

MARKET OBSERVATION FOR DANUBE NAVIGATION
RESULTS IN 2020



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Results in 2020”**

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Chapter 1.

Overview of the Danube navigation market

1.1 Initial state of the Danube transport market in 2020

The initial state of the Danube transport market in 2020 was formed on the basis of fairly stable results of 2019 compared to 2018 and positive forecasts for the main industrial sectors, agricultural sector of the economy as well as for the passenger shipping¹ in the Danube basin.

1.1.1 The volumes of cargo transport on the Danube in 2019 were significantly higher than those in 2018:

- in cross-border transport between Germany and Austria (DE/AT), the volume of traffic amounted to 137% of the 2018 volume;
- in cross border traffic between Hungary and Slovakia (HU/SK), the volume of traffic amounted to 130% of the 2018 volume;
- the volume of traffic in the Middle Danube in cross-border transport between Hungary, Croatia and Serbia (HU/HR/RS) amounted to 123.4% of the 2018 volume;
- the volume of traffic on the Black Sea channel amounted to 118.6% of the 2018 volume, meanwhile, the volume of international traffic amounted to 138.5% of 2018 indicators.

1.1.2 Passenger shipping in the passenger traffic market on cruise ships with cabins in 2019 amounted to:

- on Upper Danube lines (Passau – Vienna – Budapest - Bratislava) 131.2% compared to 2018;
- on the lines in the direction of the Danube Delta – 130.3% compared to 2018.

Passenger traffic figures of 2019 are the highest ever recorded by the Danube Commission over the time of market surveillance.

1.1.3 Cargo transport of Danube ports amounted to more than 69 million tons, which is 113.3% of the 2018 figures.

1.2 Dynamics of the transport market in 2020

1.2.1 Overview of the market in the first quarter of 2020.

In January – February 2020, the transport market of raw materials for metal industry (iron ore, pellets, coking coal, and scrap metal) and finished products was fairly stable.

Favourable forecast indicators for the 2020 harvest stimulated the growth of volumes of shipments of grain and other agricultural products in the first quarter.

Stabilization of transport of oil products that began in 2017 after the failure in years 2015 and 2016 continued in the first quarter of 2020.

Transportation volumes of chemical products (fertilizers) were stable.

¹ Secretariat information on the topic “Observation of the Danube Navigation Market: Results for 2020” (WD V.4.1 (2020-1)), sent by letter No. DC 93/V-2020.

From mid-March 2020, the demand for metallurgical products began to fall. At the same time, no sharp drops of volumes were observed in other transportation market sectors.

Accordingly, volumes of traffic in the first quarter (Q₁) of 2020 were as follows:

- in cross-border traffic Germany / Austria (DE/AT): 803 thousand tons, or 79.9% of the volume in the first quarter (Q₁) of 2019;
- in cross-border traffic Hungary / Slovakia (HU/SK): 1,389 thousand tons, or 85.8% of the volume in Q₁ of 2019;
- in cross-border traffic Hungary / Croatia / Serbia (HU/HR/RS): 1,476 thousand tons, or 93.8% of the volume in Q₁ of 2019;
- the volume of traffic on the Danube – Black Sea Canal amounted to 3,877 thousand tons, or 101% of the volume in Q₁ of 2019.

Cargo capacity of ports during the first quarter (Q₁) 2020 compared to the same period (Q₁) of 2019 varied multidirectionally. Meanwhile, in March 2020, cargo capacity of non-grain ports amounted to 65-67% of that in March 2019.

1.2.2 Overview of the market in the second quarter of 2020

While in the in the first quarter the Eurozone's Gross Domestic Product (GDP) decreased by 3.1-3.6%, in the second quarter the decline was 11.7%.

a) Already since mid-March 2020, the Danube transport market started to feel the impact of supply and demand constraints in the main segments²:

- The demand for metallurgical raw materials and, consequently, for metallurgical products in automotive industry, in construction and manufacturing of industrial equipment began to fall causing partial shutdown of industries that form this sector of Danube transport; that decline became especially evident in transportation rates for this category of cargo in the second (Q₂) quarter of 2020;
- The overall situation of declining demand for metallurgical products and transportation volumes was influenced by the reduction of quotas for import of metal to the EU and redistribution of sales flows due to introduction of new duties in international trade;
- Favourable forecasts for the 2020 harvest in the Danube countries have only partially materialized: certain countries – participants of the Danube grain market – were forced to limit export of grain and other agricultural products due to the spring drought. At the same time, it is necessary to note stable volumes of grain cargo shipments from the Middle Danube ports to the delta ports (Constanta), which made it possible in the first half of 2020 to maintain to a certain extent a balance of cargo transport on the Danube;
- In the economic conditions prevailing in the first half of 2020, the Danube markets for transportation of petroleum products and chemical products could be recognized as relatively stable.

² Secretariat information on the topic "Observation of the Danube Navigation Market: Results for 2020" (WD V.4.1.3 (2020)), sent by letter No. DC 184/X-2020.

- b) By the end of April, (according to *Eurofer* and *World Steel Association*), due to introduction of measures for halting production, capacity utilization at certain enterprises of Europe dropped from 20% to 50%. Consequently, there were massive staff reductions or shifting to reduced working hours. Demand for flat product fell to the greatest extent due to the situation in automotive industry, which developed because of decrease in demand caused by the level of income of the population. A significant decline was also observed in the construction sector (including state programs) and in industrial equipment manufacturing.

In July, the EU reduced import quotas for 26 types of metallurgical products, but the situation regarding production and sales did not change significantly by the end of the second quarter. In addition, due to high prices for raw materials, manufacturers maintained the main price parameters of finished products at the pre-crisis level.

The latter circumstance influenced the fact that freight rates for transportation during the second quarter remained at the level of the fourth quarter (Q₄) of 2019.³

In the second quarter, according to *Strategie Grains*, *USDA*, forecasts for a stable grain market (wheat, barley, and maize) changed, indicating a downward trend in the transportation market during the season 2020/2021 due to serious consequences of the spring – summer drought in the Danube countries of the South-East region.

The markets for transport of petroleum products and chemical products (fertilizers) remained sufficiently stable in the second quarter.

- c) It should be noted that the Danube Commission paid serious attention to ensuring continuous operation of the fleet, and proposed solutions to major problems⁴, such as:
- extension of crew and personnel service documents;
 - extension of the period of validity of vessels' certificates;
 - ensuring crew change;
 - the possibility to replace crew positions within the prescribed minimum number of members;
 - renewal of ADN certificates;
 - performance of cargo handling operations in ports;
 - replenishment of fuel, water and food supplies;
 - urgent repair and maintenance of vessels.

During the first half of the year, actions of the DC member states ensured the operational condition of the main elements of the navigational infrastructure, such as:

- continuous operation of locks;
- functioning of information resources on the state of water levels and weather conditions in their areas of responsibility, as well as RIS systems;

³ Secretariat information on the topic "Observation of the Danube Navigation Market: January – May 2020"; sent by letter No. DC 137 /VII-2020.

⁴ <https://www.danubecommission.org/dc/en/2020/07/23/information-regarding-the-status-of-all-national-covid-19-restrictions-for-danube/>
(Information on the status of all national restrictions related to COVID-19 for the Danube).

- operation of river supervisory authorities and execution of vessel arrival / departure procedures.
- d) By the end of the second quarter there was information available about partial recovery of activities at certain metallurgical enterprises in the Danube basin (re-commissioning of shutdown capacities).

1.2.3 Overview of the market in the third quarter of 2020

- a) Despite the forecasts of the beginning of economic recovery and GDP growth in Europe in the third quarter (Q₃) of 2020, the main elements of the Danube cargo transport market (in terms of the share in the total volume) did not recover to the level of Q₃ of 2019; at the same time, a number of specific features could be noted for certain sectors:
- The forecasted sharp increase in industrial production did not occur in the third quarter of 2020. According to the *Eurofer* forecast (data for November 2020), demand for metallurgical products in EU states decreased by 14.8% compared to 2019. At the same time, it has to be noted that world prices for iron ore raw materials reached their six year high.
 - A certain balance of cargo transport on the Danube ensured growth of grain shipments from the ports of the Middle Danube to the delta ports (Constanta). According to the estimates of *Strategie Grains* (data for October 2020), in Eurozone countries, as well as in other Danube countries, the forecast for the grain market (wheat, barley, maize, etc.) is generally positive for the season of 2020/2021.
 - Transportation of chemical cargoes (fertilizers) and petroleum products has been stable.
 - It should be noted that domestic shipments declined practically in all Danube countries.
- b) Cargo capacity of ports in the third quarter and in total for three quarters (Q₁+ Q₂+Q₃) of 2020 varied multidirectionally compared to the similar period of 2019 (table 1.1.).

Table 1.1

Cargo capacity of ports of the Danube countries For 9 months (Q₁+ Q₂+Q₃) of 2020

Ports (thousand tons)	2020 Q ₁	2020 Q ₁ + Q ₂	2020 Q ₁ + Q ₂ +Q ₃	In % of (Q ₁ +Q ₂ +Q ₃) 2019
Germany	765.4	1,712	2,931	105
Austria	1,709	3,573	5,417	98.5
Slovakia*	390	797	1,174	90.7
Hungary	1,597	3,347	5,245	109.6

Croatia	190.3	401	635.6	101.4
Serbia	1,845	4,143	5,864	74.0
Bulgaria	1,341	2,350	3,871	96.2
Romania	6,668	13,459	20,451	94.1
Republic of Moldova	296.4	647	867.7	91.5
Ukraine	2,020	2,240	3,016	69.6

* Ports of Bratislava and Komarno.

1.2.4 Overview of the market in the fourth quarter of 2020

In the fourth quarter of 2020, there were no significant changes in the transportation market, at the same time, the final dynamics for quarters of 2020 was multidirectional:

- In cross-border traffic between Germany and Austria (DE/AT) (Table 1.2):

Table 1.2

Quarter	Q ₁	Q ₂	Q ₃	Q ₄
Volume of cargo, thousand tons	801.8	822.4	342	365.5

- In cross-border traffic between Hungary and Slovakia (HU/SK) (Table 1.3):

Table 1.3

Quarter	Q ₁	Q ₂	Q ₃	Q ₄
Volume of cargo, thousand tons	1,389	1,342	1,197	1,083

- In cross-border traffic between Hungary, Croatia, and Serbia (HU/HR/RS) (Table 1.4):

Table 1.4

Quarter	Q ₁	Q ₂	Q ₃	Q ₄
Volume of cargo, thousand tons	1,509	1,575	1,564	1,465

The main increase in relation to the volume of traffic on this section of the Danube in 2019 (109.5%) resulted from transportation of grain cargo downstream (threefold increase).

- Volume of traffic on the Danube – Black Sea Canal (Table 1.5):

Table 1.5

Quarter	Q ₁	Q ₂	Q ₃	Q ₄
Volume of cargo, thousand tons	3,897	4,132	4,086	4,392

The main volume of traffic on the Danube – Black Sea Canal was international transportation (119% of the volume of 2019).

Chapter 2

Market observation of Danube navigation: traffic of fleet and cargo

2.1 Navigation conditions on the Danube in 2020 – Overall results

2.1.1 Navigation conditions in the first half of 2020

In **December 2019**, along the entire Danube, water levels remained low. On the Upper Danube the levels fluctuated around low navigable water level (LNWL) values during the whole month. Only in the third ten-day period, due to short-term rainfall, they increased up to the mean water level (MWL) level and then decreased. On the Middle and Lower Danube, a similar increase in the levels took place by the end of the third ten day period up to MWL with subsequent decrease.

During the first ten-day period of **January 2020**, the water levels along the entire Danube continued to drop from the MWL value to the value that was close to LNWL, and steadily maintained it during the month. On the Upper Danube (fig. 1) minimal water levels in January were lower than during the same period of the previous year by 70-80 cm, and the mean water level – by 30-40 cm, at the same time, during the third ten-day period the levels dropped below LNWL within 6-8 days. On the Middle Danube (fig. 2) minimal water levels in January were lower than the similar ones during the same month of 2019 by 60-70 cm, and the mean water level – by 90-100 cm. On the Lower Danube, the drop in levels below LNWL during the second ten-day period at certain stations was for 6-7 days.

During the first ten-day period of **February**, on the Upper and Middle Danube, the water level began to rise with an amplitude of 3.5 – 4.5 m and the rise time of 6-8 days. This rise ensured along the entire Danube stable levels close to MWL values, intermittently exceeding them. It has to be noted that snow reserves by the beginning of 2020 were only present in the high-mountain areas of the Upper Danube, which proved insufficient for the formation of active spring flood. Snow cover was absent across much of the Danube basin.

In **March**, levels of water along the entire Danube varied close of MWL values, intermittently exceeding them by 70-90 cm. On the Upper Danube average monthly water levels were by 30-40 cm higher than MWL, on the Middle Danube – by 10-20 cm compared to corresponding values in March 2019. On the Lower Danube the levels were below MWL.

In **April**, levels of water along the entire Danube were below long-term average annual values. On the Upper Danube, from the beginning of the month and until the end of the second ten-day period, there was a steady decline to the LNWL level, and after that there was a slight rise, but until the end of the month the levels did not reach MWL values. On the Middle Danube decrease of the levels continued for the entire first ten-day period, after which they stabilized

within the range below MWL values by 140 - 180 cm, with some stations registering decline to LNWL.

In **May**, the levels of water along the entire Danube were lower than average multi-year values, and traditional rise of water (the second wave of spring flood) did not occur. On the Upper Danube, by the end of the month, the levels were below LNWL for more than 10 days. On the Middle Danube the levels during the whole month were below MWL by 60-80 cm. On the Lower Danube the levels were below MWL values by 160-180 cm; at certain stations during the first ten-day period the levels were below LNWL for 5 - 7 days.

During the first ten-day period of **June**, the levels of water along the entire Danube were below the average multi-year values. With the beginning of the second ten-day period, due to precipitation on the Upper and Middle Danube rise began to the MWL levels and higher with peak values of 100 cm (the Upper Danube) and 200 cm (the Middle Danube). By the end of the month, the levels were in the range of MWL. On the Lower Danube the levels remain below MWL by 50-80 cm and by the end of the second ten-day period intermittently exceeded the MWL levels; at the end of the month, there was a sharp rise in the level above MWL with peak values of 150-180 cm.

2.1.2 Navigation conditions in the second half of 2020

In **July**, on the Upper Danube (fig. 1) the levels of water fluctuated in the range below average multi-year MWL values; in the middle of the second ten-day period and by the end of the third ten-day period the levels intermittently decreased to LNWL values and below. On the Middle Danube (fig. 2) the levels of water during the first ten-day period fluctuated within the MWL range with intermittent increases by maximum of 100-120 cm. During the second and third ten-day periods the levels fluctuated within the MWL range. Overall, at the end of the month, average water levels were higher than in July 2019 by 50-80 cm. On the Lower Danube within a month the levels of water were within average multi-year MWL values with intermittent insignificant increases during the first ten-day period; during the second and third ten-day periods the levels fluctuated in the range below MWL values.

In **August**, on the Upper Danube in the middle of the first ten-day period due to precipitations there was a sharp rise of water with the peak value of 250 - 270 cm with the period of increase of 3.5 days, which was followed by a drop by the end of the ten-day period to the MWL level and below; by the end of the month this drop reached the LNWL values and below. On the Middle Danube, during the first ten-day period because of precipitations there was a sharp rise of water with the peak value of 220-270 cm with the period of increase of 3.5 days, which was followed by a drop by the end of the ten-day period to the MWL level and below; until the end of the month the levels of water fluctuated within the range below MWL, while no drop in the levels to the LNWL values has been noted. In general, by the end of the month average water levels were higher than those in August 2019 by 50-69 cm. On the Lower Danube, during the month, the levels of water were in the range below average multi-year MWL values by 120-150 cm, while no drops in levels to LNWL were noted.

In **September**, on the Upper Danube, during the first ten-day period, the levels were in the range below MWL. During the second ten-day period, the levels began to decrease gradually to the LNWL values and below (in total the period below LNWL lasted for 14 -15 days). In the middle of the third ten-day period, due to precipitations, there was a sharp increase (daily increase of 70-100 cm) and a return to the area close to MWL. On the Middle Danube, during the first ten-day period, excess of MWL levels (by 50-89 cm) was observed twice, which later

on was very quickly replaced with sharp decrease until the third ten-day period; at the end of the month, due to precipitations, daily increase of the levels was 50-79 cm, which fact provided for return of the levels to the MWL value. On the Lower Danube, during the first ten-day period, the levels of water were in the range below average multi-year MWL values by 120-150 cm, while from the second ten-day period, the tendency for the levels to fall to LNWL levels and below remained until the middle of the third ten-day period.

In October, on the Upper Danube, in the first and second ten-day periods, the levels fluctuated within the range of values below MWL; in the middle of the third ten-day period, there was a short-term drop to the LNWL level with subsequent sharp rise to the MWL level. On the Middle Danube, during the first ten-day period and the first half of the second ten-day period, the levels fluctuated within the range of MWL values; from the middle of the second ten-day period there was a sharp rise with the peak value of 120-180 cm, which led to water levels being steadily above MWL. On the Lower Danube, during the month, the water levels were within the range of MWL, while intermittently exceeding them.

In November, on the Upper Danube, the levels fluctuated around MWL values; from the second half of the second ten-day period the levels started to decline and by the end of the month, the levels were below LNWL. On the Middle Danube, the levels were slightly above the MWL values; starting with the second ten-day period, systematic decline of levels began, however, the levels did not reach LNWL. On the Lower Danube, the levels remained below MWL by 100-140 cm.

In December, on the Upper Danube, the levels mostly (for more than 20 days) were below LNWL; by the end of the month, due to precipitations a slight rise of water began. On the Middle Danube, the levels were below MWL values by 120-140 cm; at the end of the month a slight rise began. On the Lower Danube, the levels remained below MWL by 100-140 cm occasionally approaching the LNWL level for short periods of time.

2.1.3 Water content and working draught of vessels

Absence of freezing on the river and lack of ice phenomena provided for uninterrupted navigation in the first quarter of 2020. Sufficient water flow was ensured only in March, which made it possible to load cargo vessels to a draught of 2.5 m, and occasionally to the maximal value of draught – 2.7 m (Table 2.1).

Table 2.1

Draughts of cargo vessels during navigation in of 2020

Month	Loading, upstream (cm)	Loading, downstream, (cm)
January	230	210
February	250/260	210/220
March	250/270	220/230
April	230/240	200/210
May	210/220	190/200
June	230	210/220

July	230/240 (250/230)*	220 (210)
August	220/230 (210/230)	200/210 (200/180)
September	220/230 (210)	210/220 (180)
October	230/240 (210/180)	220/230 (180)
November	210/220(210/250)	190/200 (180/210)
December	200/210((250/260)	185/195 (210/220)

* In parenthesis, working draughts of cargo vessels are indicated for the relevant period of 2019.

In November – December, due to decline in the levels of water, accordingly, working draughts of vessels, especially barges in caravans, were reduced.

2.2 Observation of ship traffic and cargo transport in 2020. Overall results

2.2.1 Passenger shipping

2.2.1.1 Shipping on the Upper Danube

Stable passenger shipping on cruise ships with cabins traditionally begins at the end of March.

Table 2.2

Dynamics of passenger shipping⁵
(in thousands)

Lines	Year						
	2014	2015	2016	2017	2018	2019	2020
Upper Danube	486	534	564.7	595.5	548.8	720.8	56.1
To the Danube Delta	89	83	86.9	97.7	103.6	135.04	5.15

Short trips lasting 5, 7 or 8 days on the lines Passau – Vienna – Budapest - Passau, Vienna - Bratislava - Budapest, as well as trips to and from the ports of the Rhine and the Main made up the major part of passenger transport on cabin ships (Table 2.2):

- Through the locks at Jochenstein (cross-border transport between Austria and Germany (AT/DE)) 324 passages were recorded, which is an increase by 8.8% compared to the figures of 2019, out of which 67% were in the third quarter.
- A total of 557 passages were recorded at the Gabčíkovo lock (cross-border transport between Hungary and Slovakia (HU/SK)) (fig. 4) (in 2019 – 5,141) passages, out of which 42% were in August and 20% - in September.
- A breakdown of passenger numbers on the Upper Danube by flag states in 2012 - 2019 is shown in Table 2.3.

Table 2.3

⁵ As calculated by the Secretariat of the Danube Commission on the basis of Gabčíkovo and Mohács data.

**Breakdown of passenger numbers on ships on the Upper Danube by flag states
(2012 - 2019)**

Flag State	2012	2013	2014	2015	2016	2017	2018	2019
Germany	17%	20%	16.5%	17.4%	15%	18.9%	19.8%	18.1%
Bulgaria	6%	5%	6%	4.3%	6.9%	5.1%	5.3%	5.2%
Ukraine	4.7%	2.5%	2%	1.8%	3.9%	5.0%	4.5%	5.0%
Romania	6.2%	5.3%	3%	1.9%	1.3%	-	-	-
Non-DC member countries	60%	64%	72%	74%	70.5%	68.5%	68.6%	68.9%

Insignificant traffic of passenger ships resumed in July (fig. 4).

In total in 2020, 557 (in 2019 – 5,141) passages of passenger ships were recorded through the Gabčíkovo lock, meanwhile, the following was registered:

- vessels with the length of 110 m: 343 (in 2019 – 1,655) passages;
- vessels with the length of 135 m: 181 (in 2019 – 2,567) passages, out of them 127 vessels flying flags of countries that are not members of the DC.

Average capacity utilization in July was for the vessels with the length of:

- 110 m: 103 passengers (in 2019 – 130);
- 135 m: 103 - 123 (in 2019 – 158) passengers.

2.2.1.2. Transport on the Middle Danube: cross-border transport between Hungary, Croatia and Serbia (HU/HR/RS) (statistics of the Mohacs checkpoint).

Passenger transport on cabin ships (this transport is based on the lines from Passau and from Vienna towards the Danube delta with duration of 14 – 15 - 16 days) was of intermittent nature (2 - 4 passages a month). There were 58 passages (in 2019 – 1,017) (fig. 5). 5,154 passengers were transported; the largest number of passages (19) was registered in September.

2.2.2 Cargo transport

2.2.2.1 Transport on the Upper Danube

Volume of transportation

- a) The volume of cargo transported through the Jochenstein lock (cross-border transport between Germany and Austria (DE/AT)) in 2020 was 2,332 thousand tons, which is by 29.8% less than in 2019.

At the same time, compared to 2019, there was a decrease in the volume of transport downstream (*Talverkehr*) by 38% and upstream (*Bergverkehr*) by 24% (fig. 6).

The number of passages of loaded vessels in 2020 was 77.1% compared to those in 2019, correspondingly, the average capacity utilization of a conventional group was 1,096 t (in 2019 – 1,205 t).

- b) The volume of registered cargo transported through the Gabčíkovo lock (cross-border transport between Hungary and Slovakia (HU/SK)) in 2020 was 5,011 thousand tons, which is 85.9% compared to the volume of 2019 (fig.7) and 111.7% compared to the volume of 2018. Upstream transit was around 3,299 thousand tons, or 65.8% of the total volume (in 2012 and in 2013 – 73%, in 2014 – 75%, in 2015 – 66%, in 2016 – 65%, in 2017 – 64.8%, in 2018 – 65%, in 2019 – 63.3%).

The volume of dry cargo (*trocken*) transported was 4,225 thousand tons, out of which:

- upstream (*zu Berg*) – 3,096 thousand tons;
- downstream (*zu Tal*) – 1,129 thousand tons, as compared to 2.74 to 1 (in 2018 – 2.6 to 1, in 2019 – 2.35 to 1).

Liquid cargo (*tank*) transported amounted to 786 thousand tons, out of them:

- upstream – 206 thousand tons;
- downstream – 580 thousand tons, as compared to 0.35 to 1 (in 2018 – 0.53 to 1, in 2019 – 0.33 to 1).

Ship traffic

Transport by pushed convoys (statistics of the Gabčíkovo lock)

In total, in 2020, pushed convoys carried more than 2,482 thousand tons (fig. 8) of cargo, which corresponds to approximately 71.5% of the volume transported in 2019 and 49.2% of the total volume of cargo carried through the Gabčíkovo lock, including liquid cargo (in 2014 and in 2015 – 52%, in 2016 – 56%, in 2017 – 58.7%, in 2018 – 58.2%, in 2019 – 59.4%).

- a) Pushed convoys carried a total volume of 1,989 thousand tons of dry cargo, including (fig. 9):

- Upstream – 1,343 thousand tons, making up 31.8% (in 2014 – 58%, in 2015 – 55%, in 2016 – 58%, in 2017 – 59.7%, in 2018 – 58.8%, in 2019 – 56.4%) of all dry cargo carried upstream;
- Downstream – 646 thousand tons, making up 57.2% of all dry cargo carried downstream.

A total of 1,193 dumb barges in pushed convoys travelled upstream (in 2019 – 1,108), out of them only 6% (in 2014 – 10%, in 2015 – 14%, in 2016 – 17.6%, in 2017 – 17%, in 2018 – 18.9%, in 2019 – 14.6%) carrying ballast. At the same time, out of 1,187 dumb barges travelling downstream, 34% – were ballasted (in 2013 – 63%, in 2014 – 66%, in 2015 – 56%, in 2016 – 45%, in 2017 – 51%, in 2018 – 45%, in 2019 – 33%), which fact indicates a persistent imbalance of the cargo base for transports by pushed convoy on the Upper Danube.

- b) Tank barges in pushed convoys carried a total volume of 492 thousand tons of liquid cargo, out of them:

- Upstream – 90 thousand tons;
- Downstream – 402 thousand tons.

A total of 84 loaded tank barges and 386 ballasted tank barges travelled upstream in pushed convoys; while 385 loaded tank barges and 78 tank barges carrying ballast travelled downstream.

Cargo transport by motorized vessels

In 2020, motorized vessels (fig. 10) carried a total of about 2,529 thousand tons of cargo, accounting for 50.5% (as compared to 47% in 2012, in 2013 – 51%, in 2014 and in 2015 – 48%, in 2016 – 44%, in 2017 – 41.3%, in 2018 – 41.8%, in 2019 – 40.6%) of the total volume of cargo, and 106.8% as compared to the volumes in 2019.

- Upstream – 1,753 thousand tons,
- Downstream – 776 thousand tons.

- a) In total, motorized dry cargo vessels carried 2,236 thousand tons that account for 110.3% of the volume in 2019, out of them:

- Upstream – 1,753 thousand tons;
- Downstream – 483 thousand tons.

In total 1,794 motorized dry cargo vessels travelled upstream in 2020 (in 2019 – 1,642) (out of them 94% were loaded), downstream – 1,875 (in 2019 – 1,571) vessels (out of them 65% were loaded), indicating a balance in motorized dry cargo vessels on the Danube.

Traffic figures (ratio) of motorized dry cargo vessels are shown in Table 2.4 a).

Table 2.4 a)

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

Ratio	2014	2015	2016	2017	2018	2019	2020
Loaded upstream / downstream	2:1	2.1:1	2.4:1	2.16:1	2.45:1	2.7:1	2.81:1
Loaded to ballasted upstream	18:1	8.8:1	13.7:1	16.3:1	10.9:1	13.8:1	16.3:1
Loaded to ballasted downstream	0.76:1	0.76:1	0.64:1	0.76:1	0.6:1	0.57:1	0.47:1

Through the Gabčíkovo lock 3,564 motorized dry cargo vessels travelled (in the first half year – 1,973), out of them:

- vessels with a length of 110 m – 276 loaded units (in 2019 – 246) and 105 ballasted units (fig. 12), which in total carried 310 thousand tons;

- vessels with a length of 135 m ("large European vessel") – 76 loaded units, which in total carried 110.6 thousand tons, and 66 ballasted units;
 - specialized ships (ro-ro ships, container ships, et al.) – 101 vessels in total.
- b) Self-propelled tankers carried in total 294 thousand tons in liquid cargo, which corresponds to 86.5% of the figure of 2019, out of them:
- upstream – 116 thousand tons;
 - downstream – 178 thousand tons.

In the period from April to June, on average, 35 – 49 self-propelled tankers passed through the Gabčíkovo lock.

In 2020, in total, 226 self-propelled tankers travelled upstream (in 2019 – 251), out of them 47% were loaded, downstream – 243 (in 2019 – 253), out of them 70% were loaded.

Ratios for transport by self-propelled tankers are shown in table 2.4 b).

Table 2.4 b)

Ratios for transport by self-propelled tankers on the Upper Danube

Ratio	2014	2015	2016	2017	2018	2019	2020
Loaded Upstream to downstream	2:1	0.13:1	0.48:1	0.41:1	0.51:1	0.41:1	0.63:1
Loaded to ballasted upstream	2.3:1	0.1:1	0.48:1	0.44:1	0.56:1	0.48:1	0.90:1
Loaded to ballasted downstream	0.37:1	8.5:1	2.1:1	2.7:1	2.4:1	3.6:1	2.33:1

Transport by groups of goods (statistics of the Gabčíkovo lock):

Food products, iron ore raw materials, liquid cargo and grain cargo, chemical products and metal products accounted for the major part of cargo transport volume through the Gabčíkovo lock (fig. 11). The percentage ratio of cargo volumes in upstream and downstream cargo transport (cross-border transport between Hungary and Slovakia (HU/SK)) is shown in tables 2.5 and 2.6.

Table 2.5

Cargo volumes in upstream HU/SK cross-border transport (by groups of goods)

Year, thousand tons Commodity group	2014	2015	2016	2017	2018	2019	2020
Food products and animal feed	1,440 35%	1,283 42%	1,316 37.8%	1,389 38.7%	1,022 35.1%	1,774 48% ⁶	1,321
Iron ore raw materials	1,080 26%	749 24.6%	862 24.8%	803 22.3%	669 23%	841 22%	948

⁶ In % of total upstream cargo transport volume.

Grain	206 5%	200 6.5%	298 8.6%	308 8.5%	252 8.6%	271 7.3%	352
Metal products	376 9%	358 11.7%	417 12%	473 13.1%	418 14.3%	340 9.2%	117
Petroleum products	406 10%	84 2.7%	233 6.7%	286 7.9%	317 10.9%	241 6.5%	212
Organic and synthetic fertilizers	238 5.8%	171 5.6%	167 4.8%	165 4.6%	86.2 3%	91.5 2.5%	75.2

Table 2.6

Cargo volumes in downstream HU/SK cross-border transport (by groups of goods)

Year, thousand tons Commodity group	2014	2015	2016	2017	2018	2019	2020
Organic and synthetic fertilizers	434 33%	414 26.8%	563 30.5%	513 26.6%	317 20.1%	535 25%	505
Petroleum products	323 24%	480 31%	530 28.7%	631 32.7%	585 37.1%	671.3 31.4%	578
Metal products	290 22%	399 25.8%	493 26.7%	432 22.4%	435 27.6%	380.4 17.8%	96.5

2.2.2.2 Transport on the Middle Danube (statistics of the checkpoint at Mohacs), cross-border transport between Hungary, Croatia and Serbia (HU/HR/RS))

Volume of transportation

The volume of registered cargo transported through Mohacs in 2020 comprised more than 6,113 thousand tons (fig. 12), or 109.5% of the volume of cargo transported in 2019, out of them upstream transit – 2,577 thousand tons, that is 42.2% (in 2012 – 51%, in 2013 – 58%, in 2014 – 51%, in 2015 – 39%, in 2016 – 46%, in 2017 – 47.8%, in 2018 – 57.4%, in 2019 – 59.4%).

The volume of transported dry cargo comprised 5,478 thousand tons, out of them:

- upstream – 2,472 thousand tons,
- downstream – 3,006 thousand tons.

Transported liquid cargo comprised 635 thousand tons, out of them:

- upstream – 106 thousand tons,
- downstream – 529 thousand tons.

Ship traffic

Transport by pushed convoys

In total, in 2020, pushed convoys carried more than 4,630 thousand tons through the Mohacs checkpoint (fig. 13), which amounted to 75.7% of the total volume of cargo,

including liquid cargo (in 2013 – 75%, in 2014 – 75%, in 2015 – 81.7%, in 2016 – 79%, in 2017 – 78%, in 2018 – 78.7%, in 2019 – 79.5%).

a) Pushed convoys carried in total 4,497 thousand tons in dry cargo (fig. 14), out of them:

- upstream – 1,975 thousand tons, which makes 43.9% (in 2014 – 86%, in 2015 – 91.4%, in 2016 – 86.5%, in 2018 – 87.7%, in 2019 – 79.5%) of the total volume of dry cargo transported upstream;
- downstream – 2,522 thousand tons, which makes 56.1% (in 2014 – 76%, in 2015 – 85%, in 2016 – 84.4%, in 2018 – 84.8%, in 2019 – 82.3%) of the total volume of dry cargo transported downstream.

In total, in 2020, 2,196 dumb barges in pushed convoys travelled upstream, out of them 35.4% (in 2014 – 18%, in 2015 – 42.7%, in 2016 – 31%, in 2017 – 27.8%, in 2018 – 15%, in 2019 – 11%) carrying ballast. At the same time, out of 2,460 dumb barges travelling in pushed convoys downstream 10.7% of units were ballasted.

b) Tank barges in pushed convoys carried a total volume of 132.5 thousand tons in liquid cargo, out of them:

- upstream – 14.7 thousand tons;
- downstream – 117.8 thousand tons.

A total of 62 tank barges travelled upstream in pushed convoys, out of them 8.8% were loaded; while downstream 61 tank barges travelled, out of them 92% were loaded.

Cargo transport by motorized vessels

In 2020, motorized vessels carried in total of 1,483 thousand tons (fig. 15), accounting for 24.2% (in 2013 – 25%, in 2014 – 24%, in 2015 – 18.3%, in 2016 – 21%, in 2017 – 22%, in 2018 – 21.3%, in 2019 – 20.5%) of the total volume transported through the Mohacs checkpoint, out of them:

- upstream – 645 thousand tons,
- downstream – 838 thousand tons.

a) Self-propelled barges carried 981 thousand tons (fig. 16), out of them:

- upstream – 497 thousand tons;
- downstream – 484 thousand tons.

b) Motorized tank barges carried 502.5 thousand tons of liquid cargo (fig. 17), out of them:

- upstream – 91.3 thousand tons.
- downstream – 411.2 thousand tons.

An average of 30 – 25 loaded tankers per month passed through the checkpoint Mohacs.

Transport by groups of goods

Grain, iron ore raw materials, metallurgical products, and chemical products accounted for the major part of cargo transport volume through the checkpoint Mohacs (fig. 17). The percentage ratio of cargo volumes in upstream and downstream transport (cross-border transport between Hungary, Croatia and Serbia HU/HR/RS) is shown in tables 2.7 and 2.8.

Table 2.7

Cargo volumes in upstream HU/HR/RS cross-border transport (by groups of goods)

Year, thousand tons Commodity group	2014	2015	2016	2017	2018	2019	2020
Iron ore raw materials	1.010 41%	933 38%	985 36.6%	1,023 37%	1,061 40.8%	1,247 37.6%	954
Coal (coke)	600 23%	605 24%	433 16.1%	435 15.7%	369 14.2%	479 14.4%	323
Fertilizers	344 13%	395 16%	359 13.3%	354 9.2%	362 13.9%	392 11.8%	436
Petroleum products	< 5%	< 5%	200 7.4%	168 6.1%	106 4.1%	109 3.2%	106
Metal products	176 6.9%	175 7.1%	264 9.8%	269 9.7%	297 11.4%	270 8.1%	243

A special feature of the 2020 market was the increasing volume of food products transported upstream – 272 thousand tons (in 2019 – 250 thousand tons).

Table 2.8

Cargo volumes in downstream HU/HR/RS cross-border transport (by groups of goods)

Year, thousand tons Commodity group	2014	2015	2016	2017	2018	2019	2020
Grain	674 29%	1.700 44.5%	1,249 39.8%	1,028 34.5%	414 21.5%	479 21.1%	1,471
Petroleum products	520 22.5%	613 16%	465 14.8%	558 18.7%	509 26.4%	428 18.9%	528
Metal products	276 12%	389 10%	543 17.3%	454 15.2%	444 23.6%	316 13.9%	295
Food products and animal feed	430 18.6%	687 17.2%	257 8.2%	382 12.8%	179 3.3%	203 9%	520
Fertilizers	182 7.9%	234 6.1%	261 8.3%	255 8.5%	126 6.3%	272 12%	364

2.2.3 Inter-basin traffic

2.2.3.1 Transport on the Danube – Black Sea Canal

In 2020, the volume of transport on the Danube – Black Sea Canal amounted to 16,507 thousand tons⁷, which makes it 98.6% of the similar period in 2019, out of them:

- international cargo transport: 10,599 thousand tons (corresponding to 119% of the volume carried in 2019);
- domestic cargo transport: 5,909 thousand tons (75.2% of the volumes recorded in 2019).

Dynamics of cargo transport by month is shown on fig. 19; the dynamics of cargo transport by years is shown in table 2.9.

Table 2.9

Volume of cargo transport on the Danube – Black Sea Canal, by years

Year, million tons	2013	2014	2015	2016	2017	2018	2019	2020
Total cargo transport	13.96	14.43	14.02	14.55	13.77	14.12	16.74	16.51
International cargo transport	8.63	7.90	8.62	8.03	6.91	6.42	8.89	10.60
Domestic cargo transport	5.33	6.53	5.40	6.52	6.86	7.7	7.85	5.91

According to the data, the volume of international cargo transport on the channel was the highest since 1990.

2.2.3.2. Traffic on the Sulina Canal

In 2020, cargo transport on the Sulina Canal comprised only 4,549 thousand tons, which accounts for 82.9% of the similar figure for 2019 (the volume of transport in 2019 was the highest for the last 6 years), at the same time, in the directions: Sea – the Danube and the Danube – Sea, cargo flows varied in different directions (Table 2.10).

Table 2.10

Volumes of cargo transport on the Sulina Canal, by years

Year, thousand tons	2014	2015	2016	2017	2018	2019	2020
Cargo turnover	3,668	3,848	3,764	4,307	4,441	5,487	4,549
The Danube – Sea	3,245	3,263	3,250	3,606	3,670.3	4,331	2,872
Sea – the Danube	423	585	514	701	770,3	1,156	1,677

⁷ www.acn.ro.

2.3 Changes in freight rates

Corresponding to the Rotterdam Platts, the average price for marine gasoil (MGO), the average price of bunker fuel in ports on the Danube was 465.3 USD/t in the first quarter (Q₁), in the second quarter (Q₂) it was 283.50 USD/t, in the third quarter (Q₃) – 355.0 USD/t, and in the fourth quarter (Q₄) – 377.5 USD/t.

The average price of bunker fuel in the first quarter of 2020 was 644.0 USD/t, in the second quarter – 517.2 USD/t, in the third quarter – 482.4 USD/t, and in the fourth quarter – 492.5 USD/t.

Correspondingly, the price of bunker fuel in 2020 decreased compared to the average price in 2019 (726.2 USD/t) by 26.5%.

In 2020, changes in the freight index for waterway transport are shown in tables 2.11 a) and 2.11 b).

Table 2.11 a)

Indices: Q4 2019 = 100%	Q ₁	Q ₂	Q ₃	Q ₄
Bunker	88.8 (95.1)*	71.3 (96.8)	66.5 (96.1)	67.9 (95.8)
Freight rate, including:	101.7 (97.3)	108.2 (96.1)	102.5 (97.4)	111.3 (100.2)
upstream	90.1 (98.6)	93.1 (97.6)	90.8 (97.7)	91.9 (98.4)
Downstream	118,0 (95.5)	109.7 (93.2)	101,8 (94.5)	110.7 (99.1)

Table 2.11 b)

Indices: the previous quarter = 100%	Q ₁	Q ₂	Q ₃	Q ₄
Bunker	88.8 (95.1)	80.3 (101.8)	93.3 (99.3)	102.1 (99.7)
Freight rates, including:	101.7 (97.3)	106.4 (98.8)	94.7 (101.3)	108.6 (102.9)
upstream	90.1 (98.6)	103.4 (99.1)	97.5 (100.1)	101.1 (100.7)
downstream	118.0 (95.5)	93.0 (97.6)	92.8 (101.3)	108.7 (104.9)

* Similar indices for 2019 are shown in parenthesis

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 Germany's Danube ports in 2020⁸ amounted to 3,511 thousand tons, or 107.2% of the cargo turnover in 2019 (table 3.1).

Table 3.1

Year (thousand tons)	2014	2015	2016	2017	2018	2019	2020
Cargo turnover	4,031	3,257	2,958	3,314	2,585	3,274	3,511

3.1.2 Cargo turnover in the main Danube ports of Germany is shown in table 3.2.

Table 3.2

Ports (thousand tons)	Kelheim	Regens- burg	Straubing- Sand	Deggen- dorf	Passau	Other
2016	352.2	1,350	621	217.7	292.4	125.7
2017	347.5	1,502	795	235.5	328	106.7
2018	258	1,169	430	169	369	190
2019	369	1,387	660	216	359	282
2020	361.5	1,553	660.8	144	473	312.6

Goods in 5 major groups according to NST 2007 accounted for 95.5% of the total volume of cargo turnover, taking into account the ports of Bamberg and Nuremberg (table 3.3).

Table 3.3

Groups (thousand tons)	01	04	08	10	03
Unloaded	718.8	373.8	379.1	238.8	281.3
Loaded	785.3	282.9	39.7	84.8	131.3
2019	1,205	559.5	521	450.7	327
2020	1,504	656.7	418.8	323.6	412.6

3.1.3 The largest volumes of cargo by groups:

Agricultural products (group 01)

⁸ www.statistik.bayern.de.

- accepted by ports: Straubing-Sand – 5.8%, Regensburg – 18.4% of the total volume of unloaded cargo of group 01;
- shipped: Regensburg – 39.6%, Straubing-Sand – 7.8%, Passau – 13.6% of the total volume of loaded cargo of group 01.

Food products (group 04)

- accepted by ports: Regensburg – 59.1%, Passau -11.2%, Kelheim – 10%;
- shipped: Straubing-Sand – 55.6%, Regensburg – 25.7%, Passau – 8.8%.

Chemical substances and products (group 08)

- accepted by ports: Regensburg – 28%, Kelheim – 17.9%, Straubing-Sand – 14%.

Finished metal items (group 10)

- accepted by ports: Regensburg – 63.8%, Deggendorf – 20%;
- shipped: Regensburg – 87.5%.

3.2 PORTS IN AUSTRIA

3.2.1 The total volume of cargo handled in Austrian ports in 2020 ⁹ amounted to 6,645 thousand tons, that is 103% of the cargo handled in 2019 (table 3.4).

Table 3.4

Year (thousand tons)	2014	2015	2016	2017	2018	2019	2020
Loaded	2,830	2,444	2,584	2,770	2,053	2,259	2,061
Unloaded	5,781	5,005	4,909	5,211	4,070	4,193	4,584*
Cargo volume handled	8,611	7,449	7,493	7,981	6,123	6,452	6,645

- * The total volume of cargo handled, carried in domestic transport, comprised 595 thousand tons; it corresponds to 9% of the total volume of cargo handled in the ports of the country; it is taken into account in “unloaded”.

3.2.2 The volumes of cargo handled in main ports of Austria in 2020 are shown in table 3.5.

Table 3.5

Ports (thousand tons)	Vienna	Linz	Krems	Enns
Loaded	615	1,143	80.7	123.6
Unloaded	172.3	2,268	167.8	492

⁹ www.statistik.at.

Cargo volume handled in 2019	952	3,280	305	776
Cargo volume handled in 2020	787	3,411	249	616

3.2.3 Shipped to ports of other countries (table 3.6):

Table 3.6

Country (thousand tons)	Germany	Hungary	Romania	the Netherlands	Belgium	Serbia
2017	451	560	487	273	297	182
2018	253	647	371	107	200	91
2019	361	784	466	155.5	200.5	135
2020	318.7	731	416	154.8	152.5	145

- 23.9% of loaded cargo for export was comprised of: metal products (group 10), out of which 92.5% were loaded in the port of Linz;
- 27.7% - petroleum products (group 07), 100% were loaded in the port of Vienna;
- 28.2% - chemical products (group 08), out of which 89.2% were loaded in the port of Linz.

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

Table 3.7

Country (thousand tons)	Slovakia	the Netherlands	Ukraine	Hungary	Germany	Romania
2017	1,653	763	974	675	331	201
2018	1,233	349	811	735	253	165
2019	1,108	539	832	679	285	215
2020	1,245	423	893	784	261	127

- 55.6% of cargo unloaded by the ports of Austria was comprised of imported iron ore raw materials (group 03) in the amount of 2,218 thousand tons, out of which about 91.8% were accepted by the port of Linz;
- 14% were petroleum products for import (group 07), out of which 35.8% were accepted by the port of Linz, and 11% - by the port of Vienna;
- 20.4% - agricultural products for import (group 01), out of which 35.5% were accepted by the port of Enns.

3.3 PORTS IN SLOVAKIA

3.3.1 The total volume of cargo handled by public ports of Slovakia is mostly (about 96%) determined by the volume of cargo handled by the ports of Bratislava and Komarno (table 3.8), which in 2020 comprised 1,553 thousand tons, or 93.3% of the volume of cargo handled in 2019.

Table 3.8

Year (thousand tons)	2014	2015	2016	2017	2018	2019	2020
Loaded	1,652	1,922	1,879	1,952	1,464	1,515	1,443
Unloaded	63.4	87.2	89.2	175	78	149	110
Volume of cargo handled	1,715	2,009	1,969	2,127	1,542	1,664	1,553

3.3.2 The main volume of cargo (93%) was represented by loaded cargo, out of which:

- about 87% - iron ore raw materials (ore, pellets) to Austria,
- about 8% - petroleum products to Austria and Hungary.

3.4 PORTS IN HUNGARY

3.4.1 The total volume of cargo handled in the ports of Hungary in 2020¹⁰ comprised 6,742 thousand tons, or 111% of the volume handled in 2019 (table 3.9).

Table 3.9

Year (thousand tons)	2014	2015	2016	2017	2018	2019	2020
Loaded	3,917	4,190	3,602	3,692	2,785	3,204	4,489
Unloaded	1,756	1,788	1,836	2,107	2,415	2,860	2,253
Volume of cargo handled	5,673	5,978	5,439	5,799	5,200	6,064	6,742

The total volume of cargo carried in domestic transport, i.e. loaded and unloaded in the ports of Hungary, amounted to approximately 556 thousand tons; which is 8.2% of the total volume of cargo handled in the ports of the country.

3.4.2 The volumes of cargo handled in main ports of Hungary are shown in table 3.10.

Table 3.10

Ports (thousand tons / year)	Baja	Csepel	Győr - Gönyű	Other
2014	655	758.5	221	4.038

¹⁰ www.ksh.hu.

2015	722.5	846.9	336	4,072
2016	506.5	1,045	164.3	3,722
2017	644	1,122	167	3,865
2018	347	918	105.6	3,829
2019	505	1,130	225.4	4,204
2020	845	1,192	280	4,424

3.4.3 The main groups of goods loaded for export were:

- agricultural products – 2,957 thousand tons, amounting to 65.8% of the total volume of loaded cargo and 166.3% of the volume in 2019;
- petroleum products – 750 thousand tons, amounting to 16.7% of the total volume of loaded cargo;
- iron ore raw materials – 226 thousand tons, which represent 5% of the volume of loaded cargo.

The volumes of cargo exported to ports of other countries (table 3.11):

Table 3.11

Countries (thousand tons)	Romania	Germany	Serbia	Austria	the Netherlands
2015	2,290	482	423.8	357	173
2016	1,455	654.7	459.7	467	190.4
2017	1,433	731	393	608	79
2018	726	436.6	400	693	79
2019	752	877	356	641	79
2020	2,128	716	395	774	87

It should be noted that the volume of cargo sent to the ports of Romania (Constanta) increased by 2.8 times.

3.4.4 The main groups of goods unloaded for import were:

- coal – 355 thousand tons, amounting to 15.8% of the total volume of unloaded cargo;
- petroleum products - 688 thousand tons, amounting to 30.5% of the total volume of unloaded cargo;
- metal ores – 428 thousand tons, amounting to 19% of the volume of unloaded cargo.

The largest shares in goods imported were received from ports of Romania, Austria and Serbia (table 3.12).

Table 3.12

Countries (thousand tons)	Romania	Austria	the Netherlands	Serbia
2015	843.8	382.7	95.8	24.7
2016	694	475.8	67.4	160
2017	708	567	98	204
2018	610,6	629.5	75	353
2019	823	777	93	501.4
2020	726	732.5	68	352

3.5 PORTS IN CROATIA

3.5.1 The total volume of cargo handled in the inland ports of Croatia in 2020¹¹ was 948 thousand tons, which corresponds to 116.4% of the volume of 2019 (table 3.13).

Table 3.13

Year (thousand tons)	2014	2015	2016	2017	2018	2019	2020
Loaded: - export	205.0	346.4	380.5	336	279.3	277	393.3
Unloaded: - import	236.0	168.4	200.5	181	239.9	472	463.1
Volume handled, incl. domestic transport	491.0	566.0	677.0	631.6	591.7	814	947.8

3.5.2 Agricultural products (group 01) accounted for 21.5% of the cargo volume handled in ports, iron ore raw materials (group 03) accounted for 29.4% , hard coal and lignite (group 02) accounted for 19.3% , and metal products (group 10) accounted for 16.4%.

3.6 PORTS IN SERBIA

3.6.1 The total volume of cargo handled in the ports of Serbia¹² in 2020 comprised 8,164 thousand tons, or 83.9% compared to the volume of 2019 (table 3.14).

Table 3.14

Year (thousand tons)	2014	2015	2016	2017	2018	2019	2020
Loaded - export	2,288	1,937	2,451	1,917	2,321	3,593	3,752
Unloaded	2,373	3,195	3,675	3,754	4,020	5,061	3,207

¹¹ www.dzs.hr.

¹² webrzs.stat.gov.rs
www.rzs.rs.ba

- import							
Domestic cargo transport	1,301	677	1,143	718	1,088	1,081	1,205
Cargo volume handled	7,263	6,486	8,412	6,390	7,429	9,735	8,164

- 26% of all cargo volumes are represented by construction materials (gravel and sand);
- 8.5% - iron ore raw materials;
- 17.5% - grain;
- 13.4% - oil and petroleum products.;
- 14.4% - coal.

3.6.2 The volumes of cargo handled in the major ports of Serbia are shown in table 3.15.

Table 3.15

Ports (thousand tons)	Pancevo	Smederevo	Belgrade	Novi Sad	Prahovo
2015	650	1,813	831	981	450
2016	1,040	2,466	828	1,325	673
2017	1,070	3,163	713	1,180	929
2018 ¹³	1,390	3,563	160	1,047	1,053
2019	1,517	4,040	196	1,413	1,109
2020 ¹⁴	2,051	2,612	167	1,632	1,198

3.7 PORTS IN ROMANIA

3.7.1 The following ports contribute to the total volume of cargo handled in the Danube ports of Romania:

- ports located on the maritime Danube,
- ports located on the fluvial Danube;
- ports located on the Danube – Black Sea Canal and the port of Constanta.

3.7.2 The total volumes of cargo handled in the main ports of Romania located on the maritime Danube are shown in table 3.16¹⁵.

Table 3.16

Ports (thousand tons)	Braila	Tulcea	Galat
Cargo volume handled:			
– Inland waterway vessels			
2015	1,723 (328)	2,540 (1,503)	2,961

¹³ Data by Port Governance Agency, Serbia.

¹⁴ Data by Port Governance Agency, Serbia.

¹⁵ www.insse.ro

2016	352	1,545	3,287
2017	355	1,331	3,150
2018	476	1,748	3,031
2019	397	1,660	3,077
2020	281	1,213	2,831
– Maritime vessels			
2015	494	9	1,357
2016	490	9	1,248
2017	410	90	1,177
2018	481	56	1,320
2019	835	15	2,061
2020	327	12	2,425

The volume of cargo handled for maritime vessels forms the major volume of cargo transport on the Sulina Canal. In 2020, cargo transport on the Sulina Canal comprised 4,549 thousand tons, or 82.9% of the volume transported in 2019.

In 2020, the ports of Romania located on the fluvial section of the Danube (except for Galați, Tulcea and Brăila) provided for cargo handling in the volume of about 4.2 million tons.

- 3.7.3 The total volume of cargo handled in the ports of Romania, including cargo carried by inland waterway vessels in the port of Constanta (14,505 thousand tons) amounted to 27,307 thousand tons, or 95.9% of the volume handled in 2019; it is shown in table 3.17.

Table 3.17

Year (thousand tons)	2015	2016	2017	2018	2019	2020
Loaded:						
– International cargo transport	3,861	3469.3	3,872	4,008	5,609	5,112
– Domestic cargo transport	6,575	6,879	6,835	7,549	8,190	6,602
Unloaded:						
– International cargo transport	7,355	6,930	5,281	4,532	5,674	8,217
– Domestic cargo transport	6,671	7,818	7,797	8,591	9,001	7,376
Cargo volume handled:	24,462	25,096	23,785	24,680	28,474	27,307

3.7.4 Main groups of goods handled:

- Metal ores (group 03) – 40% of cargo volume handled, out of them 80.5% are domestic transport;
- Agricultural products (group 01) – 35.6% of the volume of cargo handled, out of them 61.3% are international cargo transport;
- Chemical substances (group 08) – 8.5% of the volume of cargo handled, out of them 89.4% - international cargo transport;
- Coke and refined petroleum products (group 07) – 5.0% of cargo volume handled, out of them 70% - international cargo transport;
- Metal products (group 10) – 3.5%, out of them 80.9% - international cargo transport;
- Coal and lignite (group 02) – 4.4%, out of them 61.4% - international cargo transport.

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

- Group 08 – 35% of the volume of cargo loaded, out of them 73.9% dispatched to Serbia;
- Group 07 – 13.6% of the volume of cargo loaded, out of them 31.3% dispatched to Bulgaria and 30.9% to Serbia;
- Group 02 – 11.5% of the volume of cargo loaded, out of them 60.8% dispatched to Hungary;
- Group 03 – 23.2% of the volume of cargo loaded, out of them 57.7% dispatched to Serbia and 30.3% - to the Republic of Moldova (quarrying products).

3.7.6 Main groups of goods imported (unloaded):

- Group 01 – 70.4% of the volume of cargo unloaded, out of them 50.4% from Serbia, 30.3% from Hungary, 16.5% from Bulgaria;
- Group 03 – 11.5% of the volume of cargo unloaded, out of them 59.3% from Ukraine, 39.7% from Bulgaria;
- Group 10 – 4.5% of the volume of cargo unloaded, out of them 41.9% from Austria;
- Group 02 – 3.4% of the volume of cargo unloaded, out of them 41.9% from Ukraine.

3.8 PORTS IN BULGARIA

3.8.1 In 2020, the total volume of cargo handled in the ports of Bulgaria taking into account all terminals comprised 5,431 thousand tons, which is 100.9% of the volume handled in 2019 (table 3.18).

Table 3.18

Year (thousand tons)	2014	2015	2016	2017	2018	2019	2020
Loaded – Export	1,409	1,159	2,319	2,166	2,142	2,485	2,823

Unloaded – import	1,689	1,692	3,462	2,312	1,933	1,830	1,799
Goods loaded / unloaded in domestic cargo transport	1,412	1,695	1,222	1,092	848	1,070	809
Volume of cargo handled	4,510	4,547 (6,114)	7,013*	5,570	4,923	5,385	5,431

* Including ferry traffic.

The structure of export:

- granulated goods – 51.5%,
- general cargo – 6.31%,
- liquid goods – 2.8%,
- “ro-ro” cargo transport – 39.4%.

The structure of import:

- granulated goods – 31.2%,
- general cargo – 23.25%,
- liquid goods – 17.5%,
- “ro-ro” cargo transport – 28.1%.

3.9 PORTS IN THE REPUBLIC OF MOLDOVA

3.9.1 In 2020, the total volume of cargo handled in the port of Giurgiulesti comprised 1,185 thousand tons¹⁶, or 91.2% of cargo volume handled in 2019 (table 3.19).

Table 3.19

Year (thousand tons, %)	2015	2016	2017	2018	2019	2020
Volume of cargo handled	867.8	886.4	1,591	1,889 ¹⁷	1,299	1,185

3.9.2 Export cargo (grain, vegetable oil) represented 36.4% of the total volume of cargo handled in the port (431.8 thousand tons). While import (752.9 thousand tons) was mostly comprised of petroleum products, sand, crushed stone, coal and containers.

3.9.3 As for groups of goods, they were as follows: grain – 21.2%, sand and crushed stone – 37.7%, petroleum products – 15%, coal (coke) – 8%, containers – 3%, vegetable oil – 9.4%.

¹⁶ Data by the Water Transport Agency of the Republic of Moldova.

¹⁷ Data by the Employers' Association of Processing Industry of the Republic of Moldova.

3.10 PORTS IN UKRAINE

3.10.1 In 2020¹⁸, the total volume of cargo handled in the Danube ports of Ukraine, including cargo transported by maritime vessels, comprised 4,055 thousand tons, corresponding to 72% of the cargo volume handled in 2019 (see table 3.20), out of them:

- export – 65%;
- transit – 29.4%.

Table 3.20

Year (thousand tons)	2014	2015	2016	2017	2018	2019	2020
Volume of cargo handled	4,619.3	5,754	6,680	6,277	6,067	5,629	4,055

In 2020, the bulk of the cargo volumes handled in the ports of Ukraine was dry granulated cargo – 85.8%.

3.10.2 Volumes of cargo handled in the major Danube ports of Ukraine are shown in table 3.21.

Table 3.21

Ports (thousand tons)	Izmail	Reni
Volume of cargo handled:		
2014	3,093.0	1,464.8
2015	4,825.0	906,9
2016	5,682	972
2017	5,097	1,125
2018	4,683	1,333
2019	4,283	1,275
2020	3,245	786

Breakdown of cargo volume handled:

- Port of Izmail – dry granulated goods (ore, pellets) –83.8%;
- Port of Reni – dry granulated goods – 94%.

The largest part – 84.4% - of the total volume of cargo dispatched from the port of Izmail consisted of export of iron ore raw materials (ore, pellets) to Austria (Linz), Serbia (Smederevo) and Romania (Galați).

¹⁸www.uspa.gov.ua.

Chapter 4.

Conclusions

4.1 The initial state of the Danube transport market in 2020 was formed on the basis of rather stable results of 2019 compared to year 2018 and positive outlook for the main industrial, agricultural sectors of the economy, as well as that for the passenger transport market in the Danube basin.

4.2 Absence of river freezing and ice phenomena during the winter period, as well as precipitations in June ensured for uninterrupted navigation during the first half of 2020. Sufficient water flow in the first quarter allowed for loading cargo vessels with the draught of 2.5 m, while in March – for the maximal value of draught of 2.7 m.

Precipitations in June made it possible to shift the time of navigation start to the summer low water phase compared to the situation of 2019 and to maintain working draughts at the rather high for that navigation period level of 2.3/2.4 m.

In November – December, due to falling water levels along the entire Danube, working draughts of vessels, especially those of barges in caravans, were reduced to the levels of 2.0 / 2.1 m.

4.3 The cargo transportation market in January – February 2020 was stable due to fairly stable positions in the metallurgical, chemical industries and in the agricultural sector of the economy in the Danube basin and on inter-basin directions of cargo flows.

4.4 From mid-March 2020, the Danube cargo transportation market started to experience the impact of the economic decline as well as demand and supply restraint in key segments, meanwhile, in spite of certain economic recovery in the third quarter, the following should be noted at year end:

- A drop in demand for metallurgical raw materials and, correspondingly, for metallurgical products in automotive industry, in construction and production of industrial equipment led to partial suspension of production facilities that form this sector of Danube transportation. As a result of that situation, as well as due to decrease in quotas for import of metal in the EU and redistribution of sales flows because of introduction of new duties in international trade, indicators of this sector of the Danube transport market did not stabilize until the end of 2020;
- Significant volumes of transportation of grain and other agricultural products from the ports of the Middle Danube to the delta ports (Constanța), in 2020, allowed to a certain extent to maintain the balance of cargo transport on the Danube;
- The Danube transportation markets for petroleum products and chemical products could be regarded as relatively stable during the year.

4.5 Accordingly, the volumes of cargo transported in 2020 comprised:

- In cross-border transport between Germany and Austria (DE/AT): 2,332 thousand tons, or 70.2% of the volume transported in 2019;
- In cross-border transport between Hungary and Slovakia (HU/SK): 5,011 thousand tons, or 85.9% of the volume transported in 2019;

- In cross-border transport between Hungary, Croatia and Serbia (HU/HR/RS): 6,113 thousand tons, or 109.5% of the volume transported in 2019, meanwhile, the main increase was due to significant (three-fold) increase in transportation of grain to ports of the delta (Constanța);
 - The volume of transport on the Danube – Black Sea Canal comprised 16,507 thousand tons, or 98.6% of the volume transported in 2019; at the same time, the volume of international cargo transport was 10,599 thousand tons, or 119% of the figure recorded in 2019;
 - The volume of transport on the Sulina Canal amounted to 4,549 thousand tons, or 82.9% of the volume transported in 2019.
- 4.6 The peculiarities of cargo transportation in 2020, which turned out to be a consequence of the state of the economy and restrictions imposed on navigation on inland waterways in Europe, should include the following:
- The volume of transportation by self-propelled vessels on the Upper Danube in cross-border transport between Hungary and Slovakia (HU/SK) amounted to 50.8% of all cargo and 106.8% of the volume transported in 2019;
 - The volume of transportation by self-propelled vessels on the Middle Danube was 30% higher than the volume of cargo transported by them in 2019;
 - In certain periods, there was a decrease of shipload due to a decrease in presented volumes; for example, the average capacity utilization of self-propelled vessels (vessels with the length of 110 m) in cross-border transport between Germany and Austria (DE/AT) was by 15% lower in May – June than during the same period of 2019. A similar situation also occurred with transport by pushed convoys on other sections of the Danube;
 - Freight rates for cargo transport during the year were maintained at a stable level, meanwhile, the average price for bunker fuel was lower compared to that in 2019.
- 4.7 In 2020, cargo capacity of ports of the DC member countries was only 64.9 million tons (93.3 % of the 2019 volume), at the same time, both by quarters and by the results of 2020, it varied multidirectionally compared to 2019:

Ports (thousand tons)	2019	2020	In % of 2020 / 2019
Germany	3,274	3,511	107.2
Austria	6,452	6,645	103
Slovakia	1,664	1,553	93.3
Hungary	6,742	6,064	111
Croatia	814	948	116.4
Serbia	9,735	8,164	83.9
Bulgaria	5,385	5,431	100.9
Romania	28,474	27,307	95.9

Republic of Moldova	1,299	1,185	91.2
Ukraine	5,629	4,055	72

- 4.8 Recovery of the cargo transportation market in 2021 is expected due to the forecast data on the growth of the gross domestic product of Eurozone states by 4% compared to 2020 (forecast as of March 2021).
- 4.9 Passenger shipping on ships with cabins, which in 2019 demonstrated the highest indicators for the entire period of market observation (in 2019, a total of 190 vessels operated on the Danube), was stopped in March, and only in June some cruise ships were launched respecting all announced restrictions on the number of passengers. In November, traffic of passenger ships was halted. Forecasts for this sector of Danube navigation include possible resumption of its operation in 2022. Activities of cruise navigation on the Danube would depend primarily on the situation with the pandemic. Three options are possible here: quarantines in all Danube countries would be completely lifted; quarantine measures would be relaxed or would be maintained only in certain countries; restrictions that prevent passenger traffic would remain in place.

In the first case, cruises would be performed, and their number would be determined primarily by the customer demand. It is very unlikely that the demand would be high taking into account partial loss of revenues by the population and objective fears of people for their safety. The total number of transported tourists would also noticeably decrease because of compliance with sanitary norms on ships, possible restrictions in ports of call when organizing excursions. In particular, the following is assumed: checking passengers' conditions on the shore prior to boarding, taking temperature, sanitary treatment of luggage before boarding, face-mask requirements on board during common activities, disinfection, social distancing, high quality air conditioning, safe seating arrangements in restaurants, small excursion groups on shore, etc.

- 4.10 Special measures taken by the Danube Commission during the year for supporting operation of the fleet during various restrictions in different countries to a certain extent contributed to its functioning, and also contributed to stabilization of port operation and technical maintenance of ships, ensuring sustainable functioning of communication systems and RIS systems.

ANNEX
(figures)

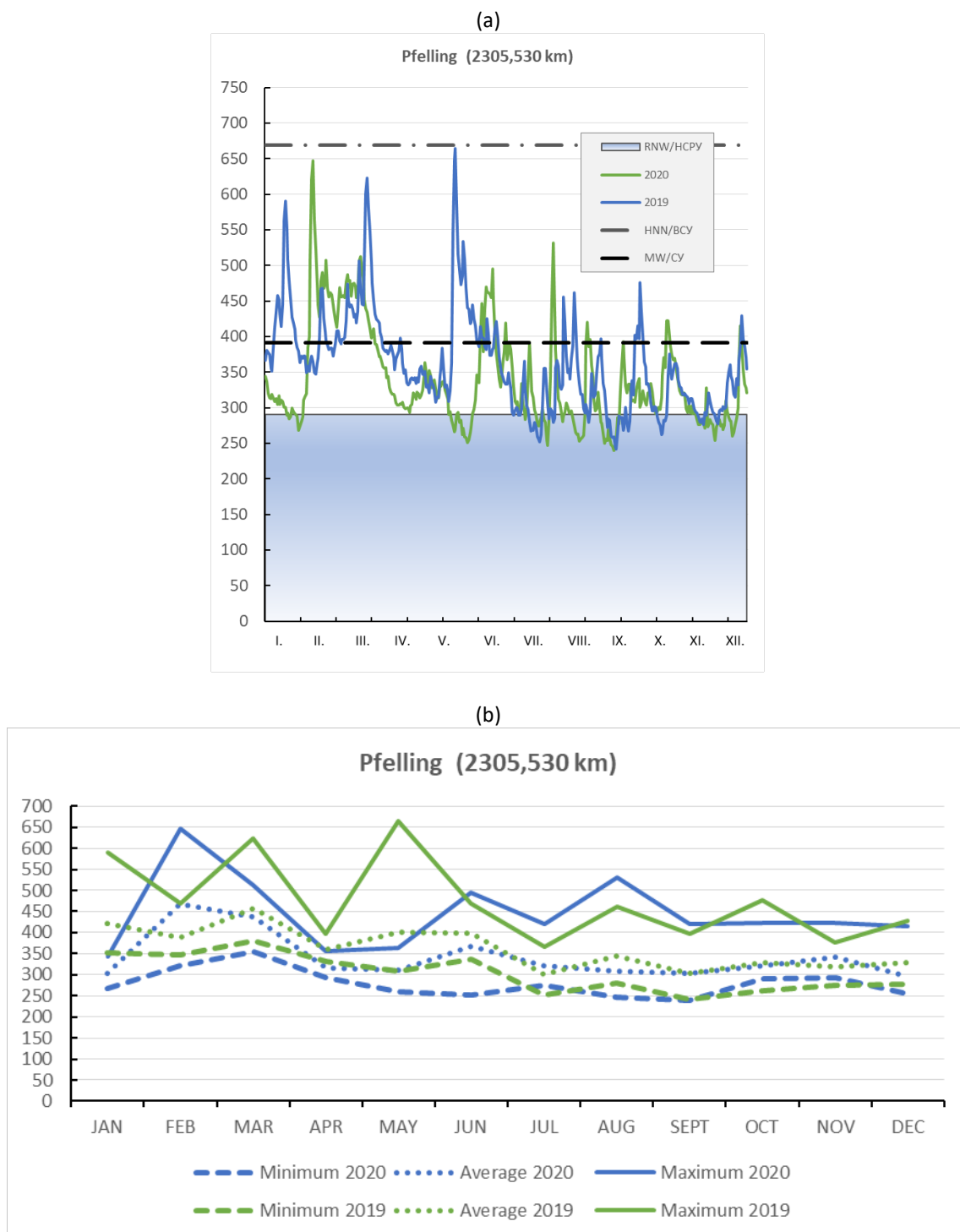


Abb. 1: Durchschnittliche tägliche (a) und absolute (b) Werte der Wasserstände am Pegel Pfelling in cm
 Fig. 1. Moyenne des valeurs journalières (a) et absolues (b) des niveaux d'eau pour la station hydrométrique de Pfelling, en cm
 Рис. 1. Среднесуточные (a) и абсолютные (b) значения уровней воды для водомерного поста Пфеллинг, в см
 Fig. 1. Daily mean (a) and absolute (b) water levels at the gauging station Pfelling, in cm
 Fig.1.

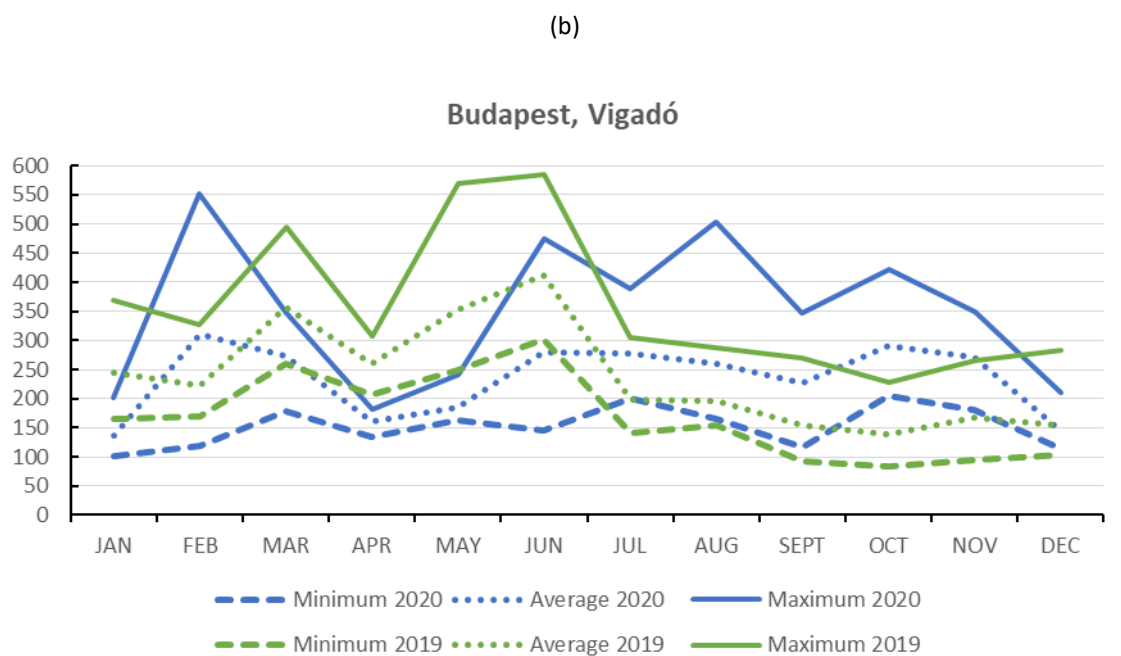
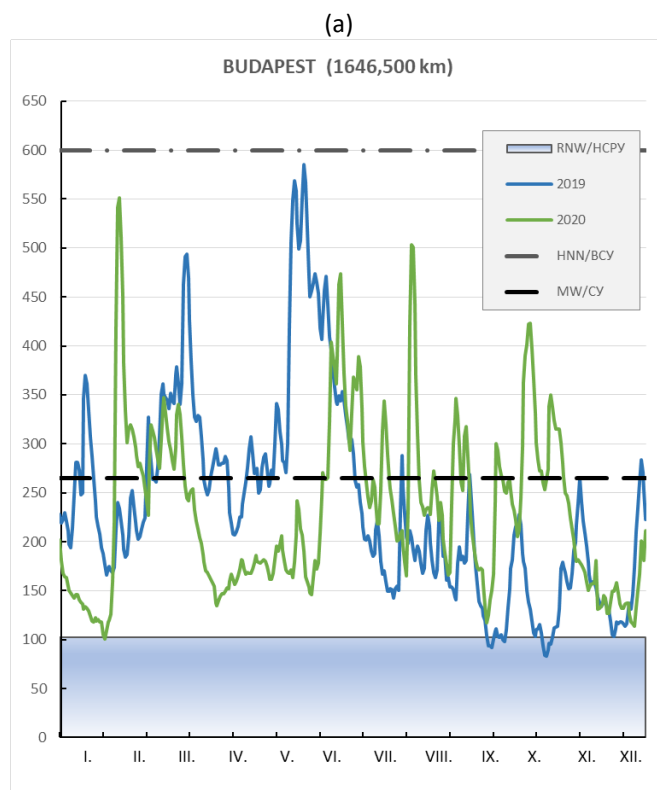


Abb. 2: Durchschnittliche tägliche (a) und absolute (b) Werte der Wasserstände am Pegel Budapest Vigadó in cm
 Fig. 2. Moyenne des valeurs journalières (a) et absolues (b) des niveaux d'eau pour la station hydrométrique de Budapest Vigadó, en cm

Рис. 2. Среднесуточные (a) и абсолютные (b) значения уровней воды для водомерного поста Будапешт Вигадо, в см
 Fig. 2. Daily mean (a) and absolute (b) water levels at the gauging station Budapest Vigadó, in cm

Fig. 2.

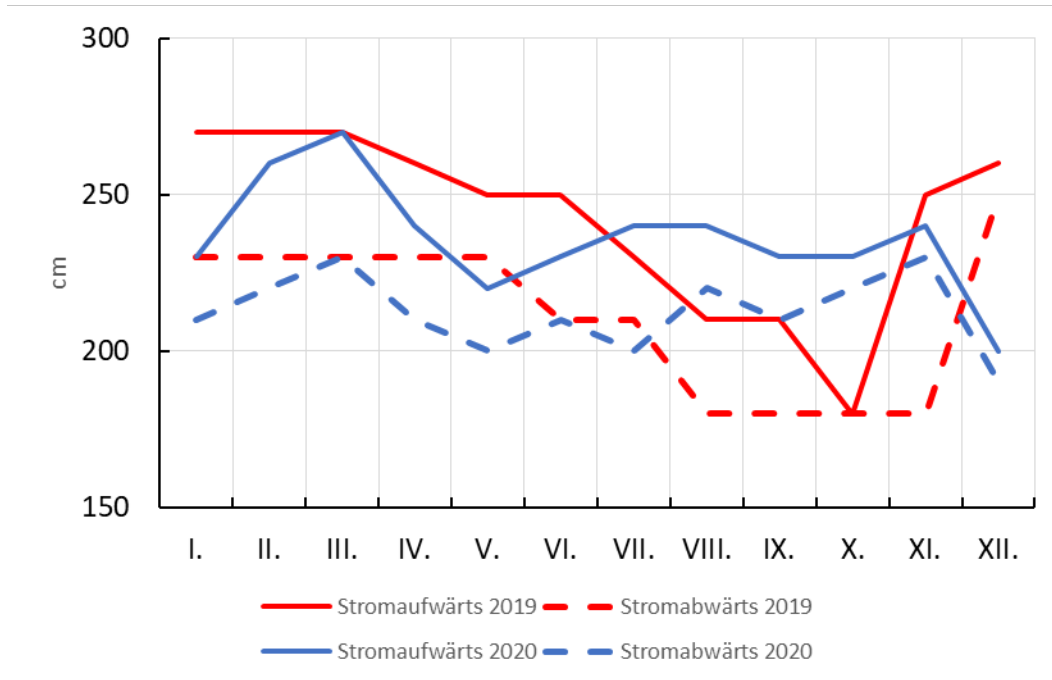


Abb. 3: Änderungen der maximalen Abladetiefe von Güterschiffen auf der Donau im Jahr 2020
 Fig. 3. Modification des tirants d'eau opérationnels maximum des bateaux à marchandises sur le Danube en 2020
 Рис. 3. Изменение максимальных эксплуатационных осадок грузовых судов на Дунае в 2020
 Fig. 3. Changes in maximal operating draughts of cargo vessels on the Danube in 2020

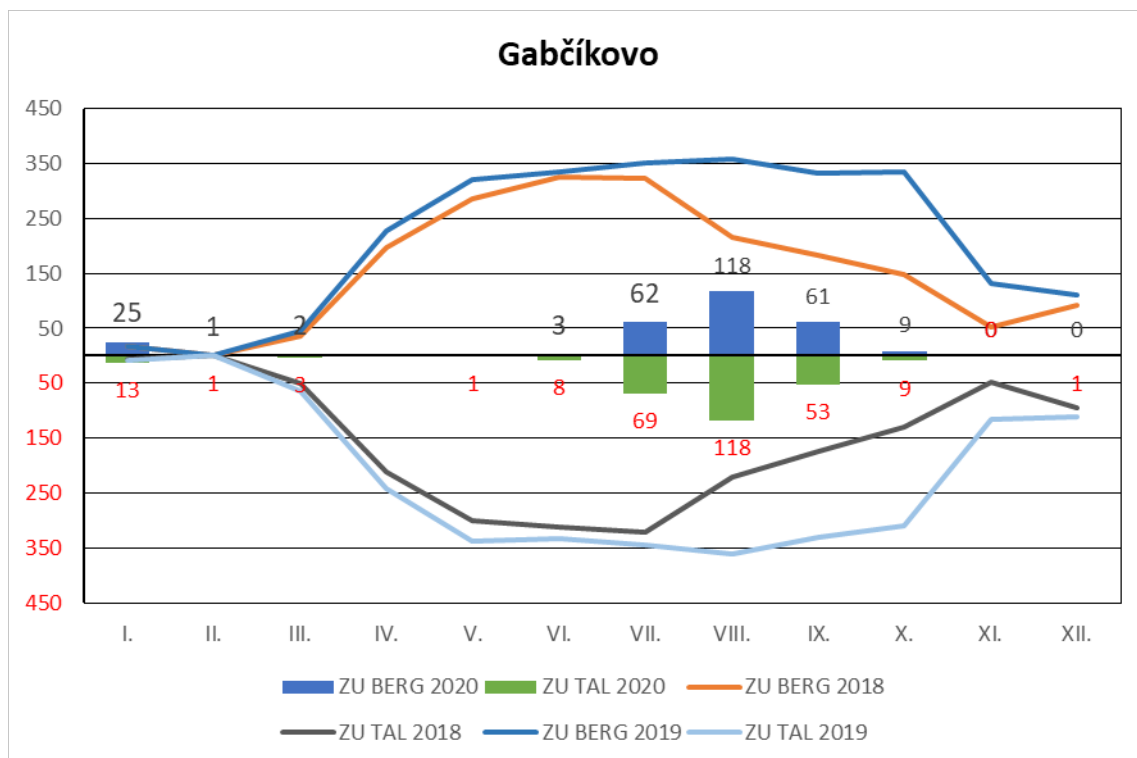


Abb. 4: Schleusungen von Fahrgastkabinenschiffen in GABČIKOVO im Berg- und Talverkehr auf der Donau 2018-2020 pro Monat
 Fig. 4. Passages de bateaux à passagers avec cabines par l'écluse de GABČIKOVO vers l'amont/vers l'aval sur le Danube en 2018-2020, par mois
 Рис. 4. Проходы пассажирских судов с каютами вверх/ вниз по Дунаю через шлюз ГАБЧИКОВО в 2018-2020 гг., по месяцам
 Fig. 4. Passages of passenger cabin ships upstream and downstream on the Danube through the GABČIKOVO lock in 2018 – 2020, by months

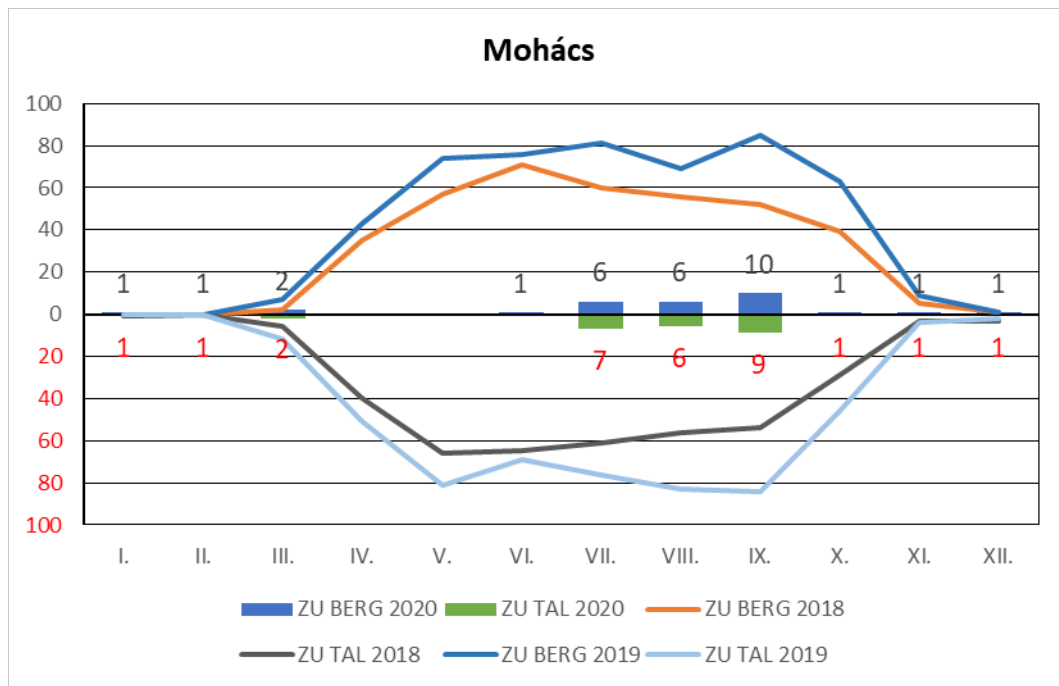


Abb. 5: Durchfahrten von Fahrgastkabinenschiffen in MOHÁCS im Berg- und Talverkehr auf der Donau 2018-2020 pro Monat

Fig. 5. Passages de bateaux à passagers avec cabines par MOHÁCS vers l'amont/vers l'aval sur le Danube en 2018-2020, par mois

Рис. 5. Проходы пассажирских судов с каютами вверх/ вниз по Дунаю через МОХАЧ в 2018-2020 г., по месяцам
Fig. 5. Passages of passenger cabin ships upstream and downstream on the Danube through MOHACS in 2018 – 2020, by months

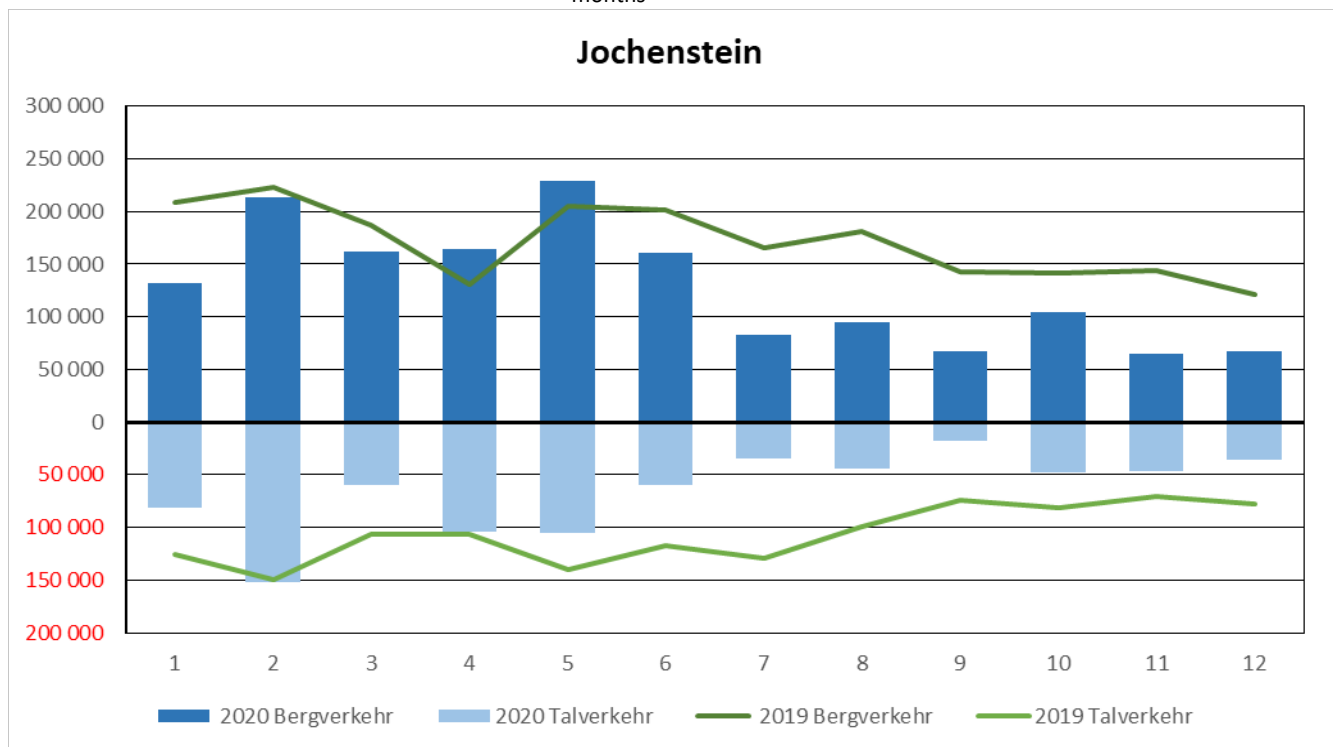


Abb. 6: Transportaufkommen an der Schleuse JOCHENSTEIN im Berg- und Talverkehr auf der Donau im Jahr 2019 pro Monat in Tonnen

Fig. 6. Volumes des transports de marchandises vers l'amont/vers l'aval sur le Danube par l'écluse de JOCHENSTEIN en 2019, par mois, en tonnes

Рис. 6. Объёмы перевозок грузов вверх/ вниз по Дунаю через шлюз ЙОХЕНШТЕЙН в 2019, по месяцам, в тоннах
Fig. 6. Volumes of cargo transport upstream and downstream on the Danube through the JOCHENSTEIN lock in 2019, by months, in tons

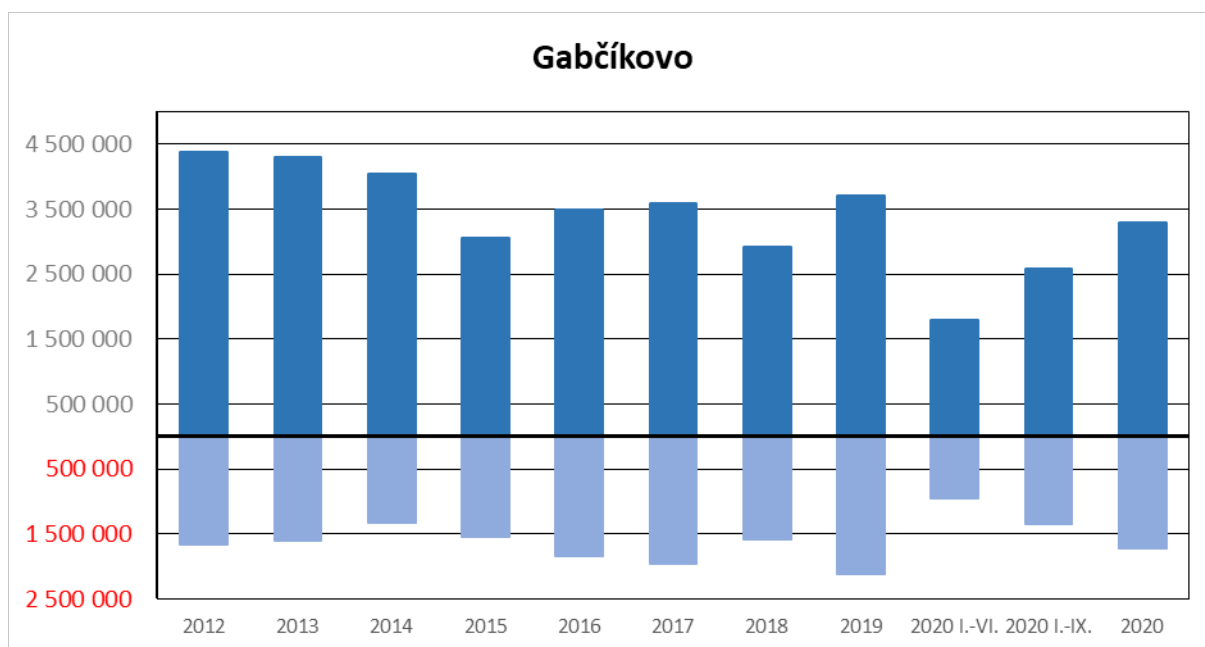


Abb. 7: Transportaufkommen an der Schleuse GABČIKOVO im Berg- und Talverkehr auf der Donau pro Jahr in Tonnen

Fig. 7. Volumes des transports de marchandises vers l'amont/vers l'aval sur le Danube par l'écluse de GABČIKOVO par années, en tonnes

Рис. 7. Объёмы перевозок грузов вверх/вниз по Дунаю через шлюз ГАБЧИКОВО по годам, в тоннах

Fig. 7. Volumes of cargo transport upstream and downstream on the Danube through the GABČIKOVO lock by years, in tons

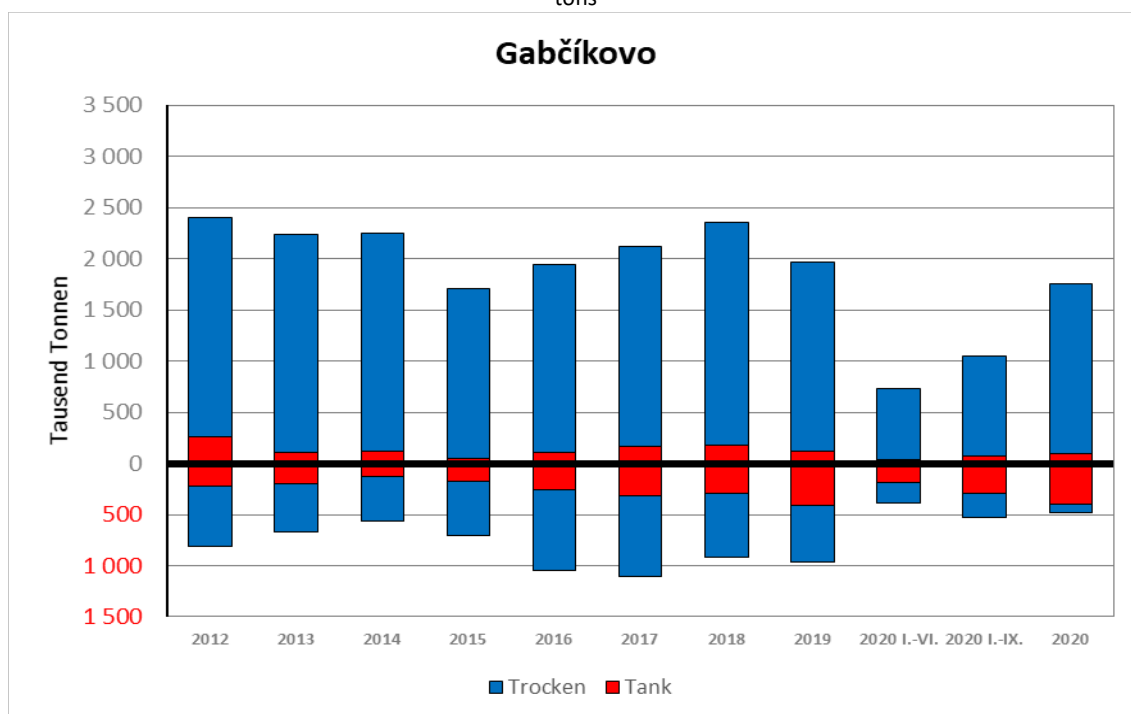


Abb. 8: Transportaufkommen mit Schubverbänden an der Schleuse GABČIKOVO im Berg- und Talverkehr auf der Donau pro Jahr in Tausend Tonnen

Fig. 8. Volumes des transports de marchandises vers l'amont/vers l'aval sur le Danube à bord de convois poussés par l'écluse de GABČIKOVO par années, en milliers de tonnes

Рис. 8. Объёмы перевозок грузов толкаемыми составами вверх/вниз по Дунаю через шлюз ГАБЧИКОВО по годам, в тысячах тонн

Fig. 8. Volumes of cargo transport by pushed convoys upstream and downstream on the Danube through the GABČIKOVO lock by years, in tons

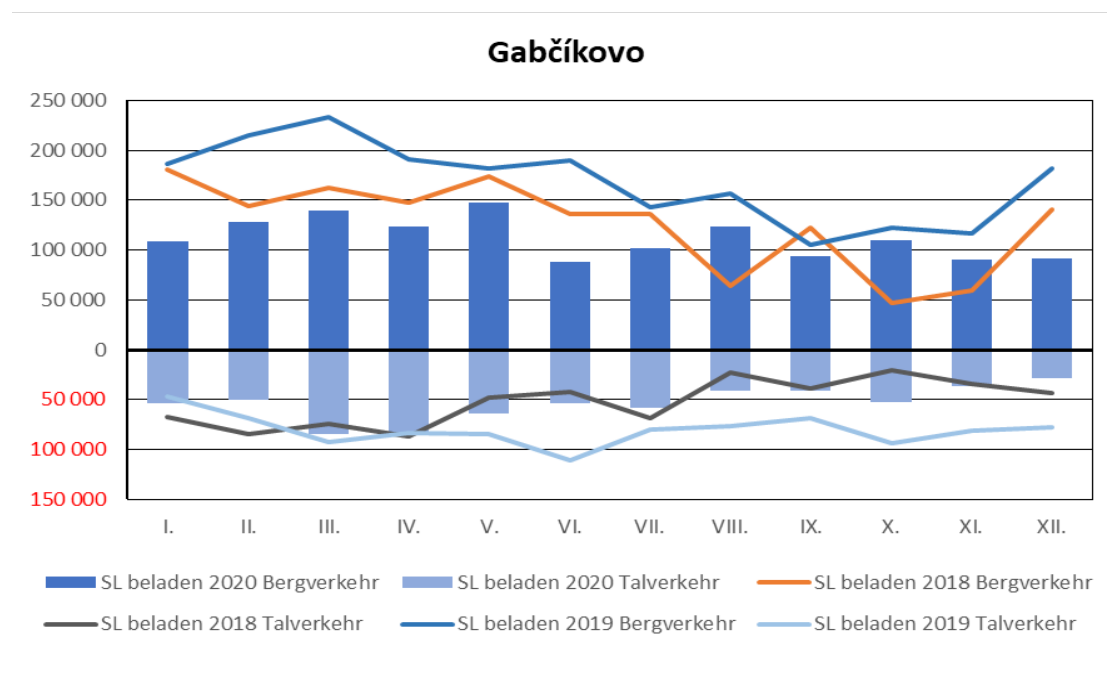


Abb. 9: Transportaufkommen mit Güterleichtern an der Schleuse GABČIKOVO im Berg- und Talverkehr auf der Donau 2018-2020 pro Monat in Tonnen

Fig. 9. Volumes des transports de marchandises vers l'amont/vers l'aval sur le Danube à bord de barges pour marchandises sèches non motorisées par l'écluse de GABČIKOVO en 2018-2020, par mois, en tonnes

Рис. 9. Объёмы перевозок грузов несамоходными сухогрузными баржами вверх/вниз по Дунаю через шлюз ГАБЧИКОВО в 2018-2020 гг., по месяцам, в тоннах

Fig. 9. Volumes of cargo transport upstream and downstream on the Danube through the JOCHENSTEIN lock in 2019, by months, in tons

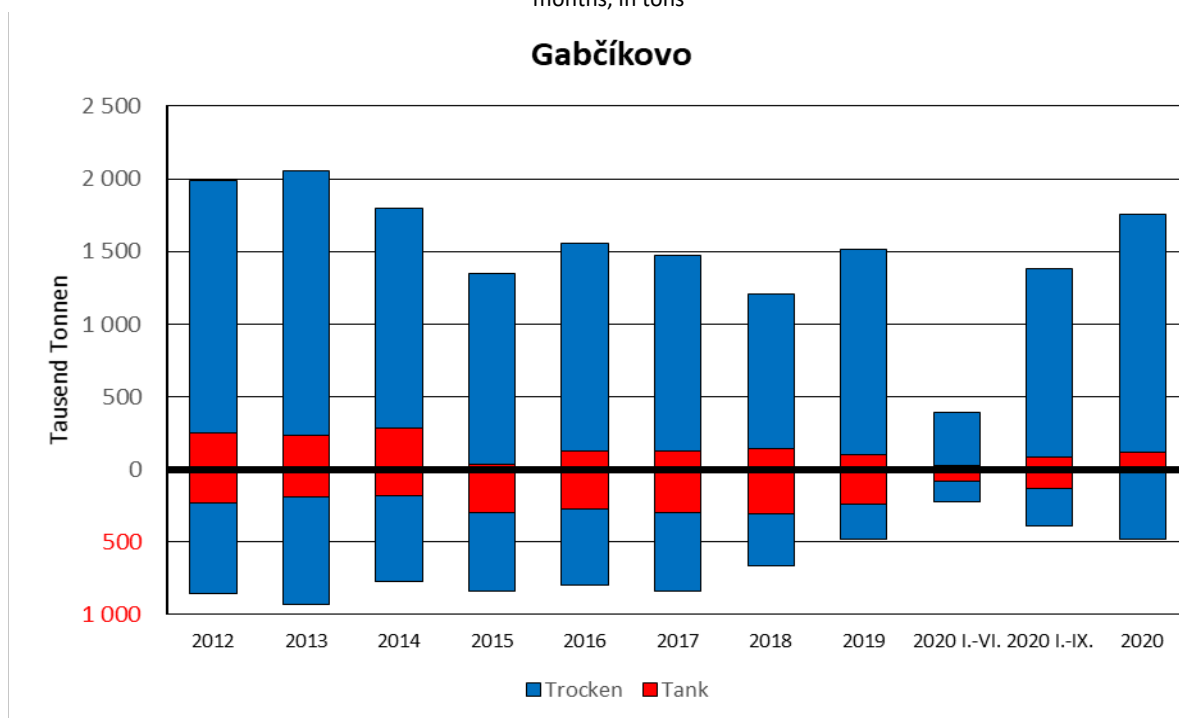


Abb. 10: Transportaufkommen mit Motorschiffen an der Schleuse GABČIKOVO im Berg- und Talverkehr auf der Donau pro Jahr in Tausend Tonnen

Fig. 10. Volumes des transports de marchandises vers l'amont/vers l'aval sur le Danube à bord de bateaux motorisés par l'écluse de GABČIKOVO par années, en milliers de tonnes

Рис. 10. Объёмы перевозок грузов самоходными судами вверх/вниз по Дунаю через шлюз ГАБЧИКОВО, по годам, в тысячах тонн

Fig. 10. Volumes of cargo transport by motorized vessels upstream and downstream on the Danube through the GABČIKOVO lock, by years, in thousand tons

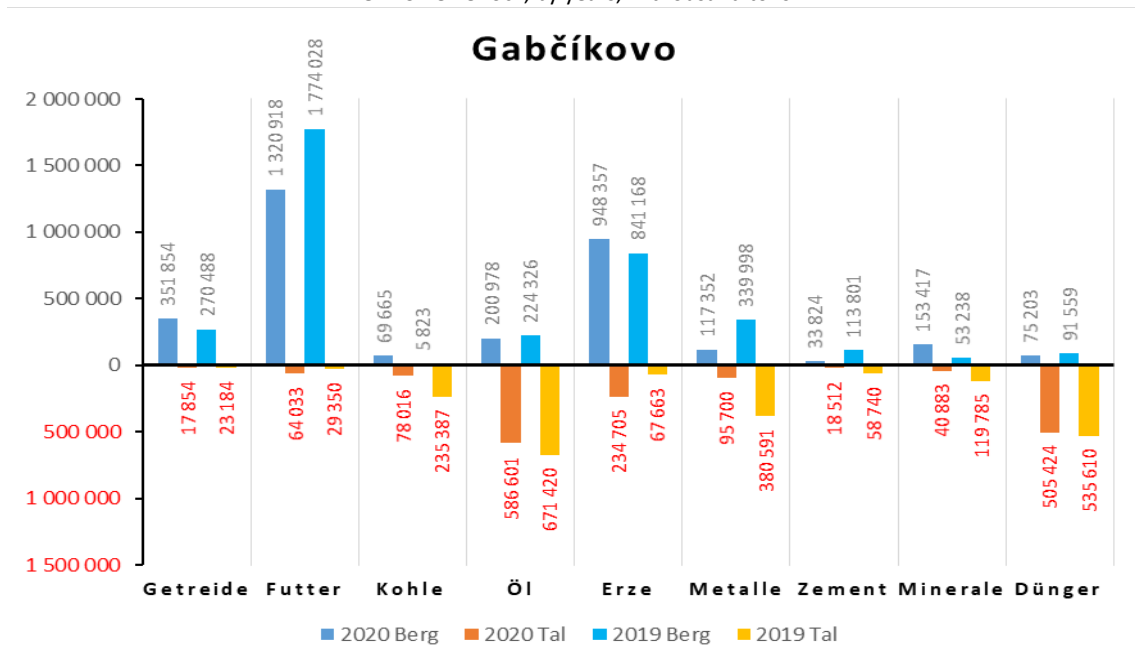


Abb. 11: Transportaufkommen nach Güterarten an der Schleuse GABČIKOVO im Berg- und Talverkehr auf der Donau 2019-2020 in Tonnen

Fig. 11. Structure des marchandises du trafic-marchandises vers l'amont/vers l'aval sur le Danube par l'écluse de GABČIKOVO en 2019-2020, en tonnes

Рис. 11. Товарная структура перевозок грузов вверх/вниз по Дунаю через шлюз ГАБЧИКОВО в 2019 -2020 гг., в тоннах

Fig. 11. Cargo transport by groups of goods upstream and downstream on the Danube through the GABČIKOVO lock in 2019 - 2020, by groups of goods, in tons

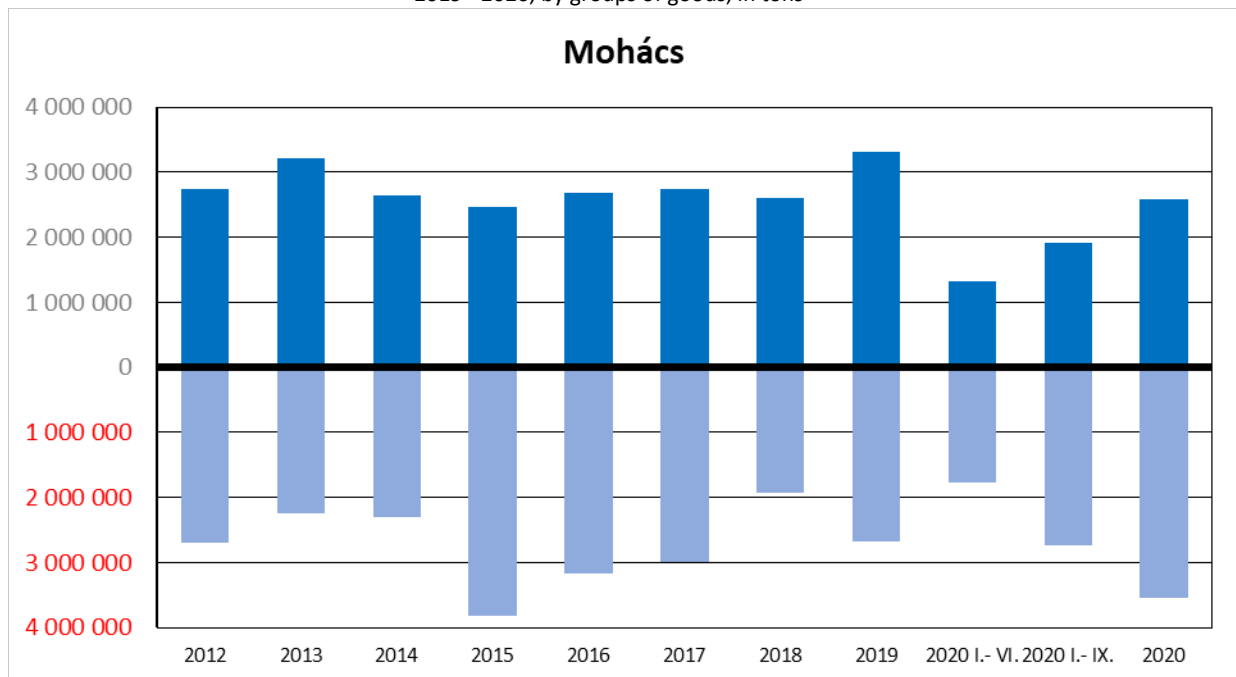


Abb. 12: Transportaufkommen in MOHÁCS im Berg- und Talverkehr auf der Donau pro Jahr in Tonnen

Fig. 12. Volume des transports de marchandises vers l'amont/vers l'aval sur le Danube par MOHÁCS par années, en tonnes

Рис. 12. Объемы перевозок грузов вверх/вниз по Дунаю через МОХАЧ, по годам, в тоннах

Fig. 12. Volumes of cargo transport upstream and downstream on the Danube through MOHACS, by years, in tons

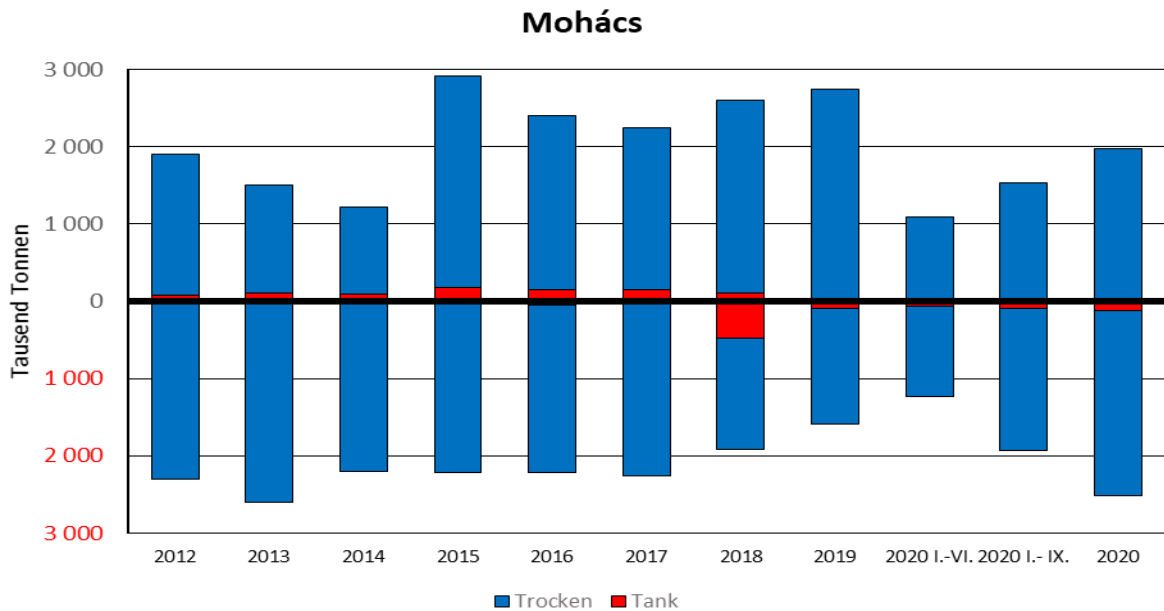


Abb. 13: Transportaufkommen mit Schubverbänden in MOHÁCS im Berg- und Talverkehr auf der Donau pro Jahr in Tausend Tonnen

Fig. 13. Volumes des transports de marchandises vers l'amont/vers l'aval sur le Danube à bord de convois poussés par MOHÁCS par années, en milliers de tonnes

Рис. 13. Объёмы перевозок грузов толкаемыми составами вверх/вниз по Дунаю через МОХАЧ, по годам, в тысячах тонн

Fig. 13. Volumes of cargo transport by pushed convoys upstream and downstream on the Danube through MOHACS, by years, in tons

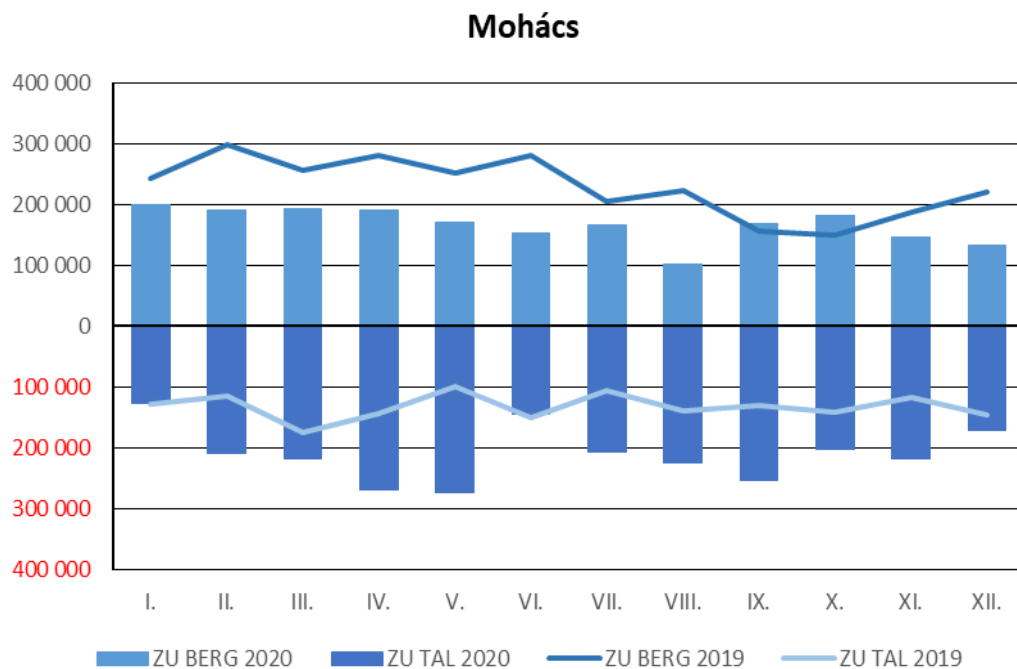


Abb. 14: Transportaufkommen von Trockengütern mit Schubverbänden in MOHÁCS im Berg- und Talverkehr auf der Donau pro Monat in Tausend Tonnen

Fig. 14. Volumes des transports de marchandises sèches vers l'amont/vers l'aval sur le Danube à bord de convois poussés par MOHÁCS par mois, en milliers de tonnes

Рис. 14. Объёмы перевозок сухих грузов толкаемыми составами вверх/вниз по Дунаю через МОХАЧ, по месяцам, в тысячах тонн

Fig. 14. Volumes of dry cargo transport by pushed convoys upstream and downstream on the Danube through MOHACS, by months, in thousands tons

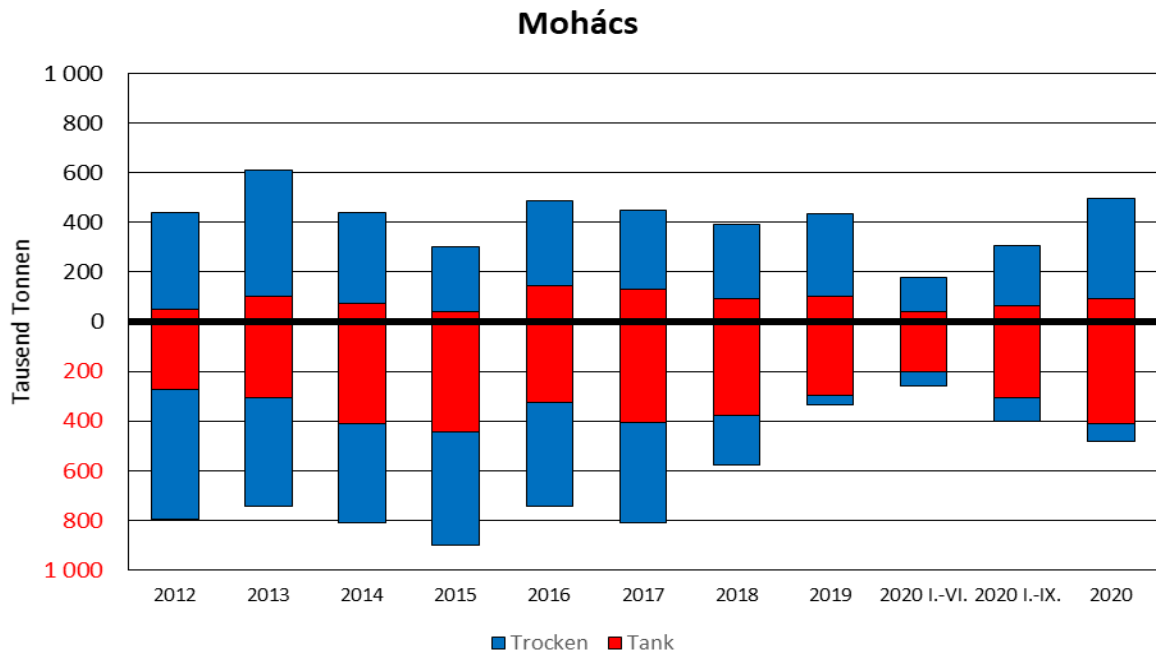


Abb. 15: Transportaufkommen mit Motorschiffen in MOHÁCS im Berg- und Talverkehr auf der Donau pro Jahr in Tausend Tonnen

Fig. 15. Volumes des transports de marchandises vers l'amont/vers l'aval sur le Danube à bord de bateaux motorisés par MOHÁCS par années, en milliers de tonnes

Рис. 15. Объёмы перевозок грузов самоходными судами вверх/вниз по Дунаю через МОХАЧ, по годам, в тысячах тонн

Fig. 15. Volumes of cargo transport by motorized vessels upstream and downstream on the Danube through MOHACS, by years, in thousands tons

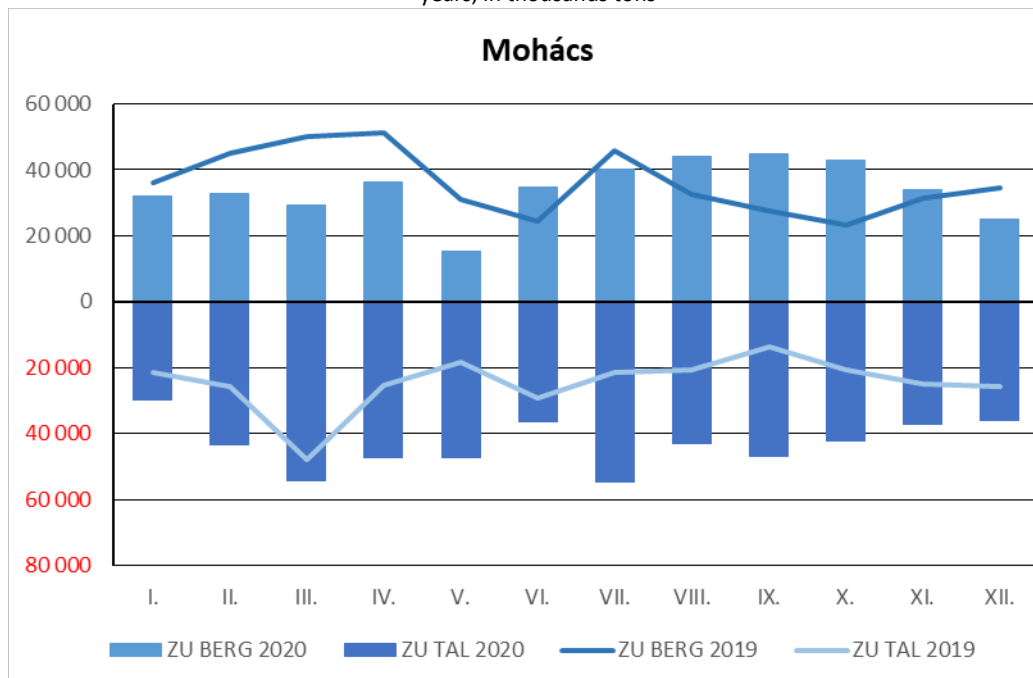


Abb. 16: Transportaufkommen mit Güterleichtern in MOHÁCS im Berg- und Talverkehr auf der Donau 2019-2020 pro Monat in Tonnen

Fig. 16. Volumes des transports de marchandises vers l'amont/vers l'aval sur le Danube à bord de barges pour marchandises sèches non motorisées par MOHÁCS en 2019-2020, par mois, en tonnes

Рис. 16. Объёмы перевозок сухих грузов несамоходными сухогрузными баржами вверх/вниз по Дунаю через МОХАЧ в 2019-2020 гг., в тоннах, по месяцам

Fig. 16. Volumes of dry cargo transported by dumb barges upstream and downstream on the Danube through MOHACS in 2019 – 2020, in tons, by months

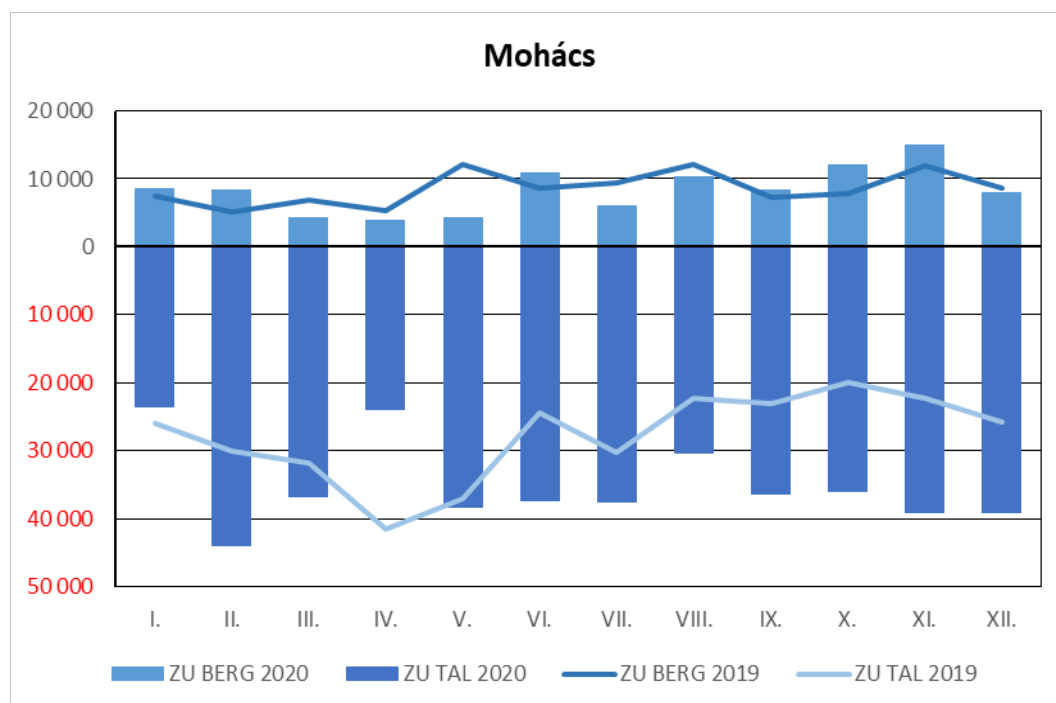


Abb. 17: Transportaufkommen mit Tankmotorschiffen in MOHÁCS im Berg- und Talverkehr auf der Donau 2019-2020 pro Monat in Tonnen

Fig. 17. Volumes des transports de marchandises vers l'amont/vers l'aval sur le Danube à bord de bateaux-citernes motorisés par MOHÁCS en 2019-2020, par mois, en tonnes

Рис. 17. Объёмы перевозок грузов самоходными танкерами вверх/ вниз по Дунаю через МОХАЧ в 2019 - 2020 гг. по месяцам, в тоннах

Fig. 17. Volumes of cargo transport by self-propelled tankers upstream and downstream on the Danube through MOHACS in 2019 – 2020, by months, in tons

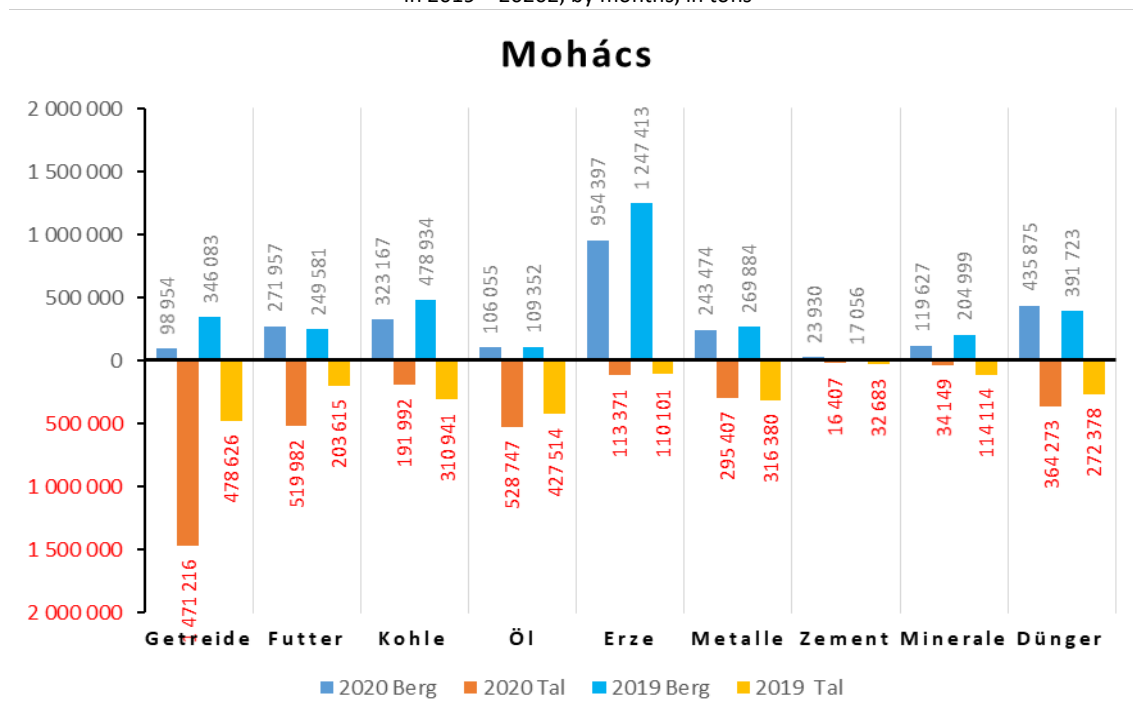


Abb. 18: Transportaufkommen nach Güterarten in MOHÁCS im Berg- und Talverkehr auf der Donau 2019-2020 in Tonnen

Fig. 18 Structure des marchandises du trafic-marchandises vers l'amont/vers l'aval sur le Danube par MOHÁCS en 2019-2020, en tonnes

Рис. 18. Товарная структура перевозок грузов вверх/ вниз по Дунаю через МОХАЧ в 2019-2020 гг., в тоннах

Fig. 18. Cargo transport by groups of goods upstream and downstream through MOHACS in 2019 – 2020 by groups of goods, in tons

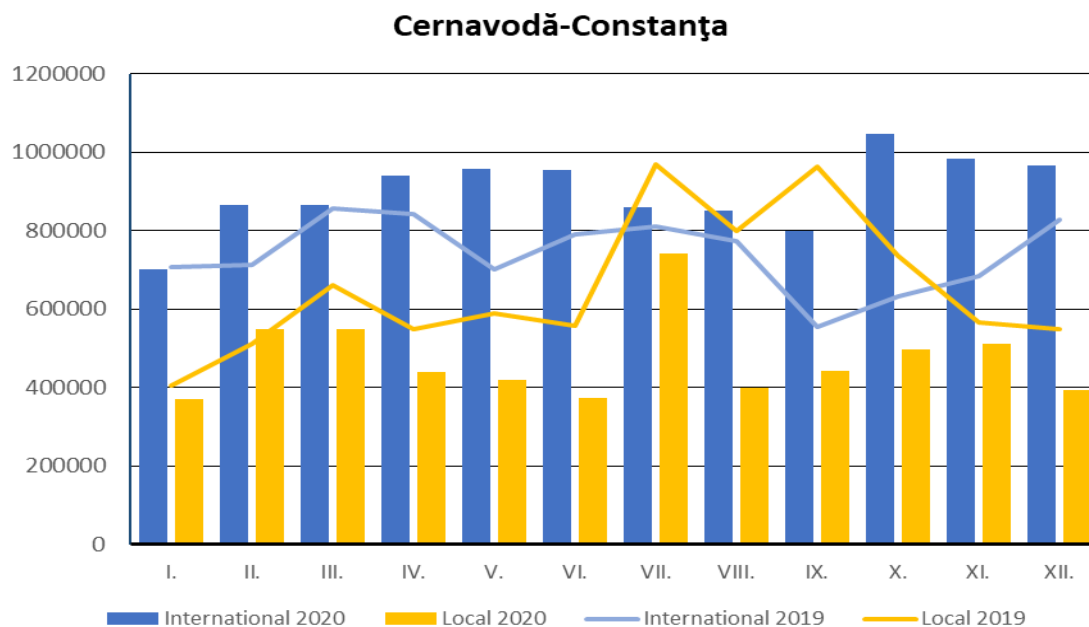


Abb. 19: Transportaufkommen im internationalen Verkehr und im Inlandverkehr im Kanal CERNAVODA-CONSTANTA 2019-2020 pro Monat in Tonnen

Fig. 19. Volume des transports internationaux et nationaux de marchandises par le canal CERNAVODA-CONSTANTA en 2019-2020, par mois, en tonnes

Рис. 19. Объёмы международных и национальных перевозок грузов по каналу ЧЕРНАВОДА-CONSTANTA в 2019-2020 гг., по месяцам, в тоннах

Fig. 19. Volumes of international and national transportation of cargo on the CERNAVODA – CONSTANTIA Canal in 2019 – 2020, by months, in tons