



Economic Commission for Europe**Inland Transport Committee****Eighty-second session**

Geneva, 25–28 February 2020

Item 4 (q) of the provisional agenda

Strategic questions of a horizontal policy or regulatory nature:**Inland water transport****Smart Shipping and Automation in Inland Water Transport****Note by the secretariat*****I. Mandate**

1. The Inland Transport Committee (ITC) at its eighty-first session welcomed the actions in the field of automation, smart shipping and digitalization by the Working Party on Inland Water Transport (SC.3) and its subsidiary body, the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation (SC.3/WP.3) (ECE/TRANS/288, paras. 82 and 83).
2. Following the decisions of the Ministerial declaration “Inland Navigation in a Global Setting” signed in Wroclaw (Poland) on 18 April 2019, the Ministerial resolution on “Enhancing cooperation, harmonization and integration in the era of transport digitalization and automation”, that was endorsed by ITC at its eighty-first session, and ITC resolution No. 265 “Facilitating the Development of Inland Water Transport” that was adopted on 22 February 2019,¹ both Working Parties continued with this issue in 2019.
3. Following the request of SC.3 at its sixty-third session, the secretariat prepared an overview of its activities and progress in 2019 in automation in inland navigation, for submission to the eighty-second session of ITC, i.e. this document. ITC may wish to (a) take note of the progress reached by SC.3, (b) include the activities foreseen in the road map for 2020–2024 “Forging international cooperation towards an international legislative basis for smart shipping” in its road map on Intelligent Transport Systems (ITS), and (c) provide further guidance to SC.3.

II. Recent activities and projects

4. Automated navigation and smart shipping have been a key focus of the inland water transport sector for several years now. It is highly desired by shipping companies as potentially beneficial for navigation safety and reliability, and as an option to resolve a

* This document was scheduled for publication after the standard publication date owing to circumstances beyond the submitter's control.

¹ ECE/TRANS/288, annex III.

growing shortage of the staff in the sector. Research and pilot projects have been in two directions: (a) creation of “smart” and automated vessels for various purposes, and (b) creation of “smart” onshore infrastructure to provide safe and cost-effective navigation of “smart” and automated vessels.

5. Some of the recent projects and programmes of member States and international organizations were highlighted in 2019:

(a) projects in Flanders (Belgium):

- Project Hull-to-Hull (H2H) began in 2017 with the aim of safe navigation of vessels and objects of close proximity to each other, using Galileo, EGNOS² and other positioning methods
- Unmanned shipping technologies were under development by SEAFAR to remotely operate automated inland barges; tests are planned to begin in September 2019
- Project AUTOSHIP (Autonomous Shipping Initiative for European Waters) aimed to test an unmanned vessel on Flemish inland waterways; the project began in June 2019 and will end in December 2022;

(b) The Artificial Intelligence Strategy adopted by Germany included an action plan aimed to foster automated inland water transport, establish testing areas for smart shipping and digitalization and various autonomous shipping projects;

(c) The work programme for 2019–2021 of the European Committee for drawing up Standards in the field of Inland Navigation (CESNI) included the development and adoption of standards in the field of technical requirements for vessels, active consideration of digitalization and automation in inland navigation, collection of experiences from pilot projects and an evaluation of the regulatory needs;

(d) The Central Commission for the Navigation of the Rhine (CCNR) began analysis of its regulatory framework with a view to implementing the automation provisions, and was working on an inventory of projects on automation in inland navigation;

(e) The newly established Working Group 210 “Smart Shipping on Inland Waterways” of the World Association for Waterborne Transport Infrastructure (PIANC) focused on the impact of smart shipping on infrastructure and on waterway traffic managers.

6. However, the practical implementation of automated navigation has not been sufficiently explored. To ensure this, the legal framework must evolve along with any technological developments, and lack of efforts must not hinder the use of new technologies. International coordination and agreement are particularly important for transboundary rivers and international waterways. Furthermore, member States emphasized that more attention should be paid to the coastal infrastructure with a view to justifying the significant costs required for its upgrading. All working stages should be defined in a balanced manner and duly planned.

III. Regulatory Work

A. Terminology

7. At its fifty-fifth session, SC.3/WP.3 had agreed with the definitions of automation levels in inland navigation adopted by CCNR in December 2018 (ECE/TRANS/2019/16). The Working Party mentioned that the definitions introduced by CCNR were more advanced and comprehensive than the relevant terminology proposed by IMO, in that they covered all automation levels.

8. At its sixty-third session, SC.3 considered the definitions on smart shipping proposed by Belgium: “Smart vessels”, “Smart infrastructure”, “Smart communication” and “Smart regulations” (ECE/TRANS/SC.3/WP.3/2019/13). The work on the definitions will continue

² European Geostationary Navigation Overlay Service.

in 2020; for which, SC.3 asked the secretariat to prepare an overview of the existing terms and definitions in this field.

B. Harmonization of the International Legislative Framework and Common Policy Areas to Foster Innovation

9. An up-to-date legal basis is a precondition to begin the commercial use of smart vessels on inland waterways. Thus, SC.3 began discussion on harmonizing the international legislative framework and policy areas for a common approach to foster innovations in inland navigation. De Vlaamse Waterweg nv (Belgium) initiated the discussion and prepared an overview of the policy areas of relevance to the legal framework of the United Nations Economic Commission for Europe (ECE) that required adaptation (ECE/TRANS/SC.3/WP.3/2019/13).

10. Gaps were identified in the ECE legal instruments and resolutions of relevance to inland navigation which showed that several technical provisions were missing, and which should be resolved prior to further development of the regulatory framework. The following major assumptions were proposed as a basis for evaluation: automated vessels should (a) maximize safety of the inland waterway network; (b) support the market by bringing new cargo flows to inland shipping, and (c) contribute to increasing the modal share of inland water transport.

11. Based on the analysis made, thirteen policy areas were identified, that required a harmonized approach:

- Definitions
- Competencies and crew qualifications
- Technical requirements for inland navigation vessels
- Presence of the boatmaster and crew members on board
- Responsibility and liability
- Technical solutions
- Communication between a vessel and the competent authority
- Ship-to-ship communication
- Digital documents and/or documents to be available on board
- Recreational navigation
- Emergency situations
- Cybersecurity
- Inland waterway infrastructure.

12. SC.3 supported the proposal and encouraged member States, international organizations and other stakeholders to support and continue this work and submit their proposals for the document. Next steps will require parallel interaction between technical and regulatory experts which reflect innovative technical developments, and options for developing the existing regulatory framework, and which maintain a high navigation safety and an efficient shipping traffic.

III. Next Tasks and Steps

A. Resolution “Enhancing international cooperation to support the development of smart shipping on inland waterways” and the road map “Forging international cooperation towards an international legislative basis for smart shipping”

13. Recognizing the key role of international cooperation in this field, SC.3 adopted resolution No. 95 “Enhancing international cooperation to support the development of smart shipping on inland waterways” at its sixty-third session on 8 November 2019 (ECE/TRANS/SC.3/211). By this resolution, SC.3 (a) endorsed the road map for international cooperation that aims to promote and develop smart shipping on inland waterways; (b) invited governments, international organizations, river commissions and other stakeholders to actively participate in ECE work on a harmonized pan-European legislative framework for smart shipping and (c) encouraged governments to include automation and digitalization on inland water transport in national development strategies and action plans.

14. The road map for 2020–2024 “Forging international cooperation towards an international legislative basis for smart shipping” (annex to ECE/TRANS/SC.3/211), endorsed by SC.3, includes the following actions:

- Introduce harmonized definitions of autonomy levels into ECE documents
- Review ECE resolutions, international conventions and agreements
- Harmonize approaches to create a basis for the deployment of smart shipping
- Digitization and digitalization
- Ensure data protection, cybersecurity, address the liability concerns and other relevant issues
- Evaluate the social impact of automation, develop and harmonize manning requirements, education and training
- Assist governments, contribute to capacity-building and awareness-raising, organize workshops and round tables on automation and smart shipping and taking part in the United Nations round tables on ITS and automation of transport.

B. Policy recommendations of the White Paper on the Progress, Accomplishments and Future of Sustainable Inland Water Transport

15. The developments, findings and conclusions made by the Working Parties have become the basis for the following policy recommendations of the new White paper that was adopted by SC.3 at its sixty-third session (ECE/TRANS/279):

- Policy Recommendation No. 6: Promote the development of automation, digitalization and other innovations in the inland water transport sector
 - Policy Recommendation No. 8: Safety, security and cyber security in inland water transport – countering internal and external threats to the sector.
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