Financing the energy transition towards a zero-emission inland navigation sector

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CCNR
CENTRAL COMMISSION
FOR THE NAVIGATION OF THE RHINE

The organisation

CCNR

- Governs navigation on the Rhine
- Oldest international organisation in activity (200 years)
- Based on Mannheim Convention (150 years)
- 5 Member States, 11 observer states and 5 observing international organisations
- Intensive participation of industry via numerous recognized international associations
- Guaranteeing freedom of navigation and promoting navigation on the Rhine
- Binding regulations from Basel to the Sea (police/operational rules, vessel technical requirements, crew qualification and manning)
- Political, organisational, technical and social innovator

The Rhine

- ***Some two thirds of IWT in Europe*** (330 million tons/year, 2 million TEU/year, > 50% international freight in corridor)
- ***300 vessels / day on lower Rhine***
- ***Probably most innovative inland navigation fleet***

Strategic objectives, Mannheim declaration, 2018

Ministers of the CCNR Member States:

- emphasised need for up-to-date, workable and **harmonised environmental and safety regulations in Rhine and inland navigation**

- tasked CCNR to develop a roadmap in order to
  - reduce greenhouse gas emissions by 35% compared with 2015 by 2035,
  - reduce pollutant emissions by at least 35% compared with 2015 by 2035,
  - **largely eliminate greenhouse gases and other pollutants by 2050**.

- pointed to **need for new financial instruments** to achieve these environmental objectives and entrusted CCNR with the task of leading this development.

In 2019, CCNR decided to launch an **overall research project on financing the energy transition towards a zero-emission inland navigation sector**

which aims to

- assess the financing needs for the energy transition of the IWT sector,
- secure support and acceptance of such results with close cooperation with the relevant stakeholders,
- formulate recommendations for the development of a European financing and subsidy system to support this transition,
- provide inputs to the discussions at the Rhine, European and international levels, and
- pave the way for a political decision.

How to finance the energy transition of the IWT sector?

Building on the question “how to finance the energy transition of the IWT sector?” and stakeholders' consultation, a preparatory study allowed the identification of a series of key research questions:

A. What are the possible triggers and financial drivers to enable a positive investment decision by shipowners to invest in technologies contributing to zero-emission performance?

B. What can we learn from other transport modes?

C. Which greening techniques fit into zero-emission development of IWT and what are the impacts?

D. What is the potential of pay-per-use and leasing schemes for the IWT market?

E. What is the potential of joint procurement?

F. What can be expected from national and European programmes and products providing funding and financing?

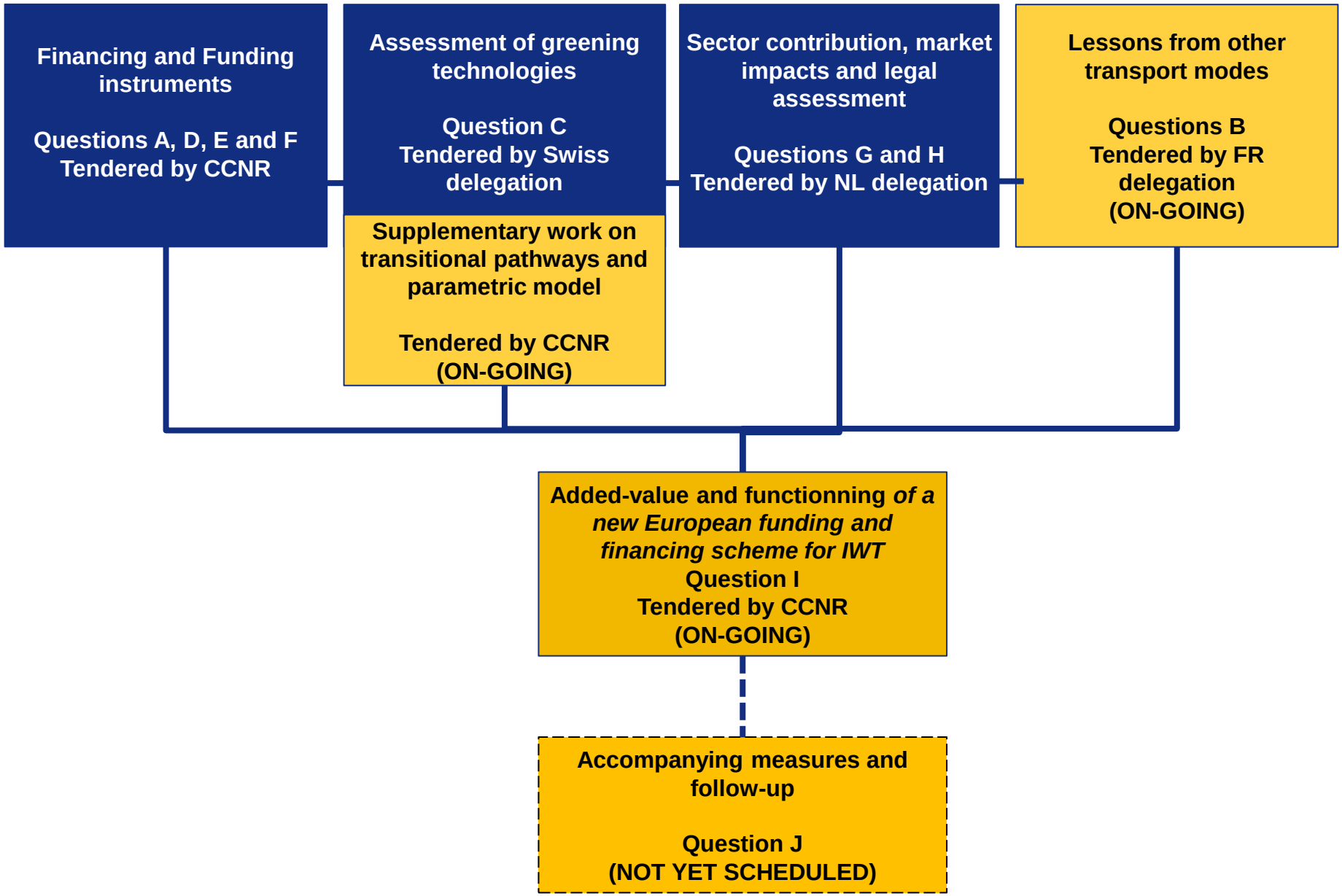
G. What is the potential for polluter pays schemes in IWT?

H. What are the requirements and boundaries considering level playing field and modal share?

I. What is the added value of a new European funding and financing scheme for IWT and how could this work?

J. What accompanying measures and follow-up steps are needed?

Overall structure studies



Several consultants involved (DST, EICB, Panteia, Pro Danube, Rebel)

Regular consultations with the Stakeholders

The facts presented in the studies, as well as the opinions expressed, are those of the authors and do not necessarily also represent the position of the CCNR or its Member States.

Publication of intermediate results in October 2020. **Final results expected in June 2021.**
https://ccr-zkr.org/12080000-en.html

Zoom on assessment of technologies (Question C)

Many technological solutions available to realise the energy transition of the sector! Hydrogen, Methanol, Batteries, Bio-fuels…

- **Means higher investment (technologies) and operational costs (fuel prices, storage,…)**
- **Different fuels with different levels of technology maturity**
- **No “one-size-fits-all” solution**

Assessment of most promising technologies with regard to their suitability for inland navigation

Identification of fleet families

Preliminary transition pathways to meet the CCNR emission reduction goals by 2035 and 2050 (which technology for which type of vessel)

Cost figures and predictions

Zoom on assessment of technologies (Question C)

Technology	GHG / CO2e	NOx	PM
CCNR 2 and below	0%	0%	0%
CCNR 2+SCR	0%	82%	54%
Stage V, Diesel	0%	82%	92%
Stage V, HVO (hydro vegetable oil)	100%	82%	92%
LNG (Liquefied Natural gas)	10%	81%	97%
LBM (Liquefied Bio Methane)	100%	81%	97%
Battery	100%	100%	100%
H2 FC (fuel cell)	100%	100%	100%
H2 ICE (combustion engine)	100%	82%	92%
Methanol FC	100%	100%	100%
Me ICE	100%	82%	92%

Emission reduction potential of alternative fuels (tank to wheel approach)

Note: for HVO, LBM, Battery, H2 and Methanol it is assumed that renewable energy is used: green electricity (e.g. wind, solar energy) to charge the batteries and for electrolyses to make H2 or renewable/bio feedstocks for HVO or methanol production.

On-going work

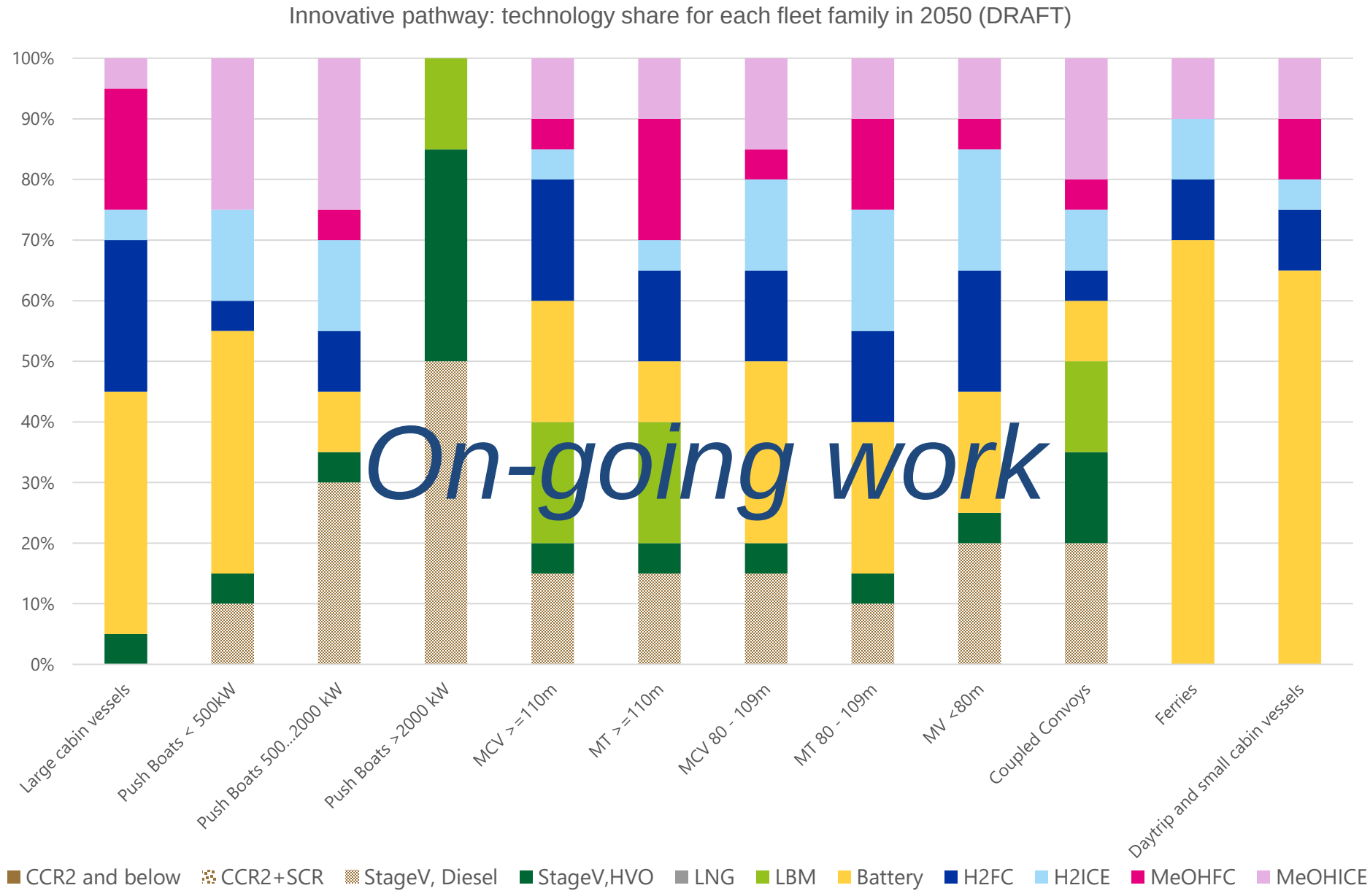
⇒ **two transition pathways (conservative / innovative)** for the European fleet **in order to reach the objectives of the Mannheim declaration, compared to a** business-as-usual (BAU) scenario**.**

⇒ identify for each pathway the technologies used and their respective shares within the inland navigation fleet (**existing and newly built vessels**), in relation to economical and technical assessments (in particular, emission reduction potential, technological maturity, operational risks/constraints)

⇒ evaluate total cost of ownership, capital expenditures and operational expenditures

⇒ evaluate the financial delta to be bridged to realise the emission reductions targets

Zoom on assessment of technologies (Question C)



Important financial gap must be bridged to realise the energy transition!

More than €10 billion necessary "just" in investment costs to reach zero-emission and higher operational costs are expected as well !

Financial support needed

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- **Sector cannot finance the energy transition by own means (high costs and lack of capital)**
- **Current framework conditions = no incentive for vessel owners to invest in "greening" (no business case)**
- **Opportunity for an European funding & financing mechanism**

Conclusions

- CCNR as international platform of exchanges dedicated to inland navigation and forerunner on the energy transition
- Intermediate study results published and on-going work on funding/financing instruments and evaluation of technologies
- Mix of energy solutions (no one size fits all). Cost and availability of fuels / energy sources will determine uptake by inland navigation.
- Transition pathways as tool to develop shared vision with the inland navigation sector
- Important financing gap. Sector cannot finance the energy transition by own means (high costs and lack of capital)
- Fundamental questions to be addressed by CCNR regarding a possible European funding instrument to pave the way for a political decision
- Forthcoming CCNR roadmap as policy instrument, with substantial synergies with EU initiatives

Thank you for your interest!

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