

**DIFFICULTIES ENCOUNTERED IN 2022  
IN THE TRANSPORT OF GOODS ON THE DANUBE**

# The Danube River in 2022

## Danube water level at Zimnicea in 2022



- **Deficient hydrological regime  $\Rightarrow$  reduced passage depths  $\Rightarrow$  great difficulties for navigation**
- **In the Zimnicea area (the most difficult sector on the Lower Danube) there were 116 days with lower elevations than LNWL.**
- **In the period July-August 2022 at km 565 navigation was completely closed for 41 days, an unprecedented fact (on some days some ships could pass, but with a draft of less than 140 cm, which are not of interest for the transport of goods)**

## **The consequences of insufficient passage depths for navigation on the Danube**

- ❖ **Reduction of loading drafts from 230-250 cm to approx. 200 cm or even smaller:  
⇒ reduction of cargo quantities loaded on each transport vessel by approx. a quarter, from 1200-1300 tons to 900-1000 tons.**
- ❖ **Splitting convoys of 9 units into formations of 1-2 units:  
⇒ the repeated transit of the sector by the propulsion ship, covering hundreds of additional km;  
⇒ additional consumption of resources (5-11 tons of diesel for a convoy of 9 units only for the Zimnicea sector);  
⇒ long delays in the delivery of goods (5-7 days or more).**
- ❖ **Damage to ships as a result of grounding in shallow water areas.**
- ❖ **Loss of carriage contracts.**
- ❖ **Decrease in customer confidence in shipping.**

## The economic impact of navigation in small water areas

Only for crossing the thresholds in the Zimnicea sector (km 572-515), in the case of a convoy of 9 units, a single barge passed each:

- an additional **912 km** are covered (8 additional roads of 57 km, round trip);
- consume additional approx. **11 tons of fuel**;
- the convoy is delayed **5-7 days**.

For transiting the bypass route on the Bala and Borcea branches (km 300-km 240-km 68 Borcea-km 345), in the case of a convoy of 8 units:

- on the Borcea arm, it is necessary to split the convoy into two groups of 4 barges;
- on the Bala arm, as a rule, only 3 units pass, so 3 transits would be necessary (2 if there are empty barges);
- an additional **274 km** are covered (or even **302 km**, if Bala is transited with groups of 3 barges);
- consume additional approx. **4,5-4,8 tons of fuel**;
- the convoy is delayed **2 days**.

In addition, due to shallow depths, barges are loaded well below capacity:

- loading at drafts of 230-240 cm  $\Rightarrow$  1 convoy of 9 barges x 1,200 tons = 10,800 tons
- loading at drafts of 170-175 cm  $\Rightarrow$  1 convoy of 9 barges x 900 tons = 8,100 tons  
 $\Rightarrow$  **25% of unused charging capacity !**

## Consequences for transport companies

Shipping companies were faced with major difficulties, implicitly with great financial losses, because they could not honor their assumed contracts. In addition, goods were stuck in barges for long periods of time in heatwave conditions, which led to the depreciation of large quantities of goods, mainly grain.

### The evolution of some physical indicators in the case of C.N.F.R. NAVROM S.A. Galați (compared to 2021)

	July	August	September	October	November	December
Goods transported (tons)	-46,20%	-48,62%	-20,50%	-2,33%	-30,34%	-30,84%
Freight path (tons x km)	-49,06%	-66,60%	-37,17%	+6,42%	-34,44%	-28,78%
Kilats of marching	-33,59%	-60,18%	-26,18%	-3,11%	-20,18%	-22,23%
Average amount of cargo loaded on a barge (tons)	-23,78%	-33,27%	-16,08%	+5,77%	-11,35%	-14,99%
Specific fuel consumption (kg/kilat) (more is worse)	+5,56%	+13,08%	+6,82%	-0,87%	+5,78%	+6,22%

Naturally, the evolution of the above elements was also reflected in the economic and financial indicators of the company.

## Climate perspectives

An important problem is the negative influence of climate change. From an analysis carried out by us on the flows of the Danube from the period 2000-2022 at the entrance to Romania (Baziaș) (for which we had information), a sharp decrease was found, especially in recent years.

Compared to the multiannual average flows used as a reference by the National Institute of Hydrology and Water Management from Bucharest (calculated probably for an interval of 40-50 years or longer) the decrease was **6,17%** if we refer to the period of the last 15 years and **14,66%** if we refer to the last 5 years (2018-2022 period).

For the most difficult months for navigation, the trends are even more unfavorable. Thus, for the months of September-October, the decrease is **7,49%** for the average of the last 15 years and **18,10%** for the average of the last 5 years. For the intervals of August-October or August-November the decreases are even worse (table below – flows are in m<sup>3</sup>/s)

<i>Period</i>	<i>Average multi-year flow</i>	<i>Average of the interval 2000-2022 (23 years)</i>	<i>Evolution compared to the multi-annual average flow</i>	<i>Difference</i>	<i>Average of the interval 2008-2022 (15 years)</i>	<i>Evolution compared to the multi-annual average flow</i>	<i>Difference</i>	<i>Average of the interval 2018-2022 (5 years)</i>	<i>Evolution compared to the multi-annual average flow</i>	<i>Difference</i>
All year round	5.470,8	5.243,6	95,85%	<b>-4,15%</b>	5.133,4	93,83%	<b>-6,17%</b>	4.668,7	85,34%	<b>-14,66%</b>
The months of Sept.+Oct.	3.825,0	3.728,6	97,48%	<b>-2,52%</b>	3.538,6	92,51%	<b>-7,49%</b>	3.132,8	81,90%	<b>-18,10%</b>
Interval Aug.+Sept.+Oct.	3.983,3	3.770,0	94,64%	<b>-5,36%</b>	3.619,3	90,86%	<b>-9,14%</b>	3.157,3	79,26%	<b>-20,74%</b>
Interval Aug.+Sept.+Oct.+Nov.	4.150,0	3.911,1	94,24%	<b>-5,76%</b>	3.764,9	90,72%	<b>-9,28%</b>	3.261,1	78,58%	<b>-21,42%</b>

As a result, we expect a worsening of the navigation conditions (decrease in flows, implicitly in elevations and passage depths), which makes a more intensive dredging and regularization activity by river administrations imperative to ensure a proper navigable channel.

## What should be done?

It is absolutely necessary to mobilize all river administrations to regularize the most difficult crossing points (they are relatively few, about 4-5 per national sector).

Several national or European projects are underway in this regard. It is necessary to move from the level of studies to that of practical achievements.

The proof that it is possible is provided by the River Administration of the Lower Danube in Galati, which, among others, in the last 4-5 years managed to increase the crossing depths on the sector between km 300-345 by approx. 100 cm. As a result, the average number of days when convoys are forced to use the bypass route (Cernavodă-Giurgeni-Borcea and Bala branches-km 345) has reduced from 118 days per year to only 46,1 days per year, so almost three times less.

***Thank you for your attention !***