EU Strategy for the Danube Region

Priority Area 1a – To improve mobility and multimodality: Inland waterways

15th Meeting of the PA1a Working Group on Fleet modernisation

Vienna, Austria
07 March 2019

MINUTES

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Version (date):

V 0.1 (draft) | 07-03-2019

EUROPEAN UNION
European Regional Development Fund

Bundesministerium Verkehr, Innovation und Technologie

viadonau

Ministerul Transporturilor

The 15th meeting of the thematic working group on *Fleet modernisation*, within PA1a – *To improve mobility and multimodality: Inland waterways* was organised in Vienna, Austria, on the 07th of March 2019.

The meeting was moderated by Mr. Gert-Jan Muilerman from PA1a Technical Secretariat. The meeting was attended by representatives from Ministries of Transport and waterway administrations from Danube riparian countries, representatives of the shipping industry, representatives of research institutes, representatives of the Danube Commission and transnational organizations (Pro Danube International, etc.).

The discussions run according to the agenda set up by the Technical Secretariat for PA1a.

1. Welcome and introduction

Mr. Gert-Jan Muilerman (viadonau) welcomed all participants and explained the Working Group structure of PA1a as well as the aim of today's Working Group Meeting. Since the European programmes and budgets are currently being prepared for the upcoming multiannual financial framework until 2027, PA1a is preparing recommendations that are supported by the Member States and the stakeholders as background material for more detailed work programmes in order to overcome the current modernisation backlog. The aim of today's Working Group meeting is to gather inputs and opinions, so that the PA1a Technical Secretariat can define a policy recommendation that finds broad support and provides solid arguments to create funding opportunities in the Cohesion Funds, Horizon Europe, CEF2 and national/regional instruments. Today's discussion should build on the results of the already implemented projects LNG Masterplan for Rhine-Main-Danube, Green Danube and PROMINENT. Lastly, Mr. Muilerman referred to the PA1a project database where the entire project landscape around the thematic topics of the Working Groups is available.

2. Overview of emission norms and regulations & most promising fleet modernisation technologies

Mr. Juha Schweighofer (viadonau) gave an overview of regulations relating to emissions and safety. He explained the provisions of Directive 2009/30/EC, according to which sulphur-free fuel is mandatory since 2011. Other regulations relating to the usage of fuel are the Clean Fuels Directive 2014/94/EC and the Renewable Energy Directive 2009/28/EC which foresee the deployment of (shore-side) infrastructure for alternative fuels (e.g. LNG) as well as electricity and promote the use of energy from renewable sources, respectively. The provisions of the Non-Road Mobile Machinery (NRMM) Directive define stringent emission limits for NRMM engines for different power ranges and applications. It also lays down the procedures engine manufacturers have to follow in order to obtain type-approval of their engines – which is a prerequisite for placing the engines on the EU market. Since 1st January 2019 manufacturers of engines with more than 300 kW need to comply with these provisions. Selective catalytic reduction (SCR) and diesel particulate filters (DPF) are to be applied. Additionally, the limits for particulate matter (PM) are defined in the Directive which are difficult to measure.
Mr. Schweighofer also explained the provisions of two regulations with impact on the ships' design. Directive 2016/1629/EC defines the minimum requirements for vessels, based on the "European Standard laying down Technical Requirements for Inland Navigation vessels (ES-TRIN)". The ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways defines that since 1st January 2019 tankers need to have a double-hull.
Mr. Schweighofer also outlined the main results of the PROMINENT project, implemented between 2015 and 2018 and funded by Horizon 2020. In a first step, promising fleet modernization technologies were examined resulting in a short list of the most promising technologies to be applied on a large scale with greater impact. He gave short explanations for each of the most promising technologies and additionally mentioned the use of GTL fuel as well as the replacement of old engines with Stage V engines which are not available at the moment.

Future research topics include (full) electric propulsion systems, fuel cells or hydrated vegetable oils (HVO). He summarized that legal actions need to be taken now and financing needs to be made available in order to apply the available technologies and reach the set targets.

3. Specific challenges for the Danube fleet: the industry's perspective

Manfred Seitz (Pro Danube International) also welcomed all participants and stated that strong cooperation is needed to overcome the multiple and severe barriers for fleet modernisation in the Danube region. He pointed out the special role of the EU in the process of achieving this goal. The shortcomings in fairway maintenance and the inhomogeneous fairway standards are the first relevant issue to be tackled so the industry sector can operate cost-effectively. Only then will vessel operators be able to invest in the various available technologies. Mr. Seitz explained that one need for modernisation of the existing vessels stems from the fact that 2.5m fairway depth is not achieved. Another reason for necessary fleet modernisation is stringent emission regulations and greening goals. A third reason for modernisation measures concerns new market demands, more specifically new cargo groups or the need to better fit into logistics chains (e.g. digitalisation needs).
Regarding the greening needs Mr. Seitz stated the emissions caused by the Danube fleet are negligible in comparison to industry and household emissions in Europe. Nevertheless, they need to be addressed, mostly due to political and societal pressure. The Non-Road Mobile Machinery (NRMM) Directive will result in a mix of different technologies to be applied to reach set goals. The biggest problem in this context is the fact that the application of greening technologies by the vessel operators does not result in business cases yet. Accordingly, the regulative framework should be adapted so the vessel operators who invest in fleet modernisation are not confronted with competition disadvantages. The deadlines for meeting the emission thresholds are especially crucial in this regard. The first and foremost aim must be not to lose market shares of cargo transport to rail. The state aid scheme which is to be developed by the GRENDEL project should tackle these issues, although it will certainly not be the only necessary measure. European schemes are just as important. Greening measures are also not only a chance for vessel operators to be more competitive and efficient, but also for the shipbuilding industry which provides the technologies. Partnership is the key in this regard.

4. Experiences with fleet modernisation measures in Austria

Ms. Vera Hofbauer (bmvit) informed the participants that the Austrian Ministry of Transport implemented a funding programme between 1 July 2014 and 31 May 2017 with a total budget of 2,000,000 EUR, aimed at promoting environmentally friendly investments in the Danube fleet. Eligible items were modifications of the hull, which are mostly to be seen in view of insufficient infrastructure parameters, and environmentally-friendly vessel adaptations that had to have a positive impact on the environment (e.g. exhaust aftertreatment facilities). Eligibility criteria: cargo vessel owners of European undertakings with at least 10 travels per year through Austria (passenger vessels were not funded). Depending on the measure to be implemented the funding rate was between 10 and 40 percent. Ms. Hofbauer summarized that in altogether six calls only 400,000 EUR were paid to applicants. Out of nine applications only four were realised although all nine applications were approved (in total: 15 vessels modernised). The funded measures ranged from optimised propulsion systems to modifications of the hull.
The reasons for the huge underexploitation of the programme are the fact that it took a long time to set up the funding scheme, the low funding rates and that business cases could not be evolved around the eligible measures. Ms. Hofbauer stressed that in future funding schemes engines and retro-fitting of engines will have to be eligible as well. Additionally, the bureaucracy in the application process needs to be reduced. The payment of lump sums would be one solution to achieve this. She stated that the NRMM Directive will hurt the industry sector in the coming years. Both, the provisions of the Directive and respective financing are needed.

5. Moderated large group discussion with panellists and audience

Mr. Muilerman shortly explained the aim of the discussion. First question: Which technologies are perceived as most promising and/or for which technology a business case would be imaginable?

Mr. Eloi Flipo (VNF – Navigable Waterways of France) stated that in France infrastructure for the future use of hydrogen fuel cells and electric propulsions (or both in combination) are on the advance. Talks with industry sector representatives have confirmed the sector's interest in these technologies and the search for suitable real estate along the waterways is ongoing. It has to be kept in mind though that vessels operating in the French waterways are mostly smaller than those operating on the Danube. As well the issue of hydrogen production has to be considered carefully in the future.

Mr. Botond Szalma (Plimsoll Zrt – Fluvius Kft) raised the issue of insufficient fairway availability/insufficient fairway parameters, in particular depths. He stated that the industry sector would be willing and able to invest in fleet modernisation only if profits are made from transport operations that allow for such investments. He pointed out that the industry sector cannot afford the modernisation of the entire existing fleet and that old vessels are usually sold to poorer countries further downstream of the Danube which does not solve but relocate the emissions issue. The old vessels would in any case have to be phased out. Mr. Szalma also voices his concern that ministries are not investing enough in IWT and the IW infrastructure but are instead subsidising rail and road transport.

Based on Mr. Szalma's statement regarding insufficient waterway depths along the Danube, **Mr. Dominik Cofalka** (Reintrieb GmbH) called attention to disruptive technologies relating to new propulsions and the vessels' draught. He explained that his company Reintrieb GmbH is working to combine two European patents in a new vessel propulsion that will reduce the vessels' draught.

Mr. Michel Voorwinde (VIV – vereniging voor importeurs van verbrandingsmotoren) stated that HVO biodiesel (hydrotreated vegetable oil) could easily be used instead of fossil diesel without major investments needed, since the same engines could be used. He pointed out though that especially old engines would have to be excluded from this option. The emission savings would be significant and result in CCNR II performance of the vessels. Mr. Voorwinde acknowledged that new fuels are usually more expensive than fossil fuels, so even if there are no investment costs the operation of the vessel would be more expensive.
Answering a corresponding question by Mr. Manfred Seitz (Pro Danube International) Mr. Voorwinde further explained that even with the use of biodiesel, Stage V performance of such a vessel is not achievable. No old engine without exhaust after-treatment will reach this standard. He also stated that methanol is also under experimentation, with more emission savings possible.

Mr. Muilerman raised the question of energy-efficient navigation, supported by digital tools on board, and whether it would create a business case for the industry sector.

Mr. Szalma confirmed the concept to be a viable idea although the real fuel-saving potentials need to be validated. He further stressed the need to integrate River Information Services into such a tool (e.g. Estimated Time of Arrival, waterway information).

Mr. Muilerman summarized that exhaust after-treatment will be mandatory under this legislation which creates high costs for the industry sector with no possible business case. This situation calls for public intervention.

Regarding barriers for the application of existing technologies **Mr. Flipo** called attention to legal barriers. Many technologies are well advanced but not approved yet, due to liability issues. The approval and certification of new technologies is a big problem. Mr. Flipo therefore suggested involving the respective authorities in research initiatives and projects at a very early stage, in order to be able to respond to concerns and feedback from these authorities.

Mr. Muilerman raised the question of financial means as a barrier for technology roll-outs. He stated that about 1-2 bn EUR would be needed to retrofit all vessels operating in the European core network. He asked whether other barriers come to mind that would hinder the roll-out of certain technologies, even if the investments would be state- or EU-financed.

Mr. Szalma explained that there is also a lack of capacity in the shipyards to implement the changes in all vessels of the Danube fleet. A shipyard needs 1 to 3 weeks to change an engine which would result in long idle times for the industry sector.

Mr. Khalid Tachi (EICB/EIBIP) explained that the marinisation of technologies is in most cases very expensive. Stationary technologies are often cheaper; as are technologies for trucks (e.g. LNG tanks for trucks are much cheaper than for vessels). Often the reasons for this situation are not quite clear. Mr. Tachi suggested taking the necessary investments out of the vessel by creating new business cases around IWT. The investments would be taken by external providers specialising in the provision of e.g. batteries or LNG tanks (LNG tanks are the most expensive component of this technology). The vessel operators would only pay for the use of the technologies/components. This shift from a CAPEX driven to an OPEX driven business model would require also a mental shift in the IWT sector. It would also be crucial not to limit this approach to certain technologies, but to foster different business cases simultaneously.

Mr. Tibor Mátyás (DDSG MAHART Kft) voices his concern that a lot of the existing Danube vessels were built in the 80s and 90s, when about 5,500 vessels were frequently operating on the Danube and the target draught of the vessels was around 3 metres. Due to insufficient fairway depths and the loss of cargo to other transport modes only about 3,000 vessels are currently operating on the Danube. Unless cargo transport can be returned to a reliable waterway and profits are made by the industry sector, the existing greening technologies will not be taken up and it would be necessary to think about new vessels with less draught. Vessel operators in the past made a 50-year investment. Mr. Mátyás therefore suggested to, above all, focus on waterway maintenance. In 2018, 57 critical locations hindered navigation on the Hungarian Danube stretch alone.

Mr. Muilerman enquired about experiences made with funding programmes.

Mr. Flipo summarized several lessons learned during the past 15 years of funding programmes being implemented in France. Until now the programmes had very limited lists of eligible equipment and in many cases there was no possibility to properly assess the implemented projects. The current programme consists of four parts and four targets with technology-wise very wide calls for each part, leaving room for various different projects. Mr. Flipo also expressed his concern that in the past some engine manufacturers have raised their engine prices by the amount of the subsidy of the funding programme.

Mr. Tachi explained that in the Netherlands there are general subsidy programmes for CO_2 reduction measures available for all modes of transport. Vessel operators thus also have the possibility to collect subsidies, yet it is difficult to apply for funding and the emission thresholds are calculated only within the borders of the Netherlands. Since recently, a funding programme dedicated to inland waterway transport is available – the temporal funding programme "Innovaties Duurzame Binnenvaart 2018–2019" which is put under a wider framework programme.
Mr. Tachi explained that many governments moved towards CO_2-reduction measures, based on the provisions of the Paris Accord, and away from measures to reduce air pollutants although especially for local authorities air pollutants (NOx and PM) present a major issue.
In order to improve the impact of funding schemes the scope of eligible technologies could be limited, for example by different calls for different measures. Currently, in many programmes the available money is widely scattered. Mr. Tachi also suggested just setting the targets in future funding schemes, independent of the technology used by the applying vessel operators to reach them. This approach has already worked well in the Netherlands. Currently, a study is ongoing (lead by CCNR) about the legal and financial framework of financing fleet modernisation in the Netherlands.

Mr. Seitz stated that the Austrian funding programme was set up too late and with too few measures eligible for funding. Additionally, the funding programme was restricted to Austria. The GRENDEL project addresses precisely these issues and aims at harmonising the various national funding programmes. Mr. Seitz remarked that such joint efforts to modernise the Danube fleet should be manageable with the help of EU funding since the Danube fleet is rather small. In the national operational programmes a lot of money is available and the combined greening measures for vessels would require only trivial amounts compared to many infrastructure projects. At the same time money

should as well be put into infrastructure maintenance in order to make the industry sector financially stronger. Harmonised funding schemes must also be embedded in the EU financing framework and the overall IWT promotion strategies on EU and national level. Mr. Seitz further suggested that future state aid schemes should consider funding the costs for the building of new vessels. In some cases it might be smarter to take an old vessel out of operation and instead build a new, environmentally-friendly vessel as replacement.

Mr. Muilerman wrapped up the session by thanking all participants for their active participation and their valuable expert inputs. He further explained that the results of the discussion will be summarized in policy recommendations, to be used for future lobbying at EU and national level, especially in view of the current preparation for the upcoming multiannual financial framework until 2027. These policy recommendations will be discussed during the upcoming Steering Group meeting at the beginning of summer and sent out to the participants of today's Working Group meeting for their approval.