

DANUBE COMMISSION

2nd Joint Workshop “Roadmap and actions towards zero-emission Danube fleet”

Work continued on the Strategy Document and first results of DC Questionnaire

Pjotr Suvorov

Budapest, 12 May 2025

DC Strategy & Roadmap for Fleet Modernization

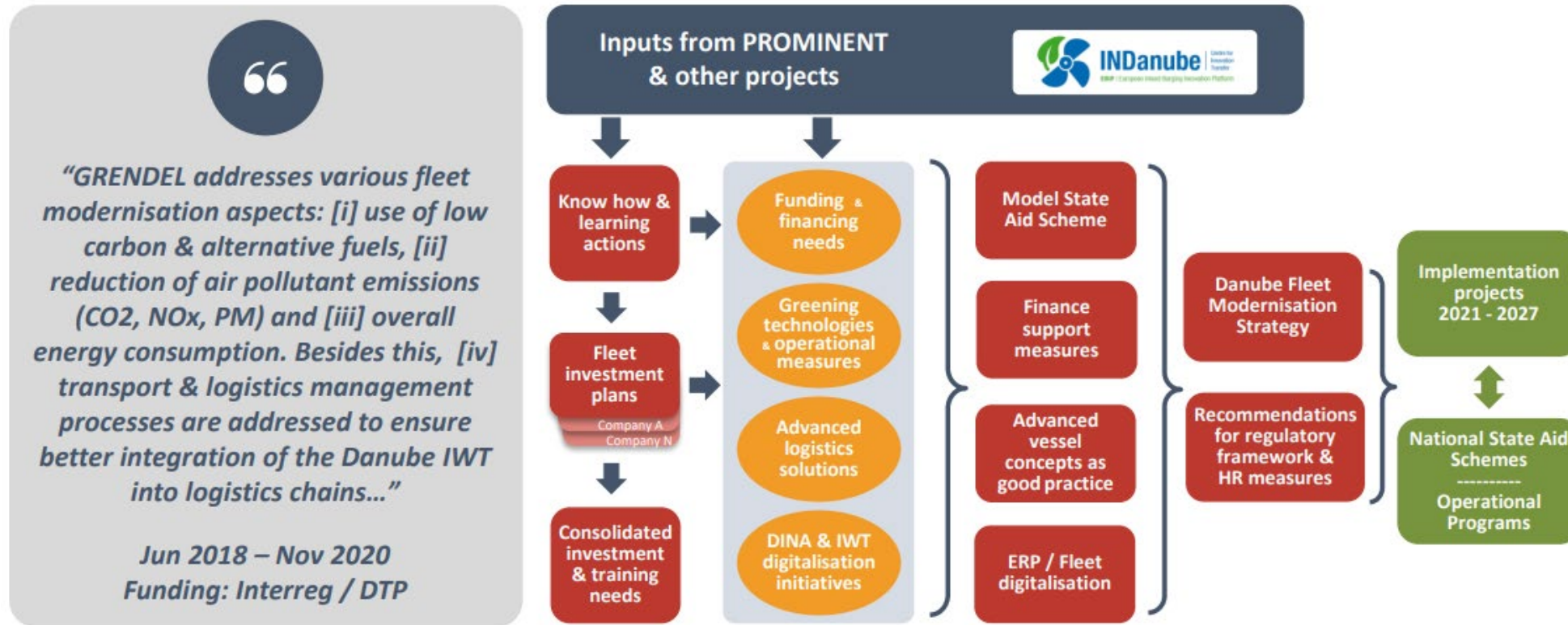
The main objective of the DC Strategy and Roadmap for Fleet Modernization is to develop and implement, within a certain time frame, specific organizational, technical, and social measures, agreed upon by the public and private stakeholders within the framework of the Danube Commission, to ensure the transition of the Danube fleet to zero emissions according to three scenarios: conservative, innovative, and business-as-usual.

To achieve this goal, the DC strategy and roadmap envisage the following:

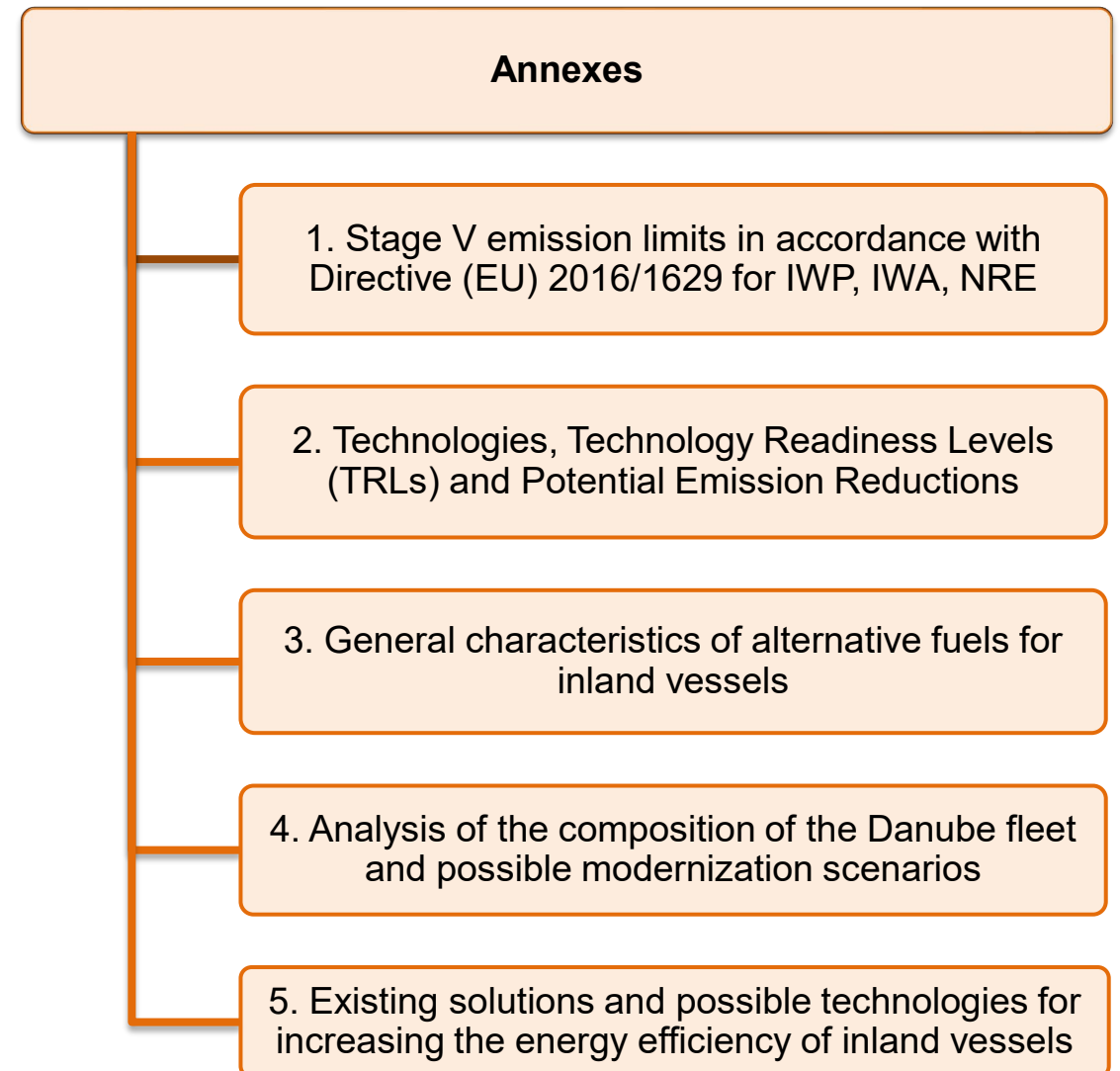
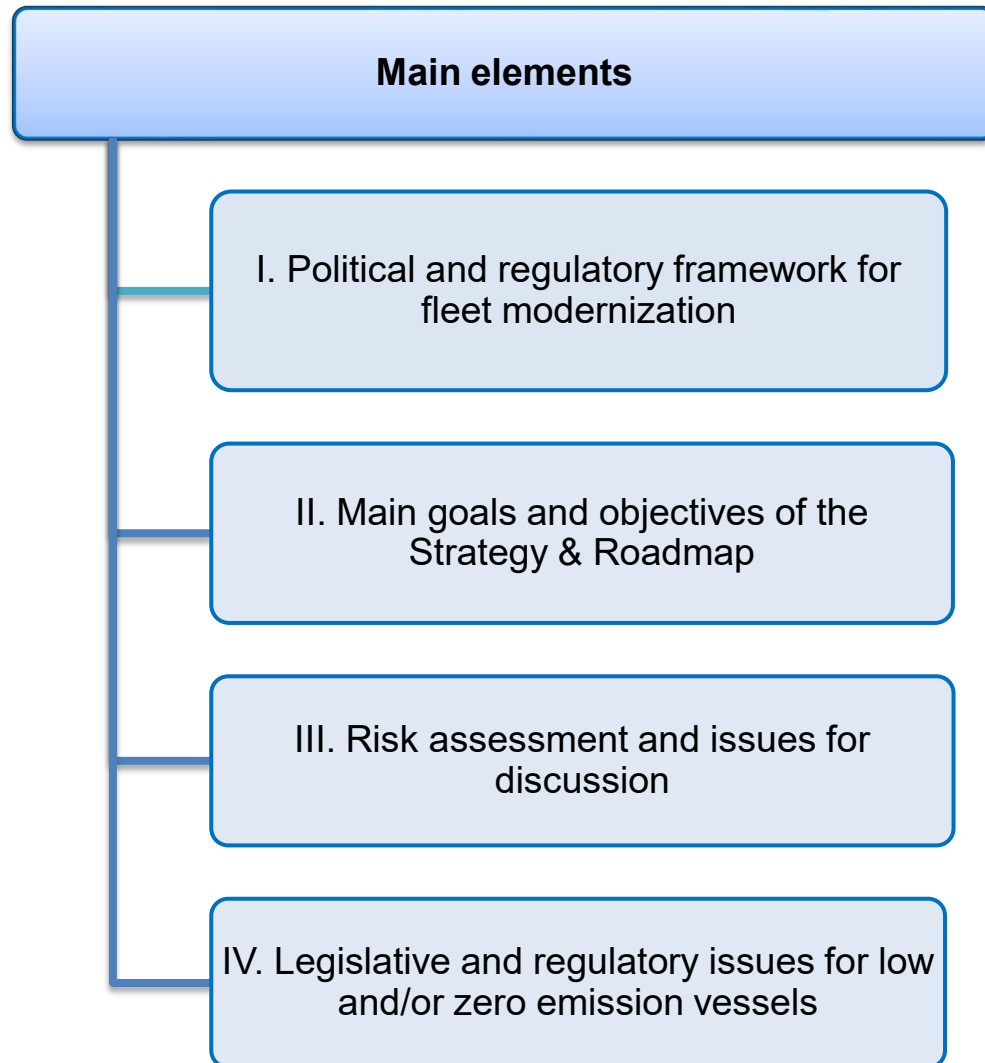
- reduction of greenhouse gases in the Danube fleet;
- compliance with regulatory requirements to reduce the level of other harmful emissions (air pollutant gases: CO, HC, NO_x, and particulate matter - PM);
- transition of the Danube fleet to zero-emission operations in terms of greenhouse gases and other harmful emissions;
- improvement of the energy efficiency of the Danube fleet and reduction of fuel consumption during vessel's operation.

The measures provided for in the DC Strategy and Roadmap should be incorporated into targeted national fleet modernization programs; they should not only ensure environmentally friendly navigation but also increase the competitiveness of transportation on the Danube.

How do we understand Fleet Modernization?



Inventory of the DC Strategy and Roadmap



Work done so far by the DC Secretariat

2018 – 2020

- The DC participated in the EU/DTP GRENDEL project “Green and efficient Danube Fleet” and followed the relevant developments on the EU level;

2020 - 2021

- In line with the European Green Deal and based on the results of the GRENDEL project, the DC has turned to the Member States to promote measures at the national level to reduce CO2 emissions and air pollutant emissions and to support the modernization of the vehicle fleet.

October 2021

- The DC proposes to its Member States to establish a cooperation platform for a future coordinated implementation of greening measures, based on the outcome of the relevant EU-funded projects and in line with the EU regulatory framework.

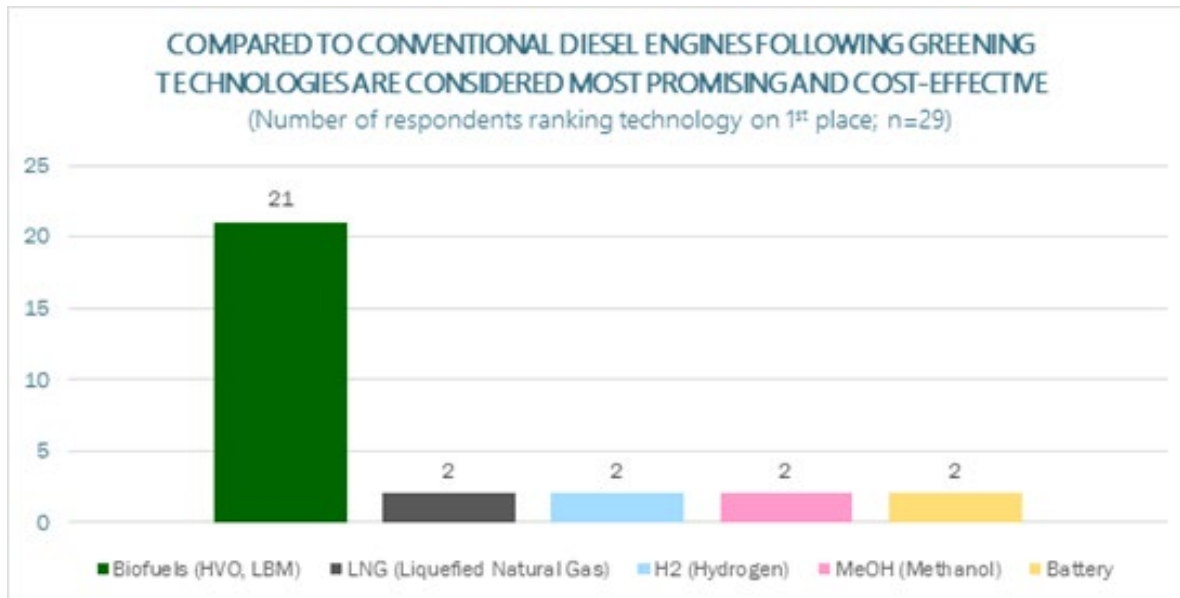
2022 – 2023

- The idea of a “Fleet Modernization Platform” of the DC was supported and discussed by the Member States. The Technical Working Group (WG Tech) tasked the Secretariat to prepare a **“Strategy and a Roadmap for Danube Fleet Modernization”**.

2024 - 2025

- The Secretariat presented a first draft of the Strategy & Roadmap document in the WG Tech and during the 1st Joint Workshop of DC and EUSDR PA1A held on 8 October 2024. In close cooperation with EUSDR/PA1A, a **“Roadmap and Actions towards zero-emission Danube fleet”** was elaborated on the basis of contributions from the Member States and sector representatives. This document will be further reviewed and expanded at the second joint workshop on 12 May 2025 and finally incorporated into the “DC Strategy and Roadmap for Fleet Modernization”.

Questionnaire for updating the DC Roadmap



Source: Expert survey at the occasion of the Danube Commission / PA1a Workshop “Roadmap and actions towards zero-emission Danube fleet” of 8th October 2024

The **objective** of the questionnaire was to provide an update of the DC Roadmap for the modernization of the Danube fleet based on the outcomes of the 1st Joint Workshop “**Roadmap and actions towards zero emission Danube fleet**” organized by the Danube Commission and the EUSDR PA1A on 8 October 2024. The expert survey conducted in the framework of this workshop collected the opinions of the representatives of the Danube shipping sector experts, while the questionnaire addressed the DC Member States.

The questionnaire’s **methodology** was based on the following topics: fleet, Infrastructure (ports), digitalization, and crew.

The questionnaire aimed to confirm the assumptions made during the workshop regarding biofuels as the most realistic and rational type of alternative fuel for the Danube fleet.

As of the 1st of May 2025, the Secretariat has received responses from Austria, Germany, and Slovakia.

Questionnaire for updating the DC Roadmap for the modernization of the Danube fleet

Question 1: Is the technology of using biofuels of the HVO type (hydrotreated vegetable oil) the most suitable alternative energy source for Danube shipping at the moment?

Question 2: The questionnaire presented an indicative scenario for the transition of the Danube fleet to alternative fuels in the course of a conservative scenario.

Question 3: What is the current tax rate on HVO biofuels (HVO25, HVO50, HVO100) in the DC Member States?

Question 4: Have EU Member States included adequate information on inland navigation in their RED-III roadmaps, particularly specific targets for the share of inland navigation fuel supply from renewable energy sources for 2026-2030?

Question 5: How is the issue of creating an alternative fuel infrastructure being addressed in this aspect?

Question 6: What are the capabilities of your country's ports to provide bunkering of the fleet with HVO fuel and HVO blends on the national stretch?

Question 7: What are the minimum distances, and what type of bunkering is most suitable for self-propelled vessels and large convoys?

Question 8: Which new elements for crew training should be taken into account in Directive 2016/2397 and the ES-QIN Standard when introducing alternative fuels in IWT?

Summary of the results of the questionnaire

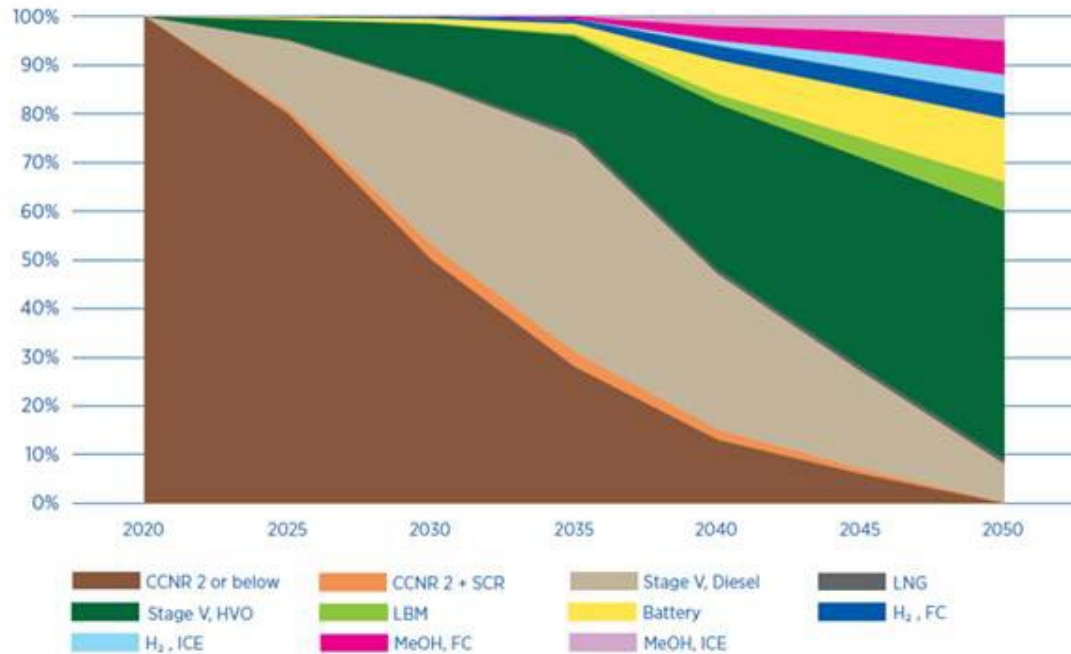
- The Member States agree that the biofuels of HVO type are the most suitable energy source to decarbonize the Danube fleet, but the research and accumulation of practical experience in the use of HVO should be continued.
- The Member States agree in principle with the scenario for the conservative transition pathway for the Danube, presented during the 1st Joint Workshop, but the current state of the Danube fleet and the financial capabilities of the shipowners have to be considered.
- HVO 100, like fossil diesel, is tax-exempt for IWT, as well as other alternative energy sources (methanol, hydrogen).
- The Renewable Energy Directive (RED III) is implemented in some of the DC Member States*, and in some it is under implementation.
- With regards to HVO bunkering infrastructure, it was emphasized that creating sufficient and effective infrastructure in ports (implementation of the AFIR at the national level) still requires time. In Austria and Germany, the number of HVO bunkering points, however, has already increased.
- The minimum distances and the type of bunkering suitable for self-propelled vessels and large convoys cannot be defined at the current moment, as they depend on local conditions, traffic on the particular stretches of the Danube, and port development options.
- The new requirements for crew still need to be defined based on the experience of the pilot projects following the work of CESNI/QP.

*meaning the DC Member States that are the Member States of the EU

Comparison of the CCNR Study assumptions with the expectations of Danube stakeholders

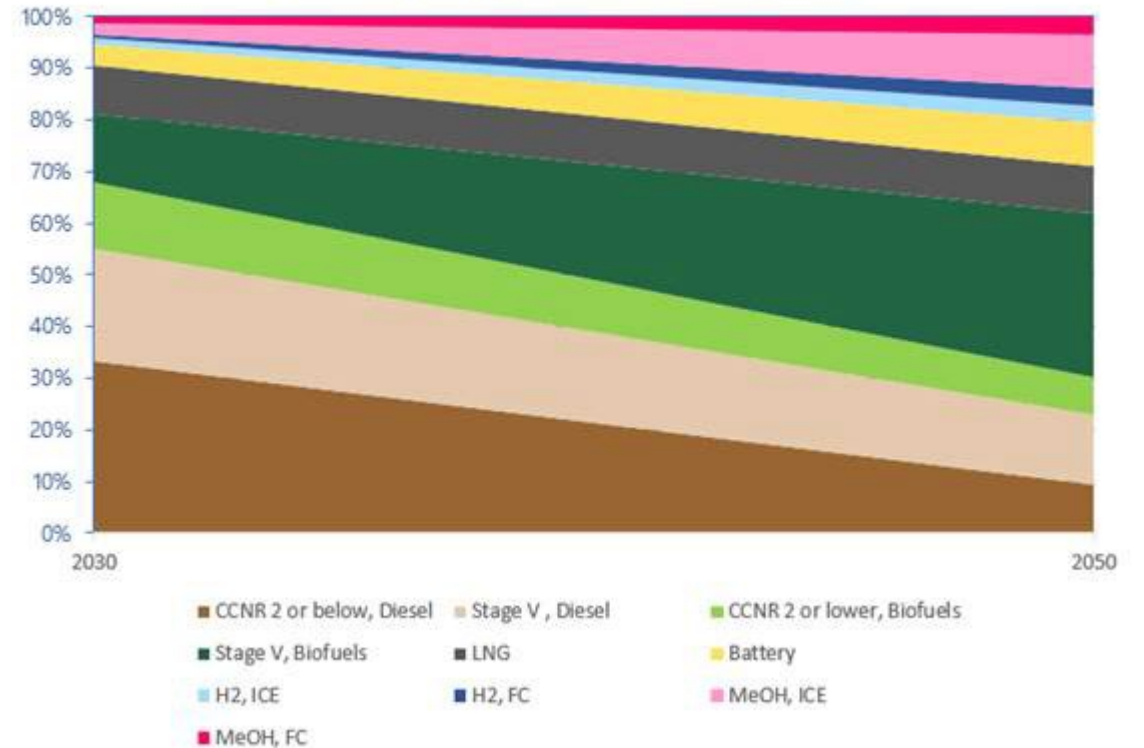
Figure 5

CONSERVATIVE TRANSITION PATHWAY: DEVELOPMENT OF TECHNOLOGIES BY 2050



Source: CCNR Roadmap for reducing inland navigation emissions

CONSERVATIVE TRANSITION PATHWAY DANUBE:
DEVELOPMENT OF TECHNOLOGIES BY 2050



Source: Expert survey at the occasion of the Danube Commission / PA1a Workshop "Roadmap and actions towards zero-emission Danube fleet" of 8th October 2024

Comparison of selected fuel characteristics for pure FAME and HVO

Baseline: Diesel	FAME	HVO
Energy content	Lower	Comparable
Cetane number	Comparable	Higher
Density	Comparable	Slightly lower
Viscosity	Slightly higher	Slightly lower
Material compatibility	Incomparable with certain materials	Comparable
Flash point	Higher	Comparable
Lubricity	Good	Poor
Cold flow properties	Poor	Good/Comparable
Storage stability	Poor	Good/Comparable

**Thank you for your
attention!**

*Secretariat of the
Danube Commission*

secretariat@danubecommission.org

*H-1068 Budapest
Benczúr utca 25*

www.danubecommission.org

