



CESNI (20) 61  
CESNI/PT (20) 83  
1 February 2021  
Or. en fr/de/nl/en

WORKING GROUP ON TECHNICAL REQUIREMENTS  
EUROPEAN COMMITTEE FOR DRAWING UP  
STANDARDS IN THE FIELD OF INLAND  
NAVIGATION

## Summary of the online workshop held on 12 October 2020 "Data collection on accidents in inland navigation"

Communication from the Secretariat

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Chairs: Mrs Hofbauer, Austrian delegation, Mrs Klootwijk-de Vries, IVR  
Secretariat: Ms Espenhahn  
Detailed programme of the workshop: *see Annex*

### I. Context

Although accident data is often collected at the national level, the exchange of data between different countries or organisations remains difficult and consequently hampers the feeding of national and international databases with sufficient and comparable information. This limits in the end the possibility to elaborate recommendations to prevent similar accidents. The fact that accident reporting is not mandatory in inland shipping does not help the situation.

In 2019, the European Committee for drawing up Standards in the field of Inland Navigation (CESNI) decided to collect more information on data collection for main accidents (PT-29) regarding experience, collection habits and existing methodologies.

### II. Objectives of the workshop

In this context, the CESNI organised a workshop with the following objectives:

- Bring together persons from different member states that are involved in collecting data on accidents in inland navigation
- Increase the understanding of existing methodologies and statistical concepts in view of an evaluation of similarities and significant differences across member states
- Inform on the work done by the EUROSTAT Task Force
- Improve the data collection situation in Europe
- Close knowledge gaps by raising awareness of who is collecting data
- Identify reasons why data is not collected
- Convey the importance of accident data collection for overall safety in inland navigation
- Pave the way to the development of an accident database on an international level (with the possibility of comparison and cooperation)
- Promote commitment to provide data

### III. Examples of practical experience on national level

#### **Mr BAČKALOV (University of Belgrade, Novimar): An analysis of data on accidents on inland waterways: lessons learnt and a possible way forward (Annex 1)**

Mr BAČKALOV explains that in the data collection process, principally two approaches are possible:

- a) a qualitative approach: investigation of specific / major accidents in order to understand the underlying causes, the mechanism and dynamics of an accident, etc.
- b) a quantitative approach: data collection from as many accidents as possible.

He states that general conclusions need in all cases a representative amount of data. The NOVIMAR project investigates possibilities also for autonomous shipping and therefore the reduction of human operators, but he raises the question what happens then with safety?

If one has a closer look on accident types that he splits into allision, collision, grounding, damage and fire, capsized, shipwreck and foundering, links to types can be made regarding traffic density and conditions like weather but also infrastructure or operational causes. He explains this with the concrete example by comparing Serbia and Austria. Regarding accidents caused by human failure, it can be observed that generally there are three times less frequent accidents in Serbia linked to human failure than it is the case in Austria. However, if you consider the accident type, i.e. collision, then the numbers are much higher: 77% for Austria and 56% for Serbia.

Furthermore, factors like weather conditions should be considered much further he states. For example, they are more severe on the middle and lower Danube than on the upper Danube, but yet all three sections are considered equally as the same type of waterway (zone 3). He raises the question if they should not be separated into three zones to modulate the vessel technical requirements regarding the particular weather conditions. And also take into consideration the seasonal differences of the year. All these factors are left out in the current regulatory framework.

Likewise, certain categories of data are missing that could be useful, i.e. the main dimensions of the vessels. They are not recorded although they are very important like also the type of cargo and the transported quantity. Last but not least certain times of the day are more dangerous than others, i.e. navigating at night. This could be linked to human failures as a cause, too.

Conclusions: A big amount of data is yet available, however, we need to extract it from reports that are written in the national languages, and therefore translation is needed.

Furthermore, Mr BAČKALOV calls for an improvement of reporting forms and that they should be standardised.

#### **Mr VAN BRUMMELEN (Rijkswaterstaat): Examples of practical experience in the Netherlands (Annex 2)**

In the Netherlands, it is mandatory to report all accidents and safety issues to the competent authority, so registration is required.

Mr VAN BRUMMELEN explains the two sources of data:

1. Harbour masters and
2. Investigating offices

Both use specific registration systems via a registration form (that is web based today) and feed data into a data base, the SOS database. This process represents a big amount of work and thus requests man power at an equal level as harbour reporting. Then the information must be spread to be analysed. All serious shipping accidents are reported via this data reporting tool. In addition, a geographic tool (map) with different accidents according to the year can be selected for the analysis.

These web based data reporting tools allow to generate dedicated reports, query tools but also precised training for accident prevention.

The strengths of this kind of accident data collection are:

- the overview of different types of accidents and locations,
- a high coverage of serious accidents,
- the use for risk analysis and monitoring,
- the indication of causes.

However, he also explains the weaknesses of this data collection process:

- detailed investigation of individual accidents is needed to identify (individual) causes,
- essential data on accidents can be missing,
- data can be inaccurate
- the degree of registration of accidents by a data supplier may vary over time.

He states that motivation through law or directives is certainly important, but even more important is to understand that sharing is related to a benefit, as the data collection represents a big amount of work.

Therefore, in the Netherlands, a pool of experts meets several times a year for expert judgement and quality control on the collected data but also to discuss the development of new tools regarding risk analysis and human factor analysis which is very complex.

He also points out a good example for a cross border cooperation of Belgium and the Netherlands. Through a joint risk based policy they do not only cooperate for sharing data, but they also collaborate regarding the risk analysis for the region of Western Scheldt. In that way, risk reduction measures can be improved in both countries.

To complete data collection, an App for mobile phone from Rijkswaterstaat (Vaarmelder) is also available to report unsafe situations. However, for accidents, you still need to contact the competent authority.

Conclusions: The Netherlands maintains an extensive shipping accident database (SOS database). The sharing of data is motivated and stimulated by mutual benefits. Several web based reporting tools allow not only to collect and analyse data but also to use them for risk based safety policy, the management of shipping activities and regular inspection of vessels.

### **Mr NEHAB (Wasserstraßen- und Schifffahrtsverwaltung, WSV): Examples of practical experience in Germany (Annex 3)**

The accident registration is done by two main sources:

1. Waterways and shipping administration (WSV), the federal authority that is subordinated to the Federal Ministry of Germany, and
2. Water police (Wasserschutzpolizei), the authority of the federal states which means 15 different water polices in Germany.

Water Polices report to the Federal Waterways and Shipping Agency<sup>1</sup> (GDWS). Accident registration is done by a reporting sheet for shipping accidents, similar to the Netherlands. This sheet is not yet in web-based application. Although the reporting sheets are stored by the GDWS, they are rarely used as the evaluation of the data sheets is very labour-intensive. Every 6 months, a report is made to the Ministry of Transport by the GDWS via a dedicated formular.

Furthermore, according to the “Ship accident database act”<sup>2</sup> adopted in 2013, the GDWS is legally obliged to establish and operate a database for ship accidents (HAVARIS). Each accident on sea- or inland-waterways and in harbours has to be reported to this database. An exact definition of the term accident as an “*unpredictable incident which entails personal damage, considerable material damage or a considerable disturbance of shipping*” determines which case is to be entered into the database. HAVARIS shall ensure the evaluation of accidents. The law authorises the transfer of data from HAVARIS to the CCNR (unless personal data is involved).

Nevertheless, HAVARIS does not yet run as a digital database. The problem consists in the structure of authorities in Germany. The access should be granted for the WSV as well as for the 15 water polices of the “Länder” while a high digital security level is guaranteed. However, each Water Police works with their own intranet which is currently not connectable to the WSV’s network.

To implement the legal act nonetheless, a working group has been established to solve this problem by identifying a software application that seems suitable for HAVARIS. This application is already used for many different purposes on the federal level and thus generates no extra maintenance and operating costs for the system. This solution even meets the high German data protection requirements as the intranet operates with an extra-protection.

This working group also developed an electronic reporting sheet that can be used by water polices to report accidents in a harmonised way. The sheet is completed by a document describing the business requirements in a detailed manner.

Conclusions and perspectives: In Germany, work is on-going for electronic data collection on accidents, in particular the start of the HAVARIS database in a “test environment” is planned for 2021, without excluding to be connected to a European database at later stage.

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<sup>1</sup> German: Generaldirektion Wasserstraßen - GDWS

<sup>2</sup> German: Schiffsunfalldatenbankgesetz

#### **IV. Harmonised methodologies - Overview of the work achieved by the Eurostat Task Force on passenger transport by inland waterways and result of pilot studies**

##### **Ms ISCRU (EUROSTAT): Presentation of the work achieved by the Eurostat Task Force on passenger transport by Inland Waterways and results of pilot studies (Annex 4)**

Ms ISCRU explains that the Commission and Member States are obliged to provide statistics through regulation (EU) 2018/974 (Article 5) for investigation of the development of inland waterway (IWW) passenger transport statistics.

The first step in 2016/2017 was to build a Task Force in order to discuss the availability of IWW passenger transport data, the definition of relevant indicators and a methodology for passenger transport statistics.

After that, in 2017/2018, the Task force collected feedback on their methodical approach and adapted it accordingly. The final methodology was then approved end 2018. This paved the way for pilot studies in 2019 for passenger transport statistics that also referred to accidents (still facultative). Within this work, the Task force not only determined a harmonised methodology for accident statistics but also adopted a common definition for IWW accidents.

The proposed datasets of the methodology concentrate on annual data concerning:

1. Number of accidents by degree of seriousness, type of accident and type of vessel;
2. Number of accidents by degree of seriousness, cause of accident and involvement of dangerous goods;
3. Number of people killed or injured by seriousness of injury and type of person injured.

In general, all countries that participated in the pilot studies do collect data in a way but with differences. For example, whereas in Germany it is mostly the Water Police that records accidents (while HAVARIS is under development), Austria gets only aggregated data. The Netherlands have several reporting instances whereas Romania gets the data from regional harbour masters.

Conclusions: Most European countries already collect and report data on IWW accidents but not in the same way. The lack of a common methodological approach could be filled by turning to the methodological manual that was elaborated by Eurostat and redefining their systems for accident data collection.

A EU regulation on accident statistics in inland waterway transport is *not* foreseen for the moment. But Eurostat will invest further on the revised methodology to suggest improvement to the Member states.

#### **V. Experience from the insurance sector - Availability of data for accidents in the insurance sector and possibilities for collaboration**

##### **Mr DE BAKKER (EOC Insurance): By insurers perspective (Annex 5)**

The EOC's goals are to lower incident numbers, to cooperate and help quickly in case of incidents, to offer a healthy loss ratios and stable insurance premiums. Collected data helps them to learn continuously.

Mr DE BAKKER points out that there are big differences regarding the insurance companies due to the fleet's composition or the different insurer's policies. A sharing of data could be of great interest but firstly the output is difficult to merge, secondly they must be willing to cooperate/share and last but not least data protection is an issue, especially in the private (insurance) sector.

Another problem is that the national authorities are working alone, so no cross border data systems are used. But this would be essential to research and find hotspots for accidents, to find solutions and to finally being able to reduce risks.

Conclusions: Mr DE BAKKER calls for one (public) European system which can be kept simple so that a large number can contribute. EOC already established working groups and informs over social media about prevention activities.

## VI. Digital tools

### Mr VAN DER LINDE (Platform Zero Incidents, PZI) (Annex 6)

The ultimate mission of Platform Zero incidents is to strive for zero environmental and safety incidents in the inland barging industry. Therefore, it wants to concentrate not only on incidents but also on near misses. PZI sees itself as a centre of expertise concerning the prevention of safety and environmental incidents in the inland barging industry.

The data collection started in 2015 and has been done since 5 years through an electronic form that is not that detailed but respects data protection through anonymity. The reports are divided per activity and focus on

- man overboard,
- navigating and mooring,
- loading and discharging,
- high impact incidents,
- low frequency incidents.

Over 4,350 records were registered so far from 2015 to 2020 (year-to-date). Among these records approximately 2,000 incidents with consequences for people, for the environment or material damage.

Safety flashes and alerts are regularly distributed and freely available on the PZI website<sup>3</sup>  
Best practices and guidelines as well as knowledge linked to data is also available.

Mr VAN DER LINDE then explains the "human error syndrome". As the human factor plays a role in around 80 % of incidents, it is tempting to hold the person in the wheelhouse responsible. Nevertheless, the human error is *not* the cause of failure but the effect or symptom<sup>4</sup>. The context in which corrective or mitigating measures were taken has to be considered as they are directly linked to the human error. The individual is embedded in a sociotechnical system and permanently influenced by it.

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<sup>3</sup> See <https://www.platformzeroincidents.nl/home/>

<sup>4</sup> See Prof. S. Dekker "[The field guide to understanding human error](#)", 2014

Conclusions: The PZI is aimed on improving safety without commercial aspects that allows its members to report anonymously incidents and near misses based on facts. It generates knowledge and expertise from the inland navigation sector on an international level and is therefore aimed to collaborate with relevant stakeholders. A big interest is paid to find root causes that go deeper than labeling it as human error. It started in 2015 as an initiative of the industry from market parties that were seeking for more influence of their own safety.

**Mr NIEUWESTEEG (Centre for the Law & Economics of Cyber Security, CLECS): Good criteria for European data collection with respect to data protection (Annex 7)**

As an independent senior strategic cyber security advisor, Mr NIEUWESTEEG's focus lies in increasing the public discourse regarding cybersecurity.

A good example is a yearly award that lists Dutch companies to promote transparency and efforts in the domain of cybersecurity<sup>5</sup>. As companies have only limited funds to spend on cybersecurity, they have to decide what measure has the most effect, depending on the case. So far, companies do not compete in the sector of cybersecurity, it is more for their own benefit.

Mr NIEUWESTEEG explains that sharing information costs money but the social benefit is not necessarily given. The consequence could be a market failure as companies still have net private costs to share information. On the other hand, sharing knowledge regarding accidents might increase social benefit which means less accidents.

So if one looks closer on the relation of benefits and costs of data aggregation, it can be seen as a sensitive balance: social benefits with incident/accident prevention and thus a possible reduction as well as a better policy on one side, and private costs to be paid by companies for data protection, cybersecurity and the risks of data sharing regarding competition on the other side. In general, data protection regulations hamper data sharing, and so does cyber protection.

So what are the best strategies to move forward?

1. **Increase social benefits:** this could help to create social welfare and positive "spillover effects" to other sectors.
2. **Introduce private benefits:** incentives in form of subsidies, co-creation and innovative business cases that could be related to positive "spillover effects".
3. **Reduce private costs:** companies could reduce cybersecurity costs for example by choosing a cyber insurer. To lower costs even more, small and medium companies could jointly invest in this kind of insurance or could invest in General Data Protection Regulation (GDPR) compliance jointly as a sector.

Conclusions and next steps: Mr NIEUWESTEEG sees the risk that cybersecurity is used as an excuse to not participate in data sharing. But data and knowledge sharing go together hand in hand with incident response. According to him, the exact social benefits of data aggregation should be determined by every company or stakeholder. Furthermore, it should be clarified to what extend private benefits could be introduced and private costs could be decreased. But to answer these questions, it has to be clear who influences the decision-making process.

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<sup>5</sup> <https://www.csarindex.eu/>

## VII. Zoom on the current situation - Obstacles and opportunities for data collection and exchange (Annex 8)

Ms KLOOTWIJK DE VRIES, IVR, draws a quick picture of the current situation of the basic principles of data collection and recalls the lessons learned during the IVR congress in Prague in June 2019. Already back then, it was stated that data exists in a fragmented way, but it is not systematically shared. Besides, mainly big accidents are registered whereas unsafe behaviours and minor accidents - that could lead to fatal accidents - are often left out (Heinrich's Triangle Theory).

Another problem lies in the missing harmonised definition of the term accident, as it was already explained by Ms Iscru from Eurostat. When every Member state has a different definition, the data collected according to it cannot be the same either.

Ms ESPENHAHN, CESNI Secretariat, continues by giving a short overview regarding the current obstacles like different statistical concepts and methodologies, the difficulties in comparing data as different indicators/parameters are used and that data is also different because the purposes out of which it is collected are various. These obstacles are not new as well as the fact that accident reporting is not mandatory in inland navigation (except for dangerous goods).

She introduces different opportunities that might help to overcome these obstacles, like closing knowledge gaps by establishing and improving a transparent communication between waterway administrations (as well as ministries) on the one side and statistical offices on the other. Determine and implement a common definition of accidents and a harmonised methodology would be extremely helpful to register the data on a comparable basis.

Conclusions and vision: Besides the vision to create a more standardised and harmonised data collection process including a common definition of accidents, the registration of unsafe behaviours and minor accidents (that can lead to main accidents) should be of main interest for all participating parties to improve accident prevention and safety. Although a new centralised European database seems unrealistic to achieve in the short term, further initiatives should be undertaken with this objective in mind. A CESNI standard could be used to introduce to ease collaboration and make comparing data easier.

## VIII. Discussion

A discussion of 60 minutes gave all the participants the opportunity to exchange. The discussion is animated by Ms Frouwke Klootwijk-de Vries, IVR.

Mr BACKALOV (University of Belgrade) raises the question of the frequency of accidents. Compared with the maritime transport, it is relatively low if the size of fleet is considered. The analogy to road and rail accident data is not that obvious as the circumstances are hardly comparable. He comes back to the human factor that is non-linear and therefore non-predictable. If you take the parameter of shipbuilding: vessels are built according to minimum requirements, so they fulfil technical standards but are less resilient to human errors.



Mr STANGL-BRACHNIK (Austria) shares the opinion that only through a common definition of the term accident, data fits on an international scale. The statistics of work related accidents already follows a clear definition and data is available and should be shared (i.e. ENI Number of vessels). He asks how far the work of Eurostat goes.

Ms ISCRU (Eurostat) reacts to the Austrian question by explaining that the common definition and methodology was not only inspired by road and rail procedures, but mainly by the maritime sector. The methodology will be improved further for passenger transport statistics, but the collection for accident data will remain on a voluntary basis. After the pilot studies' report has been given to parliament, the work of the Task Force ends. Eurostat only works with statistical offices, so she wonders how to gather data from the sources or at least how statistical offices could get to the sources.

Mr ARNTZ (IVR) says that data collection is very complex and so are the causes of accidents. For him especially the human factor should be investigated further. They are called human factor incidents but that involves communication, language barriers etc. so we have to direct the question on the purpose, are we looking at it from a pollution point of view, insurance point of view or an economic point of view?

He suggests the following approach: define the term incident; limit the registration details but search in depth for root causes; maintain a simple database with a minimum set of data to get the support and willingness to enter and share the data.

Mr MAURER (Swiss delegation) draws the attention to the fact that the analysis of unsafe behaviours and minor accidents bears a huge learning potential (Heinrich's Triangle Theory). He asks if these are registered in Germany. Mr NEHAB (Germany) answers that according to the Ship accident database act only accidents have to be registered.

Mr VAN BRUMMELEN (Rijkswaterstaat) states that the focus should also be to further reduce risks and that data is only a tool to do so. His estimation is that it will take at least 10 years to build a common international database. To not wait that long to reduce risks, a joint basis at least on certain risks should be found immediately, so that sharing information that we already have can be started right away. His suggestion is to share information first and then built a common database.

MS SCHREIBERS (Intergo) declares that to learn from incidents to reduce risks, more data is needed. According to her, human behaviour is not unpredictable but more data is needed (time of day, use of technical devices etc.). So the tricky question is how quality of registration can be improved but insufficient registration could be avoided. In Mr VAN BRUMMELEN opinion, motivation of people is the key to share data and put the necessary effort in registering. But the current forms are too complex and therefore too much work. He suggests to use a basic data set with most common accidents, and maybe collect data regarding questions for investigation separately. There will always be lacks no matter how detailed the form is. The interpretation of data is most important; a risk based approach gives more insight revealing the main causes of an incident. Keep it simple and use the available data to the maximum extend

Mr DELAERE (Belgium) welcomes the idea to work on this topic within CESNIPT, in view of the elaboration of a CESNI Standard. He recalls that private data bases have different goals than the European regulation mentions. He raises the question of a Directive.

Ms ISCRU says that a EU regulation is not foreseen in the near future; only to reinforce collaboration with EU Member states on a voluntary basis. The Task Force tried to offer some options with the harmonised methodology.

## **IX. Conclusions of the workshop and recommendations for the continuation of the work within CESNI**

In the light of the various presentations and the opinions expressed by workshop participants, the CHAIR draws the following conclusions:

With more than 60 guests and speakers, this CESNI workshop brings together different stakeholders (member states, insurance companies, Eurostat, university etc.) with a different understanding of the question of collecting accident related data. They were able to exchange on existing data collection methods, the use and analysis of data, existing lacks but also best practices.

The knowledge that the participants were able to gain through this event was both broad and profound. Existing different methodologies and statistical concepts were presented, especially the work done by the Platform Zero Incidents and the Eurostat Task Force. A harmonised process in accident data collection across Europe is welcomed but has yet to be realised. A major challenge for all participants has been identified in finding that compromise between exhaustivity and quality of data. The development of a minimum data set, which could be a first step, that should be simple enough to engage people in providing quality data, but also sufficient to get enough data to be able to analyse causes and learn from it.

The open discussion in the end of the workshop showed the differences regarding purpose and motivation of accident data collection. The importance of the question “**why** are we collecting **which** data?” was pointed out by almost all speakers. The common goal of less accidents and improved safety united all participants; only the ways, the instruments and use of databases are quite different.

According to Eurostat, no EU regulation is foreseen in the near future. Therefore, the work of CESNI as an exchange platform but also for adopting standards in inland navigation could play a major role in this.

**Annexes:**

- Programme of the Workshop
- Mr BAČKALOV (University of Belgrade, Novimar): An analysis of data on accidents on inland waterways: lessons learnt and a possible way forward
- Mr VAN BRUMMELEN (Rijkswaterstaat): Examples of practical experience in the Netherlands
- Mr NEHAB (Wasserstraßen- und Schifffahrtsverwaltung, WSV): Examples of practical experience in Germany
- Ms ISCRU (EUROSTAT): Presentation of the work achieved by the Eurostat Task Force on passenger transport by Inland Waterways and results of pilot studies
- Mr DE BAKKER (EOC Insurance): By insurers perspective
- Mr VAN DER LINDE (Platform Zero Incidents, PZI)
- Mr NIEUWESTEEG (Centre for the Law & Economics of Cyber Security, CLECS): Good criteria for European data collection with respect to data protection
- Zoom on the current situation - Obstacles and opportunities for data collection and exchange
- SOS-Form

**The Annexes are located on website under “Presentations”**

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