

TECHNICAL LEAFLET



HUMAN FACTOR ROOT CAUSES OF ACCIDENTS IN INLAND NAVIGATION

PHASE 2B: ORGANISATIONAL ASPECTS

Accidents

Accidents in Inland Waterway Transport (IWT) change and seem to increase in severity & cost of claims. Human factors account for about 70-80% of all accidents, according to databases and literature. Also changes in IWT itself develop like increasing automation, other business models, etc.

Based on triangulation approach

- ▶ information from questionnaires (**85 respondents**);
- ▶ interviews;
- ▶ and on-board-observations helped to reveal context of human factors root causes (**10 selected vessel visits**).

Paul Goris, president of the IWT Platform: "The Inland Waterway Transport sector is on the eve of a major transition in terms of sustainability and digitalisation. This requires further development of standards and certain safety requirements."



Report

This report covers phase 2b: an in-depth study into four main factors that relate to the root cause of organisational aspects:

- ▶ Communication;
- ▶ Qualification of crew members;
- ▶ Fatigue and stress;
- ▶ Specific waterway situations.

Research conducted by:

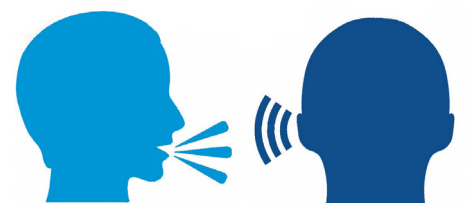


Results

To read the full report, go to www.ivr-eu.com / www.inlandwaterwaytransport.eu

▶ Communication

96% of respondents believe that inadequate or poor-quality communication with other waterway users is an important cause of accidents. Examples of communication issues are: limited use of standard communication protocols and phraseology, limited command of a shared common language. Together with a high adoption of automation, this may contribute to overtrust and errors.





► Qualification of crew members

A crucial observation made is related to a need for life-long personal development, including periodical retraining. So far this is not conventional across the sector. 94% of respondents marked that limited skills on-board are an important cause of accidents, mentioning especially a lack of experience and craftsmanship of new boatmasters.

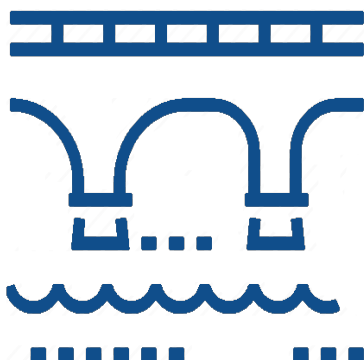
► Fatigue and stress

An immature culture for resilient strategic and operational management contributes to high operational pressure and affects communication. Also, the role of barge operators, the situation at terminals, administrative processes and journey preparation can contribute to fatigue and stress.



► Specific waterway situations

Specific waterway situations refer to aspects in the infrastructure and sailing area and navigating in weather/cruising conditions that might create a risk for accidents. Last but not least, those are believed to contribute - to a lesser extent - to accidents, e.g. due to limited familiarity with the sailing area and infrastructure 'en route' (91%) and pressure to sail in bad weather/cruising conditions (76%). In practice, the boatmasters experience difficulties in having easy access to reliable information, such as actual water levels.



Recommendations

1. Update and improve protocols and guidelines on VHF communication in inland navigation, including a shift to one shared nautical language across the IWT ecosystem.
2. Develop an integral vision on appealing lifelong personal development on mastering management, entrepreneuring and non-technical skills for all crew, apprentices etc.
3. Explore possibilities to distribute responsibility of time-bound operations across the IWT ecosystem in a more closed supply-chain loop.
4. Develop a shared vision of the helmsman's position and on the minimum requirements of information and automation needed. This includes route planning, minimum safe clearance conventions, and the use of non-task related systems, like personal social media and TV.
5. Develop a central database of European inland navigation that includes clear definitions and overall information, allowing to learn from incidents and to prevent them from happening again in the future.
6. Synchronise recommendations on organisational human factors root causes with recommendations from technical human factors aspects.