1System 4 IWT learning: upskilling pathways

- Skills gaps research and gaps in legislation implementation -

REPORT ON
LEGISLATION GAP AT EU AND NATIONAL LEVEL IN THE RHINE AND DANUBE RIPARIAN COUNTRIES AND THE NEEDS AND CHALLENGES FOR EU LEGISLATION IMPLEMENTATION REGARDING PERMANENT ADAPTATION OF PROFESSIONAL COMPETENCIES ACCORDING TO THE IMPLEMENTATION OF INNOVATIVE TECHNOLOGIES AND DIGITALIZATION IN IWT SECTOR

DELIVERABLE D 2.1.1

PROJECT: 1System 4 IWT learning: upskilling pathways
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EXECUTIVE SUMMARY

The ERASMUS+ project **"1System 4 IWT learning: upskilling pathways"**- 1S4IWT, aims to build a learning system that will act as a solution for ensuring and sustaining continuity of education & training for IWT students and workers and generate a „personalized learning experience". Furthermore, the project will focus on developing common resources, that meet the needs of nowadays trends and challenges for (incoming) staff in the IWT sector.

WP 2 - Skills gaps research and gaps in legislation implementation, deals with the creation of a resilient, easily accessible and future-proof education & training system for the IWT sector.

This report presents the conclusions of 1S4IWT Task 2.1 which identify the state of play on the transposition and implementation of ***Directive (EU) 2017/2397 of the European Parliament and of the Council of 12 December 2017 on the recognition of professional qualifications in inland navigation*** and ***Commission delegated Directive (EU) 2020/12 of 2 August 2019 supplementing Directive (EU) 2017/2397 of the European Parliament and of the Council as regards the standards for competences and corresponding knowledge and skills, for the practical examinations, for the approval of simulators and for medical fitness***, in the project partners countries, as well as the needed competences and permanent adaptation of professional competencies of crew members due to the implementation of innovative technologies and digitalization in the IWT sector.

This deliverable builds upon latest information received from EDINNA and stakeholders' interviews as well as the outcomes of CESNI.

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LIST OF ABBREVIATIONS

CCNR	Central Commission for the Navigation on the Rhine
CESNI	European Committee for drawing up standards in the field of inland navigation
DC	Danube Commission
DG- MOVE	Department for Mobility and Transport
EC	European Commission
EDINNA	Education in Inland Navigation, the educational network of inland waterway navigation schools and training institutes
ES-QIN	European Standards-Qualification in Inland Navigation
EU	European Union
E & T	Education & Training
FP 7	Framework Programme for Research
IWT	Inland Waterway Transport
LNG	Liquefied Natural Gas
MoU	Memorandum of Understanding
PLATINA	Platform for the implementation of a future inland navigation action programme

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1. INTRODUCTION

1.1. EU Directives laying down the requirements for professional qualifications of inland navigation personnel and mandatory standards for competences

1System 4IWT aims to build a learning system that will act as a solution for ensuring and enduring continuity of education & training for IWT students and workers and generate a „personalized learning experience". Furthermore, the project will focus on developing common resources that meet the needs of nowadays trends and challenges for (incoming) staff in the IWT sector.
Since 2008 key stakeholders in the IWT sector are cooperating towards the harmonization and modernization of professional qualifications in inland navigation. A formal network of IWT education & training (E&T) institutes has been founded in February 2009 under the name "EDINNA" (www.edinna.eu).
Since the start, EDINNA has pledged for "one language" and "one standard" in the IWT sector. EDINNA and FP7 project PLATINA proposed to develop so called "Standards of Training and Certification in Inland Navigation" in order to develop a level playing field in the IWT E&T system.

Directive (EU) 2017/2397 of the European Parliament and of the Council of 12 December 2017 on the recognition of professional qualifications in inland navigation and repealing Council Directives 91/672/EEC and 96/50/EC, which came into force in January 2022, does mean implementation of "one standard" as promoted by EDINNA since the MoU of 2009.
With a view to contributing to the mobility of persons involved in the operation of craft across the Union, and considering that all certificates of qualification, service record books and logbooks issued in accordance with this Directive should comply with required minimum standards in accordance with harmonised criteria, Member States should recognise the professional qualifications certified in accordance with this Directive. Consequently, the holders of such qualifications should be able to exercise their profession on all Union inland waterways.
This Directive lays down the conditions and procedures for the certification of the qualifications of persons involved in the operation of a craft navigating on Union inland waterways, as well as for the recognition of such qualifications in the Member States.
Member States had the obligation to bring into force, regulations and administrative provisions necessary to comply with this Directive by 17 January 2022, and to immediately inform the Commission thereof.
The harmonisation of legislation in the field of professional qualifications in inland navigation in Europe is facilitated by close cooperation between the Union and the CCNR, and by the development of CESNI standards. The CESNI, which is open to experts from all Member States, draws up standards in the field of inland navigation, including standards for professional qualifications. European River Commissions, relevant international organisations, social partners and professional associations should be fully involved in the design and drawing up of CESNI standards. Where the conditions laid down in this Directive are met, the Commission should refer to CESNI standards when adopting and implementing delegated acts in accordance with this Directive.

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CESNI Standards - ES-QIN- were published by Commission **Delegated Directive (EU) 2020/12** of 2 August 2019 supplementing Directive (EU) 2017/2397 of the European Parliament and of the Council as regards the standards for competences and corresponding knowledge and skills, for the practical examinations, for the approval of simulators and for medical fitness.
In order to provide minimum harmonised standards for the certification of qualifications, the Commission has been empowered to adopt detailed rules laying down standards for competences and corresponding knowledge and skills, standards for practical examinations, standards for the approval of simulators and standards for medical fitness.

The standards for competences establish the minimum competences required for the safe operation of the craft, for the crew members at operational and management levels, for the Boatmasters authorised to sail with the aid of radar and those authorised to sail on waterways with a maritime character, for the passenger navigation experts and for the liquefied natural gas (LNG) experts. Each required competence was defined with its corresponding required knowledge and skills.

In order for the competent authorities to carry out in a similar way the practical examinations required by Article 17(3) of Directive (EU) 2017/2397, **standards for the practical examinations** were established. To this end, these standards define, for each practical examination, the specific competences and the assessment situations, including a specific scoring system and technical requirements for craft and onshore installations. For the candidates to the qualification of Boatmaster who have not previously completed an assessment at operational level, an additional module should be provided, so that the ability to perform the related supervised tasks can also be verified.

The standards for the approval of simulators were established to ensure that the simulators used for an assessment of competence are designed in such a way as to allow for the verification of the competences as prescribed under the standards for practical examinations. These standards cover the technical and functional requirements for vessel-handling and radar simulators as well as the procedure for the administrative approval of those simulators.

In order to reduce national differences in medical requirements and examination procedures and to ensure that medical certificates which are issued to deck crew members in inland navigation are a valid indicator of their medical fitness for the work they will perform, **standards for medical fitness** were established. These standards specify the tests that medical practitioners are to carry out and the criteria they are to apply to determine the fitness for work of deck crew members. They cover eyesight, hearing and physical and psychological conditions which may lead to temporary or permanent unfitness for work, as well as possible mitigation measures and restrictions. For coherence, the standards are based on the guidelines on the medical examinations of seafarers published by the International Labour Organisation and the International Maritime Organisation, in particular on the criteria applied to coastal services.

The date of transposition of this delegated Directive was aligned with the dates of transposition of Directive (EU) 2017/2397, namely in January 2022 for reasons of coherence and efficiency.
With reference to professional qualifications, within work programme 2022-2024, CESNI shall prepare and adopt **standards in the field of professional qualifications**, actively promoting:
- the regular revision of ES-QIN to maintain and guarantee the high level of safety in inland navigation

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and to follow the technical evolution,
- the development of competence-based standards for:
    - *entrepreneurs, in particular for digitalisation and greening, working with:*
        - *new and innovative technologies including the use of relevant alternative fuels, batteries and electric propulsion systems,*
        - *with increasingly digitalised vessels, included automated vessels,*
        - *eco-navigation,*
        - *modern training tools, including remote learning*,
- the establishment of modern manning requirements,
- electronic tools for recording and exchanging information on crew

CESNI shall support proper implementation of standards in the field of professional qualifications, including:
- maintenance of quality standards and guidelines,
- preparation of explanatory notices for the major standards or amendments,
- deliberation on the uniform interpretation and application of the standards.

1.2. Main objective

The main objective of this report is to provide a **gap analysis of EU legislation implementation** in the Rhine and Danube riparian countries in terms of newly adopted Directives (EU) regarding the requirements for professional qualification and new common standards for competences for IWT crew members which are compulsory starting with January 2022, and the needs and challenges for permanent adaptation of professional competencies according to the implementation of innovative technologies and digitalization in IWT sector.
It highlights the state of play on implementation of the new mandatory standards for competence in the education, training and assessment system addressed to IWT crewmembers, in the Rhine and Danube riparian countries, and the technological development in the IWT sector which means permanent adaptation of professional competences - upskilling of workforce.

1.3. Methodology and approach

Taking into account the date of the transposition of Directive (EU) 2017/2397 and Delegated Directive (EU) 2020/12, namely 17 January 2022, in the first part of this report the state of play regarding the transposition and implementation of these two legal documents into the national legislation of the project partners countries will be analysed.

In order to scan the present situation regarding the transposition and implementation in the Danube and Rhine riparian countries of these Directives (EU), one **questionnaire** (presented in the Annex 1 of this Report) was jointly developed with the project partners in order to find out if the professional qualification of IWT crew members is done in a harmonised way based on the newly adopted EU legislation in this field. At the same time, we aimed to find out what the problems that arose during the implementation in practice of these new legal EU Directives are.

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The Questionnaire was distributed via email with the following link: https://docs.google.com/forms/d/1NiizOg57mZ8BHEXcK3pd2PTNegOWjNNib6EpF_Citn0/edit?ts=65436352

The questionnaire was structured in two parts: part A and part B.
Part A of the questionnaire includes 22 questions focused mainly on the mandatory requirements to be fulfilled by each member state during the transposition stage of the requirements imposed by the Directive (EU) 2017/2397. In this part questions regarding the problems that arose were included as well, at the national level, during the transposition as well as after the implementation of the new normative act regarding the professional qualification and assessment of the IWT crew members.

Certain such problems have been identified since the implementation of the Danube SKILLS project (https://www.interreg-danube.eu/approved-projects/danube-skills) in which a risk assessment was developed regarding the transposition and implementation of the Directive (EU) 2017/2397- *Deliverable D 5.2.1- Policy support strategy for nautical education,* document available for those who are interested at the aforementioned web address. In the last chapter of this deliverable document - *Risk assessment and management plan*, were identified some potential risks which can occur during the transposition and implementation of the Directive (EU) 2017/2397 in 8 Danube riparian countries (BG, RO, HU, RS, SK, HR, AT and DE).
This risk assessment was conducted in 2018, therefore, in 2023, after the deadline of the mandatory transposition of the Directive (EU) 2017/2397 and Delegated Directive (EU) 2020/12, steps are taken to find out if the identified problems are still relevant or if other such problems have appeared.

The main purpose is to scan the current situation in Danube and Rhine riparian countries regarding the transposition and implementation of these two Directives, as well as to create collaborations/ partnerships between the countries that already apply in practice the provisions of these Directives (EU) and the countries that encounter problems in the implementation of the new legislation. These collaborations can ensure the access of IWT crew members to the new system of education, training and examination in order to obtain the Union certificate of qualification and to increase the workforce mobility in Europe. In this respect EDINNA plays the role of facilitator considering that at the level of this association the situation of all members regarding the implementation of the new regulations in the field of professional qualification of IWT crew members is known.
The answers received to the questions in part A of the questionnaires are consolidated and included in this report which will be available on the project website as well as on the EDINNA website for all those interested.

Part B of the questionnaire was designed in such a way to ensure that the questions would cover a wide area of effects and impacts associated with autonomous ships. The innovation of an autonomous ship is still in a very early stage of the innovation process in inland navigation. Thus, the aim was to receive feedback on a broad overview of relevant aspects from IWT stakeholders' perspective. Going into more depth with regard to the most important and critical aspects will be possible only as soon as the innovation of autonomous IWT vessels evolve out of the current early conceptual status.
The approach used in Part B, for many questions, was meant to capture the opinion of the respondents via the Likert rating scale approach, so that either positive or negative response of the participants to a given statement (which reflects a key impact of autonomous IWT vessels) is measured. Items were

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designed in such a way as to ensure an equidistant presentation of answer options.

We used the format of five-level Likert items in the questionnaire as follows:
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Therefore, **Part B** includes 20 questions related to the need of permanent adaptation of professional competencies of crew members due to the implementation of innovative technologies and digitalization in IWT sector, and are focused on the main important aspects:

- *equipment and technology used on inland navigation vessels are getting more and more complex and inland navigation companies are looking to hire more specialized and qualified crew members;*
- *current and future workforce in IWT needs to be equipped with the right competences to deal with the green and digital transitions, cyber-security, synchro modality and the automation of vessels and infrastructure;*
- *in order to have a harmonised approach on the continuous training of workforce (upskilling) in the IWT sector, EU policies/strategies for lifelong learning need to be developed/revised;*
- *digitalisation and automation in the sector could also create new opportunities for attracting new entrants in the sector;*
- *standards for competences necessary at the moment and for the next 5 years taking into account the continuous technological transformation of the IWT sector.*

The questions were structured in such a way as to find out in which direction the technological development of the IWT sector is going, as well as the need to update and refresh the competences of the IWT crew members.
The answers received to the questions in part B of the questionnaires have been consolidated and included in this report which will be available on the project website as well as on the EDINNA website for all those interested.

1.4. Consultation with the IWT sector

1.4.1. CESNI

During its plenary session in June 2015, the CCNR created, by adopting a resolution, a European Committee for the development of standards in the field of inland navigation (“CESNI”). This resolution makes it possible to speed up the development of harmonised, modern, and clear prescriptions for users of the inland waterways.
The creation of this new working body is part of the CCNR's desire, shared with the European Union, to strengthen governance at European level, particularly in the regulatory field of inland navigation.
This Committee is intended to bring together experts from the Member States of the European Union and the CCNR, as well as representatives of international organizations concerned with inland navigation. An important place is also reserved for representatives of the various actors and professions

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in navigation in Europe. By creating this Committee, the European Commission and the CCNR wished to simplify the decision-making procedures in the field of the regulation of inland navigation, so that all the institutional partners and players involved can benefit from the experience of the CCNR.

The activities of the CESNI relate to technical requirements applicable to vessels **(CESNI/PT),** professional qualifications for the personnel **(CESNI/QP)** and technologies information **(CESNI/IT).**

Thus, the relevant stakeholders who participated in these CESNI expert groups brought their input and experience, and at the same time they also conveyed to other interested actors their vision regarding the standardization in inland navigation, as well as the vision regarding the future of inland navigation from the perspective of technological development and digitalization.

The project's main results will be sent to CESNI to receive feedback or to be later included in the working plan.

1.4.2. EDINNA

Since 2008 key stakeholders in the Inland Waterway Transport (IWT) sector are cooperating towards the harmonization and modernization of professional qualifications in inland navigation. A formal network of IWT education & training institutes has been founded in February 2009 under the name "EDINNA" (www.edinna.eu).
Key stakeholders are consulted/informed during the EDINNA meetings, and their opinions/problems/initiatives are forwarded to CESNI of which EDINNA is a part.

1.4.3. Stakeholders lists

In most European projects, one of the obligations of the project consortium is to have the stakeholders lists to whom the technical deliverables of the projects are disseminated.

The most relevant stakeholders which are included in these lists are consulted all the time, starting from the writing of the project application and then during the implementation of the project. They are invited into the project meetings, to offer feedback or to validate relevant deliverables/ documents, to fill in questionnaires, to be speakers at international events/ conferences etc.

In this project there are lists of relevant stakeholders from the project partner's countries, and they were invited to the kick-off project meeting and they are involved in filling in the questionnaires regarding the professional qualification of inland navigation personnel and future development of inland navigation sector due to the technological development, digitalization, and automation.
The result of this stakeholders' consultation (answers to the questionnaires) is included in this deliverable document.

Stakeholders' lists are permanently updated during the project lifetime in order for as many organizations as possible to be consulted within the project lifetime.

The current questionnaire was sent to over 100 stakeholders from project partner countries and neighbouring riparian ones representing:

- inland waterway port authorities and subcontractors;

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- logistic companies working with inland waterway port authorities or terminal operators.
- national inland waterway authorities;
- inland waterway shipping companies;
- public institutions with inland waterway regulatory power;
- craft operators;
- boatmasters;
- crew members of the crafts;
- inland navigation crewing agencies;
- inland navigation VET schools, E&T institutions

Among the most relevant stakeholders are the **crew members of the crafts**, who are the beneficiaries of the provisions of the new Directives (EU) for the recognition of professional qualification in inland navigation.
They are also invited to answer to the questionnaire, and as well as the **teachers/trainers from inland navigation education/training institutions** who are in charge of putting into practice the new legislative provisions regarding the professional qualification of crew members on board inland navigation vessels.

1.5. Outline of the report

The work in Task 2.1 has been focussed on preparing an analysis on transposition and implementation of the Directive (EU) 2017/2397 and Delegated Directive (EU) 2020/12 in the Danube and Rhine riparian countries, to find out if the harmonised education, training, and assessment of IWT crew members is working in the Danube and Rhine regions.
On the other hand, the analysis will be focused on the need of permanent adaptation of professional competencies of IWT crew members according to the implementation of innovative technologies and digitalization in IWT sector.

The conclusions of this analysis provide an overview regarding the status of the professional qualification of IWT crew members based on the new EU legal harmonised approach as well as the urgent need to update and refresh the competences of IWT crew members, meaning the **need to develop new standards and to update the existing ones**.

1.6. Next steps

This version consists in a gap analysis in the Danube and Rhine riparian countries regarding the professional qualification of IWT crew members according the newly adopted Directives (EU) in this field and the future of inland navigation from the perspective of technological development and digitalization. This analysis is the result of project partnership work, IWT sector consultation and the information received from EDINNA, CCNR, Danube Commission, Sava River Basin Commission and European Commission - DG MOVE.

This report will be available on the project website for those who are interested in this analysis and we are open to receive any completion, remarks and opinions from all persons, companies, associations

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etc. involved in IWT sector, during the project lifetime in order to have a consolidated version of the deliverable document.

2. RESULTS

2.1. PARTICIPANTS

The questionnaire was sent to over 100 stakeholders, representing inland waterway port authorities and subcontractors; logistic companies working with inland waterway port authorities or terminal operators, national inland waterway authorities; inland waterway shipping companies; public institutions with inland waterway regulatory power; craft operators; boatmasters on board IWT crafts; other crew members of IWT crafts; inland navigation crewing agencies; inland navigation VET schools, E&T institutions.

In total 35 participants completed the **Questionnaire on legislation, needed competences and permanent adaptation of professional competencies of crew members due to the implementation of innovative technologies and digitalization in the Inland Waterway Transport sector.**

First, the respondents were asked to specify their nationality. We received answers from 35 participants representing 11 countries: Belgium (1), Russia (2), Czech Republic (1), Netherlands (6), Republic of Moldova (1), Slovakia (4), Austria (1), Germany (4), Serbia (1), France (1) and Romania (13).

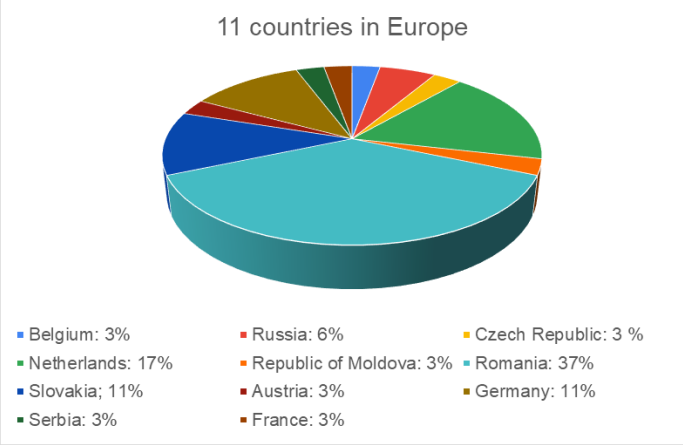

Figure 1.
Country background of questionnaire participants

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2.2. RESULTS QUESTIONNAIRE PART A

Transposition and implementation of the EU Directive 2017/2397 on the recognition of professional qualifications in inland navigation, and Commission Delegated Directive (EU) 2020/12 as regards the standards for competences and corresponding knowledge and skills, for the practical examinations, for the approval of simulators and for medical fitness, into the national legislation of Rhine and Danube riparian countries.

Part A of the questionnaire includes questions focused mainly on the mandatory requirements to be fulfilled by each member state during the transposition stage of the requirements imposed by the Directive (EU) 2017/2397 and Delegated Directive (EU) 2020/12. In this part questions regarding the problems that arose, at the national level, during the transposition as well as after the implementation of the new normative act regarding the professional qualification and assessment of the IWT crew members were included.

A-Q2. What is the name of the national document/documents which transposes the two Directives, the date of approval and the approving national authority?

Participants were asked to provide the name of the national document/ documents which transposes the two Directives, the date of approval and the approving national authority. 22 respondents provided detailed answers whereas 13 participants did not answer the question.

The answers received are presented in Table 1 below:

Table 1.
Respondents familiarity with the national document/documents transposing the Directives

Country	Name of national document(s)	Date of approval	Approving national authority
The Netherlands	**Regulation, No IENW/BSK-2022/31845**, amending the Inland Waterway Transport Scheme and the 2005 Shipping Fees Regulation partially implementing Directive (EU) 2017/2397 of the European Parliament and of the Council of 12	15 February 2022	Minister for Infrastructure and Water Management

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	December 2018 on the recognition of professional qualifications in inland navigation and repealing Council Directives 91/672/EEC and 96/50/EC (OJ L 2017, 345) (Regulation on partial implementation of the Professional Qualifications Directive on inland navigation)		
	Decree No IENW/BSK-2022/31844, amending the Decree on the CBR 2019 mandate partially implementing Directive (EU) 2017/2397 of the European Parliament and of the Council of 12 December 2018 on the recognition of professional qualifications in inland navigation and repealing Council Directives 91/672/EEC and 96/50/EC (OJ L 2017, 345)	15 February 2022	Minister for Infrastructure and Water Management
Slovakia	**Act No 338/2000** on inland navigation and amending certain acts, as amended consolidated version as amended by 90/2020 Coll.)		Ministry of Transport and Construction
	Act No 378/2021 amending Act No 338/2000 on inland navigation and amending certain acts, as amended, and amending certain acts		Ministry of Transport and Construction
	Decree of the Ministry of Transport and Construction of the Slovak Republic No 381/2021 Coll. laying down the details of qualifications of a crew member operating on an inland waterway connected to the navigable waterway network of another Member State		Ministry of Transport and Construction
	Decree of the Ministry of Transport and Construction of the Slovak Republic No 135/2022 amending Decree of the Ministry of Transport and Construction of the Slovak Republic No 381/2021 laying down details of the qualification requirements of a crew member of a vessel operating on an inland waterway linked to the navigable waterway network of another Member State		Ministry of Transport and Construction
Austria	**Inland navigation training regulations,** Federal Law Gazette I No. 60/2021 and II No. 198/2021, Federal Ministry for Digital and Economic Affairs	2021	Federal Ministry for Digital and Economic Affairs
Germany	**Ordinance on Vocational Training for the Inland Navigation Professions and Qualifications in Inland Navigation**		
	Regulation on new legislation on skills in inland waterway transport		
Romania	**Order No 209/2022** of the Deputy Prime Minister, Minister for Transport and Infrastructure approving training standards, confirming competence and certifying the professional qualifications of	23 February 2022	Ministry of Transport and Infrastructure

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	Romanian crew members working on inland waterway vessels		
	Annexes No 1-6 to Order No 209/2022 of the Deputy Prime Minister, Minister for Transport and Infrastructure approving training standards, confirming competence and certifying the professional qualifications of Romanian crew members working on inland waterway vessels	23 February 2022	Ministry of Transport and Infrastructure
	Order No 1207/2022 of the Deputy Prime Minister, the Minister for Transport and Infrastructure amending Order No 209/2022 of the Deputy Prime Minister, Minister for Transport and Infrastructure, approving training standards, confirming competence and certifying the professional qualifications of Romanian crew members working on inland waterway vessels.	30 June 2022	Ministry of Transport and Infrastructure
Other European countries			
Belgium	**Decision of the Flemish Government** on professional competences for inland waterway transport personnel	6 May 2022	
	Walloon Government Decree on the acquisition and recognition of professional qualifications in inland navigation and amending and repealing various provisions in this field	25 August 2022	Public Service in Wallonia
	Flemish Government Decree amending the regulations on technical requirements for inland waterway vessels and inland waterway personnel	25 November 2022	
	Decree of the Government of the Brussels-Capital Region on the recognition of professional qualifications in inland navigation	1 June 2023	
	Decree of the Government of the Brussels-Capital Region on the recognition of professional qualifications in inland navigation	13 July 2023	
Czech Republic	**Act No 114/1995 on inland navigation**		
	Act No 372/2022 amending Act No 114/1995 on inland navigation, as amended		
	Decree No 48/2023 Coll., defining the activities performed by deck crew members and laying down the details concerning the verification of the professional competence of persons to sail vessels, their operation and the performance of other activities in inland navigation		
Republic of Serbia	**RULES** on titles, conditions for acquiring titles and authorizations of inland vessels crew members. The **Rulebook** has not been implemented, yet. It will be applied from January 2024.	14.10.2022	Ministry of Construction, Transport and Infrastructure

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Russia	Russia is not a part of the EU and has not implemented the EU Directive 2017/2397 on the recognition of professional qualifications in inland navigation, and Commission Delegated Directive (EU).		
France	**Law No. 2019-1428** of December 24, 2019 on mobility orientation.	24.12.2019	
	Ordinance No. 2021-409 of April 8, 2021 relating to river transport and inland navigation	08.04.2021	
	Decree No. 2022-156 of February 9, 2022 relating to professional qualifications in inland navigation	09.02.2022	
	Order of April 27, 2022 relating to the qualifications of crews and the driving of commercial boats in inland navigation	27.04.2022	

A-Q3. What is the name of the designated national authority/authorities in charge with the approval of education/training programmes, with the examination of crew members, with the issuing of Union certificates of qualification, and with the approval of simulators?

Table 2.
Respondents' familiarity with the designated national authority/authorities in charge with the approval of education/training programmes, with the examination of crew members, with the issuing of Union certificates of qualification, and with the approval of simulators

Country	Designated national authority/ authorities
The Netherlands	CESNI, Rijnwaterstad
Austria	Federal Advisory Board on Vocational Education and Training (WKÖ), Ministry of Education, Federal Ministry for Digitisation and Economic Location
Germany	Generaldirektion Wasserstrassen und Schifffahrt GDWS Bonn
Slovakia	Transport authority
Romania	RNA Ministry of Transport and Infrastructure
Other European countries	
Belgium	De Vlaamse Waterweg, SPW for Walloon Region
Czech Republic	Ministry of Transport - approval of education/training programmes; State Navigation Authority - other tasks
Republic of Moldova	Ministry of Education and Research

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Switzerland	Wasser Schiffer Polizei
Serbia	Ministry of Construction, Transport and Infrastructure, Water Transport Sector
France	Ministry of Ecological Transition/River Navigation Instructor Services

Serbia added that if a public or private vocational school want to implement the educational programme for inland navigation, they also have to have the approval of Ministry of Education.

A-Q4. On what date did the provisions of the national legal document(s) regarding the IWT education and training institution entry into force?

According to participants' answers, the first country to have the provisions of the national legal document(s) regarding the IWT education and training institution entered into force is Austria (January, 1st, 2021), followed by Romania, Slovakia and Germany on January 1st, 2022, France on January 17th, 2022, the Netherlands on February 18th, 2022; Flanders on September 7th, 2022, Walloon Region on September 26th, the same year; Czech Republic on March 1st, 2023 and Russia on May 5th, 2023.

Serbia stated that the provisions of the national legal document(s) regarding the IWT education and training institution will entry into force on 01.01.2024.

A-Q5. On what date did the IWT education/training programmes start?

When participants were asked when the IWT education/training programmes started, the following answers were received: Slovakia: 01.09.2018, the Netherlands: 01.09.2020, and Republic of Serbia: 01.09.2021. Germany answered that some IWT education/training programmes started in August 2022, others on 01.10.2022. In France the IWT education/training programmes started on 27.04.2022. In Romania most of these programmes started on 01.05.2022, and others on 17.07.2023.

Belgium stated that there are problems in Walloon Region for the installation of examination Commission. In Flanders only boatmaster exams complying with the Directive are organised since mid-2022. They are still waiting for official numbers of examinations. Deckhand courses started later, too and they are offered by Syntra MV, but most people go to the Netherlands to get their Service Record Book by mail without training compliant to the Directive.

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A-Q6. Have the mandatory standards for competences and corresponding knowledge and skills, for practical examinations, for the approval of simulators and for medical fitness, been included in the national legal document/documents?

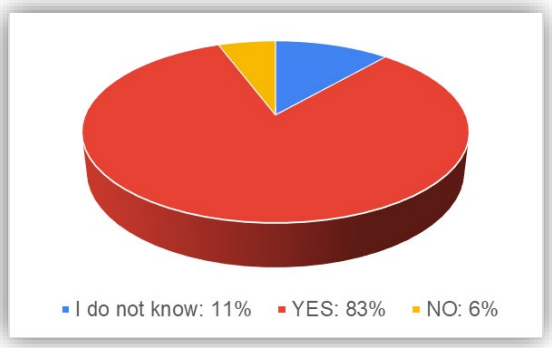

Figure 2.
Respondents' familiarity with mandatory standards for competences and corresponding knowledge and skills, for practical examinations, for the approval of simulators and for medical fitness, included in the national legal document/documents

When participants were asked if the mandatory standards for competences and corresponding knowledge and skills, for practical examinations, for the approval of simulators and for medical fitness have been included in the national legal document/documents, 29 respondents answered YES, the two representatives of Russia replied NO and 4 participants were not aware of this aspect.

A-Q7. Have the optional standards for competencies adopted by CESNI, been included in the legal document/documents?

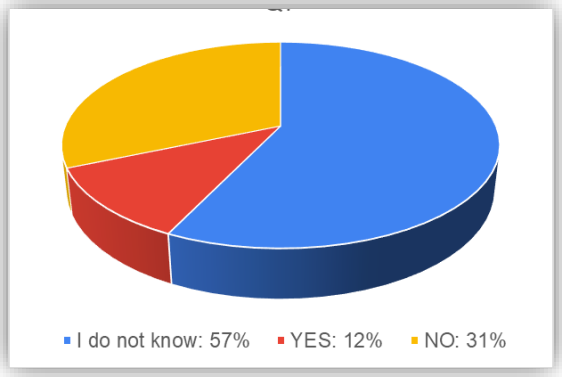

Figure 3.
Respondents' familiarity with optional standards for competencies, included in the national legal document/documents

Next, respondents were asked to answer if the optional standards for competencies adopted by CESNI have been included in the legal document/documents. Here we referred to: *Optional standards for basic training with regard to safety, Optional standard for standardised phrases in four languages, Optional*

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standards for assessing and assuring the quality of training programmes, or any other optional standard each country considers it necessary to be included in their training programmes.

Most of the respondents (57%) DO NOT KNOW whether the optional standards for competencies are included in the national legal document/documents or not; 31% of participants, Belgium, Russia, Czech Republic, Republic of Moldova, Slovakia (1) and Germany stated that optional standards for competencies ARE NOT INCLUDED in the national legal document/documents and only 4 respondents (12%), among which we include Austria, Netherlands and Romania stated that optional standards for competencies HAVE BEEN INCLUDED in the national legal document/documents.

Belgium added that the competences of CESNI QP are subject to Flemish Minister of Education and competences are actualised, but still in pipeline. The Walloon Region know about this but, for the moment, there is no information how far they currently are.

A-Q7.1 If the answer is Yes, please, specify the name of these optional standards for competences

In **Austria,** *Inland navigation training regulations* have been included as optional standards for competencies.

A-Q7.2 If the answer is No, have the optional standards for competencies and corresponding knowledge and skills, adopted by CESNI, been included in the curricula of IWT education/training programmes?

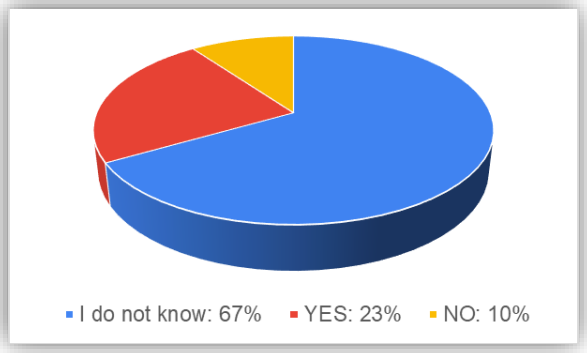

Figure 4.
Respondents' assessment of optional standards for competencies included in the curricula of IWT education/training programmes

Responses here are similar to those for Q-07. Most of the respondents (67%) DO NOT KNOW whether the optional standards for competencies have been included in the curricula of IWT education/training programmes or not; 3 participants: Russia (2) and Slovakia (1) stated that optional standards for competencies ARE NOT INCLUDED in the curricula of IWT education/training programmes and 7

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respondents (23%), among which we include Austria, Netherlands and Romania stated that optional standards for competencies HAVE BEEN INCLUDED in the curricula of IWT education/training programmes.

A-Q8. According to Article 19 of the Directive 2017/2397: "*Member States shall notify to the Commission the list of the approved training programmes*". What is the number of the training programmes included in this list, and which are the education/training programmes, and what level are the crew members who most frequently participate in?

Figure 5.
Respondents' assessment of training programmes

When participants were asked to provide the number of the training programmes included, and which are the education/training programmes, and what level are the crew members who most frequently participate in, 26 respondents (81%) were not able to provide an answer. But we received detailed responses from 6 participants, as follows:

In **Belgium** there is Safety training for Deckhand (Syntra MV), at GO! De Scheepvaartschool for -18 year olds, no other trainings are offered. The existing training programs before 18/01/2022 were cancelled. SYNTRA MV is working on a new training program but is still not officially launched. In Walloon Region: nothing is foreseen and only the school in Huy is asking for official recognition as they are already working compliant to the Directive.

In **Austria** there is the possibility to be trained in the area of inland waterways and shipping. Inland navigation operators work on cargo vessels and passenger vessels. The training is organised as an **apprenticeship**, the prerequisite is the completion of compulsory schooling of 9 years. The **dual vocational training** takes place primarily on the sailing vessel of a training company. Blocks of 3 months per year are scheduled for school-based education. There is a Vocational School for Mechanical Engineering, Manufacturing Engineering and Electronics located in Vienna. The apprenticeship usually lasts for 3 years. The final apprenticeship examination and the accompanying

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apprenticeship certificate can also be taken via second-chance education.

Since 2022, the **Austrian apprenticeship represent an approved training programme** in accordance with the EU Directive: Graduates will obtain a "Union certificate of qualification" along with their apprenticeship certificate and will thus be holder of an internationally recognised professional qualification.

Seeking to grow its inland navigation workforce, **Germany** is offering new programs to **train inland waterways boatman/boatwoman and boatmasters**. The Federal Ministry for Digital and Transport will support both training programs through its Funding of Initial and **Continuing Training** in the German Inland Waterway Transport Sector Program as well as the new option of a **skills development program for career changers** (e.g. from the maritime shipping sector) with a minimum duration of 9 months.

Digital course formats, such as live online learning, blended learning and online self-study, will be available for crew members of inland waterway vessels who want to continue their education while underway, and will be funded to the same extent as traditional classroom courses.

Also, the teaching of basic knowledge for dealing with new technologies or processes was integrated into the curricula from the outset in line with the reorganisation. These are regularly adapted as new technologies or processes are added.

In addition to (state) vocational colleges, private providers also have the opportunity to offer qualified training and further education courses. These provide participants with the necessary knowledge and skills within the framework of the free market economy and prepare them for the respective examinations. The examinations are conducted in accordance with state requirements on the basis of defined training and examination regulations. This is done, for example, by examination boards of the Chamber of Industry and Commerce or the Directorate-General for Waterways and Shipping (GDWS). In Germany, the assessment of crew members is generally the responsibility of the employers. Crew members are usually instructed annually in safety-relevant areas. The support of external partners such as the employers' liability insurance associations also plays an important role here.

Courses are available for "languages relevant to the German inland navigation sector" in addition to German language courses for non-native German speakers among crew members.

In addition, for the first time, inland waterway transport operators will be supported in offering voluntary continuous training programs for their land-based staff for the purpose of shifting the carriage of abnormal loads to inland navigation vessels.

An answer from **Romania** also detailed on the information required. A number of 25 training programmes are rolled out according to the Romanian legislation. Both Operational Level and Managerial Level crew members participate in these courses, with a bigger share in Operational Level courses.

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A-Q9. Are the approved IWT education/training programmes elaborated in both the national language and in the English language?

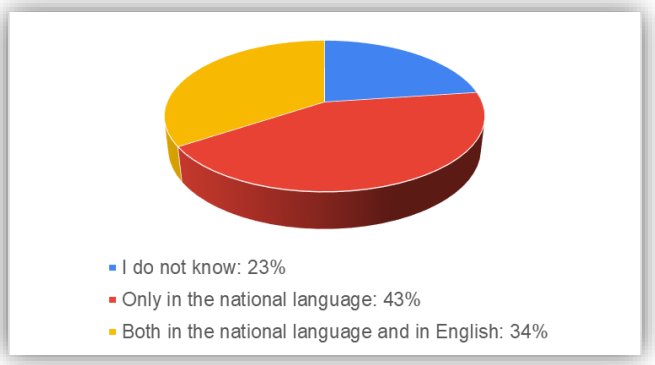

Figure 6.
Respondents' assessment of training programmes elaborated in the national language and/or in the English language

When participants were requested to state the language (national or/and English) the approved IWT education/training programmes are elaborated in, 15 respondents from Russia, Czech Republic, Austria, Germany, Serbia, France answered that they are elaborated in the national language, 12 participants from Romania, Netherlands, Slovakia stated that the programmes have been elaborated in both national and English language and 8 individuals did not know what to answer.

Different respondents from the same country, for instance Romania and Slovakia, had different answers, some said that the training programmes have been elaborated only in the national language, others that they are available both in the national language and in English showing that the information is not clear or the respondents are not aware of it.

A respondent from **Belgium** added that there is a strict language policy in Belgium which is contradictory to the European market and causes difficulties for non-Flemish or non-Walloon EU or non-EU citizens. In the training system of dual learning only Flemish companies are allowed despite their experience, level of innovation and mentorship level. Also question if this seems complementary to the principles of the EU market. They hope the European Commission will help them solve this issue.

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A-Q10. Has the National designated authority started issuing Union certificates of qualification?

If the answer is Yes, since what date?

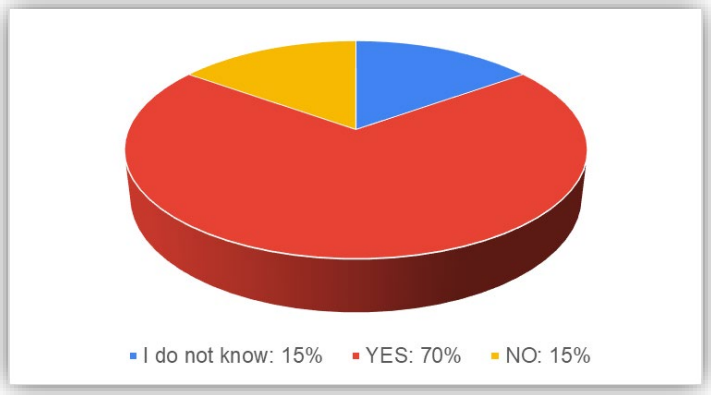

Figure 7.

Respondents' familiarity with the National designated authority started issuing Union certificates of qualification

When asked if the National designated authority started issuing Union certificates of qualification, 23 participants, representing 70%, gave a positive answer, 5 respondents answered NO and 5 participants did not know.

Regarding the date the National designated authority started issuing Union certificates of qualification, the following answers were received:

The Czech Republic and France started this process at the beginning of 2023 and in Romania, Netherlands and Germany the corresponding National designated authority started issuing Union certificates of qualification in 2022.

A-Q11. Is the data base of the national designated authority issuing Union certificates of qualification already connected to the European Hull Data Base?

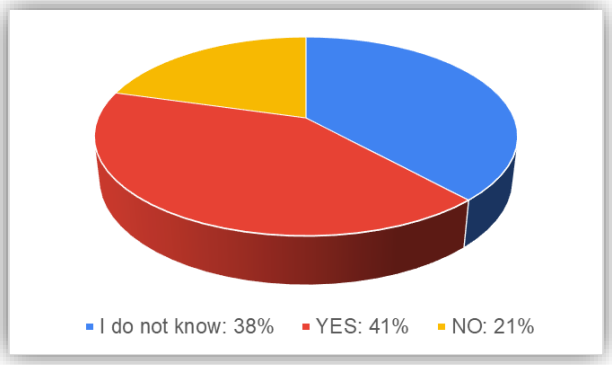

Figure 8.

Respondents' familiarity with the European Hull Data Base

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Regarding the question: “Has the data base of the national designated authority issuing Union certificates of qualification already connected to the European Hull Data Base?” 14 respondents answered YES, 7 participants gave negative answers and 13 respondents, representing 38%, did not know whether the data base of the national designated authority issuing Union certificates of qualification have already been connected to the European Hull Data Base or not.

Belgium: added that SPW is still struggling with the QR code.

A-Q12. What were the gaps that occurred during the transposition of these Directives?

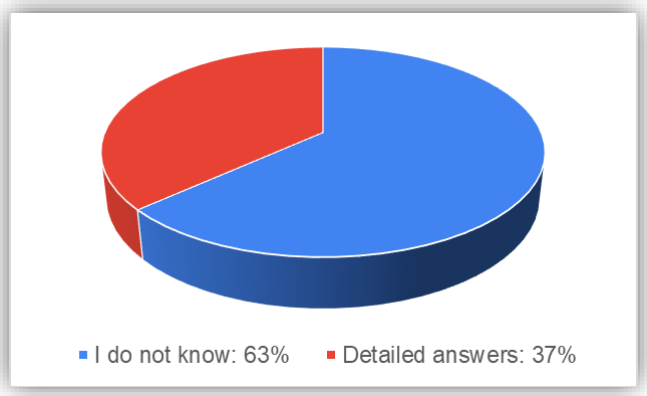

Figure 9.
Respondents’ assessment of gaps during the transposition of Directives

Most of the participants (63%) could not answer the question regarding the gaps that occurred during the transposition of these Directives. 11 respondents from Belgium, Austria, Germany and Romania gave detailed answers, as follows:

Belgium

“Training programs seized to exist. Insufficient attention from regional and national member states for this issue. Hardly any sense of urgency amongst Member States despite beautiful modal shift and sustainability stories. Drop of examinations and therefore influx of qualified personnel despite early warnings from sector in 2021. The annexes of the Directive (and articles 34-38) are standards which could have been easier and much more efficient if delegated to CESNI for a two-yearly review and update. Number of sailing days and some other preconditions to enter the profession are much too strict. Students in GO! De Scheepvaartschool are left in uncertainty. They have seen how their degree at graduation has been lowered than what they were promised when they started their education. We are currently working with the degree of aspirant-helmsman who still needs additional sailing days instead of full helmsman as previous to the directive. The merits of the directive will only materialise if all member states have transposed it not only formally but also in practice, and if the bizarre and absurd preconditions focussing on sailing days to be revisited asap by the European Commission”.

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Austria complained that there are few training companies in Austria, so not everything can be reproduced in practice. There are e.g. no simulators.

Germany
Compatibility of the joint databases of the competent European authorities

Romania
It is worth mentioning that the following detailed answer represents the position of a very large IWT company and an association of companies operating in inland waterways transport.
"We were faced with the following shortcomings of the Directive:
a) the following categories of inland waterway personnel are not regulated:

- *graduates of higher educational institutions with a marine profile;*
- *former members of the armed forces, law enforcement agencies, civil defence services, fire services or other emergency services;*
- *graduates of vocational schools and secondary schools with a marine profile;*
- *a significant number of maritime deck personnel.*

Even if some seafarers can be transferred to inland waterway crews, the conditions under which this can be done discourage a possible transfer. In addition, higher maritime education is not taken into account.
For example:

- *a maritime master or a maritime deck officer can become a helmsman under the same conditions as a maritime helmsman. It does not take into account the fact that both the deck officer and the master mariner, have completed higher education;*
- *a maritime master can only become a river helmsman (after completing a 3-day specialisation programme, which is perfectly normal, given the change in working conditions) if he/she served at least 500 days as master; but maritime deck officers do not have this possibility, regardless of the length of their seagoing service, even though they have higher education (and the inland navigation helmsman completed secondary education!) and work with similar or better equipment, performing similar duties;*
- *former employees of the armed forces, public order forces, civil defence services, fire brigades or other emergency services who worked on inland waterway vessels may only join inland waterway personnel as boatman, even though some of them finished higher education programmes in the field and for many years they worked under similar conditions as the personnel on merchant vessels, navigating the same fairway and observing the same navigation regulations.*
- *Even if their work had a particular specificity, their training as seafarers is undeniable.* ***This is why we believe that - by taking short courses to adapt to the new specifics - their access to appropriate qualifications can be resolved.*** *We cannot ask a former naval officer, who finished higher education in navigation and who, for many years worked as a naval ship's captain, to start a new career from the qualification of boatman, and wash the deck of the inland navigation vessel. This is all the more difficult to accept as, prior to the publication of OMTI No 209 and 1207/2022, naval officers and petty officers with a major in navigation could obtain the helmsman's qualification.*
- *at the same time, it is a totally unjustified waste to deny access to the qualifications of helmsman or boatmaster to graduates of maritime higher education institutions; even with little or no seagoing service, these graduates have far greater specialist knowledge than most senior*

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inland waterway crew members and can easily adapt to the requirements of inland waterway navigation, possibly by completing short-term specialisation programmes;

- *training programmes in vocational schools and maritime high schools are not mentioned in the regulations issued as a result of Directive 2017/2397, so it is not yet clear what qualification they will obtain on graduation. OMTI No 209/2022, amended by OMTI No 1297/2022, provides for the following durations of training programmes (starting from secondary school): for the deckhand: 5 days, for the apprentice: 2.5 months and for the boatman qualification - 2 years. Vocational schools have a duration of study of 3 years and high schools, of 4 years. Logic dictates that graduates should at least obtain a boatman's qualification, but at least for the time being this is not certain, as it is not mentioned in the regulations".*

A-Q13. What were the gaps that occurred during the implementation of the national legal document/documents?

Figure 10.
Respondents' assessment of gaps during the implementation of national legal document/documents

With reference to the gaps that occurred during the implementation of the national legal document/ documents, 21 respondents could not answer the question. 2 participants from Belgium and Slovakia gave detailed answers, as follows:

Belgium
"*Regional context: Schools did not receive extra means or personnel to support them in their transition. Existing training programs for sideways influx disappeared. Currently no investments have been made for new simulators for the schools. Flemish government mainly focused on examination commission and formal transposition of the directive and adjusting certificates, but on the schools or training institutes such as SYNTRA MV.*"

Slovakia
"*The ambiguity of EU Directive 2017/2397 on the recognition of professional qualifications in inland navigation and Commission Delegated Directive (EU) 2020/12.*"

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A-Q14. What issues were raised by the students/trainees in relation to the new national legal document/documents? (i.e. too many training programmes, too many days for practical training on board, mandatory use of simulators for training etc.)

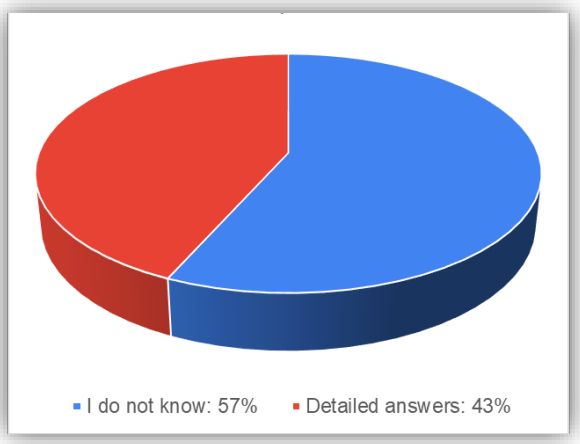

Figure 11.
Respondents' assessment of issues raised by students/trainees in relation to the new national legal document/documents

When asked about the issues raised by students/trainees in relation to the new national legal document/documents, more than 50% of the participants gave the "I do not know" answer, while the rest of 43% (13 respondents) gave detailed answers, as follows:

Belgium

"No training programs anymore, except for the schools. Not all examinations are re-installed yet. Uncertainty for students as mentioned above. Boatmasters who suddenly need a service book consider this as being completely useless and costly. In 2022 we asked our crew to do more paperwork. The latter is not the way forward. Although, I still believe in the benefits of a true European labour market with mutual recognition and a higher qualitative crewing, unfortunately, this belief is being pressured by the lessons learned from this Directive.

One stakeholder from **France** underlined the fact that there are "too many days aboard required, French simulators not technically equivalent or of a high enough standard to replicate a real ship."

One respondent from the **Netherlands** mentioned "No ability to do exam in other language than national language".

Other similar answers were given by the rest of the respondents: Ok, all good, it's ok, no issues, etc.

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A-Q15. What issues were raised by owners in relation to the new national legal document/ documents?

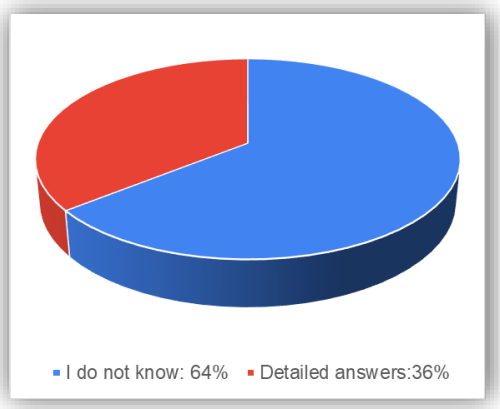

Figure 12.
Respondents' assessment of issues raised by owners in relation to the new national legal document/documents

Next, participants were asked to identify the issues raised by owners in relation to the new national legal document/ documents. 18 respondents representing over 60% gave no answer in this respect. Participants from Belgium and Romania gave detailed answers, as follows:

Belgium

"Extra administration (service books for boat masters), no training programs anymore, even worse in other countries such as Croatia. The link with ADN that the Netherlands made for their own pragmatic reasoning but which is not an element of the Directive as it is UNECE, is also not welcomed by the sector. We are now required to have the same service book for boat masters to fill in experiences for ADN purposes. Also a problem occurred with pushers and the ship booklets of the dumb barge, also something new, but we learned that SAB already has fix that. The ***lack of the Dutch juridical transposition****, despite the fact that the directive can be considered as a baby of the Dutch EU presidency in 2016, one of the most important IWT countries in EU (they did not achieve the deadline), causes that* ***Belgian people go to the Netherlands for their training****. The lack of harmonisation between Member States causes uncertainty and cherry picking behaviour.* ***As sector we urged the EC in 2021 to fasten the evaluation of this Directive and to steer it in the right direction and to take measures to mitigate if needed. We also as EBU/ESO warned the EC through the SSDC that the deadline would not be reached by a number of Member States which officials did not believe****. The directive goes further than only the formal transposition. The practical and operational side has to be taken into account. Also Germany, where we know that Berlin complied on time, but that the educational and operational part is the responsibility of the Bundesländern which are not all compliant at the moment. The RPN of the Rhine has been in place on 1/04/2023 compliant to the Directive. We hope that the EC learns from this exercise for future legislation".*

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Romania

"Owners are not considering training the main concerning issue. Owners are overwhelmed with the lack of personnel, aging personnel, lack of commitment of the crew members irrespective of their position. Owners are perceiving training periods hindering their continuity, considering the above.

- *shipowners consider it strictly necessary to regulate how the categories of personnel referred to in reply No 12(a) are accepted as inland waterway crews.*
- *at the same time, shipowners consider it necessary to accept seafarers from Ukraine and Serbia to work on Romanian-flagged inland waterway vessels; according to our information, they are accepted in Germany, Austria, Slovakia and Hungary. In view of the significant shortage of personnel at present, especially helmsmen and skippers, this acceptance, even temporarily, would help to revive inland waterway transport."*

A-Q16. What are the problems/efforts of IWT education/training institutions in relation with the implementation of the new legal provisions?

When asked to indicate *the problems/efforts of IWT education/training institutions in relation with the implementation of the new legal provisions*, all respondents answered that the biggest problems of IWT education/training institutions in relation with the implementation of the new legal provisions are linked with **lack of cooperation from the part of the designated national authority/authorities** (13 respondents), **lack of human resources** (11 respondents), **lack of finance** (9 respondents), **lack of cooperation with the relevant stakeholders** (5 respondents). Eight (8) respondents did not give a definite answer.

Figure 13.
Respondents' assessment of problems/efforts of IWT education/training institutions in relation with the implementation of the new legal provisions

Some respondents gave detailed answers. For example:
Belgium pointed out that lack of cooperation from the part of the designated national authority/authorities and lack of cooperation with the relevant stakeholders, represent important issues to deal with in Walloon Region.

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Netherlands added that the national education program will be changed, but they did not specify the date.
Austria explained that the lack of finance and the lack of human resources are due to fewer places and too expensive equipment acquisition.

A-Q17. How many students/trainees have already participated in the new approved IWT education/training programs? How many students/trainees participated in courses at managerial level, how many at operational level, and how many at entry level?

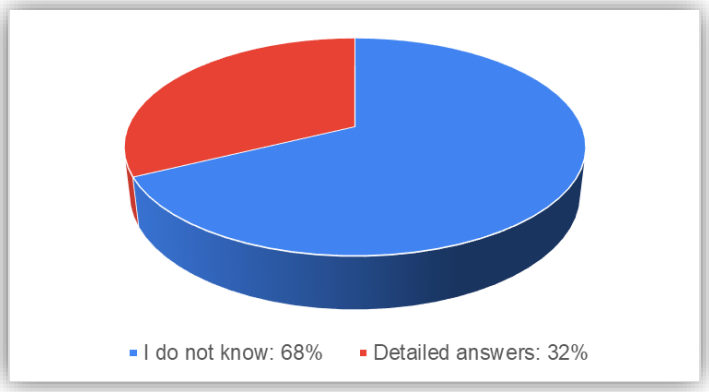

Figure 14.
Respondents' assessment of number of students/trainees participating in the new approved IWT education/training programs

Regarding the number of students/trainees that have already participated in the new approved IWT education/training programs, both at managerial level ML and operational level OL, the following figures were received:

In the **Netherlands -** +/- 70 students/trainees at operational level and +/- 100 students/trainees at entry level**.**

In **Romania**, so far (towards the end of 2023), 700 trainees completed training at managerial level, and 1,500 trainees at operational level, in total approximately 2,200 trainees.

In **Slovakia,** 27 trainees have received basic safety training at the entry level. Unfortunately, in Slovakia there are no training programmes for trainees at operational or managerial level, yet.

Serbia responded that, at the time they answered the questionnaire, there are 90 students at entry and operational level in their institution.

France stated that there are about 20 trainees at managerial level, not many trainees at operational level, and about 40/50 trainees at entry level.

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A-Q18. Was it necessary to train teachers / trainers for the implementation of the new legislation?

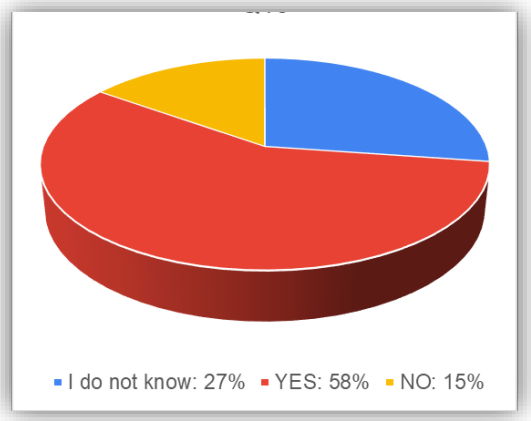

Figure 15.
Respondents' assessment of the need to train teachers / trainers for the implementation of the new legislation

When participants in the questionnaire were asked if they consider it necessary to train teachers / trainers for the implementation of the new legislation, almost 60% agreed, 15% participants did not consider it necessary and 27% of the respondents expressed no opinion.

A-Q19. What problems related to ensuring the practical training on board IWT vessels for students/ trainees have you encountered?

Next, stakeholders were asked to present the problems related to ensuring the practical training on board IWT vessels for students/ trainees they have encountered.

Belgium responded that only Flemish companies with Belgian working conditions are allowed for Dual Learning programs mentorship and to have students on board as part of the education. Sailing days on their parents' vessel at the weekend, or during holidays are not recognized anymore as part of the educational program. It was also a problem to accept sailing days on the official school training vessel, but this problem has been fixed.

Netherlands answered that the training program for passenger vessel was new, also the safety program has changed. They did not explain if there were issues to be solved in this regard or not.

Germany answered that one important issue they need to solve is that trainers on board inland navigation vessels are not sufficiently up-to-date to legislation and how to handle properly practical training.

In **Romania** practical training on board inland navigation vessels is done on both Romanian and foreign vessels. Most students/trainees are dissatisfied with the fact that boatmasters do not teach them many

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things.

Austria answered that, in their country there is the dual education system which includes practical training on board inland navigation vessels.

Serbia responded that in their institution the new curriculum implementing the new legislation has already been introduced, but the stakeholders work by old standards and rules.

A-Q20. Do you consider that these two Directives should be amended with new provisions?

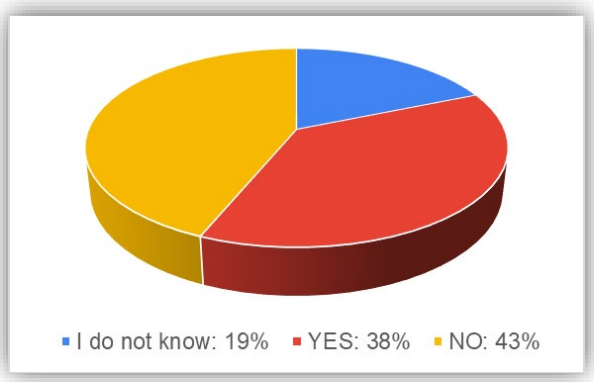

Figure 16.
Respondents' assessment of the need the Directives be amended with new provisions

Almost half of the respondents (43%) consider that there should be no need for the Directives be amended with new provisions, 38% find it necessary to amend the Directive EU 2017/2397 with new provisions and fewer respondents, meaning 19%, are neutral in this respect.

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A-Q21. Do you consider that the obligation of refresher courses should be introduced as an amendment to the Directive EU 2017/2397?

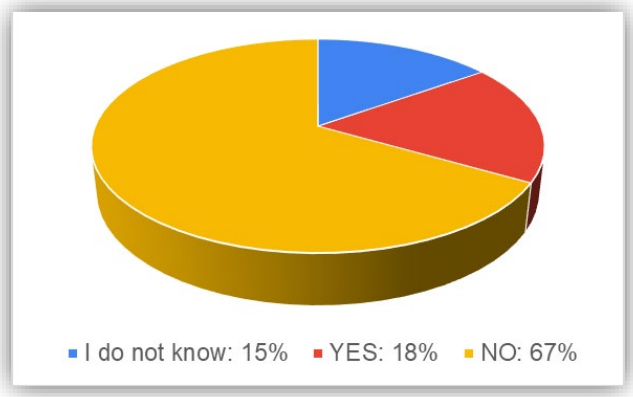

Figure 17.
Respondents' assessment of the need of refresher courses to be introduced as an amendment to the Directive EU 2017/2397

More than half of the respondents (67%) consider that there should be no obligation of refresher courses to be introduced as an amendment to the Directive EU 2017/2397, only 18% find it necessary to introduce refresher courses as an amendment to the Directive EU 2017/2397 and fewer respondents, meaning 15%, are neutral in this respect.

A-Q21.1 If the answer is Yes, for what level of crew members are such kind of training programmes suitable?

Romanian stakeholders are in favour that all crew members on inland navigation vessels should be trained periodically. They complained that basic training of crew members is often lacking, and pointed out that safety culture should be maintained. They added that refresher courses are already compulsory in Romania according to Annexes 1 and 6 to OMTI No 209/2022.

A-Q22. The provisions of the EU Directive 2017/2397 are addressed only to the deck personnel on board inland vessels. As it is known on board inland vessels there are other categories of personnel, such as: mechanical engineer, and auxiliary personnel (mainly onboard passenger vessels). Onboard technical vessels there are personnel operating dredgers, cranes, lifting facilities etc. Do you consider that for these categories of personnel, a harmonized legislation would be needed in terms of training and examination, and of course for refresher courses?

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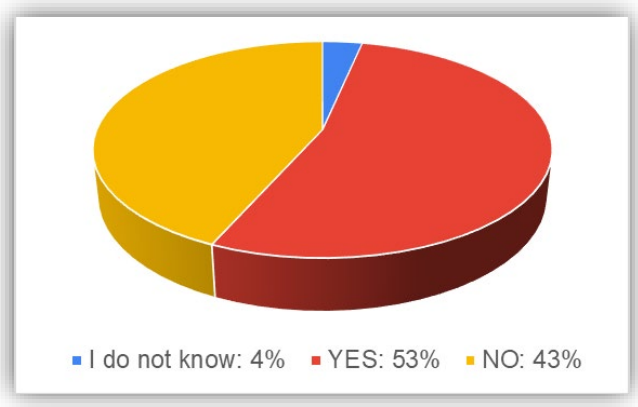

Figure 18.
Respondents' assessment of the need of a harmonized legislation for other categories of personnel

When participants were asked if they consider that for certain categories of personnel, such as: mechanical engineer, and auxiliary personnel (mainly onboard passenger vessels) there is need for harmonized legislation in terms of training, and refresher courses, more than half of respondents (53%) agreed, but 43% of respondents did not. No explanations or motivation was given from those respondents who did not agree to the need for harmonized legislation in terms of training, and refresher courses for certain categories of personnel working on board inland navigation vessels.

2.3. RESULTS QUESTIONNAIRE PART B

Permanent adaptation of professional competencies of crew members due to the implementation of innovative technologies and digitalization in IWT sector

Part B of the Questionnaire included questions related to the need of permanent adaptation of professional competencies of crew members due to the implementation of innovative technologies and digitalization in IWT sector, and are focused on the main important aspects, such as, more and more complex equipment and technology used on inland navigation vessels, more specialized and qualified crew members; right competences to deal with the green and digital transitions, cyber-security, synchro modality and the automation of vessels and infrastructure; a harmonised approach on the continuous training of workforce (upskilling) in the IWT sector, EU policies/strategies for lifelong learning need to be developed/revised; digitalisation and automation in the sector could also create new opportunities for attracting new entrants in the sector;

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B-Q1. The current and future workforce in IWT needs to be equipped with the right competences to deal with the green and digital transitions, cyber-security, synchro modality and the automation of vessels and infrastructure. What are the most important reasons associated with this need?

When participants were asked to name the most important reasons associated with the need that the current and future workforce in IWT to be equipped with the right competences to deal with the green and digital transitions, cyber-security, synchro modality and the automation of vessels and infrastructure, most of the respondents mentioned: **safety of navigation, better integration of IWT into multimodal logistics, mobility of the workforce, security of data, career opportunities, high quality jobs, good communication.**

Romanian stakeholders added that automation vessels and infrastructure is far from being implemented. Till then, there are basic operational needs that should be addressed. They concluded that life is more than an iPhone or a tablet.

B-Q2. In order to have a harmonised approach on the continuous training of workforce (upskilling) in the IWT sector, EU policies/strategies for lifelong learning need to be developed/revised in order to:

All participants considered that the most important reasons are: upskill and update competencies which will be required in the near future, create a legal framework in IWT sector and be focused on inland navigation sector.

B-Q3. Digitalization and new technologies cannot be introduced in a smooth and safe manner in the IWT sector due to the:

Regarding the question referring to obstacles/issues that can hinder digitalization and new technologies to be introduced in a smooth and safe manner in the IWT sector, all respondents concluded that the most stressing ones are: **lack of finance, lack of legislation** and **lack of qualified human resources.**

B-Q4. Do you consider that digitalisation and automation in the sector could also create new opportunities for attracting new entrants in the sector (i.e., young people, women, people from the other sectors, etc.)?

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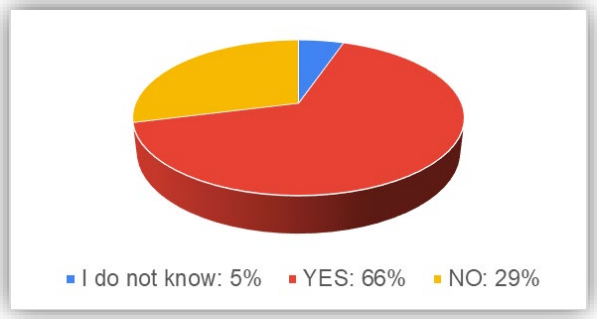

Figure 19.
Respondents' assessment of the need of new opportunities for attracting new entrants

When asked if digitalisation and automation in the IWT sector could create new opportunities for attracting new entrants in the sector, 25 respondents (representing 66%) agreed, 11 participants disagreed (29%), and only two respondents were not sure.

B-Q5. Introduction of digitalization and innovative technologies in the IWT sector, means important transformation of the sector and at the same time new competences for current and future workforce in the sector. So, new standards for competences and corresponding knowledge and skills need to be elaborated and adopted at EU level in order to:

When participants were asked if they consider that new standards for competences and corresponding knowledge and skills need to be elaborated and adopted at EU level due to the fact that the introduction of digitalization and innovative technologies in the IWT sector, means important transformation of the sector and at the same time new competences for current and future workforce in the sector, all of them stressed the importance of drafting new standards for competences and skills in this respect for: **maintaining a harmonised system of education, training and assessment of IWT workforce; increasing the mobility of workforce** in this sector as well as for **increasing safety of inland navigation.**

B-Q6. What standards will be necessary at the moment and for the next 5 years taking into account the continuous transformation of the sector?

Next, participants were asked to name the standards they consider to be necessary at the moment and for the next 5 years taking into account the continuous transformation of the IWT sector. The following new standards were proposed to be drafted: **multimodal transport and logistics**; **multimodal travel information services;** standards for **environment-friendly systems, fuels; innovative propulsion systems and sustainable fuels; smart traffic management system**; **efficient vessel operation (eco navigation)**; **alternative fuels operations**; **autonomous vessels operators**; **cybersecurity** and most importantly, standards for **train the trainers (continuous training)** courses.

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B-Q7. Do you agree that the new standards of competences elaborated and adopted by CESNI to be mandatorily applicable in order to have a harmonised approach at EU level?

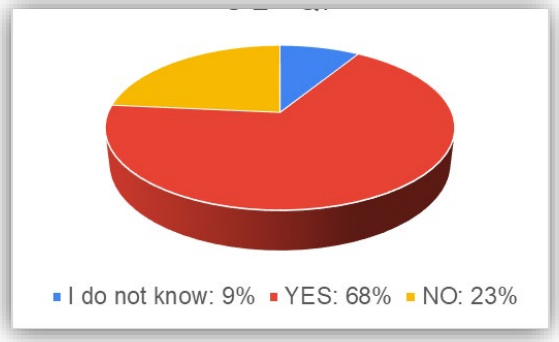

Figure 20.
Respondents' assessment of the mandatorily application the new standards of competences elaborated and adopted by CESNI

Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation introduces a harmonised system for the certification and recognition of professional qualifications of persons operating craft on inland waterways, allowing certificate holders to operate throughout the EU. This now includes the Rhine, which was excluded from Directive 91/672/EEC and Directive 96/50/EC, which this legislation repealed with effect from 17 January 2022.

In this respect, participants were asked to share their opinion with regard to the new standards of competences elaborated and adopted by CESNI to be mandatorily applicable in order to have a harmonised approach at EU level.

A majority of 68% agreed, 8 respondents (23%) disagreed and only 3 participants could not give a clear answer.

B-Q7.1 If the answer is NO, please specify the reasons

Out of the 8 respondents who disagreed that the new standards of competences elaborated and adopted by CESNI need to be mandatorily applicable in order to have a harmonised approach at EU level only 2 specified their reasons, as follows:

Czech Republic – consider it necessary to take into account the specific conditions of each waterway.

Romania - "*EU harmonised approach" just means the possibility for rich countries to take over cheap and ready-made labour force from the East. With the acute shortage of IWT personnel in Romania, the last problem for shipowners is "harmonisation*"!

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B-Q8. Do you consider that an EU vision for the sector's digitalisation and automation is a good opportunity for both owners and crew members, to adjust the existing policy in the field?

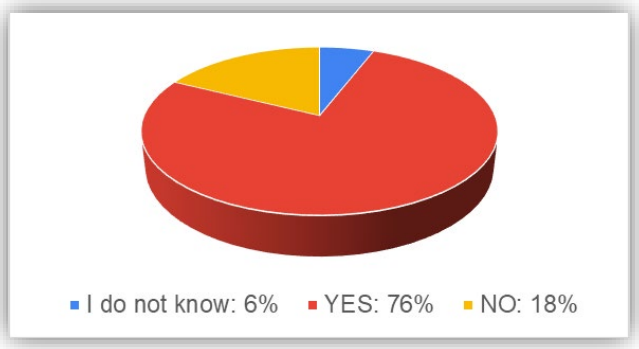

Figure 21.
Respondents' assessment of digitalisation and automation as a good opportunity for both owners and crew members, to adjust the existing policy in the field

Technological progress offers huge potentials for all economic sectors. Modern technologies are already being applied in transport and logistics sector, including inland navigation, or are on the verge of becoming reality. The use of modern technologies (such as cloud computing, Internet of Things (IoT), artificial intelligence & machine learning, robotics and automation, virtual and augmented reality and other modern technologies) offer the potential to revolutionise decades-old processes. Furthermore, automation in inland navigation covers a broad range from basic assistance systems for skippers to fully autonomous vessels. Compared to conventional shipping, enhanced automation in shipping is a great opportunity for the stakeholders of the navigation sector to improve reliability, reduce costs or contribute to the safety in general.

When participants were asked if they consider that an EU vision for the sector's digitalisation and automation is a good opportunity for both owners and crew members, to adjust the existing policy in the field, almost 80% agreed to this issue, while 18% (6 respondents disagreed) and 2 respondents (one from Romania and one from Slovakia) could not give a definite answer.

B-Q9. Further digitalisation can play a significant role in:

Next, participants were asked to identify the IWT sectors where further digitalisation can play a significant role. The following sectors were identified: **improvement of efficiency and reliability of IWT navigation and traffic management; better integration of inland waterway transport in logistics processes and multimodal chains**, and **reduction of the administrative burden and costs of complying with and enforcing legislation.**

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B-Q10. Do you agree that the RIS Directive, was and is one of the main drivers of digitalisation in the inland waterway transport sector through the introduction of information and communication technologies?

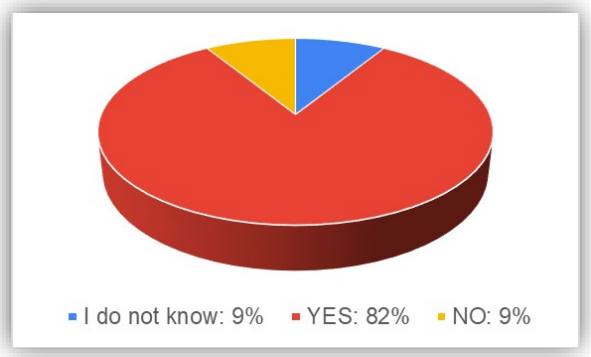

Figure 22.
Respondents' assessment of RIS Directive, as one of the main drivers of digitalisation in the inland waterway transport sector

River Information Services (RIS) is the concept whereby information services in inland navigation support traffic and transport management in inland navigation, including interfaces with other modes of transport. Directive 2005/44/EC on harmonised river information services on the EU's inland waterways requires Member States to implement RIS according to certain standards. The RIS are expected to improve safety, efficiency and the environmental friendliness of inland navigation.
As the RIS Directive refers to the four key technologies: Inland Electronic Chart Display and Information System (Inland ECDIS), Notices to Skippers (NtS), Automatic Identification Systems (AIS) and Electronic Reporting International (ERI), participants were asked to state whether they agree or disagree on the idea that RIS Directive is one of the main drivers of digitalisation in the inland waterway transport sector through the introduction of information and communication technologies.

28 participants (representing 82%) strongly agreed to this aspect, only 3 participants (9%) disagreed and other 3 respondents (9%) could not agree or disagree.

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B-Q11. RIS has already been introduced in most Danube and Rhine riparian countries, and in order to ensure interoperability, the technical specifications for RIS will have to constantly evolve towards smart shipping and interoperability with the mobility data space. Taking into account this continuous technical evolution of RIS, will there be a need of continuous training of the people who operate this system on board vessels and ashore, as well?

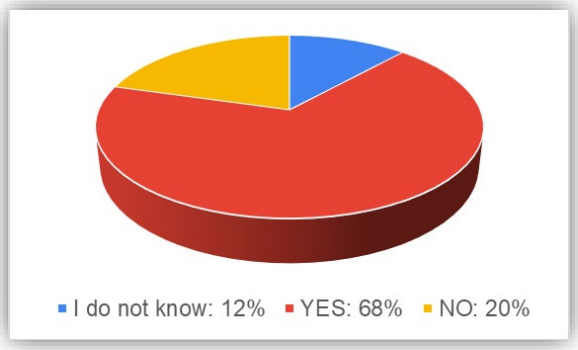

Figure 23.
Respondents' assessment of need of continuous training of the people who operate the RIS system

Taking into account the continuous technical evolution of RIS which have to constantly evolve towards smart shipping and interoperability with the mobility data space, most participants (representing 68%) agreed that there will be a need of continuous training of the people who operate this system on board vessels and ashore, as well. Only Romanian transport operators disagreed, due to the fact they are facing an acute shortage of IWT personnel in Romania.

B-Q12. Digitalization is included in all new technologies and transformations of the sector. In this respect must digital competencies be included in all education and training programmes addressed to inland navigation personnel, as a specific learning module, in order to be mandatory?

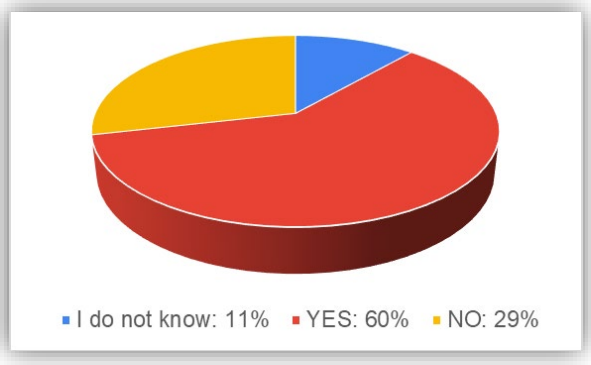

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Figure 24.

Respondents' assessment of need of digitalization as a specific learning module

As digitalization is included in all new technologies and transformations of the IWT sector, participants were asked if they agree to the statement: "*Digital competencies must be included in all education and training programmes addressed to inland navigation personnel, as a specific learning module, in order to be mandatory*"

21 respondents agreed to this idea, 8 respondents from Romania and 2 respondents from Germany disagreed and 4 participants were neutral.

B-Q13. Is the concept of autonomous shipping relevant for inland waterways?

Autonomous ships represent the next generation of vessels that are essentially an extension of remotely operated vessels. The benefits of autonomous shipping are obviously a reduction in crew-related operational costs, in the human-related errors, as the influence of the human factor will be minimized or excluded. Furthermore, an autonomous vessel can navigate full-time, as there is no crew that needs to rest. For inland waterways, member States are undertaking initiatives and/or developing projects and road maps for smart and autonomous shipping: Flanders (Belgium), Finland, Germany, Netherlands, Norway, Russian Federation, and others.

Respondents from Netherlands, Russia and Republic of Moldova consider the concept **relevant**; those from Czech Republic and Romania point out that the concept **needs further assessment**; participants from Slovakia and Austria, as well as inland navigation Romanian crew members consider that the concept of autonomous shipping is **relevant for certain types of craft or under other conditions**; and respondents from Belgium, Slovakia, Austria, Serbia think that the concept is relevant for certain waterways.

B-Q14. Which automation levels could be relevant for inland navigation?

Most of the participants consider **hybrid solutions, smart vessels, short-manned vessels, remotely operated unmanned vessels** as the most relevant levels for automation for inland navigation.

Belgium gave the following detailed answer: "*Hybrid solutions, Short-manned vessels, Smart vessels, Remotely operated unmanned vessels, Fully autonomous vessels, Other levels of automation, I am a strong but fair believer that this will partially solve the personnel shortage, increase safety, and has the potential to become a new segment in the market during the upcoming years. Regulators should hurry up but with respect for safety*".

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B-Q15. Automation will affect required competences in terms of knowledge and skills of the IWT workforce (including vessel owners, crew members and specialised engineers) to manage, operate and maintain a more advanced level of vessel automation.

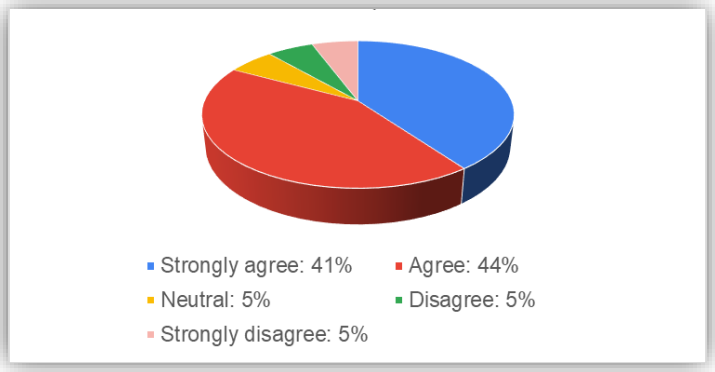

Figure 25.
Respondents' assessment of the impact of automation on competences

With the introduction of new energy carriers on inlands vessels, along with more advanced levels of automation and digital tools for navigational assistance, comes the need for existing and future IWT personnel to anticipate to new innovations.

When asked if automation will affect required competences in terms of knowledge and skills of the IWT workforce, most of the respondents (85%) agreed to this aspect, 10% of the participants disagreed and 5% were neutral.

B-Q16. There is a need for upskilling of the IWT workforce in view of more advanced levels of digitalisation and automation of on-board systems in inland shipping.

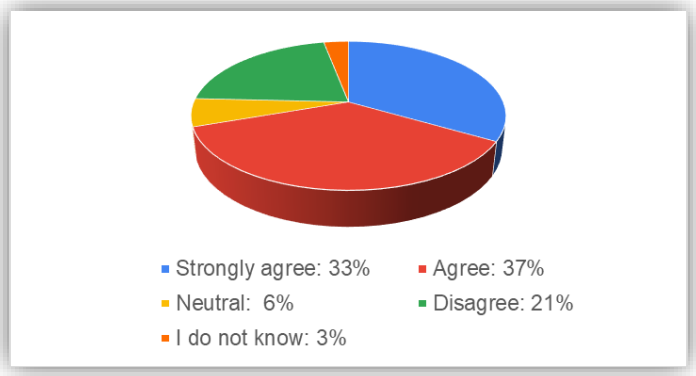

Figure 26.
Respondents' assessment of the need for upskilling of the IWT workforce in view of more advanced levels of digitalisation and automation of on-board systems in inland shipping

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On 29 November 2023 the European Commission adopted its Recommendation on means to address the impact of automation and digitalisation on the transport. It proposes several recommendations in this regard, including awareness-raising, reskilling and upskilling of workers, improving working conditions, management change and funding of the transition. The Commission recommends employers' organisations to play an active role in providing relevant information on the social impact of automation and digitalisation to their affiliates, in particular SMEs. Employers should promote upskilling and reskilling of workers in their company and take advantage of the resources and programs available at EU/national/local level. Finally, the Commission emphasises that social dialogue is an important pillar of the transition and must be supported by all parties – employers, organisations, trade unions and public authorities, workforce.

When asked to share their opinion regarding the need for upskilling of the IWT workforce in view of more advanced levels of digitalisation and automation of on-board systems in inland shipping, 70% of the participants agreed, and 21% of the respondents disagreed, while the rest of 9% did not know or were neutral.

B-Q17. Drafting of new standards for competence for nautical personnel in inland navigation involved in autonomous/ new technologies is considered to be a priority.

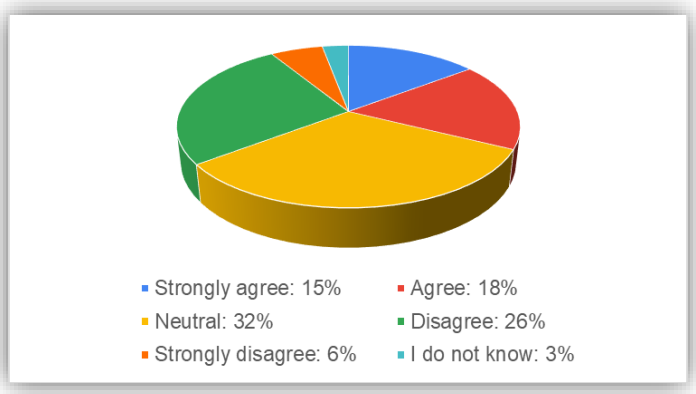

Figure 27.
Respondents' assessment on the priority of drafting of new standards for competence for nautical personnel in inland navigation involved in autonomous/ new technologies

Next, participants were asked to share their opinion on the priority of drafting of new standards for competence for nautical personnel in inland navigation involved in autonomous/ new technologies. The answers were quite divided. Basically, one third of the respondents agreed, one third disagreed and one third were neutral.

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B-Q18. New technologies affect as well the teachers/trainers who must be trained on the operation of the new equipment, on board the vessels.

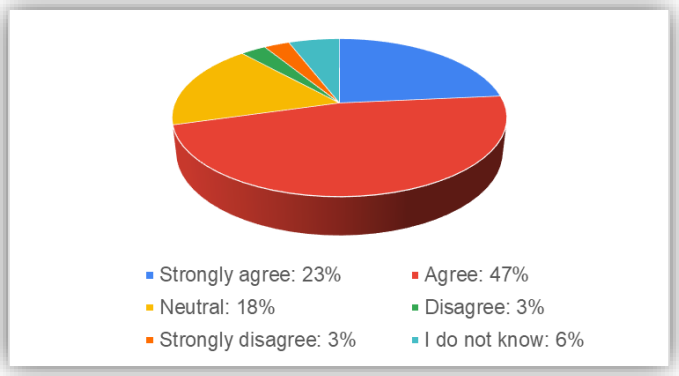

Figure 28.
Respondents' assessment on the impact of new technologies on teachers/trainers

Regarding the impact of new technologies on teachers/trainers, 70% of the participants consider it necessary for teachers to be trained on the operation of the new equipment, on board inland navigation vessels. Only 2 respondents disagreed and 6 were neutral.

B-Q19. What additional technical skills relevant for autonomous /new technologies operations should IWT personnel / teachers acquire?

The autonomous inland navigation vessels are expected to bring unprecedented changes in IWT labour sector and the workforce. Traditional jobs will be alleviated, new ones will be created while people involved in the autonomous inland navigation vessels operation should be qualified with additional skills and knowledge in order to be able to deal with the new technology and the various systems.

Most of the participants in the questionnaire consider that IWT personnel/ teachers/ instructors should acquire firstly, IT skills, safety & security management skills, meaning ability to conduct risk assessment and ability to manage cyber security.

Next, they consider that all inland navigation crew members should acquire handling skills to manoeuvre IWT vessels using remote ship control systems; should acquire knowledge regarding remote engine room operations, such as alert handling skills and maintenance skills; remote management of electronic equipment, for example, troubleshooting skills and fault-finding skills and last, but not least, knowledge about advanced sensor technologies.

One of the respondents, after selecting all the options of technical skills offered by the questionnaire also added "*human factors, effects on human behaviour* (see Ironies of Automation, 1983)".

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B-Q20. Automation of navigational tasks, remote control of inland vessels, or autonomous navigation will assist the skipper in navigation operations, supporting him in decision-making, mitigating the effects of poor visibility, and eliminating blind spots (e.g. due to hull).

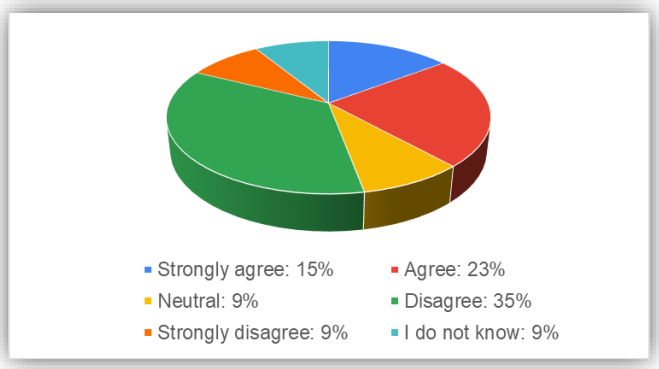

Figure 29.
Respondents' assessment on the support of automation on skippers

As presented in Platina 3 project, the novel products, advanced sensors and positioning technologies to be deployed on board inland navigation vessels primarily focus on assisting the skipper in navigation operations, supporting in decision-making, mitigating the effects of poor visibility, and eliminating blind spots (e.g. due to hull). Combining data from multiple on board sensors creates a complete digital picture of the environment around a vessel, an enhanced situational awareness that enables safer manoeuvring in ports, effective navigation on waterways, or identification of potentially hazardous targets.

Considering this aspect, 13 participants, representing precisely 50% agreed to the support of automation to skippers. However around 30% of the respondents disagreed, while the rest chose the neutral or do not know answers.

For example, a respondent from **Germany** – strongly disagreed – They commented that the introduction of automation to inland navigation is far too short to prepare a person for such a varied and responsible profession. Training should be done in the known application system for a safer and more environmentally friendly environment. They concluded that up-to-date training is important.

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3. GAP ANALYSIS/STATE OF PLAY

While inland navigation is a cost-effective and environmentally friendly mode of transport, it is not used to its full capacity. Apart from the need for significant infrastructure improvements, the sector is affected by limited labour mobility and shortage of qualified workers.

Therefore, the main objective of this report is to provide a **gap analysis of EU legislation implementation** in the Rhine and Danube riparian countries in terms of newly adopted Directives (EU) regarding the requirements for professional qualification and new common standards for competences for IWT crew members which are compulsory starting with January 2022, and the **needs and challenges for permanent adaptation of professional competencies according to the implementation of innovative technologies and digitalization in IWT sector**.

The **questionnaire** on "Legislation gap at EU and national level in the Rhine and Danube riparian countries and the needs and challenges for EU legislation implementation regarding permanent adaptation of professional competencies according to the implementation of innovative technologies and digitalization in IWT sector" jointly developed with all 6 (six) project partners representing STC and MAH – the Netherlands, FHOO - Austria , SBKR - Germany, UoC – Romania and UoZ - Slovakia and sent to over 100 stakeholders helped find out **if the professional qualification of IWT crew members is done in a harmonised way based on the newly adopted EU legislation in this field,** as well as the **effects and impacts associated with digitalization and autonomous ships in inland navigation** stakeholders have to cope with.

The questionnaire was distributed to over 100 stakeholders, representing inland waterway port authorities and subcontractors; logistic companies working with inland waterway port authorities or terminal operators, national inland waterway authorities; inland waterway shipping companies; public institutions with inland waterway regulatory power; craft operators; boatmasters on board IWT crafts; other crew members of IWT crafts; inland navigation crewing agencies; inland navigation VET schools, E&T institutions, via email with the following link: https://docs.google.com/forms/d/1NiizOg57mZ8BHEXcK3pd2PTNegOWjNNib6EpF_Citn0/edit?ts=65436352

In total 35 participants representing 11 countries: Belgium (1), Russia (2), Czech Republic (1), Netherlands (6), Republic of Moldova (1), Slovakia (4), Austria (1), Germany (4), Serbia (1), France (1) and Romania (13) completed the Questionnaire.

We also received answers from the consultation and the information received from EDINNA, CCNR, Danube Commission, Sava River Basin Commission and European Commission - DG MOVE.

All respondents considered that:

- **inland waterway transport represents a great potential for autonomous shipping** and more automation brings the reality of synchromodal IWT vessel-type in Europe closer;
- **all the relevant legislation should be revised**, where necessary, in order to facilitate the uptake of autonomous shipping, **with particular regard to the responsibilities of crew** in *emergencies* or *system failure*, clarification of *liability issues* in cases of damage and, more generally, the *safety aspects* of autonomous vessels, in order to achieve a certain level of

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harmonisation and increase the uptake of the technology at EU level;

- all steps should be taken for the necessary **training, upskilling and reskilling of crew working on inland navigation vessels**;
- **CESNI standards need further development** to ensure the necessary skills for the crew members of inland navigation vessels;
- River Information Services **(RIS) need to be further harmonised**
- there is a **need to modernise inland navigation education and training**, focusing on the *development of green and digital skills* and *overcoming language barriers*, thereby creating attractive jobs for young people and women, paying due attention to high and harmonised social and safety standards and qualification levels;
- there is the need for **compulsory, continuous and regular training schemes for all crew members**, including international exchange courses, in order to promote upskilling, reskilling, optimal labour mobility and safety throughout the sector, as well as the need for health and safety standards in line with the zero-accidents principle

But respondents complained about/considered the following obstacles:

- **the shortage of IWT personnel**;
- **insufficient attention from regional and national member states for the transposition of Directives;**
- **lack of IWT training companies, mainly in Austria;**
- **lack of regulations of the Directives (Romania) regarding the conditions under which certain categories of seafarers** (*graduates of higher educational institutions with a marine profile, former members of the armed forces, law enforcement agencies, civil defence services, fire services or other emergency services, graduates of vocational schools and secondary schools with a marine profile, a significant number of maritime deck personnel*) can be transferred to inland waterway crews.

As it is often the case **when it comes to new technologies, legislation lags behind innovation**. Either the law remains silent on the new technology and, therefore, does not directly oppose it, or the law directly poses a hindrance to the implementation of the innovation by implicitly or explicitly prohibiting it.

The reason for this relatively slow process is **the very different public regulatory institutional structure in inland shipping in EU countries**; this consists of a multi-levelled regulatory landscape with different supranational, regional and national authorities. The rules and regulations adopted by these authorities diverge as to their binding or nonbinding nature, their geographical scope of application and their hierarchical importance throughout Europe.

This means that there is a need for harmonization and unification of rules and regulations in all EU inland navigation countries.

In conclusion, by following a systematic methodological three-step approach, the report presents:

- to what extent the current regulatory legislation at EU and national level in the Rhine and Danube riparian countries is known and applied in the participants' countries;

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- what the needs and challenges for EU legislation implementation regarding permanent adaptation of professional competencies according to the implementation of innovative technologies and digitalization in IWT sector are;
- how it would be affected by autonomous inland shipping technology; and
- the specific regulatory obstacles that exist across the fragmented transnational pan-European inland shipping framework by identifying common gaps and themes that will require addressing for the regulation of autonomous ships.

As the objective of Task 2.1 was to identify potential gaps and/or themes in the relevant regulations and to subsequently establish common links across the different instruments, the identified common gaps and/or themes that could then serve as an orientation tool for future regulatory work on inland shipping regulations in a harmonised manner are presented below.

Regulatory instrument	Potential gaps identified that require addressing
CEVNI (UNECE 2021)	Definitions, responsibilities and qualifications of 'crew', 'qualified person', 'helmsman' and 'person responsible'; crewing requirements; certificates; communication; manual operations by the personnel on board; remote control from the onshore station; acquisition and transfer of data
Directive (EU) 2017/2397 (European Parliament and Council of the European Union 2022)	Definitions, responsibilities and qualifications of 'persons involved in the operation of a craft navigating', 'deck crew members', 'passenger navigation experts' and 'boatmaster'; certificate; communication; crewing requirements; remote control from the onshore station; manual operations by the personnel on board
ES-TRIN (CESNI 2023b)	Manual operations by the personnel on board; remote control from the onshore station; crewing requirements
	Acquisition and transfer of data; manual operations by the personnel on board; remote control from the onshore station; crewing requirements
ES-QIN (CESNI 2019)	Manual operations by the personnel on board; remote control from the onshore station; certificate; communication; acquisition and transfer of data
ES-RIS (CESNI 2023a)	Definitions, responsibilities and qualifications of 'crew', 'conning (navigating) skipper' and 'boatmaster/shipmaster'; acquisition and transfer of data; communication; remote control from the onshore station; manual operations by the personnel on board; certificate
RPR (CCNR 2023b)	Definition, responsibilities and qualifications of 'boatmaster'; manual operations by the personnel on board; crewing requirements; remote control from the onshore station

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RPN (CCNR 2023c)	Crewing requirements; definition, responsibilities and qualifications of 'ADN expert'
	Certificate; definitions, responsibilities and qualifications of 'boatmaster', '(deck) crew (members)', 'shipboard personnel', 'safety personnel' and 'passenger navigation expert'; communication; remote control from the onshore station; manual operations by the personnel on board
PRNM (Moselle Commission 2022)	Definitions, responsibilities and qualifications of 'boatmaster', 'crew' and 'other persons on board'; communication; acquisition and transfer of data; certificate; manual operations by the personnel on board

The potential gaps identified in inland shipping regulations included provisions requiring crew members on board ('manning requirements') and/or specific persons (e.g. boatmaster or crew member) to perform duties ('definition, responsibilities and qualifications') or provisions stipulating that (a) human(s) on board shall manually perform a task ('manual operations by the personnel on board').

Provisions requiring actions by humans on board automatically demonstrate the absence of provisions which would otherwise allow the specific task to be performed from outside the autonomous vessel ('remote control from the onshore station'). Furthermore, definitions, responsibilities and qualifications for remote control station personnel will need to be adopted. Provisions concerning communication either between on-board personnel on the vessel or between the vessel and the shore or with other vessels require adaptations to enable entirely digitalised communication ('communication'). Similarly, in the case of communication of data or situational awareness ensured by the personnel on board, new provisions are needed ('acquisition and transfer of data'). Lastly, provisions dealing with either specific certification requirements or the obligation to carry non-digitalised documents on board and to hand them over, for example, in case of inspection, raise new issues for their applicability to autonomous vessels ('certificate').

Consequently, before existing regulations can be adapted, new definitions, responsibilities and qualifications for the boatmaster and crew members need to be elaborated and changed, as the case may be, to remote control station personnel. These may be subject to policy decisions, as they likely have far-reaching implications on how regulations will address autonomous inland shipping in the future. Other issues seem to be less critical; however, they will nevertheless play an important part in the future regulation of autonomous inland ships. Amongst these are how to handle communication and data transfer as well as the adoption of new certification procedures for compliance and inspection purposes.

The adoption of a universally applicable code on autonomous inland shipping seems more than unlikely because of the very different rulemaking procedures amongst the various, multi-levelled policymakers in inland shipping. Therefore, the chance to pave the way towards a harmonised regulation in Europe could rest with CESNI, that **could create a non-mandatory regulatory framework or set of recommendations** from which other public regulators could gain inspiration for the adoption of new rules or future adaptations of their existing regulations.

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Based on the promise to fundamentally transform the IWT sector towards zero emissions, the EU has taken up the ambitious task of facilitating the elaboration of a holistic vision for the sector's digitalisation and automation EU Action Plan: "Towards a Zero Pollution for Air, Water and Soil". The latest policy directions taken by the EU that could potentially be relevant to a future regulation of autonomous inland shipping consist of a proposal for **smart and flexible EU crewing rules**. In this initiative, the EU acknowledges outdated crewing requirements for inland waterway transport despite that considerable developments have taken place in recent years that affect the sector. The objective of the initiative is an **adapted, much more digitalised and especially harmonised approach to current crewing requirements** that could speed up the process of future regulatory adaptation for autonomous vessels.

3. CONCLUSIONS

The present report provides an overview regarding the status of the professional qualification of IWT crew members based on the new EU legal harmonised approach as well as the urgent need to update and refresh the competences of IWT crew members, meaning the need to develop new standards and to update the existing ones and to provide short courses for maritime crew members to adapt to the IWT specifics due to the implementation of innovative technologies and digitalization in the IWT sector.

All responses collected led to the need to modernise inland navigation education and training, focusing on the development of green and digital skills and overcoming language barriers; creating attractive jobs for young people and women; paying due attention to high and harmonised social and safety standards and qualification levels.

A harmonised digital use and acceptance of electronic crew and vessel documents throughout the EU as soon as possible will strengthen the monitoring of social and employment conditions, improve the efficiency and attractiveness of inland waterway transport and its smooth interaction and integration with other transport modes.

The shortage of IWT personnel, and consequently the lack of proper rest for workers on board can pose considerable safety risks; highlights, therefore were made, that reliable, real-time digital controlling capacity to read, store and generate data on the working and resting times of workers on board is crucial.

Therefore, the further development and adaptation of CESNI standards to ensure the necessary skills for the crew members of inland navigation vessels due to the implementation of innovative technologies and digitalization in the IWT sector alongside with the need for compulsory, continuous and regular training schemes for all crew members, including international exchange courses, in order to promote upskilling, reskilling, optimal labour mobility and safety throughout the sector, as well as the need for health and safety standards in line with the zero-accidents principle are emphasised.

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ANNEX 1

Section 1 of 3

Questionnaire on legislation, needed competences and permanent adaptation of professional competencies of crew members due to the implementation of innovative technologies and digitalization in the Inland Waterway Transport sector

1 System 4 IWT project will focus on developing common resources that meet the needs of nowadays trends and challenges for (incoming) staff in the IWT sector, taking into account that currently there is no formal structure and or culture in the IWT sector for upskilling. Equipment and technology used on inland navigation vessels are getting more and more complex. Therefore, inland navigation companies are looking to hire more specialized and qualified crew members. With the introduction of new energy carriers on inland vessels, along with more advanced levels of automation and digital tools for navigational assistance, comes the need for existing and future IWT personnel to anticipate to new innovations.

In 2022, PLATINA 3 project proposed standards for competence for on-board systems for automation on inland vessels, with a focus on identification of competences, detailed in knowledge and skills. Within current project we want to carry out an analysis at European level on implementation and continuing revision of EU legislation regarding permanent adaptation of professional competencies according to the implementation of innovative technologies and digitalization in IWT sector.

In order to scan the present situation regarding the transposition and implementation in the Danube and Rhine riparian countries of the relevant EU Directives as well as the permanent adaptation of professional competencies of crew members due to the implementation of innovative technologies and digitalization in IWT sector, we would like to kindly ask for your support to answer the following questions, in order to find out if these directives have been transposed, but also if their provisions are applied, as well as the problems you faced/will face when implementing them.

NOTE: Please note that only the question regarding your country is mandatory.

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Section 2 of 3

SECTION A

Transposition and implementation of the **EU Directive 2017/2397 on the recognition of professional qualifications in inland navigation, and Commission Delegated Directive (EU) 2020/12** as regards the standards for competences and corresponding knowledge and skills, for the practical examinations, for the approval of simulators and for medical fitness, into the national legislation of Rhine and Danube riparian countries.

1. Please specify the country you represent. *

Short-answer text

2. What is the name of the national document/documents which transposes the two Directives, the date of approval and the approving national authority?

If you do not know the answer, please write N/A.

Long-answer text

3. What is the name of the designated national authority/authorities in charge with the approval of education/training programmes, with the examination of crew members, with the issuing of Union certificates of qualification, and with the approval of simulators.

If you do not know the answer, please write N/A.

Long-answer text

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4. On what date did the provisions of the national legal document(s) regarding the IWT education and training institution entry into force?

If you do not know the answer, please go to the next question.

Day, month, year

5. On what date did the IWT education/training programmes start?

If you do not know the answer, please go to the next question.

Day, month, year

6. Have the mandatory standards for competences and corresponding knowledge and skills, for practical examinations, for the approval of simulators and for medical fitness, been included in the national legal document/documents?

- ○ Yes
- ○ No
- ○ I do not know

7. Have the optional standards for competences adopted by CESNI, been included in the legal document/ documents?

- ○ Yes
- ○ No
- ○ I do not know

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7.1 If the answer is Yes, please, specify the name of these optional standards for competences.

Short-answer text

7.2 If the answer is No, have the optional standards for competences and corresponding knowledge and skills, adopted by CESNI, been included in the curricula of IWT education/training programmes?

- Yes
- No
- I do not know

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8. According to Article 19 of the Directive 2017/2397: *"Member States shall notify to the Commission the list of the approved training programmes"*. What is the number of the training programmes included in this list, which are the education/training programmes, and what level are the crew members who most frequently participate in?

If you do not know the answer, please write N/A.

Long-answer text

9. Are the approved IWT education/training programmes elaborated in both the national language and in English?

- [ ] Only in the national language
- [ ] Both in the national language and in English
- [ ] I do not know

10. Has the national designated authority started issuing Union certificates of qualification?

- ( ) Yes
- ( ) No
- ( ) I do not know

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10.1 If the answer is Yes, since what date?

Short-answer text

11. Is the data base of the national designated authority issuing Union certificates of qualification already connected to the European Hull Data Base?

- Yes
- No
- I do not know

12. What were the gaps that occurred during the transposition of these Directives?

If you do not know, please write N/A.

Long-answer text

13. What were the gaps that occurred during the implementation of the national legal document(s)?

If you do not know the answer, please write N/A.

Long-answer text

14. What issues were raised by the students/trainees in relation to the new national legal document/documents? (i.e. too many training programmes, too many days for practical training on board, mandatory use of simulators for training etc.)

If you do not know, please write N/A.

Long-answer text

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15. What issues were raised by owners in relation to the new national legal document/ documents?

If you do not know, please write N/A.

Long-answer text

16. What are the problems/efforts of IWT education/training institutions in relation with the implementation of the new legal provisions?

- [ ] lack of finance
- [ ] lack of human resources
- [ ] lack of cooperation with the designated national authority/authorities
- [ ] lack of cooperation with the relevant stakeholders
- [ ] I do not know
- [ ] Other...

17. How many students/trainees have already participated in the new approved IWT education/training programs?
How many of those students/trainees participated in courses at managerial level, how many at operational level, and how many at entry level?

Total number

Managerial level

Operational level

Entry level

If you do not know, please write N/A

Long-answer text

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18. Was it necessary to train teachers / trainers for the implementation of the new legislation?

- ○ Yes
- ○ No
- ○ I do not know

19. What problems related to ensuring the practical training on board IWT vessels for students/ trainees have you encountered?
If you do not know, please write N/A.

Long-answer text

20. Do you consider that these two Directives should be amended with new provisions?

- ○ Yes
- ○ No
- ○ I do not know

21. Do you consider that the obligation of refresher courses should be introduced as an amendment to the Directive EU 2017/2397?

- ○ Yes
- ○ No
- ○ I do not know

21.1 If the answer is Yes, for what level of crew members are such kind of training programmes suitable?

Long-answer text

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22. The provisions of the EU Directive 2017/2397 are addressed only to the deck personnel on board inland vessels. As it is known, on board inland vessels there are other categories of personnel, such as mechanical engineer and auxiliary personnel (mainly onboard passenger vessels). Onboard technical vessels there is personnel operating dredgers, cranes, lifting facilities, etc. Do you consider that for these categories of personnel, a harmonized legislation would be needed in terms of training and examination, and for refresher courses?

- ○ Yes
- ○ No
- ○ I do not know

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Section 3 of 3

SECTION B

Permanent adaptation of professional competencies of crew members due to the implementation of innovative technologies and digitalization in IWT sector

1. The current and future workforce in IWT needs to be equipped with the right competences to deal with the green and digital transitions, cyber-security, synchromodality and the automation of vessels and infrastructure. **What are the most important reasons associated with this need** ?

- [ ] Safety of navigation
- [ ] Better integration of IWT into multimodal logistics
- [ ] Mobility of the workforce
- [ ] Security of data
- [ ] Career opportunities
- [ ] High quality jobs
- [ ] Good communication
- [ ] I do not know
- [ ] Other...

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2. In order to have a harmonised approach on the continuous training of the workforce (upskilling) in the IWT sector, EU policies/strategies for lifelong learning need to be developed/revised in order to:

- [ ] Be focused on inland navigation sector
- [ ] Create a legal framework in this sector
- [ ] Upskill and update competencies which will be required in the near future
- [ ] I do not know
- [ ] Other...

3. Digitalization and new technologies can't be introduced in a smooth and safe manner in the IWT sector due to the:

- [ ] Lack of finance
- [ ] Lack of legislation
- [ ] Lack of qualified human resources
- [ ] I do not know
- [ ] Other...

4. Do you consider that digitalisation and automation in the sector could also create new opportunities for attracting new entrants in the sector (i.e. young people, women, people from other sectors, etc.) ?

- ( ) Yes
- ( ) No
- ( ) I do not know

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5. Introduction of digitalization and innovative technologies in the IWT sector means important transformation of the sector and at the same time new competences for current and future workforce in the sector. So, **new standards for competences and corresponding knowledge and skills need to be elaborated and adopted at EU level in order to:**

- [ ] Maintain a harmonised system of education, training and assessment of IWT workforce
- [ ] Increase the mobility of workforce in this sector
- [ ] Increase safety of navigation
- [ ] I do not know
- [ ] Other...

6. What standards will be necessary both at the moment and for the next 5 years taking into account the continuous transformation of the sector?

- [ ] Multimodal transport and logistics
- [ ] Multimodal travel information services
- [ ] Environment-friendly
- [ ] Innovative propulsion systems and sustainable fuels,
- [ ] Smart traffic management system
- [ ] Efficient vessel operation (eco navigation)
- [ ] Alternative fuels operations
- [ ] Autonomous vessels operators
- [ ] Cybersecurity
- [ ] Train the trainers (continuous training)
- [ ] I do not know
- [ ] Other...

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7. Do you agree that the new standards of competences elaborated and adopted by CESNI have to be mandatorily applicable in order to have a harmonised approach at EU level?

- ○ Yes
- ○ No
- ○ I do not know

7.1 If the answer is NO, please specify the reasons

Long-answer text

8. Do you consider that an EU vision for the sector's digitalisation and automation is a good opportunity for both owners and crew members to adjust the existing policy in the field?

- ○ Yes
- ○ No
- ○ I do not know

9. Further digitalisation can play a significant role in:

- ☐ Improving the efficiency and reliability of navigation and traffic management
- ☐ Better integrating inland waterway transport in logistics processes and multimodal chains
- ☐ Reducing the administrative burden and costs of complying with and enforcing legislation
- ☐ I do not know

9.1 If your answer is Others, please specify:

Long-answer text

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10. Do you agree that the RIS Directive was and still is one of the main drivers of digitalisation in the inland waterway transport sector through the introduction of information and communication technologies?

- ○ Yes
- ○ No
- ○ I do not know

11. RIS has already been introduced in most Danube and Rhine riparian countries and, in order to ensure interoperability, the technical specifications for RIS will have to constantly evolve towards smart shipping and interoperability with the mobility data space. Taking into account this continuous technical evolution of RIS, **will there be a need of continuous training of the people who operate this system on board vessels and ashore, as well?**

- ○ Yes
- ○ No
- ○ I do not know

12. Digitalization is included in all new technologies and transformations of the sector. In this respect, **must digital competencies be included in all education and training programmes addressed to inland navigation personnel, as a specific learning module, in order to be mandatory?**

- ○ Yes
- ○ No
- ○ I do not know

13. Is the concept of autonomous shipping relevant for inland waterways?

- ☐ Yes, it will become relevant
- ☐ It needs further assessment
- ☐ Yes

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14. Which automation levels could be relevant for inland navigation?

- [ ] Hybrid solutions
- [ ] Short-manned vessels
- [ ] Smart vessels
- [ ] Remotely operated unmanned vessels
- [ ] Fully autonomous vessels
- [ ] Other levels of automation
- [ ] I do not know
- [ ] Other...

15. Automation will affect required competences in terms of knowledge and skills of the IWT workforce (including vessel owners, crew members and specialised engineers) to manage, operate and maintain a more advanced level of vessel automation.

- [ ] Strongly agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly disagree
- [ ] Don't know

16. There is a need for upskilling of the IWT workforce for more advanced levels of digitalisation and automation of on-board systems in inland shipping.

- [ ] Strongly agree
- [ ] Agree
- [ ] Neutral

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17. Drafting new standards for competence for nautical personnel in inland navigation involved in autonomous/ new technologies is considered to be a priority.

- [ ] Strongly agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly disagree
- [ ] Don't know

18. New technologies affect as well the teachers/trainers who must be trained on the operation of the new equipment, on board the vessels.

- [ ] Strongly agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly disagree
- [ ] Don't know

19. What additional technical skills relevant for autonomous /new technologies operations should IWT personnel / teachers acquire?

- [ ] IT skills: knowledge regarding computer engineering and artificial intelligence
- [ ] Safety & security management skills: ability to conduct risk assessment
- [ ] Ability to manage cyber security
- [ ] Ship manoeuvring by using remote ship control systems
- [ ] Knowledge regarding remote engine room operations: alert handling skills and maintenance skills

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20. Automation of navigational tasks, remote control of inland vessels, or autonomous navigation will assist the skipper in navigation operations, supporting him/her in decision-making, mitigating the effects of poor visibility, and eliminating blind spots (e.g. due to hull).

- [ ] Strongly agree
- [ ] Agree
- [ ] Neutral
- [ ] Disagree
- [ ] Strongly disagree
- [ ] Don't know

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