CENTRAL COMMISSION FOR THE NAVIGATION OF THE RHINE

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ECONOMIC COMMITTEE

Synopsis of the thematic meeting

"GREENING IN INLAND NAVIGATION from an economic perspective"

on 8 October in Strasbourg, 9.30 - 12.30

1. Initial situation and emission profile of inland navigation

Around ¾ of current inland navigation emissions are accounted for by large vessels, namely vessels of between 110 and 135 metres in length. In order to achieve a significant reduction in emissions for the industry as a whole, particular attention therefore needs to be paid to this segment of the fleet. This does not however preclude considering opportunities for greening in the smaller vessel segment as well (see item 4.1).
Investigations into energy efficiency and the level of emissions of air pollutants and greenhouse gases (in particular with bottom-up approaches) are methodologically challenging as (river) infrastructure conditions and operational parameters (load factor) need to be factored in as constraints.
A recent top-down approach to estimating energy efficiency in inland navigation arrived at a more favourable figure for inland navigation than previous investigations.
Despite that, given current emission profile developments in land transport modes, greater greening in inland navigation is unavoidable. What also needs to be noted, with an eye to air pollutant emissions injurious to health, is that while inland navigation's share of overall transport emissions may be relatively small, particular attention needs to be paid to local concentrations, (passing through built-up areas). This justifies more stringent limits.

2. Current framework for greening in inland navigation

The current framework for greening in inland navigation can be described as suboptimal. Compared with other modes of transport, such as road freight haulage, the inland navigation market exhibits a number of features resulting in a structurally lower greening rate:

- Upper limits for emissions are set at longer intervals and the upper limits that are set are less ambitious than for road freight haulage, for example
- The very long life of inland vessels is an additional brake on innovation. [In this context it seems more obvious to use the railways as a benchmark (diesel-electric engines) than heavy goods vehicles].
- There are few economic incentives for greening measures.
- Where economic incentives do exist - e.g. a new LNG engine pays for itself within less than ten years because of the annual fuel savings - for many companies the very high investment costs are a barrier to entry.
- By and large, businesses in the inland navigation industry have insufficient equity to make large scale greening investments.

Financing: a plethora of technical means of reducing emissions are unfortunately mismatched with very limited financial resources and scarcely any financing tools for implementing these technologies.

3. Consequences and resulting challenge

The essential consequence of this is that inland navigation is behind the curve when it comes to greening.

In view of the structural conditions pertaining at the outset, there is a danger that in the competition with land transport modes to reduce emissions, inland navigation will continue to lose ground. Other modes of transport are currently clearly achieving a more rapid implementation of technical measures to cut emissions.

4. Possible solutions:

4.1 Growing the market volume in the internal combustion engine market

The European Association of Internal Combustion Engine Manufacturers (Euromot) recommends aligning European inland navigation emission standards with worldwide standards (USA, India, possibly IMO standards for larger engines). This has the potential to create a larger market enabling engine manufacturers to increase the scale of their R&D investment in inland navigation engines. Expanding the market is deemed necessary because persisting with a small niche market characterised by low sales volumes offers scant incentive for investing in research and development.

For some parts of the fleet, especially the small ships' segment, exploration is required of the extent to which inland navigation can tap into HGV engine market know-how. The benefit of this would be that technically mature systems possessing a favourable emission profile could be implemented in the inland navigation sector without too much additional effort and expense.

The discussion also yielded the realisation that from the inland navigation perspective, the benchmark also needs to be extended to the railway motor market, the reason being that to a large extent the performance class of an inland vessel is closer to that of a railway engine than to an HGV. In particular, the tried and tested diesel electric propulsion technology continually developed over a period of decades on the railways offers interesting scope for application to inland navigation; very targeted use could be made here of the existing railway motor market.

4.2 Increasing development and implementation efforts

An aspect closely related to the previous point concerns the rate of development and implementation of new low emission technologies. This rate needs to be increased in order to develop the individual greening options in such a way technically that their economic disadvantages are resolved at the same time.

As the exhaust aftertreatment option illustrates, from an economic perspective, implementation of the corresponding technology is nowhere near attractive enough: the current drawbacks of this option are the high investment costs, and higher machinery operating costs.

4.3 New LNG technology

LNG results not just in lower emissions but also in lower running costs: this is achieved by lower fuel consumption.

- The LNG market requires an expansion of the infrastructure (especially bunkering capacity) to ensure the required planning security when converting to LNG.
- The space requirement for the LNG tanks and the ongoing absence of tank standardisation is currently posing additional problems for the economic implementation of LNG in the navigation industry.

- If LNG is to offer a greener alternative to existing fuel, not just in terms of air pollutants but green house gases as well, methane slip must be minimised.
- *EU LNG master plan Rhine-Main-Danube*

  The LNG master plan Rhine-Main-Danube can be cited as an important project as far as the expansion of LNG infrastructure is concerned. This master plan views inland navigation as a pioneer market for LNG, both in terms of the use of LNG as a fuel and its transportation as well.

  One vision of the master plan is that inland ports on the Rhine-Main-Danube axis could become distribution centres for LNG towards their hinterland. Inland ports along the Rhine-Main-Danube axis could thereby operate as nodes from which other markets (e.g. public transport, incl. buses but the energy sector as well) could be supplied with LNG.

4.4 Standardisation of existing technologies

Especially in the early stage of the proliferation of a new technology, standardisation is required to cut costs and promote proliferation. The passenger navigation market is an important example of the required standardisation. Here there is a need for a Europe-wide standardisation of electrical systems, especially in terms of the interfaces with the shore power supply system (there are currently only 35 *Shore Power* interfaces in Europe).

4.5 Fuel quality

A relevant point of the workshop was the finding that the quality of inland navigation fuel is not particularly high and is insufficiently regulated by the EU compared with other modes of transport. Without suitably high quality standards for mineral oil and LNG, greening will be rendered more difficult or impossible. There is still more that can be done here.

5. Conclusion

Greening objectives must be challenging but at the same time achievable and practicable. The engine strategy and fuel strategy play a central role.

Overall, it is apparent that increasing the pace of development and implementation merits a key role in inland navigation greening efforts.

This quickening of the pace of development can encompass various technological solutions or else comprise a combination of different solutions.

Higher investment is required in addition to the ongoing technical development of greening options. To this end, the range of financing tools for greening measures in inland navigation should be expanded.

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