CENTRAL COMMISSION FOR THE NAVIGATION OF THE RHINE (CCNR)

Regulatory framework for decarbonisation of inland navigation

Budapest, 8th October 2024 Raphaël WISSELMANN, Chief Engineer





A few words about the CCNR



The organisation CCNR

- » Oldest international organisation in operation (1815)
- » 5 Member States, 11 Observer States
- » Cooperation with other international organisations, such as EU and UNECE
- » Intensive participation from industry
- » Governs navigation on the Rhine: freedom, safety and promotion of navigation
- » Binding regulations from Basel to the sea
 - » Police/operational rules
 - » Vessel technical requirements
 - » Crew (qualification and manning)
- » Other competencies relating to infrastructure, economics, legal issues and dangerous goods



The Rhine waterway

- » Around two-thirds of IWT in Europe
- » 300 vessels per day on the lower Rhine



Sources: CCNR analysis based on Destatis, VNF, Eurostat [iww_go_atygo], UK Department for Transport

Figures for the Po are from 2022, the others are from 2023.





Political objectives of decarbonisation



Mannheim Declaration Objectives

In the Mannheim Declaration (2018), Ministers in charge of transport of the CCNR Member States:

"tasked the CCNR to develop a roadmap in order to largely eliminate greenhouse gases and other pollutants by 2050"

"underlined the need for new financial instruments to achieve these environmental objectives and entrusted the CCNR to lead this development"

The **CCNR** and the **EU** share the **same long-term vision** with "a zero greenhouse gas emissions inland navigation sector by 2050".





CCNR roadmap for reducing inland navigation emissions Key considerations



Key considerations on most promising technological solutions



- » No "one-size-fitsall" solution: suitability of technologies depends on vessel sailing profile
- » Pilot projects needed to gain experience

Development of fuel share (in %) within the fleet (new and existing vessels) towards 2050 on the "conservative" pathway



Source: https://roadmap.ccr-zkr.org

Development of fuel share (in %) within the fleet (new and existing vessels) towards 2050 on the "innovative" pathway



Source: https://roadmap.ccr-zkr.org

Implementation plan

- Economic, technical, social and regulatory aspects to be tackled
- A list of possible measures to enable the transition (to be adopted directly or not by the CCNR)
- » Three types: legal requirements, voluntary measures and financial measures

A FEW EXAMPLES:

Legal requirements

R1a: Appropriate regulatory framework for the use of alternative fuels and batteries (vessel construction)

Voluntary measures V1: Label for environmental and climate protection

Financial measures

F1: Examination of European funding and financing instrument to support the inland navigation energy transition



State of play of regulatory framework



An appropriate regulatory framework Role of CESNI

- » adopting technical standards
- » deliberating on their uniform interpretation and application
- » deliberating on derogations and equivalences of technical requirements for specific craft
- » deliberating on priority topics (safety of navigation, environment protection, other areas).



Methanol

For which vessel types?

Mainly for tankers, push boats or passenger vessels

Already used ?

Yes, but only in pilot projects

State of play of regulation

- » Technical requirements
 - for methanol used in fuel cells: requirements published in ES-TRIN 2023/1 and entry into force from 01.01.2025
 - for storage on board and for machinery space: requirements included in draft ES-TRIN 2025/1. Entry into force expected 01.01.2026
- » Professional qualifications: publication of CESNI guidelines on competence requirements for crew operating on a vessel using methanol as fuel
- » Operational aspects (police rules): ongoing work





Gaseous hydrogen

For which vessel types?

Mainly for container and bulk (high value goods) vessels or small push boats

Already used ?

Yes, but only in pilot projects

State of play of regulation

- » Technical requirements
 - for hydrogen used in fuel cells: requirements published in ES-TRIN 2023/1 and entry into force from 01.01.2025
 - for storage of hydrogen on board: requirements almost finalised and ready to be used for pilot projects in the meantime (planned in ES-TRIN 2027/1)
 - for machinery space (necessary for H₂ in ICE engines): under discussion (planned in ES-TRIN 2027/1)
- Professional qualifications and operational aspects (police rules): ongoing work



Batteries - Lithium-ion

For which vessel types?

Mainly for container and bulk vessels, small push boats, ferries or day trip vessels

Already used ?

- Yes, largely if permanently installed batteries (mainly used in combination with a diesel electric engine)
- Yes, but only in pilot projects for swappable containers Largely depending on the area of operation

State of play of regulation

- Technical requirements published (ES-TRIN 2023/1) and entry into force from 01.01.2025
- » Professional qualifications: publication of CESNI guidelines on competence requirements for crew operating on a vessel using batteries
- » Operational aspects (police rules): ongoing work



Biodiesel - Drop in fuels (HVO, FAME)

For which vessel types?

- » Usage possible for all types of vessels and convoys
- » For the time being, the only technical solution identified to reduce emissions for large convoys

Already used ?

- » Yes, by a large part of the fleet
- » Need to verify that type approval of engine is still valid

State of play of regulation

» Same rules as for "fossil" diesel: technical requirements, professional qualifications and operational aspects (police rules)



Other fuels

LNG or Liquified Bio Methane (bio-LNG)

Requirements in force (police, crew, vessel)

CNG (Compressed Natural Gas)

Not considered yet in CCNR roadmap Work not started. Not sufficient experience yet (one pilot project examined – MS Sydney).

Ammonia

High toxicity. Not considered yet in CCNR roadmap. Work not started. Need to gain experience with a pilot project. Ongoing research work.

Liquified hydrogen Work not started. Need to gain experience with a pilot project.





Conclusion and outlook



Conclusion and outlook

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Implementation of CCNR roadmap action plan

Ongoing work for a "label": preparatory work within the CCNR regarding a CESNI standard for measurement, calculation and definition of classes of air pollutants and GHG



Continue regulatory and standardisation work



Grant permission for pilot projects for vessels using non-regulated alternative fuels ("CCNR recommendations")



Identify financing possibilities, etc.

Initial thoughts on the need to update the CCNR roadmap



Common wish to improve the assessment on a "Well-to-Wake" approach



Consider other technologies?

Update costs and action plan, etc.



REGULATIONS

- > Police Regulations for the Navigation of the Rhine (RPR)
- > Rhine Vessel Inspection Regulations (RVIR)
 > Regulations for Rhine navigation personnel (RPN)
 > ADN 2023
- > Agreement concerning the social security of Rhine
- boatmen

INFORMATION FOR THE INLAND NAVIGATION INDUSTRY

- > Water depth
 > Radiotelephony guide
 > Conclusion and recommendations of the AIS survey / Chart display system
 > Requirement of equipment AIS/ECDIS
 > Electronic reporting (ERI)
 > River Information Services (RIS)
- > Stability guide

AGENDA

> View all Meetings

PLENARY SESSION

> Press release about the last plenary session of the CCNR

CCNR ROADMAP

www.ccr-zkr.org

Or

https://roadmap.ccr-zkr.org

Available in EN/ FR / DE / NL

OTHER ACTIVITIES





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THANK YOU FOR YOUR ATTENTION!

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Transition pathways for IWT by 2035 and 2050

EXAMPLE:

Innovative pathway – technology share for each fleet family in 2050

(new build and existing vessels)





https://roadmap.ccr-zkr.org

Transition pathways for IWT by 2035 and 2050

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EXAMPLE:

conservative pathway – technology share for each fleet family in 2050

(new build and existing vessels)





Transition pathways for IWT by 2035 and 2050

Can "no-regret investments" be identified in the inland waterway transport sector's energy transition?



Ferries and day-trip vessels Vessels operating locally (especially, in densely populated areas) with a limited energy demand.

Investment in ELECTRIC DRIVETRAINS WITH BATTERIES



Large push boats will use internal combustion engines (ICE). Carbon footprint reduced by using drop-in fuels (HVO, LBM) and after-treatment systems.

Investment in CLEAN & EFFICIENT ICE (according to the latest emissions standards) ENERGY EFFICIENCY MEASURES



New or retrofitted ships, only if the operational profile is suitable.



Investment in ELECTRIC DRIVETRAINS (modular approach)