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## Economic Commission for Europe

### Inland Transport Committee

#### Working Party on Inland Water Transport

##### Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation

###### Sixtieth session

Geneva, 16–18 February 2022

Item 4 (b) of the provisional agenda

##### **Inland Waterways Infrastructure: Inventory of Main Standards and Parameters of the E Waterway Network (Blue Book)**

## **Outcome of the EMMA Extension Project – Enhancing Inland Navigation in the Baltic Sea Region**

**Note by the secretariat\*,\*\***

### **I. Mandate**

1. This document is submitted in line with the Proposed Programme Budget for 2022, part V, Regional cooperation for development, section 20, Economic Development in Europe, Programme 17, Economic Development in Europe (A/76/6 (Sect.20), para. 20.76).
2. At its fifty-ninth session, the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation (SC.3/WP.3) asked the secretariat to prepare a working document on the main outcome of the EMMA<sup>1</sup> Extension Project (ECE/TRANS/SC.3/WP.3/118, paragraph 48).
3. This document provides an overview of the main project results based on the information transmitted by the Port of Hamburg Marketing Regional Association, the lead partner of the project (Informal document SC.3/WP.3 No. 14 (2021)), and reports of the project partners available at [www.project-emma.eu/media-library](http://www.project-emma.eu/media-library).
4. SC.3/WP.3 may wish to take note of this information and decide as appropriate.

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\* The present report was submitted after the deadline in order to reflect the most recent information.

\*\* The present document is being issued without formal editing.

<sup>1</sup> Enhancing freight mobility and logistics in the Baltic Sea Region by strengthening inland waterway and river sea transport and promoting new international shipping services.

## II. General Information on the EMMA Extension Project

5. The EMMA Extension Project (August 2019–July 2021) aims at enhancing inland navigation in the Baltic Sea Region by supporting digitalization in inland waterway transport and implementing new logistic concepts in the Baltic Sea Region. The project is based on the results and recommendations of the EMMA project (2016–2019),<sup>2</sup> which brought inland navigation to a wider national and pan-European agenda, strengthened its voice and successfully demonstrated the feasibility of potential inland waterway transport services in the Baltic Sea Region. The project focuses on next steps towards further market deployment of inland water transport by capitalizing on the results and partnership of the EMMA project and implementing practical solutions for inland water transport.

6. The project is led by the Port of Hamburg Marketing Regional Association and is implemented together with seven project partners from five Baltic Sea Region countries: Finland, Germany, Lithuania, Poland and Sweden, as well as 12 associated partners that are national ministries, European associations, industry and regional authorities. The total budget amounts to € 999,000, of which € 778,000 is co-financed by the Baltic Sea Region Programme (ERDF). It has been approved as the flagship of the European Union Strategy for the Baltic Sea Region under the Transport Policy Area.

7. Despite the COVID pandemic outbreak, the EMMA Extension project has been able to support digitalization in inland waterway transport, River Information Services (RIS) and Vessel Traffic Services (VTS) and implement new logistic concepts in the Baltic Sea Region with a great success. Some main results are shortly described below.

## III. Projects and Activities in the Baltic Sea Region under the EMMA Extension Project

### A. Finland: Implementing the Smart Fairway in Saimaa

8. The EMMA project has demonstrated that RIS solutions applied in Central Europe would not be feasible for Finnish waterways, where VTS and smart fairway solutions are used. The EMMA project has also proved that functional extensions could contribute to navigation safety and simplify transport management solutions. The purpose of the EMMA Extension project in Finland was therefore to install a smart fairway solution in Saimaa.

9. As a part of the EMMA Extension project, 34 smart buoys were installed in the Saimaa deep fairway, the most important Finnish inland waterway used for commercial shipping. The buoys were installed in a class II waterway in the Haukivesi-Joensuu deepwater fairway section that connects North Karelia to other inland waterway sections in the Saimaa area and to the Saimaa Canal. The buoys are controlled remotely and provide information about their actual location, which is essential in case the buoy has been displaced, the functionality of the light and the power supply condition. In addition, communication is ensured between the buoys in order to assist boatmasters to observe the fairway. The lights are automatically adjusted according to the lighting conditions so as not to distract other traffic. Boatmasters and VTS centres can adjust the light output of the buoys and the rhythm of lights in real time to support navigation in poor visibility and bad weather conditions.

10. The smart fairway contributes to navigation safety by improving navigability and lowering the risk of accidents, gives better tools for predictive maintenance and more situational awareness to the waterway authority and opens new opportunities for digitalization of the fairway and reducing the carbon footprint. In future, smart aids to navigation might be used as 5G base stations.

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<sup>2</sup> ECE/TRANS/SC.3/WP.3/2019/25.

## **B. Germany: Extending the River Information Services Portfolio in the Baltic Sea region**

11. The software prototype ELIAS is a map-based web application providing static and basic status information on inland waterways. ELIAS is the result of a long series of research and implementation projects under several programmes, including the EMMA project. It builds on the RIS standards wherever possible and allows a new user experience. Its purpose is to maximize the waterway operability by collecting and combining information and generating added value through modern data science techniques. The information system is accessible by the following link: <https://elias.isl.org/index.xhtml>

12. One of the EMMA Extension project partners, the Institute of Shipping Economics and Logistics (Bremen), and the lead partner of the project have supported the Polish RIS-Oder pilot project with the technical knowledge and consultancy linked to common standardized interfaces to connect new digitalized data services and functionalities to external systems like ELIAS, such as a real-time data on the clearance under bridges. This cooperation resulted in the interface between the actual bridge clearance service and ELIAS, thus enhancing the route planning capabilities of vessel operators and freight forwarders.

## **C. Lithuania: Launch of Cargo Transportation by Inland Waterway from the Seaport of Klaipeda**

13. During the EMMA Extension project, several pilot voyages of inland waterway vessels took place in Lithuania by the main inland waterways – the Nemunas and the Curonian Lagoon – from Kaunas to Klaipeda and paved the way for commercial cargo transportation by inland waterways from the seaport of Klaipeda. The activities included commercial transport of containers between Klaipeda–Kaunas–Klaipeda on a towed convoy consisting of a barge with the cargo carrying capacity of 1,000 tonnes:

- April – beginning of May 2019, in total 33 containers
- May 2019, 38 containers
- End of May–beginning of June 2019, 20 containers.

In total, 91 containers were transported by inland waterways and covered the total distance of 1,400 km.

14. After the successful first trials, the Government of Lithuania has provided funding for improving freight transport by inland waterways. This includes € 2.6 million for the purchase of machinery for maintenance works in 2020–2021 and € 27 million in 2021–2023 for the modernization of the E 41 waterway and increasing the fairway depth. Further to container transport, the purpose is to develop transport of other cargoes by inland waterways, including grain, scrap metal and other bulk cargoes.

15. In spring 2021, the final fourth pilot voyage to deliver a 164-tonne autotransformer – the most powerful in the Baltic States – to the Lithuanian electricity transmission system operator (Litgrid) was therefore a huge event. After assembly and testing, the autotransformer arrived by sea from the port of Derince (Turkey) to Lithuania where transportation was by inland barge from the Klaipeda container terminal via the Curonian Lagoon and the Nemunas to the Kaunas Marvele cargo port. The final step to the Alytus district was by road. The experience was unique for Lithuania in terms of the transportation of huge cargo by waterways and was a crucial step to ensuring energy supplies from Poland to Estonia, Latvia and Lithuania. The voyage and the delivery were widely disseminated in Lithuanian mass media as a huge success.

16. The EMMA Extension pilot voyages helped to identify the existing problems related to the cargo transportation by inland waterways and next steps. Examples of the activities based on the outcome of the project are: (a) the software upgrading in the seaport of Klaipeda in 2021 to cover cargo operations by inland waterway vessels, (b) the construction of a container distribution terminal in Kaunas, (c) the construction of a new barge with a cargo-

carrying capacity of 2,000 tonnes in 2021 and (d) provision of inland ports with the equipment suitable for transshipment of containers.

## **D. Poland: Container Transport and River Information Services Pilot**

### **1. First commercial container transport on the river Vistula**

17. Under the framework of the EMMA Extension project, the first commercial container transport was launched in Poland on 6 April 2021 on the Vistula from the seaport of Gdańsk to a factory in the Kujawsko-Pomorskie region. Containers were transported by a convoy consisting of a pusher and a barge on the lower Vistula to Chełmno and were transhipped on 8 April 2021: the import containers – for further delivery by road, and goods intended for export – on a barge. In 10 hours, the convoy arrived back to the port of Gdańsk for further transshipment of containers to sea-going ships. The entire operation engaged 12 containers with about 300 tonnes of cargoes and took four days in total.

18. The main goals of the pilot project were (a) promoting inland water transport in Poland as the most economical, safe and environmentally friendly mode of transport, (b) increasing the knowledge of the use of inland navigation services and infrastructure among cargo owners and shipping companies and (c) promoting activities related to the planned construction of the Bydgoszcz logistics hub and its recognition under the TEN-T core network.<sup>3</sup> Another important goal was the practical verification of water transport possibilities and reloading goods transported from sea ports to the interior of the country as an alternative to road or rail transport. In this case, inland waterway transport could be included in the supply chain, which in the future could run through the logistics centre in the heart of the Kujawsko-Pomorskie Region – the Bydgoszcz Logistics hub. Studies of the multimodal platform Bydgoszcz-Solec Kujawski and the Last Mile Concept for the Bydgoszcz Logistics Hub have allowed to determine the parameters of a future port and identify the needs of economic entities from the region in terms of optimization of logistics operations and use of inland navigation.

19. The organization of the EMMA Extension voyages was in line with the national transport policy and the activities carried out by the Ministry of Infrastructure of Poland aimed at promoting the use of alternative modes of transport and transfer of cargo flows from road to rail and water transport as well as building modern inter- and multimodal terminals that would improve the existing supply chains. This issue is also important with a view of a possible inclusion of the Bydgoszcz Logistics hub and the related waterways of international importance into the TEN-T Network which is now under revision. Furthermore, the promotion of water transport will also indirectly justify the necessity and legitimacy of developing strategic programmes for the Vistula and the Oder rivers.

20. The pilot project has received a very good feedback from many actors interested in regular transport by inland waterway. As the key argument for customers to participate in the pilot were mentioned its environmental dimension and innovation on the local market. The conclusions made on the outcome of the pilot project highlighted its importance for the development of the Kujawsko-Pomorskie Region and identified the activities required for improving navigation conditions, the efficiency of regular maintenance of the waterway and ensuring regular transshipment operations in the ports of the region as well as the next steps.

### **2. Installation of bridge clearance applications on the Oder River**

21. Another Polish EMMA Extension pilot project is aimed at implementing automatic readings of the safe clearances under bridges on the Oder in Szczecin. Measurement and telemetric sensors and electronic information boards were installed on two bridges to ensure an accurate measurement of the clearance under the bridge and indicate the real-time value of the clearance for skippers.

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<sup>3</sup> Trans-European transport network.

22. Given that the clearance under bridges in the operation area of the RIS-Oder project is often limited, this data is crucial for boatmasters of inland vessels, allowing them to make the right decision when passing under the bridge. The project has confirmed that the information on actual values of the clearance under bridges on the boards located under the bridge is essential for navigation safety. This data is also important in terms of logistics, as this would allow to shorten the total voyage time, facilitate the loading operations and adjust the allowed height of the cargo on a vessel. In the long run, this would lower the cost and make the transport more profitable for vessel and cargo operators.

23. Furthermore, the RIS-Oder project includes: (a) the installation of sensors in the area covered by RIS (including CCTV<sup>4</sup> cameras, AIS<sup>5</sup> stations, hydrometeorological stations) as the primary source of information; (b) operation of the RIS centre, where information is processed; (c) free provision of inland electronic navigation charts, (d) issuing Notices for Skippers and (e) vessel tracking and tracing. Although the realization of the project was limited by the Szczecin area, its outcome will have an impact on the route planning for cross-border shipments and operations between the Polish and German inland waterway systems.

## **E. Sweden: Simulation of New Inland Waterway Fairways**

24. At present, only Lake Mälaren, Lake Vänern and the Göta älv river are classified for inland navigation by the Swedish Transport Agency. Plans for extending the areas for inland waterway transportation in accordance with the classification of geographical zones for inland navigation by the European Union include the waterway section between Gothenburg and Brofjorden on the west coast of Sweden. The Swedish EMMA Extension activity included simulation testing on a new fairway in this area with a purpose to evaluate the measures and infrastructure improvements that might be required for safe operation of cargo vessels. The Swedish Maritime Administration is directly involved in this activity and has a high interest in the results. The EMMA Extension project partner Avatar Logistics, together with Preem Sverige AB, has expressed an interest in being able to transport petroleum products from the PREEM petroleum refinery in Brofjorden to the port of Karlstad in Lake Vänern by an inland waterway tank vessel.

25. This simulation was the first made in Sweden for inland waterway vessels and the outcome of the test runs in the simulator were positive, however, this area might require significant investments to ensure safe navigation of cargo vessels. The outcome will be used to potentially open a new inland waterway zone in Sweden, thus enabling new inland water transport business and logistic solutions in the area. The full report is available at <https://www.project-emma.eu/content/act-31-swedish-fairway-simulation-implementation>.

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<sup>4</sup> Closed-circuit television.

<sup>5</sup> Automatic Identification System.