Low flows and impacts on navigation

CHR symposium “Low flows in the Rhine catchment”

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Impacts of low flow periods on inland navigation
Low flow periods compared to Rhine traffic Index

Source: CCNR based on Destatis and German Inland Waterway Administration / Federal Office for Hydrology
Monthly goods traffic on the traditional Rhine [Mio. t] (Jan/2009-May/2017)

Low flow periods ➔ Negative impact on transport evolution

Source: CCNR based on Destatis
Impact on vessels’ loading degrees and transport prices*

- Low flow periods
- Reduced loading degree
- Supply side contraction
- Increase in freight rates (transport prices)

Source: Calculation CCNR based on daily means data from German Inland Waterway Administration, German Office for Hydrology, PJK International

* Maximum loading degrees at Kaub/ Middle Rhine for vessels with a draught of 2.5 and 3 meters, compared with freight rates Index*; Prices (Freight Rates) in Tanker shipping
Long run relationship between water levels and freight rates – Jan/2002-May/2017

- Relationship is negative and non-linear: low flow periods increase prices
- Level of prices in autumn 2015 was on a multi-annual record level.

Source: CCNR based on data from PJK International and the German Inland Waterway Administration / German Federal Office for Hydrology
Low flow periods cause modal shift towards rail transport

IWT transport and Rail transport in Germany

Source: OECD, Destatis
Container transport is sensible towards low flow periods

Container transport and water level on the Rhine

Source: Destatis, WSV (Wasser- und Schifffahrtsverwaltung des Bundes), BfG (Bundesanstalt für Gewässerkunde)
IWT belongs to a multimodal environment - Focus on Germany

Total goods transport performance in Germany (Yearly transport performance in million TKM)

Yearly rate of change

Source: Eurostat, CCNR analysis
IWT belongs to a multimodal environment - Focus on the Netherlands

Total goods transport performance in the Netherlands (Yearly transport performance in million TKM)

Yearly rate of change

Source: Eurostat, OECD, ITF, CBS, CCNR analysis
Focus on low water periods in autumn 2015 and 2016
Low flow period in Autumn 2015

- Strong increase of prices
- Limited decrease of volumes

Source: calculation CCNR based on data from Destatis, PJK International and the German Inland Waterway Administration / German Federal Office for Hydrology
Low flow period in autumn/winter 2016/2017

- Again strong increase of prices
- Impact on volumes this time stronger, but of shorter duration
- Explanation: low flow period was even more extreme than in 2015, but lasted not as long

Source: calculation CCNR based on data from Destatis, PJK International and the German Inland Waterway Administration / German Federal Office for Hydrology
Summary
Summary – main impacts of low flows on navigation

- **Low flow periods**
  - Reduced loading degree of vessels
    - Supply side contraction on the market
      - Strong increase in prices
    - Decrease in total transport volumes by IWT
      - Deterioration of the competitive position of inland shipping compared to other modes of transport
      - Loss of market shares (modal shift)

Source: CCNR
THANK YOU VERY MUCH FOR YOUR ATTENTION

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