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CCNR Roadmap for reducing inland navigation emissions Report on the progress of its implementation as well as the need to bring it up to date

Summary

The CCNR roadmap for reducing emissions in inland navigation, which was adopted in December 2021, outlines transition paths for the fleet and identifies a number of potential financial, regulatory and voluntary measures. In line with the commitments of the CCNR foreseen in this roadmap, the present report addresses the progress made in the implementation of the roadmap and evaluates the need to bring it up to date. Taking stock of this report, the CCNR welcomes the progress on the implementation of the roadmap while acknowledging that some measures could not yet be implemented. It supports, in line with the conclusions of this report, the revision of the roadmap by 2030 and notably the action plan.

1. Context

In the Mannheim Declaration (2018), transport ministers of the Member States of the Central Commission for the Navigation of the Rhine ("CCNR"):

- tasked the CCNR to develop a roadmap in order to largely eliminate greenhouse gases and other pollutants by 2050 and,
- underlined the need for new financing instruments to achieve these environmental objectives and entrusted the CCNR to lead this development.

As a first step, the CCNR launched an in-depth study in 2019 on "Financing the energy transition towards a zero-emission European inland navigation sector" ("the CCNR's study"[1]). This study culminated in 2021 in the publication of a series of reports on the various elements of the energy transition for inland navigation (technical, economic aspects and financing of measures). The study also served as a basis for drawing up the CCNR roadmap for reducing inland navigation emissions. This roadmap, which was adopted in 2021, outlines transition paths for the fleet and identifies a number of potential financial, regulatory and voluntary measures.

The CCNR's aspiration is that this roadmap will, over time, help to contribute to a common vision on the energy transition as well as its associated challenges within the inland navigation sector. Its intent therefore was to cooperate with other energy transition actors in view of jointly implementing the proposed action plan and to ensure that measures are tailored to the inland navigation sector. In this respect, this roadmap was perceived as the primary CCNR instrument for mitigating climate change, fostering the energy transition and contributing to the European IWT policy[2].

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1 https://www.ccr-zkr.org/12080000-en.html

2 Resolution 2021-II-36

In its roadmap, the CCNR undertakes to:

1. report by 2025 on the progress in the implementation as well as the need to update the roadmap,
2. evaluate by 2025 at the latest whether it is opportune to revise the “CCNR’s study”, especially on the economic and technical evaluation of the technologies,
3. review the TTW approach in a forthcoming revision of its roadmap,
4. evaluate by 2025 whether it is opportune to extend the scope of the roadmap, for example to other greenhouse gases such as N_2O or to emissions associated with other aspects of the vessel’s life cycle, to the manufacturing and disposal of propulsion systems, to other types of vessel, or even to the safety of technologies,
5. revise, if necessary, by 2030 the roadmap and the corresponding action plan.

The present report addresses the first four commitments. This process is considered essential before taking any steps towards a possible revision of the roadmap and of the corresponding actions plan by 2030.

2. Progress in the implementation of the roadmap by mid-2025

In addition to implementing the action plan proposed in the roadmap, the CCNR invited its Member States and Secretariat to share and actively communicate on this roadmap with the different stakeholders of the IWT sector as well as with EU institutions[1]. In 2025, the CCNR considers this as having been achieved since the roadmap has been presented at many different forums[2], which has enabled sharing a vision of the energy transition and has generated debate among the relevant actors. In other words, the CCNR’s roadmap has inspired national and international initiatives.

To date, key messages such as the absence of any one-size-fits-all solution for the inland navigation sector and the need for a technology-neutral and open approach are supported and used to a large extent by actors within and outside the CCNR. Such messages also include the acknowledgement of remaining uncertainties with regard to technology development, prices, availability of fuels and bunkering infrastructure as a hurdle to this transition, as well as the essential role played by pilot projects and regulations to release the energy transition[3].

The action plan foresaw eighteen measures in total: nine of a regulatory nature, six of a voluntary nature and three of a financial nature. To date, two measures have been completed, 13 actions are ongoing and three have not yet begun. A summary table is provided in Annex. Overall, most measures are ongoing and progressing efficiently. Good progress can be reported for each type of measure considered in the roadmap, as outlined below.

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1 Resolution 2021-II-36

2 Non exhaustive list: Bilateral exchange with the experts of the Flemish region in the context of the preparation of the Green Deal Flanders, French event related to the greening strategy “vert le fluvial”, German event “Wasserstoff als Brennstoff in der Binnenschifffahrt“; Dutch event “Symposium on energy transition, Gorinchem”; CLINSH final event, Rhine-Alpine Corridor Forum, Antwerp Inland Navigation School , bilateral exchanges with DG MOVE, DG COMP, Members of the European Parliament, UNECE meetings, PIANC meetings, EBU annual events, H_2Ship final event, meetings with sector representatives, etc.

3 Resolution 2021-II-36

The organisation of workshops on the initiative of the CCNR also contributes to implementing the roadmap and building knowledge, as, for example, the workshop on alternative energy sources for electric propulsion systems in inland navigation organised in 2021, or the workshop on shore power at berths in 2022. Further workshops are envisaged in the future, for instance to raise awareness among waterway administrations, rescue organisations and police forces regarding the specific hazards of new energy sources in accidents and incidents.

2.1 Regulatory measures

Regulations and standards are useful tools to facilitate the energy transition as the legal certainty, and strongly influence the investment in new technologies (reducing the risks for shipowners who invest). They also stimulate structuring the market (with possible reduction of costs), increasing the planning reliability of manufacturers and easing the acceptance of new technologies by limiting safety or environmental issues.

These measures are based principally on the regulations and standards adopted by CCNR, EU, CESNI, UNECE to design the appropriate regulatory framework for the safe use of alternative fuels and batteries. Such regulations and standards relate to vessel construction (R1a), crew (R1b), vessel operation (R1c), transport of dangerous goods (R1d), fuel characteristics and supply (R1e), and bunkering (R1f).

Regarding the vessel technical requirements (R1a), ES-TRIN 2023/1 includes a revision of the general requirements on new energy sources, as well as new provisions on fuel cells which came into force in January 2024. ES-TRIN 2025/1 incorporates requirements for the storage and use of methanol. They should enter into force in CCNR and EU legislations in January 2026, but in the meantime could be used as interim guideline to allow derogations for innovative vessels. In addition, CESNI also adopted interim guideline regarding the storage of gaseous hydrogen before possible inclusion in ES-TRIN 2027/1. This rapid development of requirements has been possible thanks to excellent cooperation with the classification societies. Under the impulse of the CCNR, CESNI also published an interpretation of the possible locations for swappable battery containers[1]. In addition, The CCNR Member States have continued their efforts to facilitate the certification of methanol and hydrogen engines under Regulation (EU) 2016/1628[2], in particular for the retrofitting of existing engines. There is close cooperation with the European Commission in this area.

In relation to qualification requirements (R1b), CESNI also began an in-depth analysis of the skills required for methanol and batteries, accompanied by a risk analysis. Competencies tables have been finalised and adopted as guidelines by CESNI. Work on hydrogen is ongoing.

1 https://estrin-faq.cesni.eu/index.php?page=61&folder=en&id_prescr=228

2 Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery

Regarding vessel operation (R1c), work on possible adaptations of the Police regulations for the navigation of the Rhine is also ongoing. The rules related to vessels using methanol or batteries for the propulsion will probably enter into force at the beginning of 2026. Work on hydrogen is ongoing and the corresponding requirements could enter into force at the beginning of 2028.

As for the transport of dangerous goods (R1d), the ADN Safety Committee considers that the ADN regulation does not currently require any modification for dangerous goods to be transported by vessels using new energy sources in their propulsion systems (as far as the ADN derogations are applied for pilot projects). Yet, possible interactions between the cargo and the new energy source should be examined on a case-by-case basis by the ADN Safety Committee. Once sufficient experience is gained in the transport of dangerous goods with alternative fuels, amendments deemed necessary could be integrated into the ADN regulation.

With regard to fuel characteristics and supply (R1e), the CCNR considers that in relation to this task other actors could take an active role, such as the European Committee for Standardization ("CEN") which could investigate the need for more stringent fuel quality standards for biofuels, in particular fatty acid methyl esters (FAME) and its blends. Sector organisations could also play a role by launching campaigns on the use of biofuels, to raise awareness of possible risks and mitigation measures to prevent problems (e.g. with regard to filter blockage and water separation). Moreover, CCNR could investigate the potential safety issues related to the blending of diesel with low flash point fuels.

As regards the infrastructure requirements for alternative fuel and electricity for propulsion (R3), the CCNR is particularly active in the field of shore-side electricity. In 2023, it published a compilation of examples and experiences concerning the requirement for berths and the necessary equipment which includes a chapter on on-shore power supply[1]. It carried out consultations on the mandates given by the European Commission to CEN/CENELEC to develop standards (these standards must be compatible with the technical requirements for vessels) and in 2022 organised a workshop on shore power at berths. In addition, the CCNR also integrated the topic of recharging points for batteries in the work programme of its Infrastructure and Environment Committee and in its action plan on landside electricity (see chapter 5.3 of the above-mentioned compilation of examples document).

1 https://www.ccr-zkr.org/files/documents/infovoienavigable/Aires_de_stationnement_fr.pdf

2.2 Voluntary measures

Since the publication of the roadmap in 2021, the CCNR has been discussing the creation of an international emission labelling system for inland navigation (V1), particularly in terms of possible uses, administrative principles and measurements requirements. The CCNR notably participated in research work in the context of the European project PLATINA3[1] and advocated CESNI's involvement in a standard defining a methodology for measuring and calculating emissions from inland navigation vessels as well as defining emission classes. This proposal is supported in principle by the European Commission and the representatives of the inland navigation sector. The transport ministers of Germany's federal states[2] and the Dutch Ministry of Infrastructure and Water Management[3], are calling for the development and introduction of a label and are therefore expressing great interest in the work of the CCNR.

Among other aspects, the CCNR has so far:

- developed an outline of an administrative framework for awarding a label and in particular the need for a harmonised implementation based on the principle of mutual recognition,
- agreed on the different possible uses of such a label,
    - to identify low emission freight and passenger vessels (for clients and vessel operators)
    - for national or local public authorities to provide incentives or to adopt other type of measures related to the navigation or mooring of certain vessels in certain areas
    - to facilitate the reporting and modelling of fleet emissions
    - to efficiently manage the allocation of public subsidies
    - to demonstrate the emission reduction benefits of IWT for all actors involved in the logistics chains (shippers, carriers, shipping companies, etc.)
- based on the experience gained via the introduction of a label in the Netherlands, the CCNR has started to develop a methodology for measuring air pollutant and GHG emissions, in order to ensure the reproducibility and comparability of measurement results. Work on the air pollutants has progressed significantly and the methodology is almost ready. For GHG emissions, more time is necessary as it seems difficult to cover all the above-mentioned uses with a single methodology. Adapting a method from the maritime sector, such as Fuel EU maritime, could provide a cost-effective solution for the GHG intensity. At the same time, research work carried out in Germany showed that a more accurate methodology for the energy efficiency of mainly new inland vessels was possible. As the issue concerns not only the Rhine but also EU waterways, CCNR is convinced that the methodology for measuring air pollutants and GHG emissions should be defined in a standard adopted by the European Committee for the Elaboration of Standards for Inland Navigation (CESNI). On the basis of a proposal from the CCNR, the development of such a methodology has been included in the CESNI work programme (2025-2027). More generally, the methodologies developed should be compatible with EU public policies, and even facilitate their implementation.

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1 Report D2.6: https://platina3.eu/towards-zero-emission-fleet/

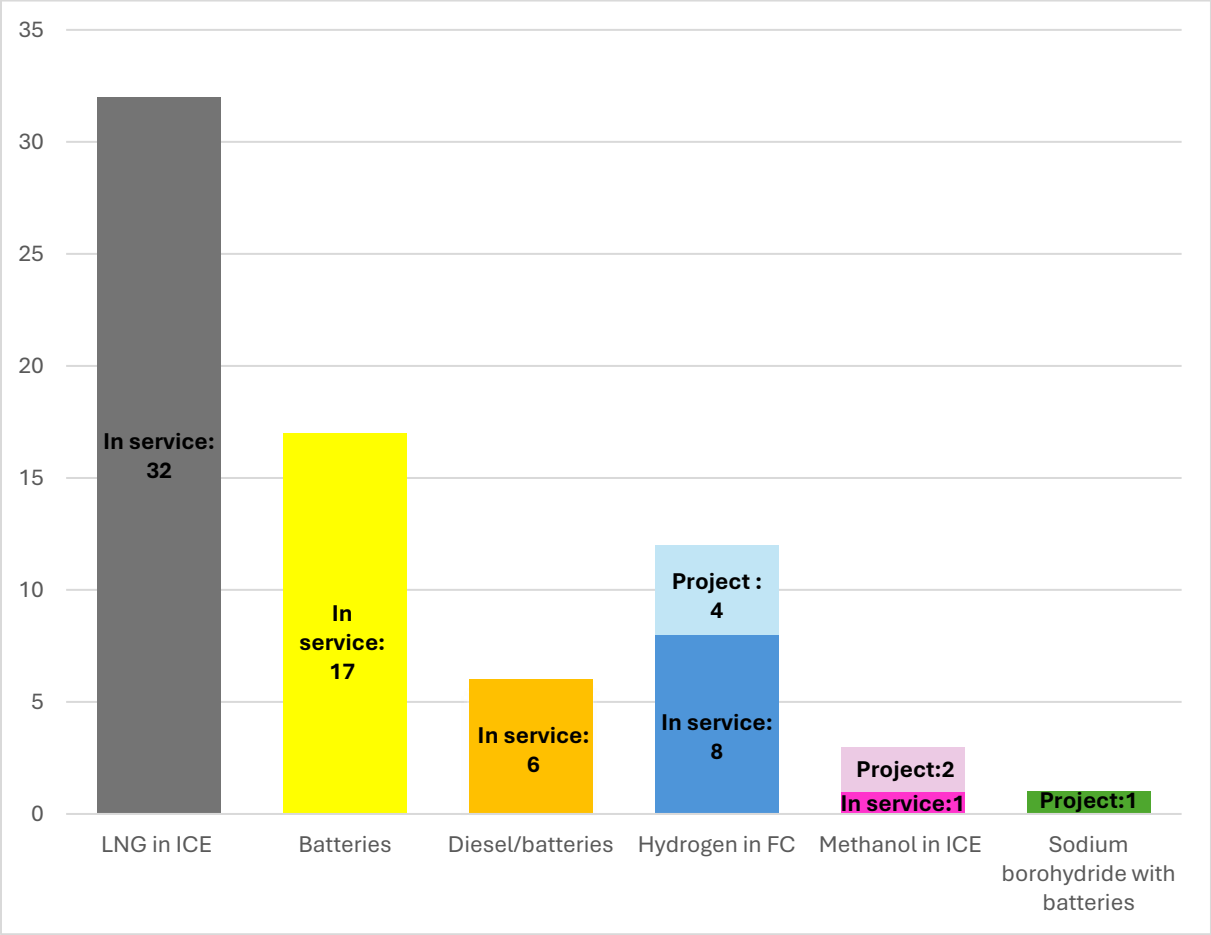
2 https://www.verkehrsministerkonferenz.de/VMK/DE/termine/sitzungen/24-04-17-18-vmk/24-04-17-18-beschluss.pdf?__blob=publicationFile&v=2

3 Dutch parliamentary letter on energy transition for inland navigation, 20 September 2024: https://open.overheid.nl/documenten/dpc-1e7da7991cba78861400c02ca77bb59bd9766e69/pdf

On the topic of emission label, the CCNR favours strong collaboration with the EU and the sector, as well as with other research projects such as PLATINA4, especially for emission factors and energy efficiency method. Most notably, it is paramount to avoid the development of a multitude of national labelling systems with different methodologies.

The CCNR has also played a thorough role in terms of stimulating innovation by authorising several pilot projects. As an illustration, in 2023, CCNR allowed derogations to vessel technical requirements for five vessels using hydrogen[1] as fuel and one vessel using methanol[2]. In 2024, this trend continued with two vessels using hydrogen as fuel and one vessel using methanol[3]. These vessels operate on the Rhine or EU waterways. The experience gained with these vessels will be invaluable in refining the regulatory framework and testing their economic and environmental sustainability (V3).

Number of vessels using (in service) or foreseen to use (project) alternative energy sources as one of the main energy carriers (February 2025)



Source: CCNR Database. *The category “Batteries” consists of vessels equipped only with batteries for propulsion purposes. The category “Diesel/batteries” consists solely of vessels which are able to rely on batteries alone for propulsion for a certain navigation time. In the category “Hydrogen”, all vessels run or are expected to run with fuel cells. So far, the only vessel which was foreseen to run with methanol in a fuel cell is out of service. In the category “LNG” the majority of vessels use dual-fuel engines. ICE = Internal Combustion Engine; FC = Fuel cells

1 AB Initio, Zulu 6, Rhenus Mannheim I, Antonie, FPS Waal; (H2 barge 2).

2 Stolt IJssel.

3 Letitia, Rhenus Ludwigshafen I and Chicago.

The CCNR also monitors the development of innovative vessels (V4) and at least once a year updates a list of these vessels. Available data is compiled within the framework of the Inspection Regulation Committee of the CCNR, with the following scope:

- innovative vessel understood as designed to emit less air pollutants or greenhouse gases than a conventional diesel vessel;
- freight, training and passenger vessels with a Rhine Vessel Inspection Certificate or a Union certificate;
- vessels planned, under construction, in service or cancelled projects.

Even if biofuels contribute to reducing – under certain conditions – greenhouse gas emissions, vessels running on biofuels were not taken into account in the analysis, as switching to biofuels does not necessarily call for a specific design or technical adaptation at the level of the vessel.

Data from this list are used as part of the market observation activities of the CCNR and results were first published as part of the annual inland navigation market observation report 2023[1].

Last but not least, the CCNR monitors annually emissions from the inland navigation fleet within the territory of the CCNR Member States and the progress with regard to emission reduction (V6). An assessment of the effectiveness of measures taken is also foreseen in the roadmap but has not taken place so far. Indeed, considering that the reduction in carbon dioxide emissions from inland waterway transport in the territory of the CCNR Member States was mostly driven by a reduction in transport it seems premature to assess the effectiveness of such measures.

[1] Market Observation Annual report 2023, Chapter 6, p. 119. https://inland-navigation-market.org/wp-content/uploads/2023/10/CCNR_annual_report_EN_2023_WEB-1.pdf

2.3 Financial measures

As stated in section 1., the CCNR published a study providing a wide-ranging review on how to finance the energy transition. In this study, the CCNR proposed the creation of a financing instrument based on public and private sources, including a sector contribution. In this context the CCNR committed to examine the possibility of a sector contribution in the framework of such an instrument (R4) and to work on the implementation of this concept (F1). The CCNR therefore asked for an in-depth legal analysis, delivered at the end of November 2021, regarding the levying of a minimum energy tax rate or a contribution to a greening fund on waterways, under the scope of the Mannheim Act[1] and launched a consultation in December 2022 to identify the vision of the inland navigation profession. The concept was also further developed in the context of the PLATINA3 project. To date, no consensus on the introduction by the CCNR of such a financing instrument has been found, for various economic, legal and political reasons (complexity of the instrument, unrealistic short-term implementation, doubts about the efficiency of such an instrument, possible incompatibility with the Mannheim Act, lack of consensus on industry participation, lack of political consensus). In addition, while an in-depth analysis on this concept was being carried out by the CCNR, Europe faced a pandemic, a changing geopolitical context and an energy crisis leading to an increase in fuel prices (in 2024 and 2023, fuel prices were respectively 44% and 54% higher than the pre-energy crisis levels recorded in 2021). The launching of the European Union “Fit for 55” Package also put an end to the momentum for such a contribution with many initiatives which would come as an additional financial burden for the sector, for instance:

- the proposal for a revision of the EU directive on Energy Taxation, which made the risk of a tax on diesel in parallel to a sector contribution a reality, although diesel is currently exempted from tax on the Rhine[2];
- the Renewable Energy Directive III which imposes a GHG reduction obligation for, among others, fuel suppliers to inland vessels thereby possibly impacting fuel prices. In the directive, the choice is left to member States to either reduce by 14.5% the greenhouse gas intensity of transport fuels or to achieve an overall rate of 29% of renewable energy in final energy consumption across all transport sectors;
- the possibility foreseen in the EU Emissions Trading System Directive to apply the ETS to inland navigation from 2027 onwards.

In this context, the merits of such a contribution, as well as the signal that it would send to the sector, were put into question. Hence, the CCNR decided to put the discussions on hold and considers that for the time being the corresponding activities are addressed (R4 and F1). Yet it remains clear that solutions must be found to encourage inland navigation companies to make investments in favour of this energy transition and that funding for inland navigation is required in this respect. The CCNR therefore remains a forum for exchanging information between Member States regarding national decisions on financing and funding instruments as well as to coordinate positions related to the financing of the IWT sector. The CCNR has already started to approach the EU in order to improve the suitability of existing and future funding and financing opportunities for inland navigation.

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1 Link to legal opinion: https://www.ccr-zkr.org/files/documents/EtudesTransEner/FullLegalOpinion_en.pdf

2 According to the 1952 Strasbourg Agreement providing for an exemption from dues for diesel oil consumed as fuel on board of vessels

Two other measures relating to the taxonomy (F2) and the stimulation of research and innovation projects (F3) require a constant monitoring from the CCNR and can be considered as ongoing tasks. For instance, the Secretariat is involved in the advisory board of relevant research projects (e.g. Synergetics, RH2INE) and holds regular exchanges with different research centres in Europe. CCNR has also contributed to the taxonomy process by making recommendations, together with other experts from the inland navigation sector, which were taken into account in the technical criteria for climate change mitigation to be used in the framework of the taxonomy.

2.4 Limitations regarding the implementation of the roadmap

A hurdle for fulfilling the action plan relates to measures in which the CCNR does not have control. The CCNR can stimulate possible initiatives for such measures, but the role of the CCNR is often limited to one of coordination with its Member States, exchange of information/best practices, and monitoring. The measure relating to the development of standards and requirements on fuel characteristics, blending and supply (R1e) is a good example. In this case, the CCNR can only facilitate the exchanges between Member States to streamline the implementation of European directives such as the Directive on the promotion of energy from renewable sources ("RED III")[1].

In addition, the CCNR decided to postpone three actions (R2 - phasing of the most harmful technologies, V2 - Carbon offsetting measures, V5 - Innovation award) until after 2025.The reasons for postponing these actions were manifold: limited role which the CCNR could play on its own, absence of a specific player taking a leading role, secondary level of priority, too premature.

3. Updating the roadmap: what are the needs?

When the roadmap was adopted, the CCNR had clearly identified some working hypotheses for a future revision (see chapter 6). The aim of this section is to take a fresh look at those hypotheses in order to highlight the aspects of the roadmap which would be worth updating in view of a revision. This exercise is essential to target the scope of a possible revision of the roadmap.

3.1 Moving towards a "well-to-wake" (WTW) approach

In its roadmap published in 2021, the CCNR adopted a "tank-to-wake" (TTW) approach, as an interim solution, with assumptions concerning the upstream chains (emissions produced and fuel availability which are idealised).

In the light of the evolution of the regulatory frameworks[2], the CCNR would like to move towards a "well-to-wake" (WTW) approach for the revision of the roadmap, if the scientific information and resources are sufficient to allow such movement. A WTW approach would be consistent with the CCNR's initial wish to apply the same framework conditions to all energy sources so as not to give an advantage to any particular one of these sources (technology-neutral approach).

[1] Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652

[2] GIEC, availability of reliable WTW data, WTW approach taken in the Fuel EU Maritime regulation and Count Emissions EU regulation, WTW approach supported by several representatives of transport modes at European and international levels.

On the other hand, it is clear that the CCNR is not in a position to influence the upstream chain (availability of fuels, production method, origin, energy strategy of each Member State, etc.), a factor that needs to be considered in a possible revision of the roadmap, particularly with regard to the action plan.

3.2 Extending the scope of the roadmap

One of the next steps identified in the roadmap was to task the CCNR to evaluate by 2025 the opportunity to extend the scope of the roadmap, for example to other GHGs, to emissions associated with other types of vessels. The result of this evaluation is as follows.

The CCNR **sees the need to**:

- consider emissions associated with the vessel's life cycle in qualitative terms and restricted to vessels' propulsion systems, especially batteries;
- extend the roadmap to other technologies (e.g. ammonia), provided that there is practical experience with these technologies in pilot vessel projects
    - It should however be noted that even if the transport of ammonia as cargo already exists on the Rhine, the toxicity and the risks associated with the storage, transshipment and bunkering of ammonia require particular attention.

The CCNR **does at present not see the need to extend the scope of its roadmap to**:

- other types of vessels (lack of data, it is more for national regulations to stimulate the energy transition of other types of vessels);
- other greenhouse gases (GHGs) than those currently considered (i.e. CH_4 and CO_2), unless it can be proven that the quantity of other emitted GHGs have a significant impact on climate;
- emissions other than those from vessel propulsion (e.g. noise or emissions into water).

3.3 Refining the categorisation of biofuels

The CCNR considers that the current categorisation of all biofuels in the roadmap under the term Hydrogenated Vegetable Oil (HVO) is too imprecise. Indeed, biofuels differ in terms of their potential to reduce emissions (in relation to their origin of production), their availability and their adaptability to the existing fleet. It therefore supports the idea of further categorising biofuels.

The CCNR still needs to work on a concrete proposal for such a categorisation of biofuels. Regulatory developments (e.g. RED III regulation, Fuel EU Maritime regulation) and European research projects (e.g. RH2IVER) are relevant sources in this area.

3.4 Update of the CCNR's study on economic and technological aspects

As a prerequisite to any revision of the roadmap, the CCNR supports in principle updating the research work, especially on the economic and technical evaluation of the technologies (Part C of CCNR's study). However, the detailed scope of the study (research questions) and its funding have yet to be clarified.

3.5 Additional possible updates

Pending the available resources and subject to the necessary priorisation of these activities, the CCNR **is in favour of**:

a) Extending part of the roadmap regarding “no-regret investments” with concrete examples of vessels already in operation with new technologies. Different types of vessels and technologies could be considered.

b) Including a new action aiming at sharing information widely on vessels already in operation with new technologies and recommendations to the vessel operators on their technological choices.

c) Including an inventory of existing regulatory obstacles to the energy transition of IWT (e.g. the NRMM Regulation brings difficulties to certify combustion engines running with methanol or hydrogen).

d) Incorporating the results of recent research on the difference between the case of retrofitted vessels and newbuilds, especially in terms of costs. Such a differentiation should however not be made in the energy transition pathways (which apply to the whole fleet).

e) Identifying the possible hurdles to realise the energy transition depending on whether a vessel operates on the spot market or with a contract.

f) Including information about the certification and control procedures that apply to fuel supply, particularly in the case of renewable fuels used to reduce the emissions.

g) Revising cost estimates for the different propulsion technologies and energy sources, provided that sufficient data and experience are available.

h) Carrying out a sensitivity analysis regarding the contribution of increasing renewable fuels blending rates to reduce emissions when reviewing the transition pathways. Different scenarios and recommendations for such blending rates (for instance in view of the implementation of RED III) could also be provided.

4. Conclusion and next steps

The CCNR recalls the importance of the roadmap to convey a shared vision of the energy transition in inland navigation and its desire to cooperate with the sector, the EU institutions and the European projects (such as Synergetics, RH2IWER, Platina4 etc…) to address the associated challenges.

The CCNR welcomes the progress on the implementation of the roadmap while acknowledging that some measures could not yet be implemented, therefore leading to delays in their implementation or their discontinuation. Therefore, a revision of the action plan of the roadmap is supported in principle by the CCNR. A plan to work towards more targeted measures which can effectively be implemented by the CCNR could be recommended.

In conclusion, taking stock of this report, the CCNR supports the revision of the roadmap by 2030 and the corresponding action plan according to this report.

Annex – Action plan

Type	No	Measures
Regulatory measures	R1a to d	Appropriate regulatory framework for the use of alternative fuels and batteries (vessel construction, crew, vessel operation, transport of dangerous goods)
	R1e	Appropriate regulatory framework for the use of alternative fuels and batteries (definition, fuel characteristics, blending and supply)
	R1f	Scrutiny and where appropriate amendment of safety and statutory requirements for bunkering of alternative fuels in inland waterway transport
	R2	Possible phasing out of the most harmful technologies which appear inconsistent with the CCNR's and the EU's long-term emission reduction ambitions
	R3	Infrastructure requirements for alternative fuels and electricity for propulsion
	R4	Examination of the possibility of a sector contribution in the framework of a European funding and financing instrument
Voluntary measures	V1	Label for environmental and climate protection
	V2	Carbon offsetting measures (carbon compensation)
	V3	Pilot vessel trials (all vessel types)
	V4	Innovative vessels (Database)
	V5	Innovation award
	V6	Situation reports: regularly analyse emissions reduction status and the effectiveness of measures
Financial measures	F1	Examination of a European funding and financing instrument to support the inland navigation energy transition
	F2	EU Taxonomy – establishment of an EU classification system for sustainable activities
	F3	Stimulate research and innovation projects

Caption:
Green = work achieved
Light green = work ongoing
Red = work not yet started