3.7.4 Main groups of goods handled:

- metal ores (group 03) - 22.7% of cargo turnover, of which 57.6% is domestic transport;
- agricultural products (group 01) - 48.1% of cargo turnover, of which 67.5% is international transportation;
- chemicals (group 08) -7.1% of cargo turnover, of which 94.2% is international transport;
- coke and refined products (group 07) -6.6% of cargo turnover, of which 73.7% is international transport;
- finished metal products (group 10) - 3.3%, of which 99.3% - international transport;
- coal and lignite (group 02) - 4.3%, of which 90.6% -international transport.

3.7.5 Main groups of goods exported through ports (loaded):

- Group 08 - 25.4% of the volume of loaded cargo, of which 65.1% for Serbia;
- Group 07 - 17.3% of the volume of loaded cargo, of which 10.3% to Bulgaria and 49.5% to Ukraine;
- Group 02 - 15.2% of the volume of loaded cargo, of which 84.3% is for Serbia;
- Group 03 - 32% of the volume of loaded cargo, of which 48.5% is for Serbia.

3.7.6 Main groups of goods imported (unloaded):

- Group 01 - 69.3% of the discharged cargo, of which 83.4% from Ukraine, 6% from Serbia, 4.3% from the Republic of Moldova, 4.2% from Hungary;
- Group 03 - 11.4% of the discharged cargo volume, of which 83.7% from Ukraine, 11.8% from Bulgaria;
- Group 10 - 3.5% of discharged cargo, of which 41% from Austria, 52.7% from Ukraine.

3.8 Ports in Bulgaria

3.8.1 The total cargo turnover of Bulgarian ports, including all terminals, in 2023 amounted to 7,026 thousand tonnes¹¹, which is 98.9% of the 2022 volume (Table 3.16).

Table 3.16

Year (thousand tonnes)	2019	2020	2021	2022	2023
Loaded - export	2.485	2.823	3.707	3.354	3.839
Unloaded - import	1.830	1.799	2.666	2.979	2.215
Domestic transport	1.070	809	738	771	972
Volume of cargo handled	5.385	5.431	7.111	7.104	7.026

Composition of exports:

- Dry bulk - 34.35%,
- General - 3.36%,
- Liquid cargo - 0.97%,
- "Ro-Ro" transport - 61.32%.

Structure of import:

- Dry bulk - 19.06%,
- General - 13.7%,

¹¹ Data provided by the Bulgarian Maritime Administration

- Liquid cargo - 11.65%,
- "Ro-Ro" transport - 55.6%.

3.9 Ports in the Republic of Moldova

3.9.1 The total volume of cargo handled in the port of Giurgiulesti amounted to 2,668 thousand tonnes in 2023¹², or 124% of the 2022 volume (Table 3.17).

Table 3.17

Year (thousand tonnes)	2019	2020	2021	2022	2023
Volume of cargo handled	1.299	1.185	1.819	2.144	2.668

3.9.2 Exports (grain, vegetable oils) account for 55.76% of the port's cargo turnover (1,488,000 tonnes). The majority of imports (1,180 thousand tonnes) are oil products, fertilisers, sand, crushed stone, and coal.

3.9.3 According to the cargo nomenclature: grain - 42.5%, sand and crushed stone - 11.0%, oil products - 20.9%, coal - 4.1%, vegetable oils - 9.09%.

3.10 Ports in Ukraine

3.10.1 Total cargo turnover of the Danube ports of Ukraine, including cargo turnover by sea vessels, in 2023¹³ amounted to 32,021 thousand tonnes, or 194% of the volume in 2022 (Table 3.18), of which grain cargoes - 15,192 thousand tonnes, or 47.4% of the total cargo turnover.

Table 3.18

Year (thousand tonnes)	2019	2020	2021	2022	2023
Volume of cargo handled	5.629	4.055	5.505	16.505	32.021

3.10.2 Cargo turnover of the main Danube ports of Ukraine is given in Tables 3.19- 3.21.

Table 3.19

Cargo turnover of Ukrainian Danube ports in 2023 (thousand tonnes)*

Port/period	Izmail	Reni	Ust-Dunaisk
2023	20.263	10.071	1.688
% by 2022	227,9	147,5	214,8

* Data received from the Administration of Sea Ports of Ukraine

¹² Data provided by the Water Transport Agency of the Republic of Moldova

¹³ Data provided by the Administration of Sea Ports of Ukraine

Table 3.20

Cargo turnover of Ukrainian Danube ports, in exports, in 2023 (thousand tonnes)

Port/period 2023	Izmail	Reni	Ust-Dunaisk
Grain	9.276,38	4.932,62	811,36
Other bulk solids	2.358,53	1.783,53	562,83
Oil (bulk)	1.700,21	1.171,00	0

For all major components of Ukrainian ports' cargo turnover, the volumes were significantly higher than the corresponding values in the same period of 2022 (Table 3.21).

Table 3.21

**Main components of cargo turnover of Ukrainian ports in 2023
(thousand tonnes)**

Period/year	Grain	Other bulk goods	Oil (bulk)
2022	6.622,30	3.742,04	1.154,08
2023	15.192,11	4.882,64	2.919,67
%	229,4	130,5	253

Chapter 4.

Conclusions

4.1 As mentioned in Chapter 1, the baseline situation of the main market sectors of Danube navigation at the beginning of 2023 was determined by the overall negative results of cargo volumes until 2022, mainly due to the impact of the full-fledged Russian military invasion of Ukraine, which started in February 2022.

On the night of 24 July 2023 and in the following months, including the winter of early 2024, Russia conducted a series of air strikes against Ukrainian port infrastructure on the Danube. These attacks have resulted in the destruction of grain warehouses, storage facilities, administrative buildings, and the disruption of communications in Ukrainian ports on the Danube.

In fact, conditions of direct security threats have been created on the Danube not only for the Ukrainian Danube port infrastructure, but also for the entire system of ship traffic on the Lower Danube, including the safety of ship crews and personnel.

Under these circumstances, in 2023 the Danube Commission continued to work actively to maximise the promotion of Ukrainian agricultural exports and imports of goods needed by Ukraine within the *Danube Solidarity Lanes EU-Ukraine initiative*, adopted in May 2022 in support of the European Union's solidarity measures with Ukraine, *inter alia* to support and develop a cargo logistics regime on the basis of the Danube ports of Ukraine, the Republic of Moldova and Romania, as well as the Danube-Black Sea canal.

Numerous special events that have been held include:

- Organisation of systematic coordination meetings of the maritime administrations of the Lower Danube from the DC Member States with the participation of representatives of DG Move of the European Commission and the DC Secretariat;
- Targeted visits to the Lower Danube ports and consideration of accelerating special cargo clearance procedures;
- Improving the system of regulation and control of the arrival/departure of vessels and removing unnecessary administrative barriers, which contributed to the intensification of the export of cargo by sea vessels (the system of passage through the Sulina Canal and the Kiliya Gyrlo), as well as by heavy caravans through the Danube-Black Sea Canal to the port of Constanta with subsequent transshipment to sea vessels (in total, over 14,000 vessels were handled in the ports);
- Initiating the development of the canal pilotage system, including the implementation of real projects for the establishment of additional communication and monitoring centres, as well as the support of the canal

navigation environment with the financial support of the European Commission.

- 4.2 Significant increase in cargo turnover of the Danube ports of Ukraine (cargo turnover growth at the end of 2023 amounted to 194% compared to the results of 2022) ensured the growth of export volumes of products of the agricultural sector of the economy, with grain cargoes and vegetable oil forming the basis of exports.

It should also be noted the growth of transshipment of iron ore, metal and other cargoes in the Danube ports of Ukraine, which contributed to the support of the overall system of cargo transportation on the Danube, taking into account the generally favourable (compared to 2022) navigation conditions on the Danube, which allowed the operation of river cargo vessels with draught of 250-270 cm.

These circumstances have led to certain adjustments in the ratio of cargo transport volumes in the main segments of the Danube navigation market.

Consequently, the cargo transportation volumes in 2023 are:

- in cross-border traffic Germany/Austria (DE/AT): 2,745 thousand tonnes, or 95.8% of the volume in 2022;
- in cross-border traffic Hungary/Slovakia (HU/SK): 3,975 thousand tonnes, or 92% of the volume in 2022;
- in cross-border traffic Hungary/Croatia/Serbia (HU/HR/RS): 3,351 thousand tonnes, or 84% of the volume in 2022;
- the volume of transportation through the -Danube-Black Sea channel amounted to 23,364 thousand tonnes, or 135% of the 2022 volume;
- the volume of transportation through the Sulina Canal amounted to 16,446 thousand, or 155.6% of the 2022 volume, with the volume of transportation in the Danube-Black Sea direction amounting to 118% and in the Black Sea-Danube direction 108% of the corresponding figures for 2022.

It should also be noted that freight rates fluctuated during the year, depending on the balance of freight lines and on the cost of bunker fuel (the cost of bunker fuel during 2023 was generally lower than the corresponding level in 2022).

- 4.3 Port cargo turnover in 2023 varied differently, except for the special conditions of the Ukrainian Danube ports (Chapter 3).
- 4.4 On the passenger transport market, the main cruise lines on the Upper Danube started to operate sporadically (and then with a strong upturn) in March 2022, and the number of voyages and passengers transported continued to rise in April, May and June.

A total of 561,500 passengers were carried on the Upper Danube lines in 2023, or 122, 2% of the volume in 2022.

The situation was different on the lines towards the Danube Delta: the number of passengers on these lines amounted to only 28.5 thousand passengers, which is 38.5% of the number in 2022.

4.5 The main objectives for the development of the Danube navigation market for 2024, taking into account the forecasts for its main sectors, should be based on the decisions taken at the 100th anniversary session of the Danube Commission, including

- continued active work to support the Ukrainian segment of Danube navigation within the *Danube Solidarity Lanes EU-Ukraine initiative* adopted in May 2022;
- intensification of implementation of recommendations of the pan-European programs of inland water transport development;
- increased cooperation of the DC Member States in implementing specific hydraulic engineering and regulation works projects on the Danube in their respective areas of responsibility.



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