

2022 low water period and the “Act now!” reflection paper

CCNR low water experts’ workshop

18 January 2023

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Summer 2022:
description and effects
3. Data analysis for the
Upper Rhine
4. The need to “Act Now!”

1 Low waters

General messages



Rhine's natural low water regime

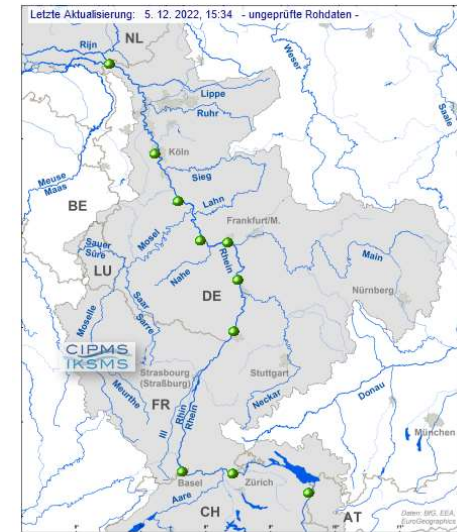
- Rhine, as all free flowing rivers has a natural low water regime!
- **Effects today**, short term measures needed.
- Did inland navigation take the natural regime into account?

Effects from climate change on Rhine discharge

- Climate change will affect the discharge regime of rivers!
- **Effects increase in future**, medium to long term measures needed.
- Is inland navigation aware of the coming changes and prepared ?

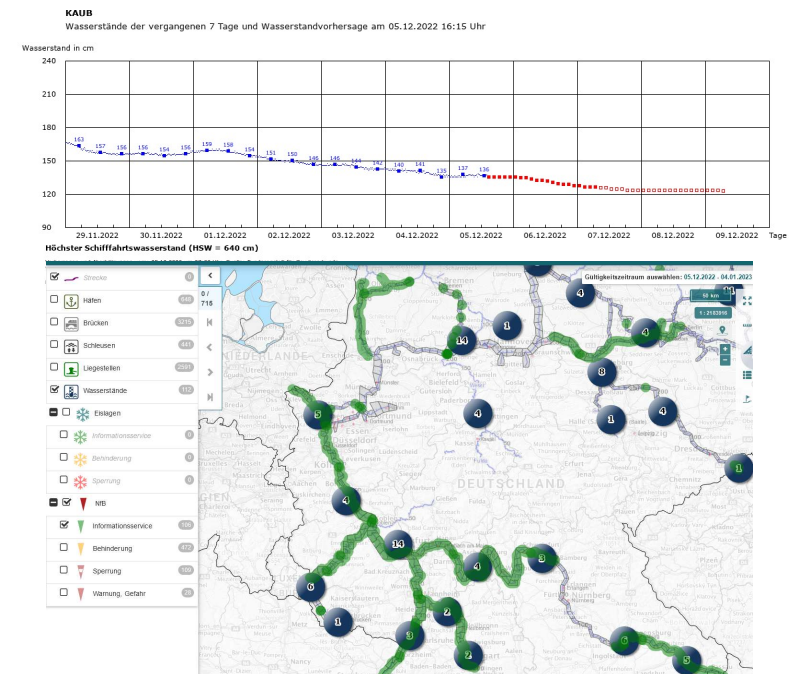
Low flow monitoring by ICPR

- Reference: **NM7Q**
- Definition: smallest mean flow values of 7 consecutive days (m^3/s)
- https://undine.bafg.de/rhein/zustand-aktuell/rhein_nw_mon_en.html



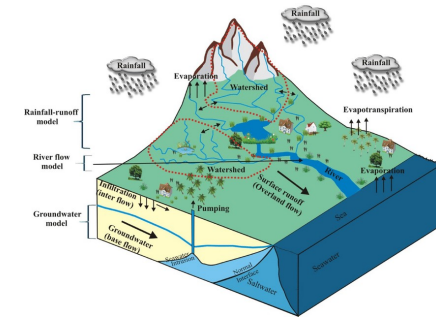
Water level monitoring by Member States an CCNR

- Reference: **GIW**
- Definition: water level (m) reached or fallen below long-term average of 20 ice-free days / year
- <https://www.elwis.de/DE/dynamisch/gewaesserkunde/wasserstaende/index.php?target=2&fs=RHEINGEBIET>



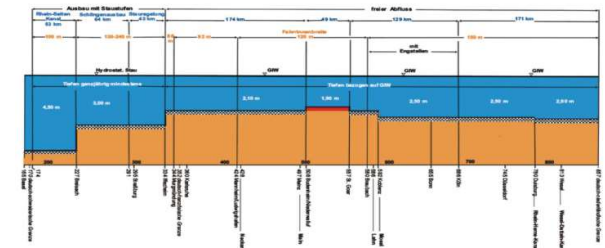
Drivers

- Precipitation (availability of water)
- Hydrology (discharge, run off)
- Morphology (riverbed, river training works)



Effects on fairway parameters and free flowing rivers

- Navigable channel depth -> reduced!
- Navigable channel width -> reduced!



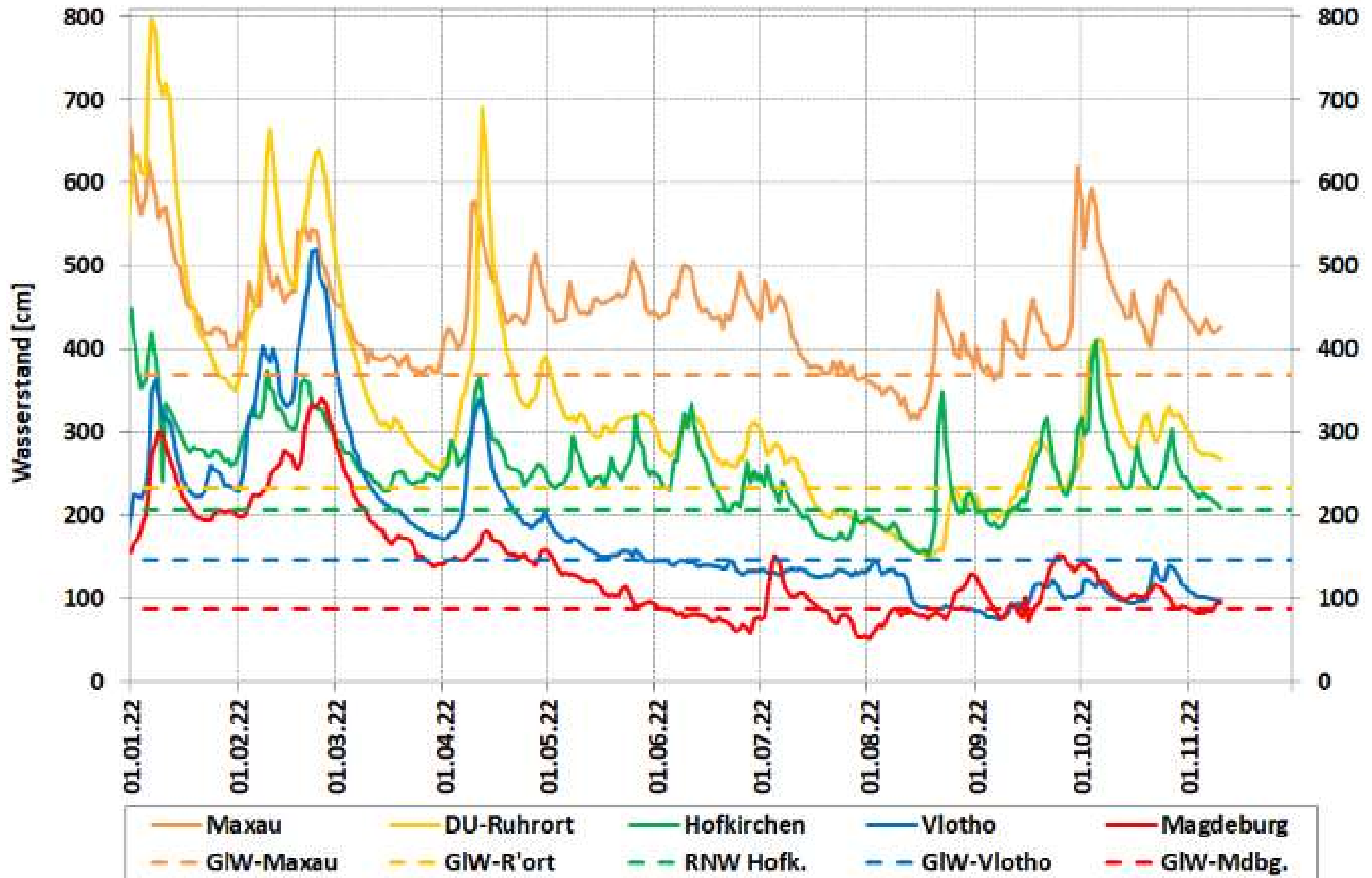
Effects on inland waterway transport

- Limits cargo-carrying capacity
- Negative impact on cargo volumes transported
- Increased freight rates
- Increased risks of accidents
- Economic losses
- Effect on industrial production
- Disturbance logistics chain
- Reliability put into question
- Reverse modal shift

2022

Low water period Summer 2022: Description and effects

Low water 2022 on the Rhine, Danube, Weser and Elbe



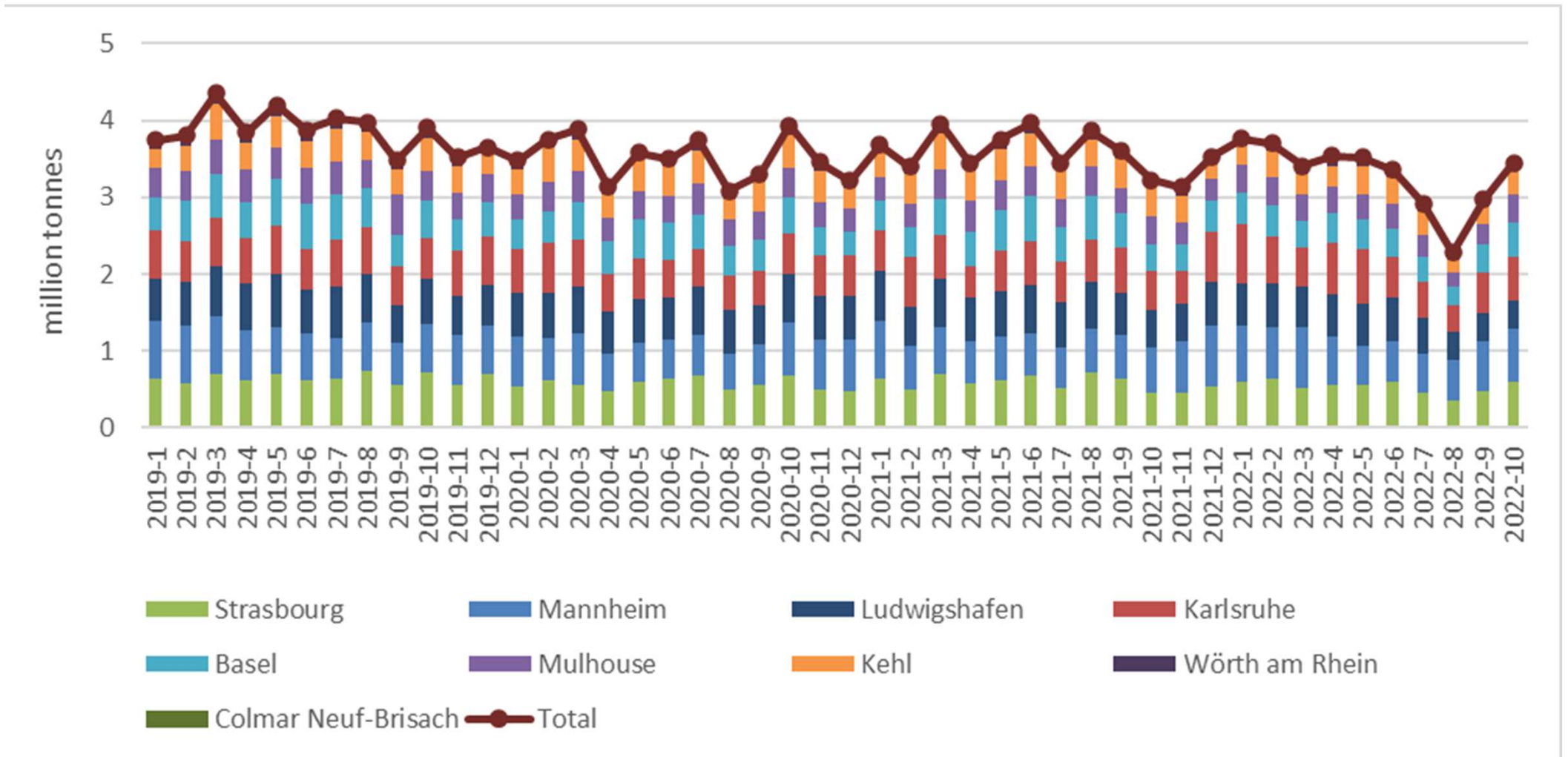
Source: Federal Institute of Hydrology (BfG)



- Inland navigation transport is influenced by low waters, next to other factors such as macroeconomic developments (oil prices, trade volumes, industrial production...)
- Economic impacts of one low water period cannot be transposed to another year. **2018 was not like 2022!**
- **Specific macroeconomic conditions in 2022:**
 - **Energy crisis:** surge in energy prices, surge in coal transport demand due to less gas available in the energy sector and soaring oil prices.
 - **Vessel capacity bottlenecks** in Western Europe
 - Transfer of vessel from the Rhine to the Danube to help exporting grain from Ukraine.
 - Exceptionally high demand for coal: additional strain on vessel capacity.
 - **Congestion and tensions due to the Covid-19** are additional factors causing disruptions (i.e. closure Shanghai and Shenzhen maritime ports).
- Early start of the 2022 low water phenomenon compared to other low water phenomena observed in the past.
- The **combination of all effects led to a complex and quite critical situation in 2022.**



Monthly waterside goods handling in main upper rhine ports (in million tonnes) January 2019 – October 2022

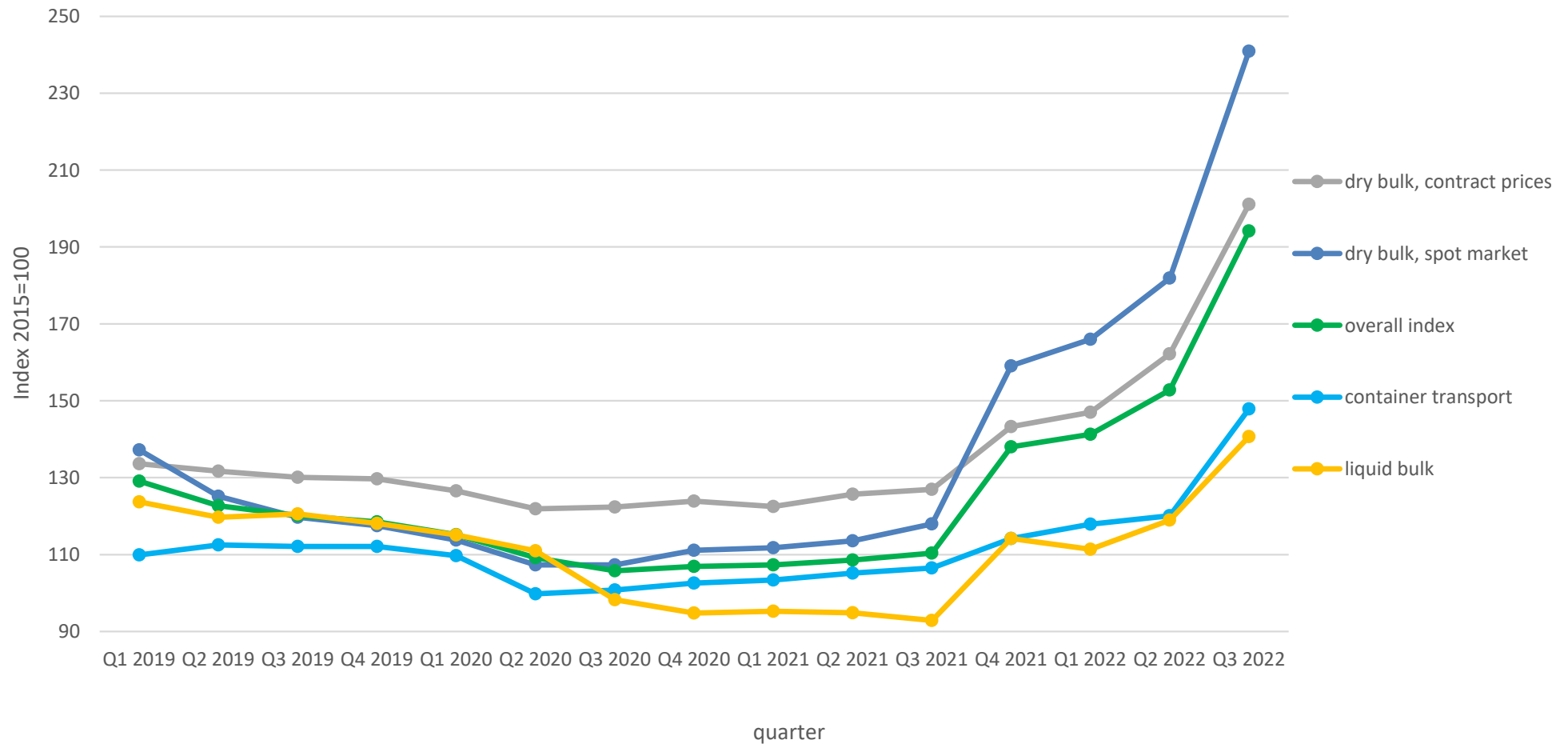


August 2022: -41 % waterside cargo transport compared to August 2021

Low waters and (to a lesser extent) the war in Ukraine are the two decisive factors responsible for this strong reduction

Source: CCNR analysis based on ports mentioned in the graph

Impact of low waters: transport prices on the Rhine for all cargo segments



→ Freight rate increase for all cargo segments in Q2 and Q3 2022

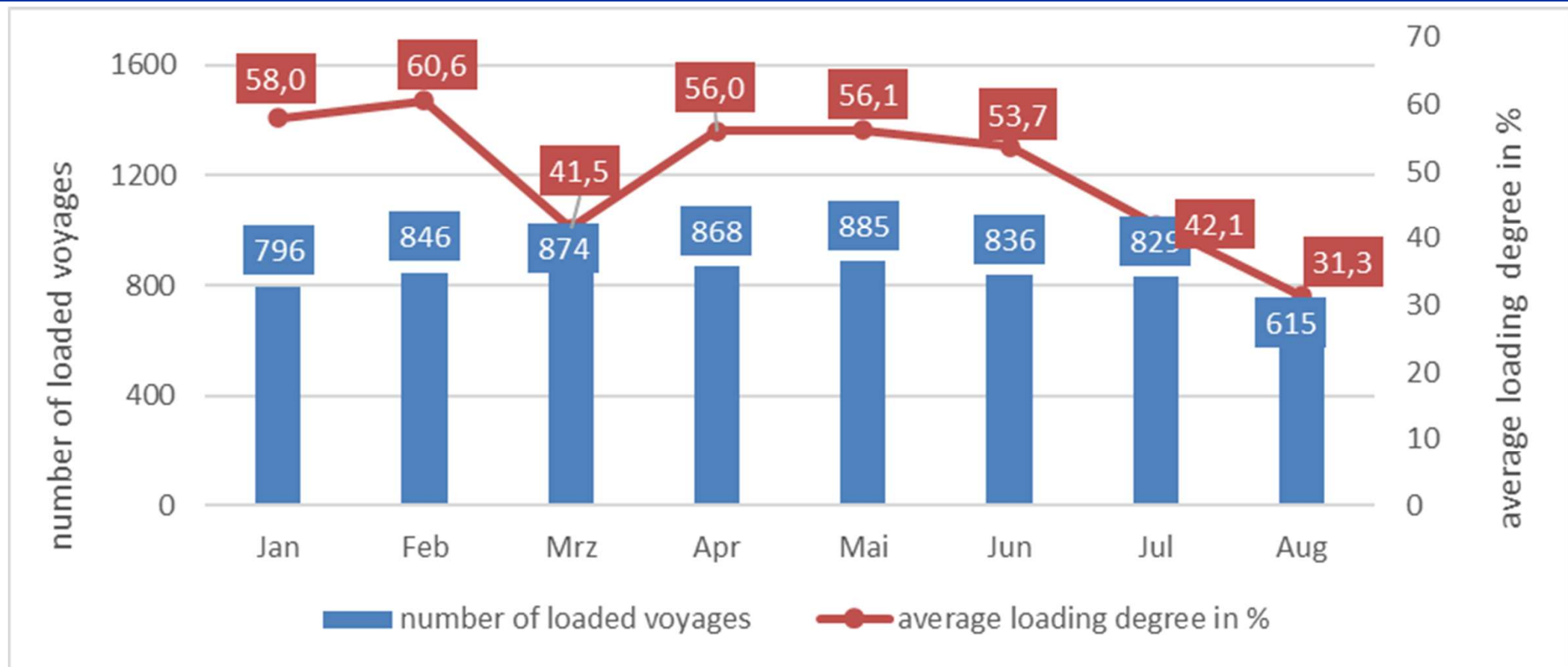
→ Dry bulk freight rates showed the strongest increase of all market segments in 2022 (reasons: low water, capacity bottlenecks and high coal transport demand).

→ In ARA-Rhine trade, freight rates for liquid cargo reached a peak in Q3 2022

03

Data analysis for the Upper Rhine *Dry cargo vessels*

Number of loaded voyages & average loading degree - dry cargo vessels



→ The low waters are reflected by a falling average **loading degree of vessels in July** (42 %) and August (31 %) 2022.

→ The **number of loaded voyages was rather constant in July compared to June.**

→ As the water levels decreased further in July, so did the number of loaded voyages.

→ As a result, a strong decline was observed in July and August in the total amount of goods transported on the Upper Rhine (-49% in July and -77% in August compared to the same months in 2021)

→ Reduction of the average loading capacity

04

The need to “Act Now!”



Why?

- A paramount role foreseen for IWT to achieve the ambitious modal shift and emission reduction objectives.
- To fulfil this role, it remains more than ever essential:
 - to ensure that inland navigation is a reliable mode of transport;
 - to avoid a permanent shift away from inland waterways to other transport modes.
 - to improve the resilience of IWT to extreme low water events.

What?

- Workshop on low water and effects on Rhine navigation (2019)
 - Objective: identify and overcome challenges associated with the low water phenomenon and stimulate discussion on strategies
- Reflection paper “Act now!” (2020, second edition 2021)
 - Collection of statements and information on low water and their impacts
 - Inventory of ongoing measures/projects
 - Proposals for short, medium and long term measures
- Today’s workshop as a logical follow-up and input for third edition “Act now!”



THANK YOU VERY MUCH FOR YOUR ATTENTION

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