

# MAPPING MARITIME PROFESSIONALS

Towards a full-scale European data collection system

Neil Ellis, Emma Wadsworth  
and Helen Sampson



**ECSCA**

European Community Shipowners' Associations



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***Mapping Maritime Professionals:  
Towards a full-scale European data collection system***

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# EXECUTIVE SUMMARY

## Background

The maritime transport sector is a key component of European economic development and growth. It is also central to the livelihoods of hundreds of thousands of seafarers, as well as countless more people involved in the sector more widely and in the supply and supporting industries with which it is connected. Despite this, there are currently no reliable, standardised data to describe and monitor the European maritime labour market.

This gap, and its significance for the maritime sector, have been recognised for some time (Task Force 2011). Accurate, reliable data are essential to the development of appropriate strategic responses to the problems and challenges the industry faces. Perhaps the most pressing of these, in the European context, is the retention of seafarers. However, the global Covid-19 pandemic, during which the study described in this report was carried out, has highlighted the difficulties faced by seafarers during their daily working lives, as well as the challenges and pressures facing shipping companies. As such, it has further underlined the importance of a rigorous understanding of the labour market as a basis from which to support seafarers, shipping companies and the maritime sector more widely.

It is now 10 years since DG MOVE set up a Task Force to consider the relationship between employment in the maritime industry and competitiveness, with a view to making recommendations on the social aspects of the European maritime policy. The Task Force had “major difficulties” in obtaining accurate, complete and reliable figures on employment in the sector. It pointed to “the lack of available data in most countries, and for some of them of no existing data at all”, and recommended that a harmonised data collection system on seafarers’ employment be set up.

The European Transport Workers’ Federation (ETF) and the European Community Shipowners’ Associations (ECSA) are currently working together to consider how accurate, reliable and standardised data on the industry’s workforce at the European level might be obtained. As part of this process, they commissioned the Cardiff University Seafarers International Research Centre (SIRC) to carry out the study described in this report. Its aim was to map existing data sources across the EU, and consider examples of good practice, limitations to current data collection

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***Accurate, reliable data are essential to the development of appropriate strategic responses to the problems and challenges the industry faces***

and issues of transferability. This mapping was intended to form the basis from which practical protocols on how a robust and reliable EU-wide data collection system might be developed.

## Methodological approach

The project was carried out in two Phases.

**Phase 1** was an in-depth desktop review. Its aim was to identify existing datasets and possible sources of data on seafarer numbers both within each EU Member State (as well as Iceland, Norway and the UK), and at the EU and international levels. Each identified source was explored to consider:

- The extent to which its data covered a set of key details on seafarers, including:
  - sex, age, nationality, rank, certificate details, multiple certificates, working at sea and being an active seafarer.
- Any limitations within the data in relation to its potential for providing a detailed and accurate picture of the seafaring workforce.

Searches and exploration of potential sources were carried out online. Where this did not yield sufficient information to consider the points above, data holders were approached directly.

**Phase 2** comprised case studies in six Member States: Germany, Greece, the Netherlands, Spain, Sweden and the UK. These countries were selected in consultation with ECSA and ETF and were intended to reflect both geographical balance and key suppliers of masters and officers, which are currently in short supply in the European maritime labour market (EMSA 2018). In-depth interviews were conducted with representatives of the organisations identified during Phase 1 as the holders of relevant data within each of the six case study countries. The interviews were intended to develop a deeper understanding of the participating organisations and the data they held.

Taken together, Phases 1 and 2 were designed to 'map' existing data on seafarer numbers in the EU and further understanding of both limitations and examples of good practice within the identified data sources.

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***Strategic planning and policy development require robust data that are comparable across countries and over time***

## Findings

The study identified and explored 93 data sources across 30 countries. These fell into three main types:

- Systems holding details of seafarer certification.
- Broader systems intended to collect employment data across a range of sectors (often based on Labour Force Surveys and available through national statistics agencies).
- Social security systems which administer income, disability and retirement benefits and some tax contributions.

The detailed review of these sources suggested a mixed and complex picture. Within each of the three types of data source, there is a wide range in terms of public accessibility, coverage, detail and specificity. However, each data source type is also limited, to a greater or lesser extent, in the degree to which it can contribute to a clear and accurate description of the maritime sector's workforce. Broadly:

- Systems holding certification data collect a range of seafarer details but for the most part cannot distinguish whether a seafarer is active at sea or not.
- Employment based data sources rarely hold seafarer specific data.
- Social security systems that are specific to seafarers often hold relevant data, but these arrangements are not universal across Member States, hold particularly sensitive data, and may not cover all national seafarers.

Further, where detailed information is available at the national level, this is often dependent on particular contexts, settings and arrangements within that Member State. In addition to more specific national contexts, traditions and situations, and as well as cross-national arrangements and agreements, these key contexts were broadly two-fold:

- Strong traditions of seafaring
  - Where this is the case, countries more often have specific arrangements that allow particularly comprehensive and fine-grained data collection on an ongoing basis.
- Strong traditions of co-operation between the social partners and/or other key stakeholders
  - Where this is the case, countries more frequently have collaborative arrangements in place that allow detailed data collection and monitoring, often bringing together information from a range of sources to build up a more in-depth and accurate picture.

This context-specificity makes the wholesale transfer of data collection arrangements from Member State to Member State particularly difficult to successfully and effectively achieve.

In keeping with earlier work (Task Force 2011; Sulpice 2011), therefore, our findings suggest that publicly available data cannot be used as they stand to draw a detailed map of employment in the maritime sector across the EU because of the range of limitations inherent in each of their arrangements. This is primarily because of the widespread variation in their accessibility and the fact that none of the data sources which hold information on seafarers at the Member State level has, as its core function, the production of a detailed map of the seafaring labour force. In addition, however, data are often collected, categorised, stored, adjusted and checked in ways that make comparisons between sources, groups of seafarers, or countries, or over time, as well as the collation of data from a range of different sources, difficult or impossible to achieve.

Nevertheless, this understanding of existing data sources and their limitations, together with the

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***None of the data sources which hold information on seafarers at the Member State level has, as its core function, the production of a detailed map of the seafaring labour force***

exploration of examples of good practice and the contexts in which such practices develop, provide the basis from which protocols for the development of a robust and reliable EU-wide data collection system might be developed.

## Conclusions

Strategic planning and policy development require robust data that are comparable across countries and over time. The rapid pace of change within the maritime sector also makes it particularly important that such data are as current as possible. Our findings indicate that certification data must be the foundation of any EU-wide system. They also suggest that an agreed set of consistently presented details on seafarers made publicly available by all administrations would allow the comparisons over time that are not currently possible. However, this dataset would have a remaining limitation: it would include all those with current certificates, whether or not seafarers were actively working at sea. This study suggests two possible approaches to addressing this limitation. First, an adjustment could be made to take account of the estimated number of such individuals within each administration's dataset. This adjustment would need to be made on a consistent, transparent and accurately reliable basis across the EU, and should be regularly reviewed to ensure it continued to reflect the current situation. Second, certificate details could be linked with tax or social security records, so giving an up-to-date and accurate indication of whether or not seafarers are actively working at sea. The second of these approaches would, of course, be more accurate but is more difficult to achieve.

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***The Covid-19 pandemic has highlighted how rapidly the sector needs to be able to react to change and unexpected developments***

Our findings also suggest that a central role in the planning and development of any EU-wide data collection system for the sector's social partners, with key stakeholder support, would be key to ensuring both appropriateness, usefulness and sustainability. In particular, their involvement would be fundamental to ensuring that the three underlying requirements for a fully functioning and effective system were achieved and maintained. These include agreement on: the definitions of 'a seafarer' and an 'active' seafarer; a key set of publicly available certificate details; and a methodological approach for adjusting or adding to these data so that they more accurately reflect those actively working at sea, as well as their consistent collation, aggregation and prompt, regular and full publication.

Such a system would allow the assessment and monitoring of trends and changes in a range of key aspects of the sector, including:

- the sustainability of the EU maritime workforce across the cluster
- the education and training needs of seafarers
- the sustainability of the seafaring profession, including in relation to younger and female seafarers.

In addition, an on-going data collection system would be readily adaptable to meet other needs and to allow independent research. The Covid-19 pandemic has highlighted how rapidly the sector

needs to be able to react to change and unexpected developments to protect the wellbeing and livelihoods of its workforce. The findings described in this report provide the basis from which protocols might be developed for a system which would contribute to social partners' strategic approaches and policies for the sector, leaving them better placed to respond decisively and appropriately to future developments, and even crises, within the industry.

*This publication reflects only the authors' view, and the European Commission is not responsible for any use that may be made of the information it contains.*





According to the European Commission,<sup>1</sup> there are over 300 key seaports in Europe, which also controls around one third of the world's merchant fleet. About three quarters of European external trade transits through European Union (EU) ports, while shipping accounts for around a third of intra-EU trade, and about 400 million passengers use EU ports annually. All this makes Europe one of the world's leading maritime centres and the maritime transport sector a key component of European, and so also global, economic development and growth.

Given that seafaring and associated maritime shore-side employment are of central importance to the European economy, it is perhaps surprising that there are currently no reliable, standardised data on the number of people available for employment in the European maritime labour market.

The most recent Baltic and International Maritime Council / International Chamber of Shipping (BIMCO/ICS) report estimated the global supply of seafarers in 2015 at 1,647,500, of which 774,000 were officers and 873,500 ratings (BIMCO/ICS 2015). Although this represents an overall increase from 2010, the report also indicates a surplus of ratings and a shortage of officers to meet global demand, and suggests that this trend of an overall shortage in the supply of officers is likely to continue.

Latest European figures from the European Maritime Safety Agency (EMSA) (2020) show that by the end of 2018 there were 209,192 masters and officers holding valid certificates of competency issued by EU Member States, with a further 106,334 holding original certificates of competency issued by non-EU countries with endorsements issued by EU Member States attesting their recognition. Overall, this suggests that in 2018, 315,526 masters and officers were available to serve on EU Member State flagged vessels.

However, these kinds of headline figures are drawn from a range of disparate sources and, in at least some instances, are based on a set of assumptions, estimates and extrapolations. Whilst this is adequate for an overview, it is not sufficient to identify and fully understand more detailed and ongoing trends and changes in the maritime labour market.

In 2010, DG MOVE set up a Task Force to consider the relationship between employment

<sup>1</sup> [https://ec.europa.eu/transport/modes/maritime/maritime-transport\\_en](https://ec.europa.eu/transport/modes/maritime/maritime-transport_en)

in the maritime industry and competitiveness, in order to make recommendations on the social aspects of the European maritime policy. However, the Task Force had “major difficulties” in obtaining accurate, complete and reliable figures on employment in the sector, and even went so far as to ask the European Commission to appoint an external consultant to “gather, aggregate and update the existing statistics and other data on seafarers and on shipping-related onshore jobs” (Task Force 2011; see also Sulpice 2011). Nonetheless, the Task Force concluded:

**After general considerations on the number of seafarers in EU countries, and well recognised downward trends in favour of seafarers from third countries, it is clear that detailed data on maritime employment is scarce, sometimes outdated and often not reliable. Moreover, the great differences from a country to another in data collection and presentation of results prevent all serious analysis on employment structure and evolution.**

(Task Force, 2011)

Pointing to “the lack of available data in most countries, and for some of them of no existing data at all”, the Task Force recommended the setting up of a harmonised data collection system in Europe on seafarers’ employment.

Currently, the data on certificates and endorsements in EMSA’s Standards of Training, Certification and Watchkeeping Information System (STCW-IS) is closest to such a system. In accordance with amended Article 25a of Directive 2008/106/EC,<sup>2</sup> Members States are obliged to provide the European Commission with information for the previous year, on a yearly basis and in an electronic format; and it is these data that are recorded in the STCW-IS. Nevertheless, the data provided by the participating countries continue to be gathered using a range of approaches, information systems and sources which are not all comparable or, necessarily, fully validated. Reliable, accurate and standardised data, therefore, are still lacking.

This is important because such data are essential to the development of strategic responses to the problems and challenges the industry is facing today – not least the pressing issue of seafarer retention, as the BIMCO/ICS (2015) and Task Force (2011) reports make clear:

**The current maritime manpower situation and future outlook indicate that the industry and relevant stakeholders should not expect there to be an abundant supply of qualified and competent seafarers in the future without concerted efforts and measures to address key manpower issues. It is crucial to promote careers at sea, enhance maritime education and training worldwide, address the retention of seafarers, and to continue monitoring the global supply and demand for seafarers on a regular basis.**

(BIMCO/ICS 2015)

**The Task Force analysed the factors turning EU seafarers away from the profession ranging from daily life on board and poor working and living conditions to the piracy threat, shore leave problems, abandonment and fears about criminalisation. It recommended to make efforts to remedy these problems notably by providing ready access to better**

2 <https://eur-lex.europa.eu/eli/dir/2008/106/2019-08-01>

**communication technologies; facilitating shore leave; reducing and managing the administrative burden as well as ensuring commensurate protection against risks of piracy and guaranteeing fair treatment to reduce fears about criminalisation.**

(Task Force 2011)

The European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA), the social partners for European maritime transport, are therefore working together to consider how accurate, reliable and standardised data on the industry's workforce at the European level might be obtained. As part of that process, they commissioned the Cardiff University Seafarers International Research Centre (SIRC) to carry out the study described in this report.



The aim of the study was to provide the basis from which to produce proposals on the development of a full-scale European level data collection system on European maritime professionals. Such a system would allow the assessment and monitoring of trends and changes in a range of key aspects of the sector, including:

- the sustainability of the EU maritime workforce across the cluster
- the education and training needs of seafarers
- the sustainability of the seafaring profession, including in relation to younger and female seafarers.

As well as providing vital data and the opportunity to identify and monitor trends over time, in the longer-term a fully functioning and on-going system could be readily adapted to meet other data collection needs, and so contribute further to the development of the social partners' strategic approaches and policies for the sector. Such a system would need to ensure that data were collected consistently and following a clearly defined methodology.

This project, therefore, was designed to map existing data sources across the EU, and consider examples of good practice, any inconsistencies and limitations to current data collection, and any issues of transferability. This mapping was intended to inform the development of practical protocols that set out how a robust and reliable EU-wide data collection system might be developed.

## Covid-19

ECSA and ETF commissioned this project against the backdrop outlined above of uncertainty about the accuracy of measures of employment in the maritime sector, coupled with concern about a surplus of ratings and a shortage of officers to meet demand. However, within weeks of the start of the work, Covid-19 was recognised in China and began its spread across the world. Our approach to data collection changed as a result, as we describe in the Methodological Approach section below. Much more significantly, the impact of the pandemic on the maritime

sector has been unprecedented. In the EU, EMSA (2020)<sup>3</sup> estimate that:

- Ships calling at EU ports declined by 15% in the first 37 weeks of 2020 compared to the same period in 2019.
- The most significantly affected sectors have been Cruise ships, Passenger ships and Vehicle carriers.
- The most significantly affected countries are Croatia, Iceland, Slovenia and Spain.
- In comparison with the first 37 weeks of 2019, weeks 1-37 of 2020 showed decreases in ship traffic from Europe to China of 51% and from Europe to the US of 31%.

The impact on seafarers themselves has been very substantial indeed. The EU Parliament<sup>4</sup> recently indicated that tens of thousands of seafarers have been stuck on ships as a result of delays to crew rotations because of the restrictions on the movement of people, reduced flights and port closures. It went on to point out that some seafarers are being asked to continue working when they should have returned home, while others face redundancy as companies make drastic changes to their operations and take wide-reaching measures to reduce their costs.

The long-term impact of this global pandemic on seafarers and their families, as well as on the maritime sector as a whole, is something we are not yet in a position to measure, or even predict. However, Covid-19 has thrown the need for accurate and reliable data on the maritime workforce into even starker clarity. Such data are key to the development of strategy that is robust enough to plan for the medium- and longer-terms, while also being flexible and reactive enough to respond to acute crises like the one we currently face.

## This report

This report is presented in three main sections. First, we outline the approach taken to achieving the project's aims. Following this, we present our findings by first describing the data sources identified during the project, and then exploring their limitations in relation to the project's aims. Within the Findings section, we also consider some examples of good practice, and describe our participants' views on data collection at the EU-level. The report closes with a brief summary and the presentation of our conclusions about the implications of the study's findings for the development of an EU-wide data collection system.

3 Available at: <http://emsa.europa.eu/newsroom/covid19-impact/download/6296/4038/23.html>

4 [https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/651907/EPRS\\_ATA\(2020\)651907\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/651907/EPRS_ATA(2020)651907_EN.pdf)



# METHODOLOGICAL APPROACH

The project was carried out in two Phases. Phase 1 was a desktop review and Phase 2 comprised case studies in six Member States. The desktop review was the focus of the start of the work and provided the basis from which the case studies were developed. However, there was some overlap between the Phases, with some additions made to the sources considered in the desktop review as a result of the interviews carried out during the case studies. The following sub-sections describe the approaches taken in each Phase of the project.

## Phase 1: Desktop review

In Phase 1 of the research an in-depth desktop review was conducted with the aim of identifying existing datasets and possible sources of data on seafarer numbers both within each EU Member State (as well as Iceland, Norway and the UK), and at the EU and international levels.

Initially, EMSA's publicly accessible STCW-IS online database<sup>5</sup> was reviewed to establish the information available on seafarer numbers by country, and whether organisations holding such information within the Member States could be identified. There were three relevant pages giving:

- 1 general information about each country, including contact details (and web addresses) of agencies such as government organisations, maritime administrations and those publishing legal documentation (both generally and specific to seafarers)
- 2 contact information for maritime administrations and other relevant departments
- 3 information on the number of certificates, by type, issued by individual maritime education and training facilities (METs).

Other potential data sources were also identified for each country through online searches, as well as by seeking advice and guidance from our own contacts and both ECSA and ETF. In addition, as indicated above, further sources were suggested during the course of the interviews carried out for the case studies (this is described in more detail below).

The sources identified included maritime specific sources, such as maritime administration websites and those maintaining registers of seafarers, as well as more general sources, such

5 Available at: <https://portal.emsa.europa.eu/web/stcw>

as ministry of transport websites, national statistics organisations, and social security agencies. Cross-national reports and datasets on seafarer numbers (both for the EU and more widely) were also identified.

**Table 1: Potential data sources and resources identified and explored during the desktop review**

Source	Nature of Source
<b>EMSA's STCW Information System (STCW-IS) - Country Level (General information Section)</b>	Contact details (both physical and web address) for countries' government agencies publishing national laws (both generally and seafarer specific), certificate verification websites, maritime administrations, ministry of transport/transport agencies, flag states and national statistics agencies
<b>EMSA's STCW Information System (STCW-IS) - Administration Level (Structures)</b>	Contact details (both physical and web address) for relevant departments within administrations
<b>EMSA's STCW Information System (STCW-IS) - MET Institution Level (Diplomas issued)</b>	The number of certificates/diplomas issued by training facilities by certificate type
<b>National administration/ Governmental website</b>	The main governmental website of the country
<b>Maritime Administration websites</b>	The Maritime Administration website (this often came under one of the government departments)
<b>Registers of seafarers</b>	A general online search for a register of seafarers within each country
<b>National authorities maintaining registers of certificates and endorsements</b>	A list published by the IMO ( <a href="http://www.imo.org/en/OurWork/HumanElement/Documents/rptPartyAddresses.pdf">http://www.imo.org/en/OurWork/HumanElement/Documents/rptPartyAddresses.pdf</a> ) of those maintaining registers of certificates and endorsements.
<b>Online certification verification</b>	An IMO website listing certificate verification databases (both on and offline) for countries both within the EU and more widely ( <a href="http://www.imo.org/en/OurWork/HumanElement/TrainingCertification/Pages/CertificateVerification.aspx">http://www.imo.org/en/OurWork/HumanElement/TrainingCertification/Pages/CertificateVerification.aspx</a> ). If the IMO website did not list organisations that verified certificates for a specific country internet searches were done to try and find any such organisations.
<b>Ministry of Transport</b>	The website of the Ministry of Transport
<b>National statistical agencies</b>	The website of the country's national statistics agency
<b>Social Security Agencies</b>	The national Social Security Agency for the country (although for the majority these just covered the general population, in some cases there were seafarer' specific social security schemes)
<b>General online (Google) searches</b>	General online search for data, possible sources of data, about seafarer numbers for each country
<b>Cross-national reports and datasets</b>	Cross-national reports and datasets containing seafarer numbers, and related information

Table 1 lists all the source types identified. These fell into one of three broad groups, holding:

- Certification data
- Employment data
- Social security data

Each source was searched for data, or for possible sources of data, on seafarer numbers. Where a website included a search box, key word searches were conducted (see Appendix Table A1).<sup>6</sup> If there was no search box, the website was reviewed manually. In each case, details of the data

6 The project's resources and time frame meant it was only possible to carry out searches in English.

source, together with an indication of public availability, the extent and coverage of the data and any limitations or shortcomings, were added to a spreadsheet. This spreadsheet, therefore, developed into a 'map' of existing and potential sources of data on seafarer numbers. The full final version of this map is presented in Appendix Table A2.

Where these desktop searches failed to establish sufficient detail about the data a source held on seafarer numbers, but there were indications that it was a potentially relevant source, direct requests were made for further information. An appropriate contact within the relevant organisation was identified and approached by email (see Appendix Figures A1 to A3), with each email accompanied by a letter of introduction and support from ECSA and ETF (see Appendix Figures A4 to A5). Those approached were asked to provide information by completing and returning an electronic questionnaire (see Appendix Figures A1 to A3). The questionnaire was designed to collect information on the nature and extent of the data held, and the coverage within the dataset of a key set of details on seafarers. These details were identified and agreed upon within the research team, in consultation with ECSA and ETF. They were selected to represent the set of key seafarer characteristics that would support the development of appropriate and effective policy and strategy at the EU, as well as the Member State, level – and so would also be of central importance in the development of an EU-wide data collection system. They included sex, age, nationality, rank, certificate details, multiple certificates, working at sea and active as a seafarer, and are described in Table 2.

**Table 2: The project's key set of seafarer details**

Key details included	Description
<b>Sex</b>	Is gender recorded?
<b>Age</b>	Is age recorded? If so, is this grouped (e.g. under 25 years old, 25-35 years old, etc.) or is date of birth recorded?
<b>Nationality</b>	Is nationality recorded? If so, is this grouped (e.g. EU, non-EU) or is individual nationality recorded?
<b>Rank</b>	Is rank recorded? If so, is this grouped (e.g. senior officers, junior officers, ratings etc.) or is it STCW rank (e.g. officer in charge of navigational watch (OOW)) recorded?
	Is it possible to determine whether a seafarer is working at a rank lower than they are qualified for? <sup>7</sup>
<b>Certificate details</b>	Are certificate limitations (e.g. officer in charge of a navigational watch on ships of less than 500GT engaged on near-coastal voyages) recorded?
	Are records of the documents underpinning the current STCW certificate recorded?
<b>Multiple certificates</b>	Is it possible to determine whether a seafarer has multiple certificates? If so, are all certificates listed, or only the highest level of certification?
<b>Working at sea</b>	Is it possible to distinguish individual seafarers among those holding multiple certificates (i.e. can the data be used to count seafarers rather than only certificates)?
	Is it possible to determine whether a seafarer is working on internationally trading vessels or on inland trading vessels only?
<b>Active<sup>8</sup> as a seafarer</b>	Is it possible to determine whether a seafarer (with a valid STCW certificate) is actively working at sea or is working ashore (e.g. in a shipping company, at a MET, outside the sector etc.)?

7 It should be noted here that seafarers often serve at ranks lower than they are qualified for, such as, for example, while waiting for a position at their qualified rank to become available. As such, certificated and serving ranks may differ.

8 For the purposes of our investigations, an 'active' seafarer was defined as a seafarer who is working onboard a marine vessel and holds both STCW certification and sea service records. Those working ashore, for example in a shipping company, and not seeking onboard employment are not considered to be active seafarers, even if they have a valid STCW certificate (for a full definition see Glen (2008)).

In addition, however, the questionnaire collected further details that were specific to each of the three main types of data source identified in the project (see Appendix Table A2 and the sub-section on *Data sources* in the *Findings* section of this report). For example, for sources holding certification data, the questionnaire also covered certificate types, accuracy checks and verification; for sources holding employment data, the questionnaire collected detail about the underlying survey from which the data were drawn; and for sources holding social security data, the questionnaire asked about any arrangements specific to seafarers.

Initial email approaches were followed-up, either by email or phone, up to three times. In total, questionnaires were sent to 45 organisations, and 36 completed questionnaires were returned (a response rate of 80%). Twenty of the returned questionnaires were completed by organisations holding certificate data, 14 by those holding employment data, and two by those holding social security data. Questionnaire responses were incorporated into the map (Appendix Table A2).

## Phase 2: Case studies

For practical reasons, it was not possible to carry out in-depth studies in each of the 30 countries that were the subject of this project. Rather, therefore, six Member States were selected for case study and were the focus of further, more detailed fieldwork. The selection of the case study countries was made in consultation with ECSA and ETF. It was intended to reflect geographical balance as well as key suppliers of masters and officers (of which, as noted above, it is recognised that there is currently a shortage (EMSA 2018)). On this basis, the countries selected as case studies were: Germany, Greece, the Netherlands, Spain, Sweden and the UK.

The aim of Phase 2 was to conduct in-depth interviews with representatives of the organisations identified during Phase 1 of the project, the desktop review, as the holders of relevant data within each of the six case study countries. In addition, however, as indicated above, as the case studies progressed respondents identified further possible sources of data and, where appropriate, these were also included in the map and in some instances relevant personnel were approached for interview. The purpose of the interviews was to gain a deeper understanding of the participating organisations and the data they held, and to develop and enhance the map to provide a better understanding of existing data on seafarer numbers in the EU.

As indicated above, the study identified three main groups of sources of information: organisations holding certificate data; those holding employment data; and social security systems; and all of these were represented among our interview participants. The first two of these groups were data sources that were anticipated prior to the start of Phase 1. However, the latter emerged during the course the investigations as part of both the desktop review and, in particular, the case study interviews. As a result, in consultation with ECSA and ETF, it was agreed that further interviews should be carried out with representatives of such systems. In order to facilitate this within the project's remaining timeframe, existing contacts were approached both within three of the case study countries – Germany, Spain and Sweden – and in Belgium and France.

Table 3 shows the organisations in which interviews were undertaken (see Appendix Table A3 for the full list of those approached for interview). These included a range of gatekeeper agencies such as: maritime authorities, transport authorities, social security agencies, ship owners' associations, statistical agencies, and maritime education and training institutions.

**Table 3: Organisations within which an interview was undertaken**

Country	Organisation <sup>9</sup>	Notes	Length
<b>Belgium (Social Security interview only)</b>	National Social Security Office	Interview completed	42:07
<b>Germany</b>	The Federal Maritime and Hydrographic Agency (BSH)	Interview completed	54:22
	Knappschaft-Bahn-See (KBS) – Agency for Social Security	Interview completed (by email)	n/a
<b>Greece</b>	Ministry of Maritime Affairs and Insular Policy - Hellenic Coast Guard (HCG) - Seafarers Training Directorate	Interview completed (by email)	n/a
	Ministry of Maritime Affairs and Insular Policy - Hellenic Coast Guard (HCG) - Seafarers Labour Directorate	Interview completed	59:01
<b>The Netherlands</b>	Kiwa Licensing	Interview completed	52:01
	Ministry of Infrastructure and Water Management	Interview completed	43:18
<b>Spain</b>	The General Directorate of the Merchant Marine (Ministry of Development)	Interview completed	39:31
	The General Directorate of the Merchant Marine (Ministry of Development) - Social Security of the Social Institute of the Navy	Interview completed (by email)	n/a
	Spanish Shippers Association	Interview completed	41:18
<b>Sweden</b>	The Swedish Transport Agency (Transport Styrelsen)	Interview completed	40:39
	Statistics Sweden	Interview completed	44:08
<b>UK</b>	Maritime & Coastguard Agency	Interview completed	44:31
	Warsash School of Maritime Science & Engineering	Interview completed	41:09
<b>Cross national organisations</b>	European Maritime Safety Agency (EMSA)	Interview completed	1:17:30
	the European Foundation for the Improvement of Living and Working Conditions (Eurofound)	Interview completed	39:56

When the project was designed and launched, our intention was for researchers to visit each of the case study countries and carry out the interviews face-to-face. However, as noted above, Covid-19 took hold in the early weeks of the research, making travel and in-person interviews impossible. From this point on, therefore, when we approached contacts at the organisation we would have wished to visit, we instead asked if they would be willing to undertake a virtual interview. Approach emails were again sent with a letter of introduction and support from ECSA and ETF (see Appendix Figures A6 to A12), and for those that agreed to an interview, a date and time were arranged at their convenience. Prior to the interview, each respondent received an information sheet and consent form (see Appendix Figures A13 and A14), which they were asked to complete and return. As in Phase 1, up to three follow-ups by email or phone were made following the initial invitation to participate in an interview.

Interviews were undertaken using guides developed during Phase 1 of the project for use with each of the three main types of data source holders (see Appendix Figures A15 to A18). It is important to stress that these were guides rather than fixed interview schedules, and so allowed the skilled interviewer to tailor each interview to the participant, the organisation they

<sup>9</sup> The job titles of interviewees are not included here to ensure that anonymity is maintained.

represented, and the nature of the data that organisation held. Nevertheless, all interviews covered a core set of information, which included: the source and coverage of the data, including coverage of the project's key set of seafarer details (see Table 2 above), any gaps, double-counting and inconsistencies, other possible sources of data, and the development a full-scale European data collection system. All interviews were recorded with the respondent's permission.

In some cases, a virtual interview was refused, but an interview by email was agreed upon. In these instances, the relevant interview guide was emailed to the respondent who provided a response by email (Table 3). Where clarification was need in relation to their responses, follow-up emails were sent.

Interviews were also undertaken with two key cross-national organisations: the European Maritime Safety Agency (EMSA) which, as outlined above, maintains a database of seafarers' certification from annual returns provided by all EU Member States, as well as Iceland, Norway and the UK; and the European Foundation for the Improvement of Living and Working Conditions (Eurofound), which undertakes a number of Europe-wide surveys including the European Working Conditions Survey (EWCS) which the desktop review suggested may include data on employment within the maritime sector. These organisations were contacted and interviews were carried out using the procedures outlined above.

In total, 28 organisations were approached and invited to take part in an interview. Sixteen interviews were completed (giving an overall response rate of 57%). Of these, 12 were carried out face-to-face but virtually, one was carried out face-to-face and in person, and the remaining three were completed by email (see Table 3 and Appendix Table A3). In two instances, interviewees kindly agreed to short follow-up interviews for clarification purposes.

All the virtual and in-person interviews were transcribed by members of the research team. The transcriptions were analysed using the qualitative data analysis software package NVivo 11. Findings from the interviews were also incorporated into the map created during Phase 1 (Appendix Table A2).

## Ethics

Ethical approval for the project was obtained from the Cardiff University School of Social Sciences Research Ethics Committee. All project materials, instruments, protocols and procedures were developed in accordance with the University's guidelines, and data collection and storage adhered to the University's strict confidentiality policies and requirements.



Taking the desk research and the six case studies together, the project considered 93 sources of data across the 27 countries in the EU, plus Iceland, Norway and the UK. In keeping with previous findings (Task Force 2011; Sulpice 2011), the broad picture in relation to existing data and its accessibility and coverage is a mixed one.

In the following sub-sections, we first consider each of the three main types of data source identified, before summarising their limitations, giving some examples of good practice, and outlining our case study participants' views on the implications of an EU-wide data collection system.

## Data sources

Table A2 in the Appendix lists each of the data sources identified in the project by country, as well as the European and global sources of data that were reviewed. For each source, summary details are given in relation to coverage and limitations. In order to be clear about how details were obtained, desktop review findings are presented in black, while those that were the result of subsequent follow-up either through interview or through an email questionnaire are presented in green and red respectively.<sup>10</sup> This distinction is important because it indicates the degree to which data, or clarity about the detail and content of data, were publicly available to our researchers.

Between one and six data sources were identified for each country. This suggests that data on numbers of seafarers exist at the national level across Europe. For the most part, countries in which more than two data sources were identified are those with a greater tradition of seafaring and/or from which larger numbers of seafarers originate. These include: Belgium, Denmark, France, Germany, Greece, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Slovenia, Spain and the UK.

As described in the Methodological approach section above, the data sources fell into one of three main types:

- Systems holding details of seafarer certification

<sup>10</sup> This is not intended to imply any difference in the reliability of findings obtained through these different approaches. Rather, our intention is to be transparent about where and how the information was obtained.

- Broader systems intended to collect employment data across a range of sectors (often based on Labour Force Surveys and available through national statistics agencies)
- Social security systems which administer income, disability and retirement benefits and some tax contributions

The following three sub-sections briefly summarise these groups and the extent and coverage of their relevant data.

## Certification systems

Systems holding details of seafarer certification (see Table 4 and Appendix Tables A2 and A4) were the most commonly identified source of data on seafarers. We were able to find some form of certification system in all but one of the 30 countries<sup>11</sup> included in the project (the exception was Austria, which likely reflects its traditions and geography)<sup>12</sup>.

These certification data are held by a range of data-keepers. Most are maritime administrations/authorities or government ministries/departments (29), but we have also included Maritime Education and Training (MET) organisations and an Examination Board in this group of sources, as well as two related journal publications, since these hold (or describe, in the case of the publications), certificate data. It should, therefore, also be noted that some of the data referred to in these various sources, in fact originate from the national administrations. As this study was intended to identify and explore existing sources of data, rather than to actually establish numbers of seafarers, this overlap between sources is not problematic for our purposes. However, it is important to be clear that an EU-wide data collection system would need to be based on sources that either do not overlap or, where they do, the degree and nature of the overlap was sufficiently explicit to allow for the inclusion of measures to prevent double counting.

For the most part the organisations in this group of data sources hold records of STCW certificates, including Certificates of Competence (CoCs), Certificates of Equivalent Competency (CeCs) and Certificates of Proficiency (CoPs). Whilst generally all certificates are issued by national Maritime Authorities, this is not always the case. For example, in the Netherlands, this responsibility has been contracted out:

**So we issue those documents on behalf of ... so the company I work for is a commercial organisation, so there is a profit to be made, so there is of course a big difference between us, for instance, and the MCA, which also issues permits in the UK, for instance. Basically, they get a bank of money every year from the tax payer and they issue the permits for the seafarers, and in the Netherlands the seafarer themselves pay for those permits, so we of course have to follow the rules which also apply for the government.**

(KIWA Register BV, Netherlands)

MET institutions train seafarers to internationally agreed standards for both CoCs and CoPs. The

11 It should be noted here that one source, the Hellenic Coast Guard, Ministry of Maritime Affairs and Insular Policy, has been included in both the Certifications systems and Employment data groups because it held both certificate data from a register of seamen's books and employment data from records of ships' articles.

12 Although earlier versions of the BIMCO/ICS Manpower Report (2000) suggested that Austria supplied seafarers to the global market, the most recent version of this publication does not make reference to Austrian seafarers.

numbers of METs in each Member State vary, but all are required to inform the relevant maritime authorities of seafarers completing their courses. In some cases, this is so that the administration can provide seafarers with a notice of eligibility to take to their oral examination, after which (if they pass) they are issued with the relevant the STCW certification. In other cases, however, an oral examination is not required, and the seafarer is provided directly with their certificate by the administration. In effect, this means that data provided by METs are updated as soon as courses come to an end, making them particularly current:

**I think it is an hourly update process... maybe daily, but I think we discussed with the developers that we made it each hour, but at the latest the next day.**

(The Federal Maritime and Hydrographic Agency, Germany)

In some instances, maritime authorities also receive notifications from other organisations, such as doctors and shipping companies, or from individual seafarers – for example when they apply for the Seafarer’s Book allowing them to work on board:

**On the regular basis different instances are reported to us, or as doctors, the colleges like you call them, and the companies.**

(Swedish Transport Agency)

**We only register them, so to speak, the moment they apply for a document, so, for instance, if you join a ship as a training or unlicensed AB, which also exists of course, then we don’t really know about you. There is also possibility you applied for a seaman’s book before that, so, for instance, there’s a big chance that we know if you are Dutch that you are going to be a seafarer.**

(KIWA Register BV, Netherlands)

In accordance with STCW Convention requirements (which we discuss in more detail in the sub-section on Certificate verification below), all of the 29 maritime administration/authority or government ministry/department bodies in this group also provide a verification system, which is generally accessible to registered users (such as shipping companies, crewing agencies, other maritime authorities and so on). Most (21) now administer this online, but eight continue to provide verification only in response to telephone or email requests.

As indicated earlier, EMSA also collects data on certification, and all EU Member States (as well as Norway and Iceland, which are members of the European Free Trade Association), are required under amended Article 25a of Directive 2008/106/EC to provide data annually on certificates issued. These data are recorded on the STCW-IS information system, and include CoCs and CeC’s (which are a requirement), as well as CoPs in some cases (which are supplied voluntarily by some administrations):

**The data we hold on seafarers... so we have from the EU member states, still UK there, but they are also sending data and certificates of competency and the Certificates of recognition... and for some countries, also the certificates of proficiency for ratings. ... What is compulsory is data of officers. When it comes to ratings, in our case, we get and put them from the countries we receive, but not all member states send data on ratings.**

(EMSA)

As described in the Methodological approach section, the project sought to establish the extent to which each identified data source covered a key set of data on seafarers (as outlined in Table 2). This key data set included: age, sex, rank, nationality, being able to distinguish seafarers with multiple certificates, being able to distinguish individual seafarers among those holding multiple certificates, identifying those working inland, identifying those working at a rank other than the one they are qualified for, being able to distinguish those who are not active, and keeping records of underpinning documents and limitations. Table 4 summarises the coverage of the project's key data set by each of the sources of certification data (see Appendix Table A4 for the full version of this summary). Ticks are used to indicate inclusion of a data item and crosses its absence. However, it was not always possible to determine whether a data source included specific details. This was generally because a source was not accessible online and there was no response to our requests for further information (see the Methodological approach section). In these instances, the table entry is blank.

It is important to be very clear here that Tables 4 and A4 present coverage of the key set of data on seafarers as we were able to establish it through desktop review and subsequent direct follow-up. Therefore, in addition to bearing in mind that we were not always able to establish the presence or absence of a particular detail within a source, it is important to remember that an indication of its absence means that it was not publicly available (in the case of the desktop review) and that a respondent indicated that it was not held (in the case of the direct follow-up). It is therefore possible that there are instances where information is held within a source, but our investigations indicated that this was not the case.

Among the sources for which there were clear indications about the presence or absence of each detail, each one holds information on sex, age, nationality, rank, limitations (i.e. Masters, less than 500 GT Near-Coastal), and underpinning documents. Most also identify seafarers with multiple certificates and individual seafarers when they hold more than one certificate. However, fewer distinguish those working at a rank below that for which they were qualified and, in particular, those who are working on inland waters (rather than at sea) or those who are not active at all.<sup>13</sup> There were just two data sources for which we were able to establish that all these details are held: the Ministry of Ecological and Solidarity Transition in France; and the Maritime Administration of Latvia. However, even in these instances it is important to note that the questionnaire responses indicated that, seafarers who trained or had certification issued outside of the national administration, that were working on a non-national vessel, would not be included in these records.

Overall this suggests that, as things currently stand, sources holding details of seafarers' certificates cannot simply be amalgamated to provide a reliable and accurate picture of the European seafaring labour force. This reflects two main issues. First, there are widespread differences in the extent to which data are publicly available. Second, and relatedly, there are indications that some key details, such as distinguishing between seafarers who are actively working at sea, are missing even from the full (i.e. privately held) data set in many instances.

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13 Where respondents suggested that it was possible to determine whether a seafarer was active, or whether a seafarer was working at the highest rank they were qualified for, and an explanation to how this was possible was offered, this usually related to the seafarer's sea service record.

**Table 4: Summary of coverage of the project's key set of seafarer details within sources holding certification data as indicated through desktop review and subsequent direct follow-up**

**KEY:** ✓ = data are available | ✗ = data are not available | [ ] = not known whether data are available | ✓(G) = data available, but in a grouped format | ♦ = Just said STCW Cert. Black text = from desktop review | Red text = from questionnaire | Green text = from interview

Country	Source	CoC	CeC	CoP	Multiple certificates	Individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Belgium	Federal Public Service Mobility and Transport, Directorate General Maritime Transport <sup>14</sup>	✓♦	✓♦	✓♦	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓	
Bulgaria	Maritime Administration Executive Agency <sup>15</sup>	✓♦	✓♦	✓♦											
Croatia	Ministry of the Sea, Transport and Infrastructure	✓♦	✓♦	✓♦	✓	✓	✓	✓	✓	✓	✓	✓ (region)	✓	✓	
Cyprus	Department of Merchant Shipping (Part of the Ministry of Communications and Works) <sup>16</sup>	✓♦	✓♦	✓♦	✗	n/a	✗	✗	✗	✓	✓	✓	✓	✓	✓
Czech Republic	Ministry of Transport of the Czech Republic <sup>17, 18</sup>	✓♦	✓♦	✓♦	✗	n/a	✗	✗	✗	✓	✓	✓	✓	✓	
Denmark	Danish Maritime Authority <sup>19</sup>	✓♦	✓♦	✓♦	✓	✓	✗	✗	✗	✓ <sup>20</sup>	✓	✓ (G)	✓	✓	✓
Estonia	Republic of Estonia Maritime Administration	✓♦	✓♦	✓♦	✓		✓	✗	✓		✓	✓	✓	✓	✓

14 Excludes Belgian seafarers trained outside Belgium.

15 No information about the certificate detail recorded was obtained as the administration did not return a questionnaire despite multiple requests.

16 Excludes Cypriot seafarers with non-Cypriot seafarers' books or on non-Cypriot flagged vessels.

17 Excludes those obtaining certificates outside Czech Republic (many Czech seafarers train in Poland) and those with a Seamen's Book from another flag.

18 Also records Seamen's' books.

19 Excludes seafarers with certificates issued outside Denmark.

20 The questionnaire response indicated that sex is not directly recorded but can be obtained from the Danish CPR number (Social Security number)

Country	Source	CoC	CeC	CoP	Multiple certificates	Individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Finland	Traficom - Finnish Transport and Communications Agency <sup>21</sup>	✓♦✓	✓♦	✓♦✓	✓		✓	✓	✗	✓	✓	✓	✓	✓	✓
France	Ministry of Ecological and Solidarity Transition	✓♦✓	✓♦	✓♦✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Germany	The Federal Maritime and Hydrographic Agency (BSH) <sup>22</sup>	✓♦✓	✓♦	✓♦		✓			✗	✓	✓	✓	✓	✓	✓
Greece	Ministry of Maritime Affairs and Insular Policy – Hellenic Coast Guard, Seafarers Training Directorate Ministry of Maritime Affairs and Insular Policy – Hellenic Coast Guard, Seafarers Labour Directorate <sup>23</sup>	✓♦✓	✓♦✓	✓♦✓						✓	✓	✓	✓	✓	✓
Hungary	Ministry of National Development, Department for Shipping Authority <sup>24</sup>	✓♦✓	✓♦✓	✓♦✓											
Iceland	Icelandic Transport Authority (ICETRA)	✓♦✓	✓♦✓	✓♦✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ireland	Department of Transport, Tourism and Sport	✓♦✓	✓♦✓	✓♦✓	✓	✓	✗	✗	✗		✓	✓	✓	✓	✓
Italy	Ministry of Infrastructure and Transport	✓♦✓	✓♦	✓♦	✗	n/a	✗	✗	✗	✓	✓	✓	✓	✓	✓
	Maritime Administration of Latvia <sup>25, 26</sup>	✓♦✓	✓♦	✓♦✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Latvia	National maritime education and training (MET) institutions (as listed on STCW-IS webpage) Two papers by Robert Gailitis (2013 and 2015) on the structure of the Latvian Seamen's registry												✓	✓	

21 Excludes seafarers with certificates issued outside Finland.

22 Includes non-nationals if studied in Germany and have a German certificate. Excludes seafarers who have studied and gained a certificate outside Germany (until they apply for a CeC).

23 Hard copy register of those issued with a seaman's book. Register of seamen's books issued do not include all sea service, and is not often updated. No information about the detail kept on these two sources was given.

24 No information about the certificate detail recorded was obtained as the administration did not return a questionnaire despite multiple requests.

25 Would not have record of a Latvian seafarer if their certificates were issued by other countries.

26 Also records Seamen's Books.

Country	Source	CoC	CeC	CoP	Multiple certificates	Individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Lithuania	Lithuanian Transport Safety Administration	✓♦✓	✓♦✓	✓♦✓	✓	✓	✓	✗	✗	✓	✓		✓	✓	✓
Luxembourg	Luxembourg Maritime Administration	✓♦	✓♦✓	✓♦	✓	✓	✓	✗	✗	✓	✓		✓	✓	✓
Malta	Merchant Shipping Directorate, Transport Malta <sup>27</sup>	✓♦✓	✓♦✓	✓♦✓	✓	✓	✗	✗	✗	✓	✓	✓	✓	✓	✓
Netherlands	Kiwa Licensing <sup>28</sup>	✓♦✓	✓♦✓	✓♦✓		✓ (but technically difficult)	✗	✗	✗	✓	✓	✓	✓	✓	✓
Norway	Norwegian Maritime Authority (NMA) National maritime education and training (MET) institutions (as listed on STCW-IS webpage)	✓♦✓	✓♦	✓♦✓	✓	✓	✗	✗	✗	✓	✓		✓	✓	✓
Poland	Polish Harbours Information and Control System Central Maritime Examination Board (CMKE) <sup>29</sup>	✓	✓	✓	✓	✗				✓	✓		✓	✓	✓
Portugal	The Directorate-General for Natural Resources, Safety and Maritime Service (DGRM), Maritime Administration <sup>30</sup>	✓♦	✓♦	✓♦											
Romania	The Romanian Naval Authority	✓♦✓	✓♦✓	✓♦✓	✓	✗	✓	✗	✗	✓	✓	✓	✓	✓	✓
Slovakia	Ministry of Transport, Construction, and Regional Development	✓♦✓	✓♦	✓♦✓	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓
Slovenia	Maritime Administration of the Republic of Slovenia	✓♦✓	✓♦	✓♦✓	✓	✓	✗	✗	✗	✓	✓	✓	✓	✓	✓

27 Also records Seamen's Books

28 Does not issue underlying certificates, but does keep record of underlying certification presented. Nationality is not recorded, but country of original CoC issue is when applying for a CEC.

29 CMKE organises and conducts examinations for seafaring diplomas and certificates.

30 No information about the certificate detail recorded as the administration did not return a questionnaire despite multiple requests.

Country	Source	CoC	CeC	CoP	Multiple certificates	Individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Spain	The ministry of Transport, Mobility, and Urban Agenda (The General Directorate of the Merchant Marine) <sup>31</sup>	✓♦✓	✓♦✓	✓♦		✓	✗	✗	✗		✓		✓	✓	
Sweden	Swedish Transport Agency (Transport Styrelsen) <sup>32, 33</sup>	✓♦✓	✓♦✓	✓♦✓			✓	✓	✗	✓	✓	✓	✓	✓	✓
UK	Maritime and Coastguard Agency	✓♦✓	✓♦✓	✓♦✓		✓ (Does for DFT report)		✗	✗	✓	✓	✓	✓	✓	✓
	Department of Transport <sup>34</sup>									✓	✓(G)	✓ sometimes ✓(G)	✓		
	Warsash Maritime Academy <sup>35</sup>						✗	✗	✗	✓					

31 Data covers all Spanish seafarers. Excludes Spanish seafarers working on a non-Spanish flagged ship that trained outside of Spain.

32 Will have records of Swedish seafarers working on foreign vessels if certificate issued in Sweden, and foreign seafarers working on Swedish vessel if certificate is endorsed. Excludes seafarers who have certification from outside Sweden working on non-Swedish flagged vessels. Also would not have records of Swedish seafarers working abroad if certification endorsed abroad.

33 Suggest the figures published are adjusted for those working ashore.

34 Based on MCA data with figures often adjusted to account for those who are not active at sea or have retired.

35 Only has information on course undertaken there. Could only count certificates, not seafarers. No information on rank (only highest course undertaken).

Country	Source	CoC	CeC	CoP	Multiple certificates	Individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Europe	European Maritime Safety Agency (EMSA)	✓	✓	✓ (some)	✓	✓	x		x	✓	✓	✓	✓	✓	✓ (small number)
	EMSA Seafarers Statistics in the EU Report: Statistical Review Series	✓	✓	✓					x	✓	✓(G)	✓(G)	✓ and ✓(G)		
	EMSA STCW-IS Online information System												✓		
	European Commission Study Report <sup>36</sup>									✓	✓(G)	✓(G)	✓(G)		
	European Commission Report <sup>37</sup>														
	European Transport Workers Federation Report <sup>38</sup>												✓(G)		
Global	BIMCO/ICS Manpower Report Series	✓	x	x					x	✓	✓	✓(G)	✓(G)		
	Drewry Manning Report Series <sup>39</sup>											✓(G)	✓(G)		
	Precious Associates Limited Report <sup>40</sup>											✓(G)	✓(G)		

36 'EU Seafarers Employment: Final Report' (Guy Sulpice 2011)

37 'An exhaustive analysis of employment trends in all sectors related to sea or using sea resources' (Weber and Nevala, 2006)

38 'How to enhance training and recruitment in the shipping industry in Europe: Final Report' (Kahvechi, Lillie and Chaumette, 2011)

39 'Manning 2015: Annual Report' (Drewry Maritime Research 2015)

40 'Availability and Training of Seafarers' (Precious Associates Limited, 2003)

## Employment data

Turning to employment-based information, the project identified 37 sources of data<sup>41</sup> within 28 of the 30<sup>42</sup> countries included in the study (see Table 5 and Appendix Table A2). Most of these sources were national statistics agencies, with data frequently drawn from Labour Force Surveys (LFS). In addition, at the European level, Eurostat is responsible for the European Labour Force Survey (EU-LFS), which combines all the LFS conducted by EU Member States (as well as the UK, the three EFTA countries, and the four EU candidate countries) to provide an overview of employment across Europe.<sup>43</sup>

In many countries we also identified a range of other potential sources of data that may hold details of seafarers' employment. These included data held for pension schemes and tax purposes, education and employment records, shipping and seafarer association membership lists, government ministries' datasets, publicly available reports, and ships' articles records. In addition, we found examples of datasets being constructed from several different administrative sources. This was also highlighted in the case studies, with a particularly good example coming from Statistics Sweden which, as it is updated on a monthly basis, is also very current:

**The labour force survey is a mandatory survey throughout the European Union. We do them, the Germans do them, and we do them very regulated – I mean, every smallest detail is laid down in the regulations. But Sweden has a little bit of a different approach than many other countries, or maybe the Nordic countries especially. We have a lot of registered base, so we get administrative data ... tax authorities, we get them from the Labour, the Department of Labour, and we have the whole system of income tax... [This] allows us to do much more granular data, and to have a better understand of how the labour force is structured.**

(Statistics Sweden)

Such a linked up approach requires a level of existing and established infrastructure and connectivity across national systems that is unlikely to be replicable in many other Member States.

The case study data also indicated that seafarer-specific surveys are undertaken in some countries. These may be regularly carried out, though their coverage and timescales can vary:

**We rely upon is the inventory that we conduct with the collaboration of the Hellenic Statistical Service... every two years. So this is a procedure that entails the actual recording of seafarers, and of a variety of criteria and characteristics of seafarers onboard the Hellenic fleet, and even the Hellenic fleet – let's say foreign flag – but the seafarers, they are under Greek law, so we follow that too, as well. There is one specific day that it is conducted. We send out the forms to the masters to fill them out.**

(Ministry of Maritime Affairs and Insular Policy – Hellenic Coast Guard (HCG) – Seafarers Labour Directorate, Greece)

41 It should be noted here that one source, the Hellenic Coast Guard, Ministry of Maritime Affairs and Insular Policy, has been included in both the Certifications systems and Employment data groups because it held both certificate data from a register of seamen's books and employment data from records of ships' articles.

42 In the remaining two countries, although they undertake Labour Force Surveys, searches did not find reference to even broad categories which might encompass employment in the maritime industry (such as 'transport and storage'), so these have not been included.

43 Eurostat were approached and there was discussion about undertaking an interview, but we were not able to arrange it within the timeframe of the study.

We have a yearly monitor, and we do this in cooperation with the sector, and they research mostly the information we need to do our work, so that's let's say the general amount of seafarers, what about the shore based jobs, coming from the shipping industry and stuff like that, so that's the information that we normally use, and that's done by a private company he does this based on the information that they receive from let's say our Statistical Organisation in the Netherlands and after consulting with the industry partners, so they do a lot of interviews with the association and some individual companies, and they aggregate from that the information that they need.

(Ministry of Infrastructure and Water Management, Netherlands)

Such approaches were the exception, and for the most part the employment-based data sources we identified are generally not seafarer specific. Of the 37 sources identified overall, 24 were based on broader classifications of employment, such as employment in the Transport and Storage (or equivalent) sector. For four of these 24 sources, employment could be broken down into finer detail relating to the sector, such as employment in 'Sea and coastal passenger water transport', 'Sea and coastal freight water transport', 'Inland passenger water transport', or 'Inland freight water transport', and in two cases even finer detail was available: one relating to the vessel type seafarers were employed on, and the other on rank); and for the rest this potential was unclear. However, in seven of the 24 cases we were told that the broad category of Transport and Storage could not be broken down further.

In terms the information kept by these sources, only one of all the 37 employment data sources kept certification details. However, 22 sources held details of sex, 16 each held age and nationality and 12 had some information on rank (nine of which were broad rank groupings, such as officers and engineers, with only three having more detailed information)<sup>44</sup>.

For the most part, therefore, employment-based data sources can only reliably provide data at a level that is too broad to be of use for strategic planning and development that is specific to the maritime sector and those working within it.

<sup>44</sup> One data source indicated that they held information on both underpinning documents and limitations (Table 5). However, this may have been the result of a misunderstanding over what was meant by the terms 'limitations' and 'underpinning documents', but as this information was obtained by email, it was not possible to pursue it further.

**Table 5: Summary of coverage of the project's key set of seafarer details within sources holding employment data as indicated through desktop review and subsequent direct follow-up**

**KEY:** ✓ = data are available | ✗ = data are not available | [ ] = not known whether data are available | ✓(G) = data available, but in a grouped format  
 Black text = from desktop review | Red text = from questionnaire | Green text = from interview

Country	Source	Type	Range	Sample size	Sex	Age	Nationality	Rank	Limitations	Underpinning	Transport and Storage Classification	Classification breakdown
Austria	Statistics Austria	Employment (LFS)	2004-2019	0.6% (0.6%)	✓	✓(G) ✓	✓(G) ✓	✓(G)			✓	✗
Belgium	Statistics Belgium	Employment (LFS)	None	n=123,000 (0.5%)	✓	✓	✓				✓ ✓	✗
Bulgaria	National Statistics Institute <sup>45</sup>	Employment (LFS)	2009-2019	Sample, % not defined	✓	✓(G)					✓	
Croatia	Croatian Bureau of Statistics	LFS and Pension Scheme	2000-2020		✓		✓ (region)				✓	
Cyprus	The Statistical Service of Cyprus (CYSTAT)	Employment (LFS)	1995-2020	n=3,800 (1.5%) (1.4%)	✓		✓(G)				✓	✗
Czech Republic	Czech Statistical Office (CZSO) <sup>46</sup>	Employment (LFS)	2009-2019	n=51,000 (0.6%)		✓(G)					✓	
	Statistics Denmark <sup>47, 48</sup>	Employment (LFS)	None	(100%)	✓	✓(G)					✓	
Denmark	Danish Shipping (website) - Shipping Association <sup>49</sup>	Employment (from Shipping Association report)	2014-2018 (2018 Report)	n/a			✓(G)					

45 Excludes those on unpaid leave of over 3 months.

46 No data on seafarers as inland country with seafarers making up a very small proportion of the workforce.

47 Covers the whole population.

48 Based on data collected annually at the end of November from a number of sources such as the central business register, the educational register, the income register and the population register.

49 Excludes Danish seafarers employed by non-Danish shipping companies.

Country	Source	Type	Range	Sample size	Sex	Age	Nationality	Rank	Limitations	Underpinning	Transport and Storage Classification	Classification breakdown
Finland	Statistics Finland (StatFin Database) <sup>50, 51</sup>	Employment (from approx 30 different administrative registers and statistical data files)	2010-2017	(100%)	✓	✓ (G) ✓	✓	✓ (G)	✓	✓		✗
France	École nationale d'ingénieurs de Metz (ENIM)	Employment (provided to ETF through an affiliate in 2016)	1) 2000-20015: not publicly available 2) 2013-20015: not publicly available		✓	✓	✓ (region)	✓			✓	
	National Institute of Statistics and Economic Studies	Employment (source unclear)	None								✓	
Germany	The Federal Statistical Office of Germany (Statistisches Bundesamt)	Employment (LFS)	2009-2019	(1.00%)	✓						✓	
Greece	The Hellenic Statistical Authority (ELSTAT) <sup>52</sup>	Employment (from Seamen's Pension Fund (NAT) and survey of seafarers serving onboard the Hellenic fleet conducted by ELSTAT)	1) Ship and Crew Census report covers 2000-2018 (published every 2 years and only covers that year, i.e. 2014, 2016, 2018 etc). 2) Enlisted Greek Seamen report covers: 2000-2017		✓	✓	✓ (G)	✓ (G)				
	Hellenic Coast Guard, Seafarers Labour Directorate <sup>53</sup>	Certificate (from register of seamen books) Employment (from records of ships articles)	None									

50 Based on data collected annually at the end of year from a number of sources; approximately 30 different administrative and statistical data files. Covers the whole population.

51 Data on rank not recorded, but limitations/underpinning documents described as being recorded.

52 Enlisted Greek Seamen Survey is carried out every two years via Greek ships masters on 20th September; includes all seafarers onboard.

53 Hard copy register of those issued with a seamen's book. Hard copies of ships articles. Register of seamen's books issued do not include all sea service, and is not often updated.

Country	Source	Type	Range	Sample size	Sex	Age	Nationality	Rank	Limitations	Underpinning	Transport and Storage Classification	Classification breakdown
Hungary	Hungarian Central Statistical Office (KSH)	Employment (LFS)	2008-2020	n=36,000 (0.4%) (0.9%)	✓ x						✓	✓
Iceland	Statistics Iceland	Employment (from Tax Register)	2008-2019	(100%)	✓		✓ (G)				✓	
Ireland	The Central Statistics Office of Ireland <sup>54</sup>	Employment (LFS)	1998-2020	n=32,000 (2.0%) (1.7%)	✓	✓	✓ (G) ✓				✓	✓
Italy	National Statistical Institute	Employment (LFS)	None								✓	
Latvia	Central Statistics Bureau	Employment (from multiple sources such as employers, the State Revenue service, tax agencies)	2005-2019	n=6,000							✓	
Lithuania	Statistics Lithuania	Employment (LFS)	2015-2019 (with comparable data perhaps available from 1998)	(0.5%)	✓	✓	✓	✓		✓	✓	✓
Lithuania	European Commission Country Report <sup>55</sup>	Employment (from maritime companies report on crewing to the Klaipeda State Sea Port)	2004-2005									
Luxembourg	National Institute of Statistics and Economic Studies of the Grand Duchy of Luxembourg (STATEC)	Employment (LFS)	None	(96.0%)							✓	x
Malta	National Statistics Office	Employment (LFS)	2016-2019	(5.0%)	✓	✓	✓				✓	✓

54 Indication that ISCO08 was used for occupational coding.

55 Figures in text for number of Lithuanian seafarers for 2004 and 2005. Rounded to the nearest thousand.

Country	Source	Type	Range	Sample size	Sex	Age	Nationality	Rank	Limitations	Underpinning	Transport and Storage Classification	Classification breakdown
Netherlands	Ministry of Infrastructure and Water Management – Netherlands official maritime authority <sup>56</sup>	Employment Social security/ tax records	None									
	Central Agency for Statistics (CBS)	Employment (from multiple sources)	1995-2019	sample (% not given)	✓	✓	✓	✓(G)			✓	
	2019 Netherlands Maritime Land Report produced by ECORYS (usually called the 'Maritime Monitor') <sup>57</sup>	Employment (as supplied by CBS)	2006-2019									
	The Royal Association of Netherlands Shipowners (KVR) <sup>58</sup>	Employment (from records of seafarers working on vessels)	None									
Norway	Statistics Norway <sup>59, 60</sup>	Employment (from the Register of Employers and Employees)	2015-2020	(100%) (100%)	✓	✓	✓(G) ✓	✓ ✓				✓
Poland	Central Statistical Office	Employment (LFS)	2010-2020								✓	
Romania	National Institute of Statistics	Employment (LFS)	2015-2019	(1.5%)	✓	✓(G)					✓	✗
Slovakia	Statistical Office of the Slovak Republic	Employment (LFS)	2009-2020	(0.6%)	✓			✓(G)				✗

56 Does not directly collect data. Is responsible for policies in relation to international shipping. Suggested population data, social security data, and employer's records could be a good source of information.

57 Maritime Monitor figures on employment based on figures from CBS, which are adjusted following consulting with industry about those retiring/ working ashore.

58 The Royal Association of Netherlands Shipowners covers most of the major Dutch Shipping companies.

59 Also has information on flag (NIS, NOR, or Foreign register) and vessel type (grouped).

60 Data classified using NACE, ISCO and ISCED.

Country	Source	Type	Range	Sample size	Sex	Age	Nationality	Rank	Limitations	Underpinning	Transport and Storage Classification	Classification breakdown
Slovenia	Statistical Office of the Republic of Slovenia	Employment (from Statistical Register of Employment (SRDAP))	2005-2019	(100%)	✓	✓(G) ✓	✓				✓	✓
	European Commission Country Report	Employment	2005					✓(G)				
	National Statistics Institute	Employment (from the Active Population Survey (EAPS))	2008-2020	n=65,000							✓	
Spain	Spanish Shippers Association <sup>61, 62</sup>	Employment (Figures as provided by members)	None	95% of Spanish fleet, and 70% non-Spanish flagged vessels owned by Spanish companies				✓ (not for all)				
	Statistics Sweden <sup>63, 64</sup>	Employment (from Swedish Occupational Register) Two types of data: 1) Labour Force Survey, and 2) Occupational based Register Statistics	2014-2018		✓	✓	✓	✓(G) ✓				
UK	Office for National Statistics	Employment (LFS)	2012-2020 (sector data); 2001-2018 (occupational data); 2001-2018 (series discontinued)	100,000 people (40,000 households)	✓			✓(G)			✓	

61 No information on Spanish seafarers on foreign flagged vessels.

62 Includes both Spanish and non-Spanish seafarers. Rank can be extracted from copies of seafarers' contracts (non-European seafarers only).

63 From occupation based register incorporating the whole population. Based on records from tax authorities and the department of Labour. Foreign seafarers on Swedish vessels not included. Labour Force Survey does not accurately represent seafarer due to scaling up.

64 Publication is 16 months after data collection. Uses Swedish classification SSYK-12 (based on ISCO-08). Also undertakes standard Labour Force Survey. Data less accurate for Swedish seafarers working abroad. Rank is detailed but not STCW classifications.

Country	Source	Type	Range	Sample size	Sex	Age	Nationality	Rank	Limitations	Underpinning	Transport and Storage Classification	Classification breakdown
Europe	European Foundation for the Improvement of Living and Working Conditions (EUROFOUND)	Employment (from European Working Conditions survey)	None	1,000 people per country (although some countries collect more)	✓	✓ (age at survey)	✓(G)				✓	✓
	Eurostat (the statistical office of the European Union)	Employment (from European Labour Force Survey)	None									
	European Commission Study Report <sup>65</sup>	Certificates? / Employment? (nature of data unclear)	2010 but makes comparisons to 2000 data		✓	✓(G)		✓(G)				
	European Commission Report <sup>66</sup>	Certificates? / Employment? (nature of data unclear)	2004/2005									
	European Transport Workers Federation Report <sup>67</sup>	Certificate/ Employment	covers varying year from 1980-2007					✓(G)				
	Global	BIMCO/ ICS Manpower Report Series	Certificates (and some employment)	Report published every 5 years, since 1990 (latest version 2015)		✓	✓	✓(G)	✓(G)			
Precious Associates Limited Report <sup>68</sup>		Certificates (and some employment)	1990, 1995, and 2000					✓(G)				
SIIRC Report <sup>69</sup>		Employment	2003	10% of world fleet		✓(mean)	✓ (Top 10)	✓(G)				

65 'EU Seafarers Employment: Final Report' (by Guy Sulprice 2011)

66 'An exhaustive analysis of employment trends in all sectors related to sea or using sea resources' (Weber and Nevala, 2006)

67 'How to enhance training and recruitment in the shipping industry in Europe: Final Report' (Kahvechi, Lillie and Chaumette, 2011)

68 'Availability and Training of Seafarers' (Precious Associates Limited, 2003)

69 'The Global Labour Market for Seafarers: Working Aboard Merchant Cargo Ships 2003' (Ellis and Sampson, 2008)

## Social security data

The final set of sources comprises those based on social security data. As indicated in the *Methodological approach* section, for pragmatic reasons we were not able to undertake detailed desk research on the potential relevance of social security data in all 30 countries. Instead, in consultation with ECSA and ETF, we chose to focus was on five Member States: Belgium, France, Germany, Spain and Sweden (Table 6 and Appendix Table A2). Of these, Belgium, Germany and Spain have social security arrangements that are specific to seafarers.<sup>70</sup> As a result, they hold more detailed information on the areas of interest to this project.

Data from the case study interviews provide some useful further detail here, with a particularly interesting example found in Belgium – a Member State with relatively few seafarers. There, seafarers' social security is dealt with by a dedicated section of the National Social Security Office (NSSO). This was formed when an existing independent organisation administering a seafarers' health and welfare fund was amalgamated into the NSSO in 2018. Seafarers need to be registered on what is known as the 'pool list' to be included. Registration can be requested either by shipping companies, or seafarers can register directly themselves. The NSSO is supplied with STCW certificate information by the shipping company or seafarer, and can check details with shipping companies, Maritime Authorities, or seafarers themselves as required. This information is then linked with seafarers' social security numbers.<sup>71</sup> As a result, the pool list holds data on the characteristics of those who are registered in terms of their demographics (age, sex, nationality), their occupation (rank, limitations) and, importantly, on whether or not they are actively working at sea. This also means that, in addition to its social security remit, the system can be used as a resource for shipping companies, which can request the details of available seafarers of specific ranks to meet their current crewing needs. As our interviewee indicated, with the support of the social partners, the system is effectively used to try to minimise unemployment/under-employment among seafarers:

**The pool list, as such, is a list, from which the ship owners can select seafarers. They say, "OK, we need a second officer; I am short of a second officer. You can see on the pool list maybe is free..." We are also the intermediary person for the labour market, to bridge the gap between the seafarers and the ship owners. That's our mission too, to make sure... because we have the competence of unemployment, so we try to make sure that the unemployed get a job. So that a bit also our mission. ... We have a general management committee, with representation of the ship owners, and of the seafarers, and that committee, also they see, because it's a small world, they say ok, we have here two second officers who don't find jobs." The representations demand the ship owners, "Don't you have a job for them? And it's really ... because it's a small system we can do that, if we tried to integrate it in the larger Belgium unemployment system, it cannot function like that. But it's a system that functions very well. We have very low unemployment for seafarers.**

(National Social Security Office, Belgium)

70 During a key country interview with the Ministry of Infrastructure and Water Management, the Netherlands official maritime authority, it was suggested that the Netherlands may also have specific social security arrangements for seafarers. This suggestion was not followed up due to time constraints.

71 Where non-Belgian nationals are registered for Belgian social security (see below), they are issued with a Belgian social security number.

This system is, of course, dependent on co-operation and collaboration both between the social partners and with the social security body. As such, it reflects the specific national and sectoral level arrangements in place to support seafarers in Belgium. This context specificity makes the wholesale transferability of the detail of such an approach to other countries complicated or, in some instances, likely impossible.

Similarly, in Spain the Social Institute of the Navy is broadly responsible for seafarers' wellbeing, so its remit includes social security, as well as (inter alia) training, medical examinations and collaborative ship inspections. While in Germany, the KBS provides social insurance for seafarers, offering security in the form of the Bridging Benefit – a kind of pre-retirement pension. In some Member States, therefore, social security systems may hold detailed and current information on seafarers, as our interviewees acknowledged:

**We usually make enquires to the social security to check for these kind of things... so you can see that its very good source of information for these kind of things.**

(Merchant Marine, Spain)

**I think they [the social security system] have... I don't know if they are allowed to share them with you, but they will have them.**

(Ministry of Infrastructure and Water Management, Netherlands)

However, as our data also make clear, these systems vary across Member States, in particular in relation to whether seafarers are covered by special arrangements or even a dedicated 'branch' within a broader social security scheme.

It is also important to be clear here that legal factors impact on the extent to which social security systems encompass the kinds of data that are the focus of this project. Under Article 11.4 of EC Regulation 883/2004, seafarers are obliged to contribute to the social security scheme in the country of the flag of the vessel they are sailing on. However, if a seafarer is employed by a company based in another country, they contribute to the social security scheme of their employer's country, and not that of the flag. In addition, in some instances there are special arrangements between flag states such that seafarers are covered by a scheme in their home country, rather than that of the flag of the vessel or their employer. Our interviewees were well aware of these complexities:

**Those workers who agree with the regulations must be subject to Spanish social security. In this matter, the Law of the ship's flag governs, so that if the ship has a Spanish flag, all those who work on board must be subject to Spanish social security. There are some exceptions to this flag or ship flag law, which is established in community regulations or in social security agreements signed with various countries.**

(Social Institute of the Navy, Spain)

**Great parts of the crew on Belgium social security are not Belgians. Normally the flag determines the social security, but in Europe, in the European regimentation of the coordination of social security systems, you have one particular article 11.4 which say, OK, normally it's the flag of the state, managed state, that will determine social security; but if**

**you live in Member State A and you are paid by an employer also situated also in member state A, it will be that social security.**

(National Social Security Office, Belgium)

In addition, in some cases, seafarers may choose to sign up to a scheme that may be more beneficial for them:

**So a Belgian ship owner employs a Polish citizen on a Belgium flag, and then it will be Belgium social security, and... the Polish seafarer is from a company in Poland, but for ... the higher ranked officers, they choose the Belgium social security, because I think it's better than the Polish, and the Bulgarian, so I, we, have much, many Polish and Bulgarian officers, and Romanian, and for the best officers we choose the Belgium social security. It about 60% of the population.**

(National Social Security Office, Belgium)

The direct comparability, as well as transferability of particular systems or arrangements, therefore, is particularly challenging. In addition, social security data are extremely sensitive and so may not be appropriate for use in the areas that are of central interest to this project.

**Table 6: Summary of coverage of the project's key set of seafarer details within sources holding social security data as indicated through desktop review and subsequent follow-up**

**KEY:** ✓ = data are available | ✖ = data are not available | [ ] = not known whether data are available | ✓(G) = data available, but in a grouped format  
 Black text = from desktop review | Red text = from questionnaire | Green text = from interview

Country	Source	Type	Range	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning	Transport and Storage Classification	Classification breakdown
Belgium	National Social Security Office <sup>72</sup>	Social security/ tax (Seafarer specific)	Accessible custom tables; 2013-2019			✓	✓✓	✓✓	✓✓	✓✓	✓		✓	
Germany	Knappschaft-Bahn-See (KBS) – German Pension Insurance Miners-Railway-Maritime <sup>73</sup>	Social security/ tax (Seafarer specific)	None			✓	✓	✓	✓					
Luxembourg	Joint Social Security Center (Centre Commun De La Securite Social) <sup>74</sup>	Social security/ tax	None											
Malta	Department of Social Security <sup>75,76</sup>	Social security/ tax	None				✓	✓	✓					
	Office of the Commissioner for Revenue <sup>77</sup>	Social security/ tax	None											
Netherlands	The Dutch Tax and Customs Administration (Belastingdienst)	Social security/ tax	None											

72 Includes vessels over 24m so may include seafarers on seagoing, commercial yachts; excludes Belgian seafarers covered by non-Belgian social security arrangements.

73 Includes all those living in Germany (even if working on a foreign flagged vessel). Excludes foreign seafarers working on German flagged who choose to opt out.

74 Possibly includes seafarers eligible for the Luxembourg Social Security System.

75 Maltese seafarers on foreign vessels may be included depending on the legislative agreements they are covered by. Includes foreign seafarers working on Maltese flagged vessels. Excludes Maltese seafarers working on vessels flying the Flag of an EU Maritime State.

76 Not responsible for collection of social security contributions. No specific scheme for seafarers, so cannot identify those working in maritime industry; no record of nature of employment (e.g. rank).

77 May include seafarer eligible for Maltese Social Security.

Classification breakdown	
Transport and Storage Classification	
Underpinning	
Limitations	
Rank	✓(G)
Nationality	✓(G)
Age	✓
Sex	✓
Not active	✓
Working inland	x
Working below rank	
Range	None
Type	Social security/ tax (Seafarer specific)
Source	Ministry of Labour, Migrations, and Social Security (Social Security of the Social Institute of the Navy) <sup>78, 79</sup>
Country	Spain

78 Does not include all those working on Spanish flagged vessels (some countries).

79 May includes seafarers eligible for Spanish social security. Has access to records but does not directly collect social security contributions.

## Data sources: key messages

Taken together, the desk review and case study data identify a wide range of sources that paint a complex picture. They highlight the key issue of accessibility and clearly indicate widespread variation in the extent to which data, or an explicit description of the content of privately held datasets, are publicly available. This means that, as things stand, existing datasets cannot be simply combined to describe the seafaring workforce. In addition, the data point to three broad types of data source, but suggest that each is limited, to a greater or lesser extent, in the degree to which it can contribute to a clear and accurate description of the maritime sector's workforce. Broadly:

- Systems holding certification data collect a range of seafarer details, but for the most part cannot distinguish whether a seafarer is active at sea or not.<sup>80</sup>
- Employment based data sources rarely hold seafarer specific data.
- Social security systems that are specific to seafarers often hold relevant data, but these arrangements are not universal across Member States, hold particularly sensitive data, and may not cover all national seafarers.

Further, the findings make it clear that, where detailed information is available at the national level, this is often dependent on particular contexts, settings and arrangements within that Member State, or in some instances on cross-national agreements. The wholesale transferability of the detail of country-specific systems, therefore, may be complex or impossible. In addition, our findings note variations in the timeframes within which data are collected or updated. This makes comparisons between sources and across countries difficult, and highlights the importance of regular and ongoing data collection and monitoring. However, in indicating that, for the most part, maritime authorities or their equivalents first become aware of a seafarer when she or he applies for a certificate or other documentation or completes their first certificate allowing them to work on board,<sup>81</sup> the findings also highlight the potential for an EU-wide system of data on seafarers throughout their careers.

Overall our findings suggest that, as they currently stand, existing data sources cannot be used to draw a detailed map of employment in the maritime sector within the EU because of differences in accessibility, the limitations inherent in each of their arrangements and the difficulties these together pose for combining data from a range of sources. Yet there is much to be learned from the limitations associated with the various data sources that is pertinent to the development of an EU-wide data collection system. They are explored in the following section.

80 Sea time is required in order for a seafarer to obtain/renew STCW certification, meaning that a seafarer will be active in order to obtain such qualifications. However, once the certificate is obtained, there is no further indication as to whether the seafarer is actively working at sea or not. Similarly, CoPs must be renewed on a 5 yearly basis and require sea time.

81 Though in some instances, such as when seafarers study at a college outside their home country, maritime authorities or their equivalents often have to approve their attendance before they start the course.

## Limitations

As the *Data sources* section above makes clear, we were not always able to determine exactly how much of the project's key data set of seafarer details (Table 2) each of the identified data sources covered. Nevertheless, among those sources for which details were available, the findings indicate various limitations to the existing data among all three main data source types.

First, in some instances, sources holding information on seafarer certification may:

- include seafarers who are no longer working at sea
- misclassify those working at a rank other than that for which they are qualified
- include seafarers with multiple certificates more than once.

In fact, as noted above, we were only able to positively establish that two organisations (the Ministry of Ecological and Solidarity Transition in France; and the Maritime Administration of Latvia) hold all of the project's key data set, including the ability to determine whether seafarers were active and were working at their qualified rank. Whilst we have no further information for France, in the Latvian case, these factors were determined through reference to sea service records.

Second, broader employment data, which are often available through national statistics agencies, generally do not provide seafarer specific detail. Rather, they indicate levels of employment in various categorisations of the water transport sector, with such classifications being sectoral rather than occupational. Furthermore, in most cases, the information is based on data from a sample of the population and then adjusted to represent the population as a whole.

Third, while some countries do have specific social security arrangements for seafarers, and so hold seafarer specific information (albeit perhaps limited to those seafarers working on national flagged vessels, those not exempt under a legal agreement between flag states and in some instances to those who register), where this is not the case, again seafarer specific detail is not available. In addition, of course, these are particularly sensitive data, so are never publicly available.

In order to explore these limitations in more detail, the following sub-sections consider three broad groups of limitations: inconsistencies, gaps and double counting. Some limitations fall into more than one of these groups (as indicated later in this report, when data coverage, strengths and weaknesses are summarised by data source type – see Table 8).

## Inconsistencies

There were a number of apparent inconsistencies between data sources both within and between countries. As we describe below, these included: varying time frames, a varying range of bases for data sources, adjustments to data, and various sub-divisions of seafarers.

### *Varying time frames*

Although much of the data that were identified are current, variations were found in the range of years covered. For example, not all sources include data for each of the last 10 years. This is the case, for instance: in the Ship's Crew Census survey of Greek serving seafarers which, as indicated

earlier, is conducted by the Hellenic Statistical Authority every other year; and for the BIMCO/IMF report, which is based on data collected every five years. Of course, even regular data collection schedules can be disturbed, particularly under the current exceptional circumstances:

**Interviewer: How often is it collected?**

**Interviewee: Five years by now, every five years, and unfortunately we scheduled it to happen in 2020 and we started in February and had to abandon fieldwork at the beginning of March, and are now preparing an alternative: a computer-assisted telephone interview – a CATIA version – which will go into the field in March of next year.**

(EUROFOUND)

The time points at which data are collected also vary across sources, from ‘snapshots,’ for example at a single time-point in a year, to systems which are updated at least weekly:

**It is annual... You’ve got a directive... it’s the 2008 106/CC... there is an article 25, which states the requirement, and then annex what information they have to send. They have to send the data... the first... of December.**

(EMSA)

**We have a... I think it is an hourly update process... maybe daily, but I think we discussed with the developers that we made it each hour, but at the latest the next day.**

(Federal Maritime and Hydrographic Agency, Germany)

For some data sources we also found time lags between data collection and publication – in one case, this was 16 months.<sup>82</sup> This also applies to data held at the EU level, not least because of the processing and validation required to check the data supplied by the various authorities and ensure its consistency, as one of our interviewees explained:

**We publish always, one year and something delay, one year and a half usually, because they have to get the data of all of them, treat the data, we have also to validate, because sometimes there are mistakes there.**

(EMSA)

### *A range of bases for data sources*

As we have made clear, sources which hold data on European seafarers draw on a wide range of datasets, used either singly or in combination. These include, for example, certificates, diplomas, survey and census data, pension fund data (which of course excludes those without the relevant pension arrangements), shipping association membership (which similarly excludes those who are not members) and business, education, employer, employee, income and population registers. These systems collect data for a very wide range of different purposes, which are necessarily reflected in the detail they collect, how they collect and store it, and so on.

An obvious solution might be to simply combine data from some or all of these sources and so arrive at an overall total number of seafarers. Unfortunately, this is substantially easier said than done. For example, combining data from a country’s Labour Force Survey (LFS) with that Member

<sup>82</sup> This was the result of a single annual supply of data, followed by several months of data verification and analysis.

State's certificate data might, in theory, provide a full national dataset by adding an indication of whether a seafarer is actively working at sea to the details (rank, limitations and so on) held on their certificate. However, in practice this would be problematic for two reasons. First, any system of matching certificate and LFS data would likely be time consuming and costly, particularly when carried out on a sufficiently regular basis to be of use for the purposes of this study. Second, Labour Force Surveys are based on a sample of the population, so would not capture all seafarers. In fact, arguably such surveys may under-represent seafarers because of their household sampling approach which may miss those working away from home for long periods of time. Any combined dataset, therefore, would need to be scaled up to represent the population as a whole – which of course brings its own issues of accuracy (as discussed further below). This process would then need to be regularly repeated, using the same timeframe and methodological approach, for each Member State, as well as Iceland, Norway and the UK.

The key point here is that, while these datasets contain information relevant for the aims of this report, the coverage and compatibility of that information across datasets varies enormously. As a result, amalgamating them, or using them for a process of triangulation, on an EU-wide scale to address areas of interest other than those for which they were designed, is difficult and sometimes impossible.

### *Data adjustment*

Our findings also suggest that adjustments are sometimes made to data based on a set (or sets) of assumptions, which are not always explicitly described in the publicly available material. For example, adjustments are often made to take account of inactive CoC holders. As we discuss in the section on Good practice below, such adjustments may more closely reflect numbers of active seafarers within certificate-based datasets. However, a consistent and transparent approach to the basis on which they are made and the methods used to make them, as well as regular review of each of these areas, is essential to ensuring robustness and comparability across countries and over time.

Similarly, data from population surveys, such as the Labour Force Survey, are generally based on a sample from which population (in this case sector) level data are estimated. This can over- or under-estimate the true population size, particularly where the number of representatives of a sector captured in the sample is relatively small. As one of our interviewees explained, such data must, therefore, be used and interpreted appropriately:

**I'm afraid that the labour force survey ... I mean, it's a good macro tool, it's a very good tool to get on a country... But this is a very small industry, and I would have to say the same thing as we, when people ask us, is this a good estimate for, for example, the south of Sweden? We don't do enough sampling. The sample sizes are too small to give you an accurate picture of all of it, The level is increasing or decreasing. So, I mean, it's a beautiful instrument, and really gives you a timescale and a comparability between different countries that this data doesn't, but I would say that our... I'm guessing in Greece the labour force survey really gives a great picture of the shipping industry, for example, being a large part of the Greek economy. For us it's not.**

(Statistics Sweden)

It is not only at the country level that this can be an issue. Even EU level surveys, such as the European Working Conditions Survey, may not be able to accurately represent relatively small groups within its sample:

The sample size is 1000 respondents for every country, with the exception of the few big ones. Germany has a larger sample size. Spain has a larger sample size because the Spanish government actually finances a top up. We have, interestingly, a larger sample size for Belgium because they are, again, it's the same thing that the Belgian government pays us in order to do more interviews. So it's a representative survey, but at country level the sample size is then quickly... too small in order to do very detailed breakdowns by sector. It's all at the European level, we have something like 35,000 respondents altogether. There, of course, you can do a wide variety of analysis, but as soon as you want to do it by country, by sector, by occupation, you very quickly reach a cell size where you have 27 respondents and then of course... generally speaking – even at a much higher level – the difficulty with sectoral analysis of the working conditions data. Fine at European level. Tricky very soon at country level.

(Eurofound)

As this interviewee went on to explain, this could become even more problematic for certain groups, including seafarers, because of the nature of the work itself:

We could identify how many respondents in our survey identify as seafarers. The likelihood of this being a very large number is very small, also due to the fact that the working conditions survey is a face-to-face survey where we go to people's homes not the workplace, and I would assume that seafarers are very often not there when we knock on the door. So, in theory, there could be a number of seafarers in that survey, which would mean that we could find out something about their working conditions, but in terms of what you are mostly interested in, how many of them there are out there, that would not answer your question.

(Eurofound)

However, in combination with other sources, some interviewees felt that such data could be used to build up a picture of the sector that was not apparent from one data source alone:

In the past, what they did was, they just got the information from the industry, and they just said, well that means that about, and they just added some factors, so what that means that so much is, for example, extra in relation, let's say we have so many seafarers; that means that we expect that so many jobs ashore are available, and what they do now, they now try to actually compare this with the information they receive from the general population statistics. They find some incorrect numbers, and they are changing it now, and hopefully this will give us some more accurate view of what is happening in the industry.

(Ministry of Infrastructure and Water Management, Netherlands)

As the quote above makes clear, there was widespread awareness of the potential for a survey's sample to limit the conclusions that can be drawn, particularly in relation to smaller sub-groups within a population – for example, seafarers, especially in a Member State without a long tradition of seafaring. In addition, however, the case studies also made it clear that approaches to addressing this issue vary across Member States, often reflecting specific national contexts and arrangements, and so also limiting cross-country comparability over time.

### *Different sub-divisions of seafarers*

Our desktop review also indicated that different data sources have different ways of sub-dividing seafarers into various categories. For example, where data are available by rank, categorisations included varying degrees of specificity, with some sources, such as the maritime administrations, having very detailed information, and others much less:

**We only have the number of officers and number of ratings and, in some cases, non-navigational personnel.**

(The Spanish Shippers Association, Spain)

Published data on age are also often grouped, but from the desktop review it was apparent that the group boundaries used vary (though in practice sources do often also hold data on date of birth, which of course could be used to form any range of age categories if the raw underlying data were accessible).

Such categorisation differences often reflect the purpose for which the data have been recorded and the needs and interests of the organisation holding the data. For the purposes of this report, however, such differences are important because they limit, and in some cases rule out, accurate and reliable comparison and/or combination and triangulation.

### *Accuracy*

The accuracy of any data set is, of course, key to its application for policy-making and strategic planning. Our interviewees described a range of ways in which data are checked within the various sources identified in the project. For example, in relation to certificates, some referred to checking samples of a dataset, others to checks carried out if information is highlighted (digitally or manually) as being potentially incorrect, and still others to systematic audits of the data and the arrangements for storage, encoding, management and so on. Some systems are also externally audited:

**Then there are also audits, which are done by MCA, the Dutch Shipping Inspectorate and third parties. So the MCA ones are really detailed and they, last time I was really sweating because they really do... it's, yeah, he was really knowledgeable and sometimes he ask me things, and I was like, I'm not sure... The inspectorate also checks us every five years, and they also do the same they go to a randomized checks: a few applications every year, like one a month, for instance, in five years, and then they check if everything according to them is complete.**

(KIWA Register BV, Netherlands)

Similarly, stringent quality control processes are in place for EU level surveys:

**There is a big quality, data quality control protocol. ...The working conditions survey has a very good reputation for its reliability and we don't want to jeopardise that.**

(Eurofound)

When asked directly about the degree of accuracy with which the number of seafarers in their Member State could be determined from the data they worked with, interviewees gave a range of responses. Some explained that their data could provide an accurate picture because of the way it was collected and/or the records on which it was based:

There's actually a quite precise number available of the amount of people sailing onboard because in their taxes they have to tell how many days they were at sea, so I think they [tax agencies] know very accurately how many people are sailing, so that should be available, but the amount of people that are actually holding a certificate of competence, who are not sailing, I never saw that number coming by, because I think so far nobody was really interested in that.

(Ministry of Infrastructure and Water Management, Netherlands)

**Interviewer:** do you think it's an accurate picture of who's working on the EU fleet, on the European fleet? Do you think your data represents seafarers in Europe pretty accurately?

**Interviewee:** It represents, yeah, I would say so, regarding those, the certificates or endorsements to work on board EU, more or less European flag vessels. So, because, yeah, I would say yes, because there is everybody that can work on board EU flag vessel or European flag vessel because we go further than EU, so we have that. So it represents in terms of nationalities, in terms of the capacities, in terms of the gender, I think, and age. I think so.

(EMSA)

However, there was also an awareness of the potential for inaccuracies, for example because of the possibility of seafarers with certificates not actively working at sea:

Those who are qualified in Germany, I would say 95% of the times it is that way. But we are not in the position to be informed if they really are seafarers right now, because they could have some certificates, they have no limitations in time, no validity, only a few are there, we don't know if they are really onboard the ships.

(Federal Maritime and Hydrographic Agency, Germany)

We cannot, because we don't know if they are on board...we can go as far as knowing that people have valid certificates. The number of, not only the number of certificates but people have valid certificate ... then individually of course, how many Norwegians or how many people holding certificates issues by Norway have a master ticket. So we know what is the potential – labour force potential masters. Whether they are working at sea, we don't know. ... For instance, in Spain, this is a convention; in other countries the same. So if you are working for a shipping company, if you are teaching, or if you are a surveyor or a whatever pilot, you can provide a certificate. But at the end you are not working at sea or on board, you may well be a ... working for a shipping company or be a professor in an academy.

(EMSA)

Some interviewees were clear that the data held by their organisation could not be used to draw an accurate picture of the number of seafarers within the country because that was not its intended purpose. For example, shipping association data only cover the vessels of those who are members of the association, while social security data do not contain details of national seafarers covered by social security systems in other countries.

### *Certificate verification*

Under amended Article 25a of Directive 2008/106/EC Resolution 5, there is a requirement for maritime administrations to verify seafarers' certification when requested to do so by other administrations (or other relevant parties). As indicated above, in some instances, it is possible to verify CeCs and CoCs online, but this is not always the case:

**So we have an online verification system that any company ... any shipping company that kind of registered to use it, or an administration that registered to use it, can check the details of a certificate of Competency that we've issued, that tells them whether it's valid or not, what capacity limitations that it should have, and that sort of stuff. So there's online verification there.**

(MCA, UK)

**Interviewer: Do you have an online verification system?**

**Interviewee: No, not yet... for the time being we are in the process of having this possibility of checking the validity online. We do not have this process ... you can call us, or you can go to one of our office.**

(Directorate of the Merchant Marine, Spain)

Some of those we spoke to referred to verifying a sample of CeCs and CoPs,<sup>83</sup> for practical reasons:

**Interviewer: Will you validate every sort of certificate then? Or just a random...**

**Interviewee: No a sample, a sample, because otherwise it would be impossible.**

(EMSA)

CoPs are less often systematically verified and in some instances are generally not verified at all, again reflecting regulatory requirements:

**The STCW conventions, forces us to check for CoCs, not for CoPs, to check those validity and that they are really issued, so that they are not false or anything.**

(Federal Maritime and Hydrographic Agency, Germany)

Certificate verification is complex and time-consuming, but it is also central both to the safety of the sector, and to the key purpose of this project: understanding numbers of seafarers with the range of qualifications working across the EU.

### *Inconsistencies: key messages*

As indicated above, inconsistencies between and within data sources make appropriate and robust comparisons (between countries, over time and so on) difficult or impossible to achieve. In addition, many of these kinds of issues raise questions about the accuracy of the underlying data, and therefore the reliability of extrapolations made using such data.

<sup>83</sup> In this particular case, checks are made for the most part in response to apparent inconsistencies within the supplied dataset.

This has implications for the development of an EU-level data collection system. First, a system that avoids sampling should be considered. If this were not possible, then a consistent approach to sample selection and size, data collection methods and regularity, as well as data adjustments, would be essential. Second, arrangements for regular, detailed and methodical accuracy checks, including certificate verification, would be of particular importance in ensuring robustness and reliability. However, perhaps of most importance is the underlying reason for collecting the data. The sub-sections above make it clear that data collected for one purpose generally cannot be used to effectively address another. This suggests that a system dedicated to describing the seafaring workforce is the only way to ensure the collection of accurate, reliable, detailed and relevant data.

## Gaps

As the sections above have made clear, there were also gaps within the data sources we identified. For example, it was apparent that, in some circumstances and for some data sources, certain groups of seafarers and/or certain certification types, might be excluded from the dataset. In addition, some data sources lack specific detail on seafarer characteristics and the ability to distinguish between groups of seafarers.

### *Exclusion of some groups of seafarers*

In the main, the data sources identified in the project include details of both national and non-national seafarers (including seafarers who were non-EU citizens). For example, certification systems generally endorse all those working on vessels flagged to their Member State, regardless of the individual seafarers' nationalities:

**We do have also foreign seafarers, maybe it's more correct to say there are seafarers who ever applied for German document, maybe a foreign person took part in a German approved course, or a foreign person just studied at in German or so on. So there is no difference, and there is even no difference between EU citizen, or third party citizens.**

(The Federal Maritime and Hydrographic Agency, Germany)

It is also important to note here that, as described above, social security systems are subject to specific regulations in this regard:

**The Law of the ship's flag governs, so that if the ship has a Spanish flag, all those who work on board must be subject to Spanish social security. There are some exceptions to this flag or ship flag law, which is established in community regulations or in social security agreements signed with various countries.**

(Social Institute of the Navy, Spain)

However, as described in the sub-section on Social security data, sometimes seafarers are able to choose where to make their social security contributions, and so may choose to do so in a country offering what they perceive to be more attractive benefits.

Of course, the corollary of this is that seafarers who train or obtain their certification outside their home Member State, and are working on a foreign flagged vessel, are not always included in national records:

**If he doesn't ... apply for any medical certificate, or any other personal certificate, or hasn't attended any maritime schools in Sweden, and of course hasn't been on a Swedish vessel, we wouldn't have him in our system.**

(Swedish Transport Agency)

This could result in various levels of inaccuracy, depending on both the data source and the specific Member State context:

**It's not really accurate, because there a big part of the Belgian national seafarers with Belgian national who do not sail under Belgium social security. ... we have one Belgian school that delivers officers ... they deliver 200, more or less 200 potential officers, and I see which will be afterwards in the Belgian social security, its maybe 30 or 40 so the question is, the other 160 each year, where do they go? ... you have others who have disappeared to work on the flags of convenience, it's a large part of young people, because they earn lots of money, because they don't have to pay taxes, or social security contributions... so I don't think it's very accurate.**

(National Social Security Office, Belgium)

Caution is also needed in relation to data sources based, for example, on membership – so, as indicated above, a shipping association may only have details relating to the vessels operated by their members, which may not be the entire national fleet, may exclude certain ship types and so on:

**That average is not for the whole fleet, for our member fleet which is around 60-70% of the Spanish Control Fleet, they have we have that, okay, and ... we have ours depending on the ship type, 30% that is not members.**

(Spanish Shippers Association, Spain)

### *Exclusion of some certificate types*

Some sources holding certification data record all certificate types, as well as the supporting documents used in applying for each certificate and any limitations. Others, by their very nature, are more restricted. For example, as noted earlier, MET institutions, which award CoCs and CoPs, do not also cover CeCs; while maritime administrations, which issue CoCs and CeCs, sometimes do not have information on CoPs as they are not always responsible for their issue. There is also variation by rank, with deck officers holding CoCs (or CeCs if their certificates are being recognised by a different administration), and ratings (i.e. ABs and OSs) only required to hold CoPs. In other instances, there are no records of supporting documents and/or limitations. In addition, those working in areas that do not require commercial endorsements or have different certification arrangements, such as yachting, are often, but not always, excluded from sources of certification data, while the situation around those working on smaller vessels can be similarly mixed:

**The pool list includes all the people under Belgium social security, and then on seagoing vessels, and then it's not that clear: it's the bigger vessels at least 24 meters, and they have to accommodate at least 12 persons, but it can be cruise ships, and maybe even bigger yachts that have a commercial objective, because now you have the sector also for private**

**cruises, large yachts which can accommodate 12 persons and crew which you can rent. That's also because it's a sea going vessel; the social security is applicable.**

(National Social Security Office, Belgium)

Even in the case of seafarers' certificates, therefore, it is important to be clear about which seafarers and which certificates are included within a particular system and under what circumstances.

### *Limited detail on seafarers' characteristics*

As we have made clear, one of the main aims of this project was to consider the coverage of a key set of seafarer details (Table 2) within each of the various potential sources of data. Both the desktop review and case study interviews indicated substantial variation in this coverage across the data sources identified in the project, both in relation to its public availability and the extent to which it was possible to positively establish the presence and, most importantly, absence of specific seafarer details within non-accessible datasets (see Tables 4 to 6, and Appendix Tables A2 and A4). This is not to say, of course, that the data are not detailed, or that there is not considerable planning and development in their collection:

**The level of detail is very important – to know the sector and to be able to legislate according to its needs. Statistical series have been maintained for more than 20 years, but the level of detail has increased over time.**

(Social Institute of the Navy, Spain)

**Interviewer: How detailed is the Maritime Monitor Data please?**

**Interviewee: I think only rank, and I think they were actually planning to look a little bit more into diversity, so the next version might also include some more information about female participation in the sector. ... The last version, as far as I can remember, doesn't include any age information, nothing. ... Maybe that going to change because the diversity question becomes also important for the Dutch sectors, but so far it wasn't available, this information. ... No, so far, there was no need for this type of specific information, to do our work – let's say our policy work, to assist the work of the industry. So, so far, this general information was enough for the sector.**

(Ministry of Infrastructure and Water Management, Netherlands)

Rather, data holders' policy and related interests differ and, as a result, so does the detail they need to collect:

**Interviewer: ... you wouldn't have details in terms of rank, in terms of department, it's just officers and ratings?**

**Interviewee: Not so much, no, only in some ships. We are not interested in the time or the statistics in general, but only in trying to show how the total employment changes in time, the evolution in time, but we don't have, we have not to my mind, any .... detail for ranks and so on.**

(Shippers Association, Spain)

Necessarily, this also often reflects the type of data with which the source is concerned. For example, population surveys, collecting information on employment within a sample of the wider working population, and METs, focused on training, tend not to have detailed data on rank:

**Age, and nationality, but not specific what they work with ... but I guess there's only one occupation ... it says if you are a seafarer or not.**

(Statistics Sweden)

**We don't keep their rank I don't think ... No it's not something we ask, I think we have asked for it in the past but I think it got removed because it wasn't a, it's not something we need to hold.**

(Warsash, UK)

Similarly, data on nationality are often collected to allow comparisons between the Member State and all other countries, rather than so that a breakdown of seafarer nationalities could be considered:

**We make no distinction anymore between the Spanish and the other EU nationals, and non-EU nationals.**

(Shippers Association, Spain)

**We do record nationality, no not correct. We, the only question we ask is whether or not the respondent is, has the nationality of the country...Because we can identify workers with a foreign background in the survey, however we cannot identify where they originally came from, so that's why the question of nationality is not in there.**

(Eurofound)

This can also be the case with certification systems. For example, when a CeC is issued, the country the certificate was issued in is recorded (as the country of recognition), but the nationality of the seafarer may not be:

**Interviewer: Does it mention your nationality specifically in terms of the CECs, will it say what your actual nationality is?**

**Interviewee: No it does not mention your nationality, but if it's a CEC country of recognition.**

**Interviewer: So you could say, say if I applied for a captain certificate to the Netherlands, I would get a Netherlands certificate but it would say it's a UK application based on a UK document?**

**Interviewee: Yeah, it would mention something like on behalf of the government of the United Kingdom, and something else. The name of the UK is quite long but it would also say the Federal Republic of Germany, so it mentions what country we are recognising.**

(KIWA Register BV, Netherlands)

Nevertheless, it was also apparent that in some instances data that might have been relevant within a particular source may be missing altogether. This was the case particularly in terms of sex and nationality:

**Interviewer:** Do you record sex as well?

**Interviewee:** I don't know frankly. ... Probably no.

...

**Interviewee:** when you have your certificate, your physical certificate, this piece of paper in which it is stated that you, Mr blah, blah, blah has the rank of 2nd engineer, it is me of course signing this paper, we have no reference if you a foreigner or you are a Spanish citizen.

(Directorate of the Merchant Marine, Spain)

### *Inability to distinguish between groups of seafarers*

Relatedly, the interview data confirmed the desktop review findings in indicating that, for the most part, data sources are not able to distinguish between active and inactive seafarers. Significantly, even systems holding data on certificates are frequently unable to determine whether a seafarer is active. Of course, certain levels of sea time are required both in order for a seafarer to obtain STCW certification and so that their certification can be renewed. This is the case for both CoCs and CoPs, which have a maximum validity period of five years. However, once a certificate is obtained, it is not possible to tell whether the seafarer continues to actively work at sea throughout the period for which that certificate remains valid. As a result, those who change to work ashore, leave the sector or retire during the period for which their certificate is valid continue to be included for all of that period (i.e. potentially just under five years). It is difficult to estimate the degree to which this inflates the data, but the UK Department of Transport adjusts its annual figures by 16% to account for this (see the Data adjustment section above and the Good practice section below), with both EMSA and the Swedish Transport Agency making similar adjustments. Again, these were issues that our interviewees were well aware of:

**We don't know once they've obtained that qualification what they do with it. A few people, quite a few people, work ashore and they might not ever really go to sea after the first 6 months or whatever... We don't record any of that... for example if somebody gets their licence and they're 40 years old, let's say for example, its valid for 5 years, they decide at 42 they want to work ashore, they've only used two years of that licence ... it's still valid. We wouldn't know if they're using it to sail or not.**

(MCA, UK)

**We have like an algorithm for that, so we, I don't exactly know but they have to get any kind of certificate issued from Swedish Transport Agency issued within the last three years, or they have been at sea for the last 18 months, of those parts we call them active. ... Actually we don't have a clue if the person is working at like a clothes store, but they do have a sea certificate, but we cannot know for sure that they are at sea. We make an assumption.**

(Transport Agency, Sweden)

Similarly, publicly available employment data, as indicated earlier in this report, are generally not specific enough to determine whether an individual working in the water transport sector is in fact an active seafarer. In addition, such data are often collected using household surveys, which may miss workers such as seafarers who spend long periods of time working away from home.

The exception here are data obtained from social security or tax-related information, which generally can show whether a seafarer is active (although, as previously indicated, these data sources often lack other types of detail, for example, seafarers' rank).

Similarly, many data sources, including those based on certificates, are unable to determine whether a seafarer is working at the rank for which they are qualified:

**Basically that something that we don't know, so if you are a captain and you work as a chief mate for instance, there is no way for us to know, except when you apply, then we can see it of course, but it is not registered as such.**

(KIWA Register BV, Netherlands)

**You can have a master ticket or a shipmate and working as a second mate. We know the other way round is not possible, but that is possible, but because we would need to for instance know crew cross check and things... and that is the problem, we have to know exactly how many, for that you would need to collect a sample somewhere with some countries' companies and try to see how many people with higher certificates are working in positions below on board. But from the data we have it is not possible.**

(EMSA)

Again, there were exceptions here. Our interviewees explained that, in Sweden shipping companies are required to report sea time records to the Maritime Administration (though, as this is done on a yearly basis, there can be a time lag), which include details of the time served onboard ship and the rank worked at.

Relatedly, both certificate-based and social security data generally cannot distinguish those working at sea from seafarers with an unrestricted licence who are working in domestic water only (either through choice or circumstance):

**If somebody's got a unlimited master's, that not to say that they're just not working off the coast as a chief mate for example, so we couldn't guarantee who working coastal; we could only tell you these people might be.**

(MCA, UK)

**We have the information of those workers who are included in Spanish social security regardless of the navigation they carry out.**

(Social Institute of the Navy, Spain)

### *Gaps: key messages*

Considered together, the desk review and case study data highlight a number of gaps in a range of the data sources identified. However, it is important to reiterate at this point that the findings reported here reflect the data that were publicly available during the desktop review, together with the responses from follow-up questionnaires, email correspondence and interviews. So, whilst we can accurately describe the picture these data paint, we cannot be entirely definitive about the specific detail – or perhaps more importantly the lack of specific detail – held by each data source. Nevertheless, the findings suggest limitations within each type of data, as well as within specific data sources. In some cases, these reflect the nature of the source itself, while in others they may

reflect particular national arrangements and contexts. The implication, though, is that in almost all the sources identified in the project, some seafarers are missed altogether and/or some key details on seafarers are unavailable. This again raises questions of accuracy and reliability, but more importantly it indicates that making international comparisons either over time or between groups of seafarers, particularly at a fine-grained level, between Member States and over time on the basis of the currently publicly available data would be difficult and, in some instances, impossible.

As with inconsistencies within and between datasets, there are implications of gaps in data sources for the development an EU-level data collection system. In particular, such a system should not only include all seafarers, but it should also collect information to consistently and accurately populate an agreed key set of details from which strategy and policy could be appropriately developed. Of central importance to this is the development of a shared definition among the sector's key stakeholders at the national and EU levels of 'a seafarer', an 'active' seafarer and the characteristics of seafarers that must be understood to allow for planning for the sustainability of the profession.

## Double counting

Finally, the potential for double counting (that is, including a single seafarer more than once and/or including individuals that should not be counted as seafarers), was also evident in relation to various sources. For example:

- Data based on certificates may double count those holding more than one certificate.
- Similarly, these sources may misclassify those no longer working at sea or not serving at their certified rank.
- Where data sources include seafarers of a range of nationalities, it is not always possible to extract data on each nationality separately.
- Where data sources include employment in sectors other than the maritime sector, it is not always possible to extract data specific to seafarers separately.

Our interviewees confirmed this potential for double counting and gave some further useful insights. For example, some certification system records are kept by certificate rather than by seafarer. For some, extracting data by seafarer, as opposed to by certificate, is possible, but it is not something that is routinely done:

**We should be able to do it, although it would be very tricky because they have so many functions, so you would have to cross-reference different lists to get that answer, I think, so we can look easily at the individual level, so to speak, like if you give me a name and date of birth, it is easy for me to find out. But if you're really asking me, how many people hold a master licence, and a chief engineer licence for instance ... it would take me some time for me to get those criteria straight enough for our IT department to get those numbers.**

(KIWA Register BV, Netherlands)

However, there were many instances where databases are very flexible:

**It depends what the stats you are really after. ... We have the ability to .... strip out everything, so that we're only ever counting the highest unlimited capacity in that dataset series at least.**

(MCA, UK)

The EMSA STCW-IS database is a particularly good example here. As our interviewee explained, despite receiving data from multiple sources, procedures are in place to avoid double counting:

**We get ... seafarer unique identifier, exactly to avoid the duplication, this is the sign. Then they can send the name if they want, but usually...The thing is that those that identify the seafarer, the names and the number of certificates we don't get, that goes through the anonymised form, and then the work to avoid duplication, and then also, although the administration ... initially, there's, the name. So what when ... the system gets the number, we cannot do it the other way around.**

(EMSA)

The potential for double counting, therefore, is often context dependent and, like many of the other limitations considered above, generally reflects the data source itself. METs train seafarers to meet various international requirements, bodies issuing certificates need to ensure that seafarers have met required standards, and so on. Their aim, therefore, is not, for example, to be able to distinguish individuals among those holding more than one certificate, so it is not always possible for them to do so.

### *Double counting: key messages*

Our findings indicate that, under some circumstances, seafarers may be double-counted within systems, and of course this may also be a danger when data from several systems are combined. Again, this has important implications for an EU-level data collection system. Such a system would need to be designed to allow for individual seafarers to be effectively tracked across their maritime careers. The means to do this are in place, as seafarers have unique identification numbers as required by the ILO's Seafarers' Identity Document Convention (Revised), 2003 (No 185).<sup>84</sup> It would therefore be important to ensure that such a system made effective use of these unique seafarer identification numbers, and so was able to avoid the potential to double count, for example, those holding more than one certificate, or those working for a company based outside their country of origin and/or on a vessel flagged to a third country.

## Good practice

The Data sources and Limitations sections above have described the extent and coverage of the sources of data identified in this project, and the limitations to those sources, in particular in relation to their potential to accurately and reliably map the seafaring workforce. We have repeatedly indicated that the picture painted is complex and mixed, with a range of inconsistencies, gaps and potential for double-counting. However, these sources also include examples of good practice. For the purposes of this project, good practice has been taken to mean an approach or way of collecting, manipulating or presenting relevant data, that mitigates

<sup>84</sup> For detailed information about the ILO's Seafarers' Identity Documents Convention, see: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---sector/documents/publication/wcms\\_177102.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_177102.pdf)

one or more of the limitations we have identified in the sections above. This does not necessarily mean that the example dataset is 'ideal', or even that it is the most comprehensive data source identified in that particular country. Rather, our intention is to indicate that the good practice exemplified suggests that a particular limitation can be successfully addressed. In addition, as we have repeatedly pointed out in the preceding sections, the contexts in which such good practices develop are often key determinants of their function. As such, this necessarily may limit the wholesale transferability of systems in full from one Member State to many others, but it also provides an indication of what supports success in this regard. In each case, therefore, we have sought to consider the contexts or underlying mechanisms that are relevant to the examples of good practice identified. It is also important to be clear at this point that the examples presented below do not represent a comprehensive list of all such instances of the good practice in question. Rather, they are the examples that were clearest from our mixed-methods approach to data collection. In some cases, more than one form of good practice is identified in a single example.

From the findings, we have identified six broad forms of good practice, each of which result in certain advantages in relation to the capture of accurate data on the seafaring workforce across the EU, and/or its flexible use for strategic planning. These are considered in turn below, and are summarised in Table 7.

As the findings described above have made clear, certification datasets generally hold the most comprehensive set of data on seafarers. However, for the most part, it is not possible to distinguish certificate holders who are active at sea from those who are no longer working as active seafarers, within a dataset. Whilst this may only apply for a maximum of the five years for which certificates are valid, it means that the data likely overestimate the number of those actively working at sea (see the Data adjustment section above). Our findings point to two practices that are intended to address this limitation, the first of which leads to an estimated, and therefore less accurate picture, than the second.

First, a statistical adjustment to account for inactive seafarers can be made, as is the case, for example, in the annual Department of Transport Seafarers in the UK reports, which are based on Maritime and Coastguard Agency data (Table 7, line 1). As previously noted, this requires a transparent and consistent approach to data cleaning and adjustment with regard to the basis for the estimated levels of inactive certificate holders, and regular review of both this basis and the methods used for the adjustment itself.

Second, this limitation can also be addressed by combining certificate data information with that from a data source that holds information on employment status, such as tax bodies and, in particular, seafarer-specific social security systems. Examples of this kind of good practice are seen in Spain and Sweden, where the Ministry of Labour, Migrations and Social Security and Statistics Sweden respectively use multiple datasets in combination (Table 7, lines 2 and 3). Similarly, the Greek Seafarers Labour Directorate cross-references a number of data sources and, as a result, is also able to identify active seafarers (though, as noted in Table 7, line 4, in this case there may be a time lag of up to two years on this information). These kinds of systems require the mechanisms for co-operation between various bodies and/or linking of datasets, and are more often found in countries which have a tradition of seafaring and so find the instigation of a seafarer-specific social security system appropriate.

Third, this approach is in place in Belgium, where the involvement of the social partners also allows the use of the Seafarers Pool List for market stabilisation, for example through attempts to minimise the under-employment, and indeed unemployment, of seafarers (Table 7, line 5; see also the Social security data section above). As noted earlier, longstanding collaborative and involvement traditions between the social partners across sectors provides the underlying context for the evolution of such an approach.

These examples of the first three forms of good practice all allow for a more accurate picture of the seafaring workforce, with the third clearly showing how such information can form the basis of a system used to benefit both seafarers and their employers.

The remaining three forms of good practice each relate to overcoming limitations of accessibility to and flexibility within data sources. The first of these, public accessibility and customisable tabulation, mean that data can be used flexibly by a variety of users to a range of ends. While it should also be noted here that the Department of Transport Seafarers in the UK reports (Table 7, line 5) are a particularly good example of very detailed publicly accessible data, good examples of where data are also available for flexible use include the Croatian Ministry of the Sea, Transport and Infrastructure and the StatFin database in Finland (Table 7, lines 6 and 7). An interactive website with capacity for producing user-driven custom tables and datasets is a requirement for this form of good practice. Again, the demand for this kind of facility may be more common in countries with long seafaring traditions.

Secondly, sufficient flexibility to be able to provide summaries of data both by seafarer and by certificate type again allows a greater range of analyses. Examples include the Federal Maritime and Hydrographic Agency in Germany, the Ministry of Transport, Mobility, and Urban Agenda, Merchant Marine in Spain and the KIWA Register BV in the Netherlands (Table 7, lines 8, 9 and 10). Here a systematic and comprehensive database of STCW certification classification is essential to allowing a greater range of analysis and comparison types.

Finally, the inclusion of sufficient specificity of occupation in population data to allow the identification of seafaring within a broader category, such the Water Transport sector (see the Employment data section above), opens up the possibility of national level comparisons within the sector and/or more widely. Within our study, this was the case in the Finnish database StatFin (Table 7, line 7). This may reflect both the tradition of seafaring and/or relatively high numbers of seafarers within the population.

Each of these three forms of good practice allows a variety of users to carry out data analyses and comparisons within and/or between datasets to a range of different ends. This, when combined with the accuracy of data obtainable through the first three forms of good practice, is the basis from which strategic and responsive planning can be developed for and by the industry and its workforce.

There is, therefore, much to be learned from the ways in which the many sources identified in this project collect data and, in particular, the contexts and underlying mechanisms which support the evolution of various forms of practice that enhance data accuracy and flexibility. These are summarised in Table 7, with practices relating to data accuracy highlighted in yellow, those relating to flexibility in blue and those relating to both accuracy and flexibility shown in green.

**Table 7: Summary of examples of good practice and the contexts / underlying requirements that support them**

KEY:		Good practices relating to data accuracy	Good practices relating to both accuracy and flexibility	Good practices relating to data flexibility
	Good practice	Context / underlying requirements		Source
1	Statistical <b>adjustment for inactive seafarers is made</b> <sup>85</sup> . The level of detail held in datasets is not always clear from <b>publicly available material – this is the exception.</b>	Very detailed publicly available information <sup>86</sup> requires a detailed underlying dataset and a consistent approach to data cleaning and adjustment. This may be more common in countries with a tradition of seafaring		Department of Transport, Seafarers in the UK Industry: 2019 Report
2		Combining multiple datasets, which include data from tax bodies (particularly seafarer-specific social security systems) allows the construction of very detailed data with accurate information on seafarers' active status. The mechanisms for co-operation between various bodies and for linking data across multiple sources may be more common in countries with a tradition of data sharing and combination, and seafarer-specific social security systems may be more often found in countries with a tradition of seafaring		Ministry of Labour, Migrations, and Social Security (Social Security of the Social Institute of the Navy), Spain
3	The ability to <b>distinguish active from non-active seafarers</b> , usually achieved through <b>combining multiple datasets</b> , gives a more accurate and current picture of the labour force – see also 1	Cross referencing multiple datasets, such as seamen's book, sea service records, and/or a seafarer survey, allows the construction of detailed data with information on seafarers' active status. Again, this may be more achievable in countries with a tradition of seafaring		Statistics Sweden <sup>87</sup>
4				Ministry of Maritime Affairs and Insular Policy - Hellenic Coast Guard (HCG) – Seafarers Labour Directorate, Greece <sup>88</sup>
5	<b>Co-operation and involvement</b> of the social partners and tax body allows the construction of a very <b>comprehensive dataset</b> , including <b>active sea status</b> , and its use for labour market stabilisation	In the context of longstanding national traditions of social partner co-operation, the mechanisms for co-operation and involvement among the social partners, as well as and the tax body, are more likely to be in place		The National Social Security Office (NSSO) -Seafarers Pool List, Belgium
6	<b>Public accessibility</b> and <b>customisable tabulation</b> results in data that can be used flexibly by a variety of users to a range of ends	Interactive website with capacity for producing user-driven custom tables		Ministry of the Sea, Transport and Infrastructure, Croatia

85 Figures for 'active seafarers' obtained through statistical adjustment of 16%.

86 The number of UK certificates is provided by the UK Maritime Coast Guard Agency to the Department of Transport for this report.

87 The Swedish occupation register combined with information from tax authorities and the department of Labour

88 Seaman's book records (it should be noted that these may be up to 2 years old at the point of inclusion), ships article records, and Seafarers Survey (done by the Hellenic Statistical Authority)

	Good practice	Context / underlying requirements	Source
7	<b>Maritime specific information</b> available <b>within national data on employment</b> across sectors is unusual and allows comparison of seafaring with other occupations at the national level	A tradition of seafaring and/or relatively high numbers of seafarers within the population, may mean that including detail on seafaring as part of a comprehensive and regular national population survey is more likely	StatFin Database, Finland
8			Federal Maritime and Hydrographic Agency, Germany
9	The flexibility to be able to provide <b>data summaries both by seafarer and by certificate</b> allows a greater range of analyses	Systematic and comprehensive database of STCW certification classification	The Ministry of Transport, Mobility, and Urban Agenda, Merchant Marine, Spain
10			KIWA Register BV, Netherlands

As part of the case studies, the project was also able to explore participants' views on the development of an EU-wide data collection system.

Interviewees made it clear that, for the most part, organisations held far more data than they made publicly available, and in some instances than they used internally. This is not surprising, but is relevant when considering the basis from which an EU-wide data collection system might be developed:

**Interviewer: How much of your data is actually available? Or is it not sort of available?**

**Interviewee: Available right now, only CoCs.**

(Federal Maritime and Hydrographic Agency, Germany)

**No, to be honest we don't make any statistical use of this information we have. Unlike EMSA that, you know, that is STCW overview for the whole of Europe, we don't have such a similar use of our data for seafarers from Spain, which is something ... it's on the things to be done in the coming year from our side.**

(Merchant Marine, Spain)

Most of our interviewees felt that an EU-wide data collection system would offer benefits, either: in terms of providing an overview of the European fleet, and so also allowing comparisons between Member States; and/or to identify issues in the labour market, such as shortages of seafarers of particular ranks. Many also recognised that such a system would be difficult to instigate and maintain:

**I think to have the visibility of data like that is always a good thing I think. It gives you a good picture of what is happening in the industry. I think it is going to be a difficult task, anything stats based, especially when you're looking at this sort of number of people across a huge industry like shipping, it's going to be a challenge.**

(MCA, UK)

**I would think this is really useful. I mean, we have the statistical data we provide for the STCW, which is OK. ... But we don't have a picture of the workforce of the maritime in the EU, we don't know whether they are working onshore, or whether they are working onboard, or whether they are looking for job opportunities or not, or the difficulties they are facing. ... There's a lot of discussion coming about this, the scarcity of seafarers in the EU, but we don't have tools to check what is the degree of the scarcity. ... We have the big picture OK, but we should go to the detail.**

(Merchant Marine, Spain)

**I mean, I think it would, because we're always looking to say, well, you know, how many seafarers are out there? And actually to be able to say to a cadet, or someone who's thinking about a career ... the numbers are slightly declining ... you can show that it is a career worth doing.**

(Warsash, UK)

However, others were less sure about the benefits of an EU-level data collection system and what value it could add over and above existing datasets at this level:

**I think what an important question is always – if you want to create a new dataset – is, what are we going to do with this information? What is the role of this information? ... What benefits is it necessary to aggregate it or not?**

(Ministry of Infrastructure and Water Management, Netherlands)

**I'm a little bit curious what the difference from this would be and the collection that EMSA is detracting from us each year.**

(Swedish Transport Agency)

About half of those we spoke to felt that, if such a system were to be implemented, their organisation would be willing to participate. Some, of course, stressed that this would only be possible following various levels of internal approval, and as long as the data were anonymised and adhered to EU General Data Protection Regulation (GDPR) and other relevant regulations. This issue was something those operating at the EU level were, of course, already very familiar with:

**Well, the problem is with access to data. I think is the main problem, it's what we ... The industry may be more open to it than administrations ... even if there is no data protection. They say data protection is a problem.**

(EMSA)

Interviewees also talked about factors that might support the implementation and running of such a system. For many, this revolved around the temporal and financial implications and related technical difficulties of, for example, their organisation contributing data, as well as an understanding of the value their participation would bring:

**Time and resources. It's actually, it's the answer to everything these days. ... It depends if the costs weigh up from the benefits. I've been in the working group ... they're supposed to have a centralised database with all the certificates in this inland navigational .... Many of the Member States have a lot of difficulties to actually connect their own system to the EU database ... it's a technical difficulty and it costs a lot of money and hours.**

(The Swedish Transport Agency, Sweden)

Overall, this suggests some appreciation of the potential benefits of collecting data across the EU, as well as the difficulties this would entail. Nevertheless, participants' engagement with the idea of an EU-wide data collection system, as indicated by the detailed quotes above, provides some encouragement for its potential feasibility and acceptance among those stakeholders whose support and involvement would be key.



The sections above have presented the project’s findings on the extent and coverage of existing data sources and their limitations. Table 8 gives a broad summary of both these areas by each of the three main data source types that have been the focus of the study. This is not intended to be comprehensive (the detail has been presented above), but rather to provide a broad overview, in particular in relation to the strengths and weaknesses of each data source type, so that the potential for mitigating areas of weakness within one data source type with those of strength from another might be identified. This is something we return to below. In addition, though, Table 8 further highlights the considerable variation both within and between data source types in their extent, coverage and limitations.

Taken together, the project’s findings highlight to two key factors:

- Relevant data on the maritime sector workforce are collected through at least one source in all 30 of the countries included in the project
- No single data source provides ‘problem-free’ information on seafarer numbers

This confirms previous findings indicating that it is not possible to paint a fully current and accurate picture of the European maritime labour market using publicly available data as they stand (Task Force 2011; Sulpice 2011). This is primarily because of the widespread variation in their accessibility and the fact that none of the data sources which hold information on seafarers at the Member State level is specifically intended to count and keep track of sufficient detail on all seafarers to be able to paint such a picture. Also, the data that are held, are often collected, categorised, stored, adjusted or checked in ways that make comparisons between sources, groups of seafarers, or countries, or over time, difficult or impossible.

This typically reflects the contexts in which the data are collected. As a result, countries with strong traditions of seafaring may have specific arrangements or systems that others with a smaller seafaring population do not; countries with strong traditions of co-operation between the social partners and/or other key stakeholders and institutions may have collaborative arrangements in place that those without such traditions do not; and so on. This makes the wholesale transferability of the detail of specific data collection arrangements from Member State to Member State particularly difficult to successfully and effectively achieve.

However, in suggesting that national level data on numbers of seafarers do exist across Europe, the findings also indicate that drawing a current and detailed map of the European seafaring workforce is possible. Further, they suggest that these data could be used to give a more accurate indication of seafarer numbers if a consistent set of details were made publicly available across Member States. In addition, consideration of both the limitations inherent in the existing data sources, and the examples of good practice highlighted above, provide an important starting point for exploring how a full-scale European level data collection system might be developed.

Key factors in this regard include the following:

- Systems holding certification data collect a range of seafarer details, but these are not always publicly available and generally cannot distinguish whether a seafarer is active at sea or not
- Social security or tax systems can provide an indication of whether a seafarer is active at sea or not, but generally do not hold information on seafarer details such as rank
- Where these data can be linked, a detailed and accurate picture can be obtained and, under appropriate circumstances, can form the basis from which the seafaring labour market can be tracked and strategic policies for the sustainability of the profession developed

From this basis, the section below concludes this report by considering the implications of the study's findings for the development of an EU-wide data collection system.

Table 8: Summary of the coverage, strengths and weaknesses of the different types of data

	Certificate Data	Employment Data	Social Security Data
<b>Coverage</b>	<p><b>Strength:</b> Certificate data include all those with a certificate issued by the national administration. As well as national seafarers, it may include foreign seafarers with CeCs, or those who have trained at national MET institutions (regardless of nationality).</p> <p><b>Weakness:</b> Some sources of data do not cover certification type – for example METs do not have data on CeCs.</p>	<p><b>Weakness:</b> LFS data only cover a small sample of the population, typically about 1%.</p> <p><b>Weakness:</b> Some sources of data may only include those working in specific sectors (e.g. Shipping Association data only include their members).</p>	<p><b>Strength/Weakness:</b> Social security data include all those enrolled under that system. It may not include national seafarers working on foreign flagged vessels, and may also include non-national seafarers that are registered on that system.</p> <p><b>Weakness:</b> Not all countries have seafarer specific tax/ social security arrangements.</p>
<b>Details held</b>	<p><b>Strength:</b> Provides (in many cases) detailed seafarer specific information.</p> <p><b>Weakness:</b> Cannot determine if a seafarer is actively working at sea or working at the highest rank they are qualified for. Where data sources include seafarers of a range of nationalities, it is not always possible to extract data on each nationality separately.</p>	<p><b>Weakness:</b> Does not provide seafarer specific detail (e.g. can only say people work in water transport), and often sector rather than employment data.</p> <p><b>Weakness:</b> Not always possible to extract data specific to seafarers separately (i.e. the category of water transport may include non-seafarers).</p>	<p><b>Strength:</b> Shows whether a seafarer is actively working at sea.</p> <p><b>Weakness:</b> Cannot say if a seafarer is working in domestic waters/or deep sea, does not always have seafarer specific data (such as rank).</p>
<b>Varying time frames</b>	<p><b>Weakness:</b> Time point at which data are collected can vary. For example, EMSA is provided with data on a yearly basis, on a fixed date, while administrations get data every time a MET training course finishes.</p>	<p><b>Weakness:</b> Although surveys like the LFS are done on a regular basis, times frames (e.g. quarterly, yearly), as well as the range of years covered, vary.</p>	<p><b>Strength:</b> Collected regularly.</p>
<b>Publication time lag</b>	<p><b>Weakness:</b> Often there may be a time lag between data being produced and publication – i.e. EMSA publication is usually 16 months after the data are provided.</p>	<p><b>Strength:</b> LFS surveys are usually published on a yearly basis, with some countries publishing even more frequently, on quarterly, or month basis, so the data are up-to-date.</p>	<p><b>Strength:</b> Data are very up-to-date.</p>
<b>A range of bases for the data sources</b>	<p><b>Weakness:</b> Different systems collect data for different purposes, which is reflected in the details that they collect.</p>		

	Certificate Data	Employment Data	Social Security Data
<b>Data adjustment</b>	<p><b>Strength:</b> Certificate data provide information on actual certification that seafarers have (i.e. no adjustments are made).</p> <p><b>Weakness:</b> Although the above is true, this does not take into account seafarers who have certificates, but are not actively working at sea. Thus, adjustments are often made within publications to take into account non-active seafarers, limiting comparability – this could be a strength if conditions of transparency, consistency and reliability were met across countries and over time.</p> <p><b>Weakness:</b> In publications, data are often sub-divided in different ways (e.g. ranks are classified as senior or junior seafarers).</p>	<p><b>Weakness:</b> Population data are frequently based on a sample which is adjusted to represent the entire population. This can over/underestimate a population group, especially for a group which is relatively small, such as those working at sea.</p> <p><b>Weakness:</b> As with publications relating to certification, population survey publications may publish data using different sub-divisions (e.g. showing different age groupings).</p>	<p>Unknown as such data are not routinely published.</p>
<b>Accuracy</b>	<p><b>Strength:</b> Certificate data are accurate for seafarers working on that nationality's flagged vessels or, in the case of the EMSA data, for those in the EU.</p> <p><b>Weakness:</b> Data may not actively represent seafarers working on non-national flagged vessels, do not accurately account for those that are not active at sea, and may misclassify those no longer working at sea or not serving at their certified rank.</p>	<p><b>Weakness:</b> May not include eligible seafarers as they may be away working at sea when the surveys are undertaken.</p> <p><b>Weakness:</b> Population data are frequently based on a sample which is adjusted to represent the entire population. This process can over/underestimate small population group, such as those working at sea, in particular.</p>	<p><b>Strength:</b> Provides a very accurate picture of current employment.</p> <p><b>Weakness:</b> Classifications used may differ from those used for seafarer ranks. Social security data only has details of those enrolled under the national system. It may not include those working on foreign flagged vessels, and may also include non-national seafarers who are registered on that system.</p>
<b>The potential for double counting</b>	<p><b>Weakness:</b> There is the potential for double counting where seafarers hold more than one certificate.</p>	<p><b>Strength:</b> No possibility of double counting.</p>	<p><b>Strength:</b> No possibility of double counting.</p>



## CONCLUSIONS

This project was designed to map existing data sources across the EU. It identified 93 sources of data from 30 countries: the EU 27, and Iceland, Norway and the UK. Table 9 outlines the available data in the most comprehensive sources identified in each country. For the most part, this is the national source of certificate data. However, in instances where a second data source holds significant additional detail, both sources are shown, as an indication of the potential for combining sets of data to provide a more complete picture.

The project was also designed to consider examples of good practice, any inconsistencies and limitations to current data collection, and any issues of transferability. The intention was to inform the development of practical protocols for how a robust and reliable EU-wide data collection system might be developed. This section describes the implications of our findings for building such a system and ensuring that it collects detailed, accurate, consistent and reliable data.

As we have stressed above, strategic planning and policy development require robust data that are comparable across countries and over time. The rapid pace of change within the maritime sector, also makes it particularly important that such data are as current as possible. Our findings indicate that certification systems provide the most detailed sets of data, both in terms of seafarer numbers and seafarer characteristics. However, these systems generally cannot determine whether or not a seafarer continues to actively work at sea throughout the period for which her/his certificate is valid. The most effective way to determine this is to consider seafarers' tax or social security information – in order to establish whether, and in what capacity, they are working. Combining these data consistently across all countries would produce a complete picture because the key element that is missing from certificate systems – an up-to-date indication of whether or not a seafarer is active at sea – could be supplied using systems which collect details of tax-related data, such as social security contributions (which, used alone, do not contain other key data, such as rank, which are included in certificate systems). This is an approach that our findings have shown is both achievable and effective, where the contextual circumstances are supportive – see, for example, the Belgian pool system.

A second approach would be the adjustment of certificate-based datasets to take account of the estimated number of certificate holders not actively working at sea. This approach, which is used, for example, in the Maritime and Coastguard Agency figures published by the Department

of Transport in the UK, is less accurate than an approach which links certificates with tax/social security data, but it might be consistently achievable in a wider range of national and sectoral contexts. Such an adjustment would need to be made on a consistent, transparent and reliably accurate basis across the EU, and should be regularly reviewed to ensure it continues to reflect the current situation. Our findings also highlight some important underlying requirements for any EU-wide data collection system, each of which has emerged from our exploration of the advantages and limitations of the various existing arrangements considered in the course of the project. First, it would be essential to establish an agreed definition of both 'a seafarer' and an 'active' seafarer. Second it would require agreement on a key set of certificate details (including, for example, sex, age and nationality, as well as rank and limitations), all of which would have to be presented in an agreed consistent format so that they could be collated across countries, and all of which must be made publicly available. Third, a methodological approach for adjusting or adding to these data so that they more accurately reflect those actively working at sea, as well as their consistent collation, aggregation and prompt, regular and full publication, would be essential.

Assuming that these underlying requirements were met, certificate data, enhanced to account for whether or not certificate holders were actively working at sea, could be used to paint a more detailed and accurate picture of the sector's labour force than is currently available from the existing data sources as they stand.

Our findings also indicate that, in addition to its core purpose, the context in which a data collection system is situated, is key in determining its development. Two elements of this context are of central importance in this regard. First, a long history of seafaring and recognition of the importance of the maritime sector to the wider economy. Where this is the case, countries more frequently have seafarer-specific arrangements in place in relation to, for example, social security or tax-related systems, and/or particularly detailed and well-developed seafarer-specific datasets. This reflects an understanding, developed over the course of this history, of both how to support the seafaring workforce, but also how to ensure that its key characteristics are appropriately captured and monitored for the purposes of such support. Second, a strong tradition of close co-operation between the social partners and, in some cases, other key stakeholders. Where this is so, it may underlie the development of collaborative arrangements, for example around the collation of data from a range of sources and/or systems, intended to develop and maintain a stable maritime labour market that benefits both workers and employers.

These contexts do not exist in all Member States and as a result, as we have argued above, the specificities of the good practices identified in this report may be difficult or impossible to transfer wholesale to all countries. However, they do exist at a European level and can be further concentrated through the collaborative development of an EU-wide data collection system, so providing the context in which the combination or enhancement of data sources referred to above might be achievable. Our findings also suggest, therefore, that it would be important for the sector's social partners, with key stakeholder support, to play a central role in the development of any EU-wide data collection system. In particular, their involvement would be key to ensuring that the three underlying requirements for a fully functioning and effective system were achieved and maintained. These include agreement on: the definitions of 'a seafarer' and an 'active' seafarer; a key set of publicly available certificate details; and a methodological approach for accounting for

inactive certificate-holders, as well as the consistent collation, aggregation and prompt, regular and full publication of the data.

As indicated in the Purpose and aims section at the start of this report, if these requirements were met on an EU-wide scale, the resulting data collection system would allow the assessment and monitoring of trends and changes in a range of key aspects of the sector, including:

- the sustainability of the EU maritime workforce across the cluster
- the education and training needs of seafarers
- the sustainability of the seafaring profession, including in relation to younger and female seafarers.

Finally, the focus of this study has been data relating to those working at sea, and we have been at pains to establish the extent to which existing datasets accurately and consistently capture this information. However, seafarers of course sometimes move into shoreside roles within the sector, or move out of the sector altogether. It was beyond the scope of the current study to comprehensively consider maritime professionals more broadly and the contribution former seafarers make to the sector more widely. Nevertheless, our research suggests that such information is not generally included within the data sources we identified. The exception within our findings is the Belgian system referred to above. Here our interviewee indicated that the potential to consider where former pool list registrants go on to work exists through their social security numbers and the NACE codes of all Belgian employers, and that as a result he was aware of the kinds of areas former seafarers tend to move into:

**Interviewer:** Say somebody was working ashore, but five years ago, they were working at sea. Could you see that in your records?

**Interviewee:** Yes. We could see ... I have the data we go I can go until 1800s ... So security number Belgian social security number, we can we can say that the key of the that person ...

**Interviewer:** But, it's easy to do it for one person. To do it for a whole group of people that would be time consuming wouldn't it?

**Interviewee:** It depends. It depends. It's on base of the national social security number we can interrogate database. It doesn't take that much time. It's automatic... For us, it will be easy because in the normal worker system in Belgium, to every employer has an NACE code, and on base of that code, we can we can see these employers afterwards, even ashore ... So that's possible. ... We see that the most of them in Belgium go to work for a shipowner, onshore ... to teach.

(National Social Security Office, Belgium)

It is important that future work in this area addresses the knowledge gap concerning the shore-based employment of former seafarers. This will provide a detailed and EU-wide understanding of:

- movement from sea to shore-based jobs, including retention rates and employment on shore, movement within the cluster and out of it

- the demand ashore for qualified and experienced former seafarers, including the value of seafaring qualifications and maritime know-how to employers in the maritime cluster.

As well as providing vital data and the opportunity to identify and monitor trends over time, a fully functioning and on-going data collection system covering currently active and former seafarers (whether employed within the sector or beyond it) would be also readily adaptable to meet other needs and to allow independent research. The current global pandemic has highlighted how quickly and unexpectedly change can come, and so also how rapidly the sector needs to be able to react to protect the wellbeing and livelihoods of its workforce. A consistent set of data based on certificates and including information about seafarers' activity at sea, is essential to accurately describe and monitor the European maritime labour market. Ensuring that these data are regularly collated and publicly available at the European level, and extend to seafarers' employment both within and beyond the sector following their at sea careers, would contribute to the development of the social partners' strategic approaches and policies for the sector and leave them better placed to respond decisively and appropriately to future development and crises facing the maritime industry.

**Table 9: Main data sources by country**

Country	Sources	Available data	Missing data	Advantages	Disadvantages
<b>Austria</b>	Statistics Austria (Labour Force Survey)	Sex, age (grouped), nationality (grouped), rank (basic marine occupation groups)	Limitations, underpinning documents, active sea status	Source of data	Only source of data and rank, age and nationality are grouped
<b>Belgium</b>	1. Federal Public Service Mobility and Transport, Directorate General Maritime Transport (Certificates) 2. National Social Security Office (Pool List)	Sex [1,2], age (DOB) [1,2], nationality [1,2], rank [1,2], limitations [1,2], active [2]	Underpinning documents	Co-operation and involvement of the social partners and tax body [2]	Excludes Belgian seafarers covered by non-Belgian social security arrangements [2]
<b>Bulgaria</b>	Executive Agency Maritime Administration (IAMA)			Source of certification data	No accessible data
<b>Croatia</b>	Ministry of the Sea, Transport and Infrastructure	Sex, age, nationality, rank, limitations, active sea status	Underpinning documents	Public accessibility and customisable tabulation	
<b>Cyprus</b>	Department of Merchant Shipping (part of the Ministry of Communications and Works)	Sex, age, nationality, rank, limitations, underpinning documents	Active sea status	Source of certification data	Excludes Cypriot seafarers with non-Cypriot seafarers' books or on non-Cypriot flagged vessels
<b>Czech Republic</b>	Ministry of Transport of the Czech Republic	Sex, age (DOB), nationality, rank, limitations	Underpinning documents, active sea status	Source of certification data and includes information from Seafarers' Books	Excludes CeCs
<b>Denmark</b>	Danish Maritime Authority	Sex, age (DOB), rank, limitations, underpinning documents	Nationality, active sea status	Source of certification data	Excludes seafarers with certificates issued outside Denmark. The questionnaire response indicated that sex is not directly recorded but can be obtained from the Danish CPR number (Social Security number)
<b>Estonia</b>	Republic of Estonia Maritime Administration	Age, nationality, rank, limitations, underpinning documents, active sea status	Sex	Source of certification data, includes active seafarer status	Only source of data
<b>Finland</b>	Traficom - Finnish Transport and Communications Agency	Sex, age, nationality, rank, limitations, underpinning documents	Active sea status	Source of certification	

Country	Sources	Available data	Missing data	Advantages	Disadvantages
<b>France</b>	Ministry of Ecological and Solidarity Transition	Sex, age, nationality, rank, limitations, underpinning documents, active sea status		Includes active seafarer status	Excludes CeCs
<b>Germany</b>	Federal Maritime and Hydrographic Agency, Germany	Sex, age, nationality, rank, limitations, underpinning documents		Data summaries possible both by seafarer and by certificate	Includes non-nationals if studied in Germany and have a German certificate. Excludes seafarers who have studied and gain a certificate outside Germany (until they apply for a CeC).
<b>Greece</b>	1. Ministry of Shipping and Insular Policy- Hellenic Coast Guard (HCG) - Seafarers Training Directorate, Greece 2. Ministry of Shipping and Insular Policy - Hellenic Coast Guard (HCG) - Seafarers Labour Directorate, Greece <sup>2</sup>	Sex [1], age [1], nationality [1], rank [1], limitations [1], underpinning documents [1], active sea status [2]		Combining data from multiple sources allows the construction of a dataset including active sea status [2]	Sea service records (indicating active status) may be out of date when returned to the Seafarers Labour Directorate [2]
<b>Hungary</b>	Ministry of National Development, Department for Shipping Authority			Source of certificate data	No accessible data
<b>Iceland</b>	Icelandic Transport Authority (ICETRA)	Age, rank, limitations, underpinning documents, active sea status	Sex, nationality	Includes active seafarer status <sup>1</sup>	
<b>Ireland</b>	Department of Transport, Tourism and Sport	Age, nationality, rank, limitations, underpinning documents	Sex, active sea status	Source of certification data	
<b>Italy</b>	Ministry of Infrastructure and Transport	Sex, age, nationality, rank, limitations, underpinning documents	Active sea status	Source of certification data	CECs and CoP excluded
<b>Latvia</b>	Maritime Administration of Latvia	Sex, age, nationality, rank, limitations, underpinning documents, active sea status		Includes active sea status; also records Seamen's Books	CECs excluded. Excludes Latvian seafarers issued with certificates outside Latvia
<b>Lithuania</b>	Lithuanian Transport Safety Administration	Sex, age, rank, limitations, underpinning documents	Nationality, active sea status	Source of certification data	
<b>Luxembourg</b>	Luxembourg Maritime Administration	Age, rank, limitations, underpinning documents	Sex, nationality, active sea status	Source of certification data	CECs Only. Does not issue CoCs (or CoPs) as does not have any METs

Country	Sources	Available data	Missing data	Advantages	Disadvantages
<b>Malta</b>	Merchant Shipping Directorate, Transport Malta	Sex, age, nationality, rank, limitations, underpinning documents	Active sea status	Source of certification data; also records seamen's books	
<b>Netherlands</b>	KIWA Register BV, Netherlands	Sex, age, rank, limitations, underpinning documents	Active sea status, nationality (though country of original CoC issue is recorded when applying for a CEC)	Data summaries possible both by seafarer and by certificate	
<b>Norway</b>	1. Norwegian Maritime Authority (NIMA) 2. Statistics Norway	Sex [1,2], age [1,2], nationality [1,2], rank [1,2], limitations [1], underpinning documents <sup>1</sup> , active sea status [2]		Source of certificate data <sup>1</sup> Updated weekly <sup>2</sup>	Excludes CeCs <sup>1</sup>
<b>Poland</b>	Polish Harbours Information and Control System	Sex, age, nationality, rank, limitations, underpinning documents	Active sea status	Source of certification data	
<b>Portugal</b>	The Directorate-General for Natural Resources, Safety and Maritime Service (DGRM), Maritime Administration			Source of certification data	No accessible data
<b>Romania</b>	The Romanian Naval Authority	Sex, age, nationality, rank, limitations, underpinning documents	Active sea status	Source of certification data	
<b>Slovakia</b>	Ministry of Transport, Construction, and Regional Development	Age, nationality, rank, limitations, underpinning documents	Sex, active sea status	Source of certification data	Excludes CeCs
<b>Slovenia</b>	Maritime Administration of the Republic of Slovenia	Sex, age, nationality, rank, limitations	Underpinning documents, active sea status	Source of certification data	Excludes CeCs
<b>Spain</b>	1. The Ministry of Transport, Mobility, and Urban Agenda, Merchant Marine, Spain 2. Ministry of Labour, Migrations, and Social Security (Social Security of the Social Institute of the Navy), Spain	Sex [2], age [1,2], nationality (grouped) [2], rank [1], (grouped) [2], limitations [1], active sea status [2]		Combining data from multiple sources allows the construction of a dataset including active sea status [2]	Does not issue CoPs <sup>1</sup> Excludes seafarers not covered by the Spanish Social Security System; may also exclude some non-national seafarers working on Spanish flagged vessels [2]

Country	Sources	Available data	Missing data	Advantages	Disadvantages
<b>Sweden</b>	1. Swedish Transport Agency (Transportstyrelsen) (Certificates) 2. Statistics Sweden (Occupational Register)	Sex [1,2], age (DOB) [1,2], nationality [1,2], rank [1], (grouped) [2], limitations [1], underpinning documents [1], active sea status [2]		Combining data from multiple sources allows the construction of a dataset including active sea status [2]	Rank is an occupation coding (i.e. deck officers, engineers etc.) rather than STCW rank; may exclude Swedish seafarers working outside Sweden; excludes non-Swedish seafarers working on Swedish vessels [2]
<b>UK</b>	1. Maritime and Coastguard Agency 2. Department of Transport, Seafarers in the UK Industry Reports	Sex [1,2], age (DOB) [1,2], nationality [1,2], rank [1,2], limitations [1], underpinning documents [1]	Active sea status	Detailed publicly available data; statistical adjustment made for inactive seafarers [2]	Statistical adjustments to account for inactive seafarers cannot accurately reflect the active population

- More than one source per country has been included in instances where data that are not held by the national certificate-based system are available elsewhere, and therefore suggest at least the potential for a more comprehensive combined dataset.
- Information in each source is updated at least annually unless otherwise indicated.
- Unless otherwise stated: population data is taken from a sector-based on a sample and therefore does not include detailed information about employment or rank; and national administrations do not hold certificate details where certification was obtained outside the country, especially if seafarers are also working on non-national vessels.



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# APPENDIX

**Table A1: Desktop review searches**

Specific websites searches	General online searches
Seafarer/ Seamen	COUNTRY Seafarer/ Seamen
Seafarers/ Seamen statistics	COUNTRY Seafarer/ Seamen statistics
Seafarer/ Seamen numbers	COUNTRY Seafarer/ Seamen numbers
Seafarer/ Seamen population	COUNTRY Seafarer/ Seamen population
Seafarer/ Seamen labour market	COUNTRY Seafarer/ Seamen labour market
Seafarers/ Seamen employed	COUNTRY Seafarer/ Seamen employed
Seafarer/ Seamen employment	COUNTRY Seafarer/ Seamen employment
Seafarer/ Seamen employment numbers	COUNTRY Seafarer/ Seamen employment numbers
Seafarer/ Seamen employment statistics	COUNTRY Seafarer/ Seamen employment statistics
Seafarers/ Seamen certificates	COUNTRY Seafarer/ Seamen certificates
Seafarers/ Seamen certificate numbers	COUNTRY Seafarer/ Seamen certificate numbers
Seafarers/ Seamen crew numbers	COUNTRY Seafarer/ Seamen crew numbers
Seafarers/ Seamen Officer numbers	COUNTRY Seafarer/ Seamen officer numbers
Number of Seafarers/ Seamen	Number of COUNTRY seafarers
How many Seafarers/ Seamen	How many COUNTRY seafarers
Register of Seafarers/ Seamen	Register of COUNTRY seafarers
Employment	COUNTRY Maritime authority
Statistics	COUNTRY Active seafarers
Maritime	
Active seafarers	
STCW	

**Table A2: Map of existing and potential data sources, their coverage of the project's key set of seafarer details, and their limitations, as indicated through desktop review and subsequent direct follow-up**

KEY: Black text = from desktop review | Red text = from questionnaire | Green text = from interview

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
1 Austria	Statistics Austria	Employment (from Labour Force Survey)	2004–2019	Questionnaire	Desktop: Tabulated data on employment by basic marine occupation groups split by sex, age and nationality. Questionnaire: Data collected continuously, includes sex, age (from DoB) and nationality.	Desktop: Limited detail on occupation (broad ranks), age and nationality grouped, based on sample of 0.6% of the population. Small numbers meant dataset could not be produced. Questionnaire: Based on a sample of 0.6% of the population. 'Transport and storage' category cannot be broken down further. No information on rank, limitations, or underpinning documents.
2 Belgium	Federal Public Service Mobility and Transport, Directorate General Maritime Transport	Certificate	None	Questionnaire	Desktop: Issue STCW certificates. Online certificate verification system. Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, sex, age (from DoB) and nationality. Can tell if multiple certificates.	Desktop: Unknown as no access. Questionnaire: Underpinning documents not recorded. Counts certificates rather than seafarers. Cannot identify those working below their qualified rank, with an unrestricted licence but working on inland waterways; not active at sea. Excludes Belgian seafarers trained outside Belgium.
3 Belgium	National Social Security Office	Social security/ tax records (Seafarer specific)	None Accessible custom tables: 2013–2019	Interview	Desktop: Seafarers eligible for the Belgian Social Security as recorded on Pool list; Pool list application form includes: rank, nationality, age and sex. Tabulated data (from Statwork) on employment in the transport and storage sector. Interview: Includes gender, age (from DoB), nationality, rank, limitations, flag of vessel. Can distinguish if a seafarer is active at sea	Desktop: Social security/ tax records: Unknown as no access Tabulate data: Sector rather than occupational data. No information in sex, age, rank, nationality. Interview: Includes vessels over 24m so may include seafarers on seagoing commercial yachts; excludes Belgian seafarers covered by non-Belgian social security arrangements.

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
4	Belgium Statistics Belgium	Employment (from Labour Force Survey)	None	Questionnaire	Desktop: Potentially has data on employment in the 'Sea and coastal passenger's water transport' and 'Sea and coastal freight water transport' sectors. Questionnaire: Data collected continuously, includes sex, age (from DoB) and nationality.	Desktop: Unknown as no access: Sector rather than occupational data; based on sample of approximately 123,000. No information in sex, age, or nationality. Questionnaire: Based on a sample of 0.5% of the Population. 'Sea and coastal passenger/ freight' category cannot be broken down further. No information on rank, limitations, or underpinning documents.
5	Bulgaria Maritime Administration Executive Agency	Certificate	None	No response	Desktop: Issue STCW certificates; Offline certificate verification;	Desktop: Unknown as no access.
6	Bulgaria National Statistics Institute	Employment (from Labour Force Survey)	2009 to 2019	Not approached	Desktop: Tabulated data on the numbers employed in the 'water and transport' sector split by sex, age (grouped), and educational level.	Desktop: Sector rather than occupational data; based on a sample with averages of four quarters and excluding those on unpaid leave of over 3 months. No information on nationality. Age is grouped.
7	Croatia Ministry of the Sea, Transport and Infrastructure	Certificate	Accessible custom tables: 1999-2020	Questionnaire	Desktop: Issue STCW certificates. Online certificate verification system. Tabulated data on the number of certificates issued by rank (detailed with limitations) and region. Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, sex, age (from DoB) and nationality. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates. Can distinguish those: working below their qualified rank, with an unrestricted licence but working inland, not active at sea.	Desktop: No information on sex, age, nationality (has region but not nationality). Seafarers may have multiple certificates (i.e. OOW and fire fighting). Unclear as to whether it covers just CoC's or CeC's as well. Questionnaire: Unclear if underpinning documents are recorded.
8	Croatia Croatian Bureau of Statistics	Employment (1: from Labour Force Survey; 2: from records of those insured by the Croatian Pension Insurance Institute)	2000-2020	Not approached	Desktop: 1) Tabulated data on employment in 'Transport and Storage' for 2000-2020 split by sex; 2) Tabulated data on employment in 'Transport and Storage' for 2005-2019 split by sex and region.	Desktop: 1) Sector rather than occupational data, no information on sex, age, or nationality. 2) Sector rather than occupational data, region only available from 2005, no information on age or nationality.

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
9	Department of Merchant Shipping (Part of the Ministry of Communications and Works)	Certificate	None	Questionnaire	Desktop: Issue STCW certificates. Online certificate verification system. Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, sex, age (from DoB), nationality, and underpinning documents.	Desktop: Unknown as no access. Questionnaire: Cannot tell if multiple certificates. Cannot identify those working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea. Excludes Cypriot seafarers with non-Cypriot seafarers' books or on non-Cypriot flagged vessels.
10	The Statistical Service of Cyprus (CYSTAT)	Employment (from Labour Force Survey)	1995-2020	Questionnaire	Desktop: Tabulated data on employment in 'Transport and Storage' split by sex and nationality (Cyprus, EU and non-EU). Questionnaire: Data collected quarterly. No seafarer data kept.	Desktop: Sector rather than occupational data, based on sample of approximately 3,800 (1.5% of households). Only basic nationality information. No information in age. Questionnaire: Based on a sample of 1.4% of the population. 'Transport and storage' category cannot be broken down further. No information on sex, age, nationality, rank, limitations, or underpinning documents..
11	Ministry of Transport of the Czech Republic	Certificate	None	Questionnaire	Desktop: Issue STCW certificates. Online certificate verification system. Questionnaire: Includes CoCs, and CoPs, and details on rank, limitations, sex, age (from DoB) and nationality. Also records Seamen's Books.	Desktop: Unknown as no access. Questionnaire: CeCs not included. Unclear if underpinning documents are recorded. Cannot tell if multiple certificates. Cannot identify those working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea. Excludes those obtaining certificates outside Czech Republic (many Czech seafarers train in Poland) and those with a Seamen's Book from another flag.
12	Czech Statistical Office (CZSO)	Employment (Labour Force Survey)	2009-2019	Questionnaire	Desktop: Tabulated data on employment in 'Transport and Storage' split by age (grouped) Questionnaire: Data collected continuously. No seafarer data kept.	Desktop: Sector rather than occupational data, based on sample of 51,000 (approximately 0.6% of households). No information on nationality. Age is grouped. Questionnaire: No data on seafarer as is an inland country with seafarers making up a very small proportion of the Czech workforce. This means that the Labour Force Survey cannot gather representative information on them.

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
13	Danish Maritime Authority	Certificate	Accessible custom tables: 2017-2019	Questionnaire	<p>Desktop: Issue STCW certificates. Online certificate verification system. Tabulated data on seafarers on DIS registered ships split by rank (grouped) and nationality (grouped).</p> <p>Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, underpinning documents and sex and age (from DoB). Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates.</p>	<p>Desktop: Limited detail on occupation (deck, navigating/engineering officers) and nationality (Denmark, EEA/EU and others), excludes DAS and Danish seafarers working on non-Danish flagged vessels; based on active seafarers onboard ship on a specific day each year.</p> <p>Questionnaire: Nationality not recorded. The questionnaire response indicated that sex is not directly recorded but can be obtained from the Danish CPR number (Social Security number). Cannot identify those working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea. Excludes seafarers with certificates issued outside Denmark.</p>
14	Statistics Denmark	Employment (from Labour Market Account (LMA), a longitudinal population based register)	2008-2018	Not approached	<p>Desktop: Tabulated data on employment in the 'water transport' sector split by sex, and age (grouped). Covers the whole population.</p>	<p>Desktop: Sector rather than occupational data; based on data collected annually at the end of November from a number of sources such as the central business register, the educational register, the income register and the population register. Covers the whole population. Age is grouped.</p>
15	Danish Shipping (website) – Shipping Association	Employment (from Shipping Association Report)	2014-2018 (2018 Report)	Information supplied	<p>Desktop: Bar graph showing the number of people employed by Danish shipping companies, by nationality and year.</p>	<p>Desktop: No information on rank, sex, or age. Nationality category is broad (Danish, EU, other). Danish seafarers employed by non-Danish shipping companies excluded.</p>
16	Republic of Estonia Maritime Administration	Certificate	None	Questionnaire	<p>Desktop: Issue STCW certificates. Online certificate verification system. Online verification system for crew and passenger lists.</p> <p>Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, age (from DoB), nationality and underpinning documents. Can tell if multiple certificates. Can distinguish those working below their qualified rank, not active at sea.</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: Sex not recorded.. Cannot identify those with an unrestricted licence but working on inland waterways.</p>

	Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
17	Finland	Traficom - Finnish Transport and Communications Agency	Certificate	None	Questionnaire	<p>Desktop: Issue STCW certificates. Online certificate verification system.</p> <p>Questionnaire: Includes CoCs and CoPs, and details on rank, limitations, sex, age (from DoB), nationality and underpinning documents. Can tell if multiple certificates. Can distinguish those: working below their qualified rank, with an unrestricted licence but working inland.</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: CeC's not included. Unclear if seafarers with multiple certificates can be distinguished. Cannot identify those: not active at sea. Excludes seafarers with certificates issued outside Finland.</p>
18	Finland	Statistics Finland (StatFin Database)	Employment (from approx 30 different administrative registers and statistical data files)	2010-2017	Questionnaire	<p>Desktop: Tabulated data on employment by rank, sex, and age (grouped). Based on data collected annually at the end of year from a number of sources; approx 30 different administrative and statistical data files. Covers the whole population.</p> <p>Questionnaire: Data collected on the last day of the year from administrative registers/ statistical datasets. Covers the whole population. Includes sex, age (from DoB) and nationality, limitations/ underpinning documents<sup>89</sup></p>	<p>Desktop: Limited detail on occupation (broad rank categories), age is grouped. No information on nationality.</p> <p>Questionnaire: Occupational groupings (i.e. deck officers, ships engineers) cannot be broken down further. Data on rank not recorded.</p>
19	France	Ministry of Ecological and Solidarity Transition	Certificate	None	Questionnaire	<p>Desktop: Issue STCW certificates. Online certificate verification system.</p> <p>Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, sex, age (from DoB) nationality and underpinning documents. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates. Can distinguish those: working below their qualified rank, with an unrestricted licence but working inland, not active at sea.</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: Excludes seafarers trained and working under a non-French flag</p>
20	France	École nationale d'ingénieurs de Metz (ENIM)	Employment (Provided through Lotte from an affiliate (CGT) in 2016)	<p>1) 2000-2015: not publicly available</p> <p>2) 2013-2015: not publicly available</p>	Information supplied	<p>Desktop: 1) Tabulated data on employment in different maritime sectors (i.e. international navigation, pilot age etc) split by sex.</p> <p>2) Tabulated data on employment in different maritime sectors (See above), by rank (detailed), by age (bar graph) or by region of origin in France (separate tables) by sex.</p>	<p>Desktop: 1) Sector rather than occupational data, No information on age, or nationality.</p> <p>2) Tables/ graph are presented separately.</p>

89 Data on rank not recorded, but limitations/underpinning documents described as being recorded.

	Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
21	France	National Institute of Statistics and Economic Studies	Employment (Source unclear)	None	No response	Desktop: Potentially has data on employment in the 'Sea and coastal passenger's water transport' and 'Sea and coastal freight water transport' sectors.  Desktop: Issue STCW certificates. Online certificate verification system.  Interview: Responsible for STCW certification and the verification of German certificates (CoC's only). Information kept includes: sex, age (from DOB), nationality, rank, limitations and underlying certification. Can distinguish seafarers with multiple certificates. Includes non-nationals if studied in Germany and have a German certificate.	Desktop: Unknown as no access: Sector rather than occupational data.
22	Germany	The Federal Maritime and Hydrographic Agency (BSH)	Certificate	None	Interview	Desktop: Issue STCW certificates. Online certificate verification system.  Interview: Responsible for STCW certification and the verification of German certificates (CoC's only). Information kept includes: sex, age (from DOB), nationality, rank, limitations and underlying certification. Can distinguish seafarers with multiple certificates. Includes non-nationals if studied in Germany and have a German certificate.	Desktop: Unknown as no access.  Interview: Cannot distinguish seafarers active at sea or not; excludes seafarers who have studied and gain a certificate outside Germany (until they apply for a CeC).
23	Germany	Knappschaft-Bahn-See (KBS) – German Pension Insurance Miners-Railway-Maritime	Social security/ tax records (Seafarer specific)	None	Email interview	Interview: Pension coverage for those working in shipping. Includes all those living in Germany (even if working on a foreign flagged vessel), can identify individual seafarers based on tax records, and includes details on sex, age, and nationality. Can identify those working inland waterways but with unrestricted licence.	Interview: Excludes foreign seafarers working on German flagged who choose to opt out; no information on rank, limitations or flag.
24	Germany	The Federal Statistical Office of Germany (Statistisches Bundesamt)	Employment (from Labour Force Survey)	2009–2019	Not approached	Desktop: Tabulated data on employment in 'Transport and Storage' by sex.	Desktop: Sector rather than occupational data, based on sample of 1.0% of the population. No information on age or nationality.
25	Greece	Ministry of Maritime Affairs and Insular Policy – Hellenic Coast Guard, Seafarers Training Directorate	Certificate	None	Questionnaire	Desktop: Issue STCW certificates. Offline certificate verification.  Email Interview: Responsible for STCW certification, issuing CoCs, CeCs and CoPs. Information kept includes: sex, age (from DOB), nationality, rank, limitations and underlying certification.	Desktop: Unknown as no access.  Email Interview: Unclear whether seafarers working inland and internationally can be distinguished

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
26	Ministry of Maritime Affairs and Insular Policy - Hellenic Coast Guard, Seafarers Labour Directorate	Certificate (from register of Seamen books) Employment (from records of ships articles)	Unknown	Interview	Interview: 1) Hard copy register of those issued with a seaman's book. 2) Hard copies of ships articles.	Interview: 1) Register of seamen's books issued do not include all sea service, and is not often updated. 2) Figures on ships articles (based on sea service) are adjusted for leave/ sick leave, those working ashore, or on rotation.
27	The Hellenic Statistical Authority (ELSTAT)	Employment (from Seamen's Pension Fund (NAT) and from survey of seafarers serving onboard the Hellenic fleet conducted by ELSTAT)	1) Ship and Crew Census report covers 2000-2018 (published every 2 years and only covers that year, i.e. 2014, 2016, 2018 etc). 2) Enlisted Greek Seamen report covers: 2000-2017	No response (to questionnaire)	Desktop: 1) Tabulated data on employment by rank (detailed) split by nationality (Greek or foreign), by nationality (detailed) split by ship type (grouped: cargo, passenger, tanker, other), by age (grouped) split by rank (grouped), and by region of origin. (separate tables). Covers the whole population. 2) Tabulated data on employment by rank (grouped). Interview: Enlisted Greek Seamen Survey is done every two years via Greek ships masters on 20th September; includes all seafarers onboard. Records information on sex, age (from DoB), and detailed rank.	Desktop: 1) Tables/ graph are presented separately. Grouped data often used. 2) Limited detail on occupation (grouped ranks). No information on sex, age, or nationality. 1&2) Only includes those on merchant ships of 100 GRT and over, under Greek or other flags. Interview: Cannot distinguish those working below their qualified rank (though this may be unlikely due to technicalities of Greek law)
28	Ministry of National Development, Department for Shipping Authority	Certificate	None	No response	Desktop: Issue STCW certificates. Offline certificate verification.	Desktop: Unknown as no access.
29	Hungarian Central Statistical Office (KSH)	Employment (from Labour Force Survey)	2008-2020	Questionnaire	Desktop: Tabulated data on employment in 'Transport and Storage' by sex. Questionnaire: Data collected continuously. Transport and storage can be broken down into sub-categories of sector but numbers are small.	Desktop: Sector rather than occupational data, based on sample of approx 36,000 (0.4% of population). No information on age or nationality. Questionnaire: Based on approximately 0.92% of the households (note: figure above is population). No information on sex, age, nationality, rank, limitations, or underpinning documents.

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
30	Icelandic Transport Authority (ICETRA)	Certificate	None	Questionnaire completed	<p>Desktop: Issue STCW certificates. Offline certificate verification.</p> <p>Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, age (from DoB) and underpinning documentation. Can tell if multiple certificates. Can distinguish seafarers even with multiple qualified rank, with an unrestricted licence but working inland, not active at sea.</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: Nationality and sex not recorded.</p>
31	Statistics Iceland	Employment (from Tax Register)	2008–2019	Not approached	<p>Desktop: Tabulated data on employment in 'Transport and Storage' split by sex and nationality (grouped). Based on ALL people in the tax register.</p>	<p>Desktop: Sector rather than occupational data, covers the whole population. No information on age. Nationality is grouped.</p>
32	Department of Transport, Tourism and Sport	Certificate	None	Questionnaire completed	<p>Desktop: Issue STCW certificates. Online certificate verification system.</p> <p>Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, age (from DoB), nationality, and underpinning documentation. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates.</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: Sex not recorded. Cannot identify those: working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea.</p>
33	The Central Statistics Office of Ireland	Employment (from Labour Force Survey)	1998 (1st quarter) - 2020 (2nd quarter)	Questionnaire completed	<p>Desktop: Tabulated data on employment in 'Transport and Storage' split separately by sex, or by nationality (grouped).</p> <p>Questionnaire: Data collected continuously, includes sex, age (from DoB) and nationality (actual nationality, not region). 'Transport and storage' category can be broken down further. Indication that ISCO08 was used for occupational coding</p>	<p>Desktop: Sector rather than occupational data, based on sample of 32,500 (nearly 2.0% of population). No information on age. Nationality is grouped.</p> <p>Questionnaire: Based on a sample of 1.7% of the population. No information on rank, limitations, or underpinning documents.</p>
34	Ministry of Infrastructure and Transport	Certificate	None	Questionnaire completed	<p>Desktop: Issue STCW certificates. Offline certificate verification.</p> <p>Questionnaire: Includes CoCs only, and details on rank, limitations, sex, age (from DoB), nationality, and underpinning documentation.</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: CeCs and CoP's not included. Cannot tell if multiple certificates. Cannot identify those: working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea.</p>

	Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
35	Italy	National Statistical Institute	Employment (from Labour Force Survey)	None	No response	Desktop: Potentially has data on employment in the 'Maritime and costal transport of passengers' and 'Maritime and costal transport of goods' sectors.	Desktop: Unknown as no access: Sector rather than occupational data.
36	Latvia	Maritime Administration of Latvia	Certificate	None Accessible custom tables: 2011–2018	Questionnaire completed	Desktop: Issue STCW certificates. Online certificate verification system. Tabulated data on the number of certificates issued. Questionnaire: Includes CoCs and CoPs, and details on rank, limitations, sex, age (from DoB) nationality, and underpinning documentation. Also records Seamen's Books. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates. Can distinguish those: working below their qualified rank, with an unrestricted licence but working inland, not active at sea.	Desktop: STCW Certificates: Unknown as no access. Tabulated data: No information on sex, age, nationality, rank, limitations, or underlying certification. Questionnaire: CeC's not included. Would not have record of a Latvian seafarer if their certificates were issued by other countries.
37	Latvia	National maritime education and training (MET) institutions (as listed on STCW-IS webpage)	Certificates/diplomas	2015–2019	Not approached	Desktop: Number of diplomas issued by year and certificate type	Desktop: Only 5 of 11 METs provide data: no information on sex, age, serving rank; whether currently active
38	Latvia	Central Statistics Bureau	Employment (from multiple sources such as employers, the State Revenue service, Tax agencies)	2005–2019	Not approached	Desktop: Tabulated data on employment in the 'water transport' sector. Based on merged data from a range of sources	Desktop: Sector rather than occupational data, based on sample of approximately 6,000. No information in sex, age, or nationality.
39	Latvia	Two papers by Robert Gaillitis (2013 and 2015) on the structure of the Latvian Seamen's registry	Certificates/diplomas	1995–2012; 2015	Not approached	Desktop: Tabulated data on the number of Latvian Seafarers (defined by certification) split by age (grouped), rank (grouped) and department (separate tables).	Desktop: Data is presented on separate tables. No precise numbers on bar graphs. Categorisation of rank is broad (deck officers, engine officers, ratings etc). Even when detailed only covers limited ranks. Time coverage varies/is limited.

	Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
40	Lithuania	Lithuanian Transport Safety Administration	Certificate	None	Questionnaire completed	Desktop: Issue STCW certificates. Online certificate verification system. Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, sex, age (from DoB) and underpinning documentation. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates. Can distinguish those: working below their qualified rank.	Desktop: Unknown as no access. Questionnaire: Nationality not recorded. Cannot identify those: with an unrestricted licence but working on inland waterways; not active at sea.
41	Lithuania	Statistics Lithuania	Employment (from Labour Force Survey)	2015-2019 (with comparable data perhaps available from 1998)	Questionnaire completed	Desktop: Tabulated data on employment in 'Transport and Storage' split by sex. Questionnaire: Data collected quarterly, includes sex, age (from DoB), nationality, rank and underpinning documents. 'Transport and storage' category can be broken down further.	Desktop: Sector rather than occupational data, based on small sample of households. No information on age, or nationality. Questionnaire: Based on approximately 0.5% of the population, collected quarterly. No information on limitations.
42	Lithuania	European Commission Country Report	Employment (from maritime companies report on crewing to the Klaipeda State Sea Port)	2004-2005	Not approached	Desktop: Figures in text for number of Lithuanian seafarers for 2004 and 2005	Desktop: Figures out of data and to the nearest thousand. No information on sex, age, nationality, or rank.
43	Luxembourg	Luxembourg Maritime Administration	Certificate	None	Questionnaire done	Desktop: Issue STCW certificates. Online certificate verification system. Questionnaire: Includes CeCs, and details on rank, limitations, age (from DoB) and underpinning documentation. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates. Can distinguish those: working below their qualified rank	Desktop: Unknown as no access. Questionnaire: Does not issue CoC's (or Cop's) as does not have any Maritime Training institutions. Nationality and sex not recorded. Cannot identify those: with an unrestricted licence but working on inland waterways; not active at sea (due to not keeping CoC's and Cop's)
44	Luxembourg	National Institute of Statistics and Economic Studies of the Grand Duchy of Luxembourg (STATEC)	Employment (from Labour Force Survey/ Census)	None	Questionnaire done	Desktop: Potentially has data on employment in the 'water and river transport' sectors. Questionnaire: Data collected quarterly from a census covering 96% of population. No seafarer data kept.	Desktop: Unknown as no access: Sector rather than occupational data; based on sample. No information on sex, age, or nationality. Questionnaire: 'Transport and storage' category cannot be broken down further. No information on sex, age, nationality, rank, limitations, or underpinning documents.

	Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
45	Luxembourg	Joint Social Security Center (Centre Commun De La Securite Social)	Social security/ tax records	None	Not approached	Desktop: Seafarers eligible for the Luxembourg Social Security System	Desktop: Unknown as no access
46	Malta	Merchant Shipping Directorate Transport Malta	Certificate	None	Questionnaire completed	Desktop: Issue STCW certificates. Offline certificate verification. Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, sex, age (from DoB) nationality, and underpinning documentation. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates. Also records Seamen's Books	Desktop: Unknown as no access. Questionnaire: Cannot identify those: working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea.
47	Malta	National Statistics Office	Employment (from Labour Force Survey)	June 2016 to January 2019	Questionnaire completed	Desktop: Tabulated data on employment in 'Water Transport' split by sex and full time/ part time employment. Questionnaire: Data collected continuously, includes sex, age (from DoB) and nationality. 'Transport and storage' category can be broken down further.	Desktop: Sector rather than occupational data, based on sample of population. No information on age or nationality. Questionnaire: Based on approximately 5.0% of the population. No information on rank, limitations, or underpinning documents.
48	Malta	Department of Social Security	Social security/ tax records	None	Questionnaire completed	Desktop: Seafarers eligible for Maltese Social Security Questionnaire: Includes details on sex, age (from DoB) nationality, and residential address. Maltese seafarers on foreign vessel may be included depending on what legislative agreements they are covered by. Will include foreign seafarers working on Maltese flagged vessels.	Desktop: Unknown as no access Questionnaire: Not responsible for collection of social security contributions, Office of the Commissioner for Revenue is (See below). Cannot identify those working in maritime industry, with no specific scheme for seafarers. Does not record the nature of employment, or more specifically rank. Will not include Maltese seafarers working on vessels flying the Flag of an EU Maritime State.
49	Malta	Office of the Commissioner for Revenue	Social security/ tax records	None	Questionnaire completed	Desktop: Seafarers eligible for Maltese Social Security. Questionnaire: Responsible for collection of social security contributions. Can identify those working in maritime industry. Includes details on sex, and age (from DoB).	Desktop: Unknown as no access Questionnaire: Does not record nature of employment, nationality, or specifically in relation to the maritime industry rank. Unclear whether there is specific social security arrangement for those in the maritime industry, or if Maltese seafarers on non-Maltese flagged vessels, or foreign seafarers on Maltese flagged vessel will be included.

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
50	Netherlands Kiwa Licensing	Certificate	None	Interview completed	<p>Desktop: Issue STCW certificates. Offline certificate verification.</p> <p>Interview: Issue (and verifies offline) CoC, CeC and CoP certification on behalf of the Transport and Water Management Incorporate. Does not issue underlying certificates, but does keep record of underlying certification presented. Information kept includes: sex, age (from DOB), nationality, rank, limitations and underlying certification. Can distinguish seafarers even with multiple certificates (but would be a technically difficult task).</p>	<p>Desktop: Unknown as no access.</p> <p>Interview: Nationality is not recorded, but country of original CoC issue is when applying for a CEC. Cannot tell if a seafarer is active at sea or working ashore, if they are working at the rank they are qualified for, or if they have a unlimited licence but are working on inland waterways.</p>
51	Netherlands Ministry of Infrastructure and Water Management – Netherland official maritime authority	Employment Social security/ tax records	Unknown	Interview completed	<p>Interview: Does not directly have data. Is responsible for policies in relation to international shipping. Suggested population data, social security data, and employer's records could be a good source of information.</p>	<p>Interview: Does not have own data/ any records of seafarers.</p>
52	Netherlands Central Agency for Statistics (CBS)	Employment (from multiple sources including national accounts, Labour Force Survey, Employment and Wage Statistics, and job files from the System of Social Statistical Files (SSB))	1995–2019	Questionnaire completed	<p>Desktop: Tabulated data on employment in the 'water transport' sector split by sex. Based on information from a number of data sources.</p> <p>Questionnaire: Data collected continuously, includes sex, age (from DoB) and nationality. Rank is available as per ISCO 2008 categories (grouped rank, i.e. deck officers).</p>	<p>Desktop: Sector rather than occupational data. No information on age, or nationality.</p> <p>Questionnaire: Based on a sample of the population (% details not given). Did not say whether 'Transport and storage' category could be broken down further. No information on limitations, or underpinning documents.</p>

	Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
53	Netherlands	2019 Netherlands Maritime Land Report produced by ECORYS (Usually called the 'Maritime Monitor')	Employment (as supplied by CBS)	2006-2019	Information supplied on Maritime Monitor from the Ministry of Infrastructure and Water Management interview.	Desktop: Bar graph showing the number of seafarers in direct/ indirect employment in the maritime sector. Precise figures given on graph. Interview: From the Ministry of Infrastructure and Water Management interview: Maritime Monitor figures on employment based on figures from CBS, which are adjusted following consulting with industry about those retiring/ working ashore.	Desktop: No information on rank, sex, or age. No data on other forms of employment. Interview: From the Ministry of Infrastructure and Water Management interview: Figures only broken down by rank, not by sex, age, or nationality. Suggested it just includes CoC's. Cannot accurately say how many seafarers working ashore.
54	Netherlands	The Royal Association of Netherlands Shipowners (KVN/R)	Employment (from records of seafarers working on vessels)	Unknown	Information from KIWA Licensing Interview.	From the KIWA Licensing interview: It was suggested that the Royal Association of Netherlands Shipowners may have records of seafarers working on Dutch ships. Association covers most of the major Dutch Shipping companies. (My research found 90% of Dutch fleet).	From the KIWA Licensing interview: Does not cover all Dutch companies. Did not say what details kept.
55	Netherlands	The Dutch Tax and Customs Administration (Belastingdienst)	Social security/ tax records	Unknown	Information on Dutch Tax Agency from the Ministry of Infrastructure and Water Management interview.	Interview: Suggests tax agency would know very accurately the precise number of people at sea because have to tell them how many days away for tax reasons. Should also include most Dutch seafarers as Dutch tax system is based on where living not where working.	
56	Norway	Norwegian Maritime Authority (NMA)	Certificate	None without a valid Norwegian certificate	Questionnaire completed	Desktop: Issue STCW certificates. Online certificate verification system. Questionnaire: Includes CoCs and CoPs, and details on rank, limitations, sex, age (from DoB) nationality, and underpinning documentation. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates.	Desktop: Unknown as no access. Questionnaire: CeC's not included. Cannot identify those working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea.
57	Norway	National maritime education and training (MET) institutions (as listed on STCW-IS webpage)	Certificates/ diplomas	2015-2019	Not approached	Desktop: Number of diplomas issued by year and certificate type	Desktop: Only 9 of 51 METs provide data; no information on sex, age, serving rank; whether currently active

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
58	Norway Statistics Norway	Employment (from the Register of Employers and Employees)	2015-2020	Questionnaire completed	<p>Desktop: Tabulated data on employment by rank (very detailed) split by nationality (grouped: resident/ non resident) flag (NIS, NOR, or Foreign register) and vessel type (grouped). Covers the whole population.</p> <p>Questionnaire: Data collected monthly (published yearly: Nov 4th) from the tax authority, and Norwegian Labour and Welfare Administration. Covers the whole population. Data classified using NACE, ISCO, ISCED classifications. Includes sex, age (from DoB) and nationality, and rank (detailed). 'Transport and storage' category can be broken down further.</p>	<p>Desktop: No information on sex or age. Grouped data on nationality, flag, and vessel type (tourist boat, drill platform, other).</p> <p>Questionnaire: No information limitations or underpinning documents.</p>
59	Poland Polish Harbours Information and Control System	Certificate	None	Questionnaire completed	<p>Desktop: Online certificate verification system.</p> <p>Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, sex, age (from DoB) nationality, and underpinning documentation. Can tell if multiple certificates</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: Counts certificates rather than seafarers. Cannot identify those: working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea.</p>
60	Poland Central Statistical Office	Employment (from Labour Force Survey??)	2010-2020	Not approached	<p>Desktop: Tabulated data on employment in 'Transport and Storage'</p>	<p>Desktop: Sector rather than occupational data. No information on sex, age, or nationality.</p>
61	Poland Central Maritime Examination Board (CMKE)	Certificates/ diplomas	None	No response	<p>Desktop: CMKE organises and conducts examinations for seafaring diplomas and certificates</p>	<p>Desktop: Unknown as no access.</p>
62	Portugal The Directorate-General for Natural Resources, Safety and Maritime Service (DGRM), Maritime Administration	Certificate	None	No response	<p>Desktop: Issue STCW certificates. Online certificate verification system.</p>	<p>Desktop: Unknown as no access.</p>

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
63	Romania The Romanian Naval Authority	Certificate	None	Questionnaire completed	<p>Desktop: Issue STCW certificates. Offline certificate verification.</p> <p>Questionnaire: Includes CoCs, CeCs and CoPs, and details on rank, limitations, sex, age (from DoB) nationality, and underpinning documentation. Can tell if multiple certificates. Can distinguish those: working below their qualified rank.</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: CeCs not included. Counts certificates rather than seafarers. Cannot identify those: with an unrestricted licence but working on inland waterways; not active at sea.</p>
64	Romania National Institute of Statistics	Employment (from Labour Force Survey)	2015 to 2019	Questionnaire completed	<p>Desktop: Tabulated data on employment in 'Transport and Storage' split by sex and age (grouped).</p> <p>Questionnaire: Data collected quarterly. 'Transport and storage' category can be broken down further.</p>	<p>Desktop: Sector rather than occupational data, based on sample of population. No information on nationality.</p> <p>Questionnaire: Based on a sample of 1.5% of the population. No information on sex, age, nationality, rank, limitations, or underpinning documents.</p>
65	Slovakia Ministry of Transport, Construction, and Regional Development	Certificate	None	Questionnaire completed	<p>Desktop: Issue STCW certificates. Offline certificate verification.</p> <p>Questionnaire: Includes CoCs and CoPs, and details on rank, limitations, age (from DoB) nationality, and underpinning documentation. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates.</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: CeCs not included. Sex not recorded. Cannot identify those: working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea.</p>
66	Slovakia Statistical Office of the Slovak Republic	Employment (from Labour Force Survey)	2009 (3rd quarter) - 2020 (1st quarter)	Questionnaire completed	<p>Desktop: Tabulated data on employment by basic marine occupation groups split by sex.</p> <p>Questionnaire: Data collected continuously.</p>	<p>Desktop: Based on sample of the population. Limited detail on occupation (broad ranks: 'Ships' deck crews and related workers' or 'Ship and aircraft controllers, technicians'). No information on age or nationality.</p> <p>Questionnaire: Based on a sample of 0.6% of the population. 'Transport and storage' category cannot be broken down further. No information on sex, age, nationality, rank, limitations, or underpinning documents.</p>
67	Slovenia Maritime Administration of the Republic of Slovenia	Certificate	None	Questionnaire completed	<p>Desktop: Issue STCW certificates. Online certificate verification system.</p> <p>Questionnaire: Includes CoCs and CoPs, and details on rank, limitations, sex, age (from DoB) and nationality. Can tell if multiple certificates. Can distinguish seafarers even with multiple certificates.</p>	<p>Desktop: Unknown as no access.</p> <p>Questionnaire: CeCs not included. Underpinning documents not recorded. Cannot identify those: working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea.</p>

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
68	Statistical Office of the Republic of Slovenia	Employment (from Statistical Register of Employment (SRDAP))	2005-2019	Questionnaire completed	Desktop: 1) Tabulated data on employment 'water transport' split by sex and age (grouped). 2) Tabulated data on employment in the 'Sea and coastal passenger's water transport' and 'Sea and coastal freight water transport' sectors. Questionnaire: Data collected monthly from Statistical Register of Employment (SRDAP). Covers the whole population. 'Transport and storage' category can be broken down further. Includes sex, age (from DoB) and nationality.	Desktop: 1) Sector rather than occupational data, based on sample of population. Age is grouped. No information on nationality. 2) Sector rather than occupational data, based on sample of population. No information on sex, age, or nationality. Questionnaire: No information on rank, limitations, or underpinning documents.
69	European Commission Country Report	Employment	2005	Not approached	Desktop: Figures in text: for number of Slovenian seafarers by rank (officers, radio officer, and ratings). Actual number of masters and engineers also given.	Desktop: Out of date; Rank is grouped. No information on sex, age, or nationality. Source of data not given.
70	The ministry of Transport, Mobility, and Urban Agenda (The General Directorate of the [Merchant Marine])	Certificate	None	Interview completed	Desktop: Issue STCW certificates. Online certificate verification system. Interview: Issue (and verifies offline) CoC's and CeC certification, although doesn't issue many CeC's as have to pass tough exam on Spanish law. Information kept includes: age (from DOB), rank, and limitations. Can distinguish seafarers even with multiple certificates. Data covers all Spanish seafarers.	Desktop: Unknown as no access. Interview: Does not issue CoP's (done by the training organisations). Information on sex, underlying certification for CeC's and nationality not recorded (may be able to retrieve nationality from ID number). Excludes Spanish seafarers working on a non-Spanish flagged ship that trained outside of Spain. Cannot identify those working below their qualified rank; with an unrestricted licence but working on inland waterways; not active at sea.
71	Ministry of Labour, Migrations, and Social Security (Social Security of the Social Institute of the Navy)	Social security/ tax records (Seafarer specific)	None	Email interview	Desktop: Seafarers eligible for Spanish social security. Interview: Within the general social security system, there is a scheme specifically for seafarers. Includes details on sex, age, rank (not detailed), nationality (not detailed) and sector working in (not detailed). Can identify those: those active at sea From the ministry of Transport, Mobility, and Urban Agenda interview (above); Suggests social security records provide good information about who is working at sea. Often contacted them for information.	Desktop review: Unknown no access Interview: Has access to records, but does not directly collect social security contributions (done by General Treasury of Social Security). Limited detail on rank (grouped ranks), sector (broad vessel types), and nationality (grouped: national or foreign seafarers). Will not include all those working on Spanish flag vessels (some countries have special arrangements). Cannot identify those: with an unrestricted licence working on inland waterways.

	Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
72	Spain	National Statistics Institute	Employment (from the Active Population Survey (EAPS))	2008–2020	Not approached	Desktop: Tabulated data on employment in 'maritime and inland waterway Transport' sector split by sex.	Desktop: Sector rather than occupational data, based on sample of approx 65,000 people per quarter. No information on age or nationality.  Interview: Figures only cover Spanish Shipping Association members (approx. 95% of Spanish fleet, and 70% non-Spanish flagged vessels owned by Spanish companies). Figures then scaled up. Detailed information on rank only for non-European seafarers. No information on Spanish seafarers on foreign flagged vessels. Cannot identify those working below their qualified rank; not active at sea.
73	Spain	Spanish Shippers Association	Employment (Figures as provided by members)	None	Interview completed	Interview: Figures on the number of seafarers employed onboard member's vessels. Includes both Spanish and non-Spanish seafarers. Rank can be extracted from copies of seafarers contracts (non-European seafarers only)	Interview: Figures only cover Spanish Shipping Association members (approx. 95% of Spanish fleet, and 70% non-Spanish flagged vessels owned by Spanish companies). Figures then scaled up. Detailed information on rank only for non-European seafarers. No information on Spanish seafarers on foreign flagged vessels. Cannot identify those working below their qualified rank; not active at sea.
74	Sweden	Swedish Transport Agency (Transport Styrelsen)	Certificate	None	Interview completed	Desktop: Issue STCW certificates. Online certificate verification system.  Interview: Issue (and verifies online) CoC, CeC and CoP certification. Information kept includes: sex, age (from DOB), nationality, rank, limitations and underlying certification. Can distinguish seafarers even with multiple certificates. Can identify those working below their qualified rank; with an unrestricted licence but working on inland waterways. Will have records of Swedish seafarers working on foreign vessels if got certificate in Sweden, and foreign seafarers working on Swedish vessel if they got there certificate endorsed.	Desktop: Unknown as no access.  Interview: Cannot distinguish seafarers active at sea or not. Excludes seafarers who have certification from outside Sweden working on non-Swedish flagged vessels. Also would not have records of Swedish seafarers working abroad if certification endorsed abroad. Suggest the figures publish are adjusted for those working ashore.
75	Sweden	Statistics Sweden	Employment (from Swedish Occupational Register)  Talks about two types of data: 1) Labour Force Survey, and 2) Occupational based Register Statistics.	2014–2018	Interview completed	Desktop: Tabulated data on employment by basic marine occupation groups split by sex from Swedish Occupational Register. Covers the whole population.  Interview: Information kept on age (DOB), sex, nationality, and rank (using Swedish classification SSYK-12, based on ISCO-08). From Occupation based register incorporating all of population. Based on records from tax authorities and the department of Labour, thus can say if actively working at sea. Also undertakes standard Labour Force Survey.	Desktop: Limited detail on occupation (broad ranks: ship's deck officers, ship's engineers etc). No information on age, nationality, or limitations. Publication is 16 months after data collection.  Interview: Population based register statistics: Not know if a seafarer had unrestricted licence but working inland; Foreign seafarers on Swedish vessels not included. Data less accurate for Swedish seafarers working abroad. Rank is detailed but not STCW classifications. Labour Force Survey: Does not accurately represent seafarer due to scaling up.

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
76 UK	Maritime and Coastguard Agency	Certificate	None	Interview completed	<p>Desktop: Issue STCW certificates. Online certificate verification system.</p> <p>Interview: Issue (and verifies offline) CoC, CeC and CoP. GMDSS Certificates verified offline. Information kept includes: sex, age (from DOB), nationality, rank, limitations and underlying certification. Can distinguish seafarers even with multiple (Does for DfT report)</p>	<p>Desktop: Unknown as no access.</p> <p>Interview: Does not have records of supporting certification (i.e. fire fighting courses). Colleges have these records. Cannot identify those: with an unrestricted licence but working on inland waterways; not active at sea.</p>
77 UK	Office for National Statistics	Employment (from Labour Force Survey)	2012-2020 (sector data); 2001-2018 (Occupational data) 2001-2018 (Series discontinued)	Interview refused	<p>Desktop: 1) Tabulated data on employment in 'Transport and Storage' split by sex. 2) Tabulated data on as marine and waterways transport operatives (2011-2018) and as ship and hovercraft officers (2001-2018) split by sex. SOC 2010 classifications used.</p>	<p>Desktop: 1) Sector rather than occupational data. No information on age, or nationality. 2) Limited detail on occupation (broad ranks). No information on age or nationality. Publication discontinued. 1&amp;2) Based on sample of approximately 100,000 people (40,000 households).</p>
78 UK	Department of Transport	Certificate	2011-2019	Not approached	<p>Desktop: Tabulated data on the number of certificates issued by UK MCA split by rank (detailed, but doesn't cover all ranks), department, nationality (sometimes grouped), sex, and age (grouped) for 2012-2019 (separate tables)</p>	<p>Desktop: Data is presented on separate tables. The range of years covered varies. Ranks is often grouped (deck officers, engine officers etc), and even when detailed rank information is provided it doesn't cover all ranks. Age and Nationality grouped. Based on MCA data with figures often adjusted to account for those who are not active at sea or have retired.</p>
79 UK	Warsash Maritime Academy	Certificates (This training establishment only)	None	Interview completed	<p>Interview: Runs short courses, basic training (i.e. fire fighting), OPTIO course, STCW officer training courses. Cadet ships run September and January. Second officer, Sept, January, and April. Short courses monthly basis (some weekly). Students are 60% British/ 40% foreign. Sex is recorded.</p>	<p>Interview: Only has information on course undertaken there. Could only count certificates, not seafarers. Certificates need renewing at different time intervals, yearly statistic on course completed may miss seafarers. No information on rank (only highest course undertaken). Does not record age or underlying certification. Cannot tell if a seafarer if a seafarer is working at the rank they are qualified for, or if they have an unlimited licence but working inland waterways.</p>

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
80	European Maritime Safety Agency (EMSA)	Certificates European Wide Data Collection (also includes Norway and Iceland)	None	Interview completed	<p>Desktop: See below for review of EMSA published reports.</p> <p>Interview: EMSA maintains data on STCW certificates (CoC, CeC, and CoP's) as sent to them from EU Members States Maritime Authorities annually on the 1st December. The provision of this data is a legal requirement as specified under article 25. Information is kept on: sex (all but Netherlands and Poland), age (from DOB), nationality, rank, limitations, date of issue, date of expiry. Can distinguish seafarers even with multiple certificates. Suggests data accurately reflect those working on EU flagged vessels. EMSA is working on a publically available, searchable database of STCW certificates, which should go live in 2021.</p>	<p>Desktop: See below for review of EMSA published reports.</p> <p>Interview: Only a small number of EU Members states supply details of underlying certification as not a legal requirement to do so. Not all supply information on CoP (n=16). Only verifies a sample of the certificate detail provided from each country. Cannot identify those working below their qualified rank, active at sea. Did not say whether they could identify those working with an unrestricted licence on inland waterways. In some publications figures are scaled down by a factor of 16% to take into account seafarers working ashore and retired.</p>
81	European Foundation for the Improvement of Living and Working Conditions (EUROFOUND)	Employment (from European Working Conditions survey) Covers all of Europe	None	Interview completed	<p>Desktop: Eurofound is the EU Agency for the improvement of living and working conditions. It conducts a number of European wide surveys on a regular basis, and may have data on employment, either by sector, or actual employment classification.</p> <p>Interview: Does research into living and working conditions in Europe in order to inform policy making. The European Working Conditions survey uses sector (NACE) and occupation (ISCO) classifications. Information kept includes: sex, age (Not DOB, age when surveyed), nationality (National vs Non-National). Data is publically available.</p>	<p>Desktop: Unknown as no access.</p> <p>Interview: European working conditions survey only conducted every 5 year. Based on sample of approx 1,000 people per country (although some countries collect more). Does not accurately represent seafarer due to scaling up. Interviews done face-to-face, thus may not include seafarers working at sea. Cannot break NACE categories down further. Occupational categories do not show STCW ranks.</p>
82	European Centre for the Development of Vocational (CEDEFOP)	Covers all of Europe	None	No interview as does not keep data	<p>Desktop: CEDAFOP is a research agency that provides evidence for, and advice on, European wide Vocational and Educational Training (VET) policies.</p> <p>Interview: Not undertaken as email reply said did not keep data on seafarers.</p>	<p>Interview: Replied to email saying does not collect data on seafarers</p>

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
83	Eurostat (the statistical office of the European Union)	Employment (from European Labour Force Survey) Covers Europe (also includes the UK, 3 EFTA countries, and 4 EU candidate countries)	None	Unable to arrange interview in time	Desktop: Eurostat is the statistical office of the European Union. It is responsible for undertaking the European Labour Force Survey (EU-LFS), and combines LFS data from 35 different countries.	Desktop: Unknown as no access.
84	EMSA Seafarers Statistics in the EU Report: Statistical Review Series (Write up based on 2017 report)	Certificate Data All EU members states (as well as Norway and Iceland)	Reports are published yearly Available for 2016-2020	n/a	Desktop: Report provides information on STCW certificate (CoC's, CeC's and CoP's) numbers as provided to EMSA from EU Members States (as well as Norway and Iceland) recorded in EMSA STCW Information System (STCW-IS). Tabulated and graphical data is provided individually for CoC's, CeC's and CoP's covering: rank (both grouped and detailed), department (Grouped), country of issue (Grouped), sex, nationality (grouped), and age (grouped/average ages). (separate tables).	Desktop: Data cannot identify those: not active at sea (i.e. working ashore). Due to data being provided by multiple administration there may be some double counting. Differences in coding of certificate types may also lead to inaccuracies. A delay in reporting, and analysing the data means that it is approximately 2 year out of date. Data is grouped for: rank (Sometimes detailed), department, country of issue, nationality, and age (Sometimes average given)
85	EMSA STCW-IS Online information System	Certificate/ Diploma Data All EU members states (as well as some other countries)	Data on certificates issued by MET for the previous 5 years	n/a	Desktop: Developed by EMSA, the STCW-IS is a web-based information system containing information on both national maritime administrations and maritime education and training (MET) institutions as supplied by participating countries. Within the system is a page listing the number of certificates, by type, issued by individual maritime education and training facilities (METs) for the previous 5 years.	Desktop: Although certificate type is detailed (including limitations) no information is provided on sex, age, nationality, or underpinning documents. Data is only provided by a very small number of countries, and even within these not all MET provide data. Data only covers the previous 5 years (rolling).

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
86	Europe European Commission's Study titled 'EU Seafarers Employment: Final Report' (by Sulpice 2011)	Certificates?/ Employment? (nature of data unclear) EU members EU states (where data was available/ provided)	One off report in 2011  Data covers 2010, but sometimes makes comparisons to 2000 data	n/a	Desktop: The report provides information on employment of seafarers in the EU, and estimates shortages and surpluses. Uses data from existing sources (published reports, studies and statistics, data from administration websites), supplemented with information from Maritime administrations about the number of national seafarers (on both national and foreign flagged vessel).  Tabulated and graphical data is presented on seafarer's numbers by rank (grouped), department (grouped), region (grouped), country of supply, flag (grouped), sex and age (grouped). Comparison are often made to other data sources (for example, ISF/ Bimco, Drewry's, Ecory's)	Desktop: Out of date. Study was not able to provide a detailed overview of seafarers employment due to a lack of availability of data in most countries. Figures mostly based on ISF/ Bimco report.  Due to poor coverage of existing data this was supplemented with a questionnaire sent to Maritime administrations asking about the number of national seafarers on national and foreign vessel, the sex and age of these seafarers (both grouped). Of the 15 administrations approached only 6 returned a completed questionnaire.
87	Europe Summary report for the European Commission titled 'An exhaustive analysis of employment trends in all sectors related to sea or using sea resources' (Weber, and Nevala 2006. By ECOTEC Research & Consulting)	Certificates?/ Employment? (nature of data unclear)  All EU members states	One off report in 2006  Data covers 2004/2005	n/a	Desktop: Study looks at employment and employment trends in a number of different maritime related sectors (for example, shipping, shipbuilding, recreational boating, offshore, Maritime services, tourism, and Fisheries) at European and Member States levels.  Tabulated data provides figures on those employed in the shipping sector in 2004/ 2005 split by country (covers all EU countries).	Desktop: Out of date. Report does not just look at those working in the marine industry. Looks at sectors such as shipbuilding, recreational boating, offshore oil and gas extraction, Maritime services, Navy, Coastal tourism, and Fisheries. Figures for those working in the shipping sector are often rounded up. The source of the figures is stated as 'national expert' with no detail of how these are obtained. No information on sex, age, nationality, rank, limitations etc.
88	Europe European Transport Workers Federation Report titled 'How to enhance training and recruitment in the shipping industry in Europe: Final Report' (by Kahvechi, Lillie and Chaumette 2011)	Certificate/ Employment  EU Members (France, Germany, Greece, Norway, UK and Poland)	One off report in 2011  Data covers varying year ranges from 1980-2007	n/a	Desktop: Report looking at the seafarer's labour market from the perspective of current and future shortages of EU national seafarers as well as current and future skills gaps. Uses data from SIRC Global Labour Market Survey, national and international statistics (predominantly BIMCO report), industry publication, reports, and academic and grey literature.  Tabulated data is presented individually for each country showing: Nationality (grouped), rank (grouped), (separate table, and not always comparable)	Desktop: Out of date. Only looks at data from 6 EU countries. Figures mostly based on ISF/ Bimco report. The range of years covered in tables frequently vary. Nationality and rank grouping often done in different way for each key country. Figure sometimes presented as number of certificates, or as number employed.

Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
89	Bimco/ICS Manpower Report Series (write-up based on 2015 report)	Certificates (and some employment) Covers 140 National Administrations globally	Report published every 5 years, since 1990. Available for 2005, 2010, 2015 (Next report will be in 2021)	n/a	Desktop: The BIMCO report looks at the current supply and the future anticipated demand for seafarers. Information on the number of STCW certificates is provided by administrations through a country questionnaire. A questionnaire is also sent to company's to get information on age profiles, wastage, and turn- around times, and the seafarers survey provides information on age profile, rank, gender, and years at sea. Tabulated and graphical data is provided on of seafarers by rank (grouped), regional and economic groupings (Grouped, i.e. OECD, Eastern Europe etc), country of supply (Grouped), age (grouped), sex, and years at sea (grouped) (mostly separate tables).	Desktop: Country questionnaire only includes COC's. In some cases data was not complete so made assumptions, or use data from previous reports. Numbers were adjusted if key stake holders did not think they were accurate. Administrations record keeping was not seen as accurate. Country questionnaires only sent to 20 countries. Data cannot identify those: not active at sea (i.e. working ashore), medically unfit, or retired. The information about seafarer number derived (from STCW certificate records) was not related to information provided on other surveys. Rank, economic and groupings, country of supply, age, and years at sea were grouped. Although tables/ graphs cover many factors (rank, sex, age etc) frequently provided on separate table.
90	Drewery Manning Report Series (Write up based on 2015 report)	Certificate Data Covers 10 countries (China, Croatia, India, Latvia, Philippines, Poland, Romania, Russia, Ukraine, UK)	Report published yearly since 2006 (Later replaced by The Manning Annual Review and Forecast)	n/a	Desktop: The report looks at both the current supply of predicted future availability and demand for seafarers for 10 countries (see left). The majority of information on seafarer numbers is taken from the BIMCO/ICS Manpower report. Tabulated and graphical data is provided on of seafarers supply for each of the countries (10 countries listed above) by rank (officers or ratings) and nationality by year (covers 1990-2015 with figures for every 5 years, i.e. 1990, 1995, 2000 etc).	Desktop: The data is only a snapshot, looking at seafarer supply every 5 years (i.e. data available for 1990, 1995, 2000, 2005, 2010, 2015). The majority of information on seafarer numbers is from the BIMCO/ ICS Manpower report. Seafarer numbers is estimated. No information on sex, age, limitations, or underpinning documents. Rank and nationality is grouped.

	Country	Source	Type	Availability at desk review	Follow-up	Coverage	Limitations
91	Global	Report by Japan International Transport Institute and The Nippon Foundation titled 'A Study on the 'Future Global Supply and Demand for Seafarers and Possible Measures to Facilitate Stakeholders to secure Quantity of Quality Seafarers''	Estimated seafarer demand Global	One off report in 2010  No data on seafarer numbers	n/a	Desktop: Report looks at the projected futures demand for seafarers. This is estimated by looking at manning numbers/ world fleet statistics, and calculating the required number of seafarers. Figures are then adjusted based on estimated GDP growth, scrapage of vessel, ships being layed up, and cancelation of new builds to produce the predicted demand for seafarers in 2020.	Desktop: Out of date. The report does not look at actual seafarer numbers. It only predicts demand based on calculations from safe manning numbers, and world fleet data.
92	Global	Report by Precious Associates Limited titled 'Availability and Training of Seafarers' prepared for the OECD Maritime Transport Committee (2003)	Certificates (and some employment)  Global	One off report in 2003  Data covers 1990, 1995, and 2000	n/a	Desktop: This report looks at the future predicted demands for ships crews, both in terms of numbers, and the skill they required in relation to developments in the industry. It focuses predominately on factor which may influence demand (ie changes in trade, technical developments in ships). Tabulated data on seafarer numbers by rank (grouped) for 1990, 1995, and 2000.	Desktop: Out of date. Figures presented are from ISF/ Bimco reports. Only gives data every 5 years.
93	Global	Report by SJRC titled 'The Global Labour Market for Seafarers: Working Aboard Merchant Cargo Ships 2003' (by Ellis and Sampson 2008)	Employment Global	One off report in 2008  Data covers 2003	n/a	Desktop: The report looks at crewing of the world fleet through the collection of crew lists from 'hub' ports. Tabulated and graphical data (percentages) is presented on rank (grouped), department (grouped) Nationality (top 10), age (mean) vessel type (grouped), flag (top 10), DWT (grouped) (separate tables)	Desktop: Out of date. Based on a sample covering 10% of world fleet as defined by Lloyds Register World Fleet Statistics, which was then scaled up to give global figures. Is a snap shot of seafarers that were on vessel during the particular month of survey. Does not reflect less common vessel types accurately. Grouped data for rank, vessel type, and DWT. Only gives top 10 countries for flag and seafarer nationality. Figures presented as percentages and not actual numbers.

**Figure A1: Email and questionnaire to the holders of certificate data**

Dear [PERSON],

I am writing to you with the support of the European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA) who are undertaking a European wide project to map the availability of data on those employed in the maritime industry. The research is not seeking to collect any data. It simply aims to assess what data are available, in as much detail as possible, and from this to develop recommendations for a European wide data collection system.

The ETF and ECSA have contracted Professor Helen Sampson and me from the Seafarers International Research Centre (SIRC), part of the School of Social Sciences at Cardiff University in the UK, to undertake part of the work for this project. Please see attached a letter of introduction and support from the ETF and ECSA.

During the first phase of our research we have identified organisations which keep reliable and accurate data on seafarers within each of the EU Member States, and our desktop research indicates that the [ORGANISATION] holds such data on [COUNTRY] seafarers. We would really like to find out more about the nature of the data you keep, and therefore we would be very grateful if you would answer the few brief questions below. Your participation will make a very substantial contribution to our project.

If you have any questions or would like to discuss this research further, please feel free to contact me directly.

Best regards,

Neil Ellis

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## Questions

We are aware that you are responsible for the issue of [COUNTRY] Seafarers STCW Certificates, and also that you provide an online verification system. We have a few questions about the data you keep on certification.

1. Do you provide certificates for all [COUNTRY] seafarers? (please put 'x' next to the appropriate answer)  Yes  No
  - a. If not, who else provides certificates? Why is this? (please specify below)
  
2. What types of certificates do you issue? (Please put 'x' next to all that apply)
  - Certificates of Competency (CoC's)
  - Certificates of Equivalent Competency (CeC's)
  - Certificates of Proficiency?
  - Other? (Please specify below)
  
3. Do you keep records of the certificates that you issue? (please put 'x' next to the appropriate answer)  Yes  No
  
4. The following questions ask about how much detail is kept about each certification.
  - a. Is **rank/capacity** recorded, and if so, is this grouped or do you record specific rank? (Please put 'x' next to the appropriate answer)
    - Rank is not recorded
    - Grouped rank recorded (i.e. deck officer)
    - Specific rank recorded (i.e. Master, 2nd Engineer)
  
  - b. Are **limitations** recorded, and if so, is the specific nature of these noted? (Please put 'x' next to the appropriate answer)
    - Limitations are not recorded
    - Grouped limitations recorded (i.e. limited, unlimited)
    - Details of limitations recorded (i.e. unlimited, costal, category A Fishing vessel)
  
  - c. Is **nationality** recorded, and if so, do you record individual nationalities? (Please put 'x' next to the appropriate answer)
    - Nationality is not recorded
    - Grouped nationality is recorded (e.g. Own country, Other countries)
    - All individual nationalities are recorded

- d. Is **age** recorded, and if so, does this include Date of Birth (DOB)? (Please put 'x' next to the appropriate answer)
- Age is not recorded
  - Grouped age is recorded (e.g. 20-30, 30-40)
  - DOB is recorded
- e. Is **sex** recorded? (Please put 'x' next to the appropriate answer)
- No
  - Yes
- f. Are the **underpinning documents** recorded? (Please put 'x' next to the appropriate answer)
- No
  - Yes
- g. Is **other** information recorded? (Please put 'x' next to the appropriate answer)
- No
  - Yes (please specify)
5. Can you tell if seafarers have multiple certificates? (please put 'x' next to the appropriate answer)  Yes  No
- a. If so, does each certificate count as a separate entry in the dataset? (please put 'x' next to the appropriate answer)  Yes  No
- b. Are you able to make a count of individual seafarers (i.e. even where seafarers have multiple certificates, can you make an accurate count of how many seafarers have at least 1 certificate), or can you only count certificates? (please put 'x' next to the appropriate answer)
- Can count certificates but not individual seafarers if they hold more than 1 certificate
  - Can count individual seafarers, even where they hold multiple certificates
6. Are there any circumstances in which a [COUNTRY] seafarer would not be recorded? (please put 'x' next to the appropriate answer)  Yes  No
- a. If yes, please give details of why they would not be recorded below.

7. Would you be able to tell if (please put 'x' next to the appropriate answer):
- a. A seafarer is serving at the rank he/she is qualified for?  
 Yes    No
  - b. A seafarer has an unrestricted certificate but has chosen to work in inland trades?  
 Yes    No
  - c. A seafarer with an in-date licence is 'active' at sea? (i.e. not working ashore or retired etc)  
 Yes    No
8. Do you know if there is a national/regional register of seafarers in [COUNTRY]? (please put 'x' next to the appropriate answer):    Yes    No
- a. If there is, who is responsible for maintaining this? (Please specify below)

**Figure A2: Email and questionnaire to the holders of employment / population data**

Dear [PERSON],

I am writing to you with the support of the European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA) who are undertaking a European wide project to map the availability of data on those employed in the maritime industry. The research is not seeking to collect any data. It simply aims to assess what data are available, in as much details as possible, and from this to develop recommendations for a European wide data collection system.

The ETF and ECSA have contracted Professor Helen Sampson and me from the Seafarers International Research Centre (SIRC), part of the School of Social Sciences at Cardiff University in the UK, to undertake the part of the work for this project. Please see attached a letter of introduction and support from the ETF and ECSA.

During the first phase of our research we have identified organisations from each of the EU countries which keep reliable and accurate data on seafarers within their country, and our desktop research indicates that the [ORGANISATION] holds such data on [COUNTRY] seafarers. We would really like to find out more about the nature of the data that you keep, and therefore we would be very grateful if you would answer the few brief questions below. Your participation will make a very substantial contribution to our project.

If you have any questions or would like to discuss this research further, please feel free to contact me directly.

Best regards,

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## Questions

We are aware that you are responsible for the annual Labour Force Survey in [COUNTRY], and that part of the data you collect on employment includes information about those working in the maritime industry. We have a few questions about the data you keep.

1. How often is the Labour Force Survey conducted? (Please specify below)
  
2. Is the data collected by ORGANISATION? (please put 'x' next to the appropriate answer)  
 Yes    No
  - a. If not, who collect this data (Please specify below)
  
3. Is the survey based on a sample of the population? (please put 'x' next to the appropriate answer)    Yes    No
  - a. If so, what percentage of the population is the sample based on? (Please specify below)
  
  - b. If the data is based on a sample, how are national level numbers calculated? (Please specify below)
  
4. In relation to classification of employment, do you use a standard European Classification System? (please put 'x' next to the appropriate answer)  
 No  
 NACE  
 ISIC  
 Other (Please specify)
  
5. On your website, you publish figures on 'Transport and storage' (CHECK THIS FOR EACH COUNTRY). Can such classifications be broken down further, to cover just those working at sea? (please put 'x' next to the appropriate answer)    Yes    No
  
6. If the data can be broken down to just those working at sea, please answer the following questions to indicate whether you keep any more detailed information on seafarers.
  - a. Is **sex** recorded? (Please put 'x' next to the appropriate answer)  
 No  
 Yes

- b.** Is **age** recorded, and if so, does this include Date of Birth (DOB)? (Please put 'x' next to the appropriate answer)
- Age is not recorded
  - Grouped age is recorded (e.g. 20-30, 30-40)
  - DOB is recorded
- c.** Is **nationality** recorded, and if so, do you record individual nationalities? (Please put 'x' next to the appropriate answer)
- Nationality is not recorded
  - Grouped nationality is recorded (e.g. Own country, Other countries)
  - All individual nationalities are recorded
- d.** Is **rank/capacity** recorded, and if so, is this grouped or do you record specific rank? (Please put 'x' next to the appropriate answer)
- Rank is not recorded
  - Grouped rank recorded (i.e. deck officer)
  - Specific rank recorded (i.e. Master, 2nd Engineer)
- e.** Are **limitations** recorded, and if so, is the specific nature of these noted? (Please put 'x' next to the appropriate answer)
- Limitations are not recorded
  - Grouped limitations recorded (i.e. limited, unlimited)
  - Details of limitations recorded (i.e. unlimited, costal, category A Fishing vessel)
- f.** Are the **underpinning documents** recorded? (Please put 'x' next to the appropriate answer)
- No
  - Yes
- g.** Is other information recorded? (Please put 'x' next to the appropriate answer)
- No
  - Yes (please specify)

**Figure A3: Email and questionnaire to the holders of social security data**

Dear [Sir/ Madam],

I am writing to you with the support of the European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA) who are undertaking a European wide project to map the availability of data on those employed in the maritime industry. Please let me stress, the research is not seeking to collect any data. It simply aims to assess what data is available, in as much detail as possible, and from this to develop recommendations for a European wide data collection system.

The ETF and ECSA have contracted Professor Helen Sampson and me from the Seafarers International Research Centre (SIRC), part of the School of Social Sciences at Cardiff University in the UK, to undertake the part of the work for this project. Please see attached a letter of introduction and support from the ETF and ECSA.

Our research during the first phase of the project has indicated that records of social security contributions within each of the EU countries, such as [COUNTRY] Social Security Scheme, may be a reliable source of information about those employed in the maritime industry. Therefore, we would really like to find out more about the nature of the data that the [ORGANISATION] keeps on those working in the maritime industry as part of their Social Security Scheme, and would be very grateful if you were able to answer the few brief questions below for us. Your participation will make a very substantial contribution to our project.

If you have any questions or would like to discuss this research further, please feel free to contact me directly.

Best regards,

Neil Ellis

**Neil Ellis**

Research Associate

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## Questions

1. Is the [ORGANISATION] responsible for the collection of social security contributions? (please put 'x' next to the appropriate answer)
  - No
  - Yes

a. If not, please specify which agency is?
  
2. If your organisation is responsible for the collection of social security contributions, do you keep records on the nature of a person's employment? (i.e. job title) (please put 'x' next to the appropriate answer)
  - No
  - Yes
  
3. Is a standard European Classification System of Employment used? And if so which one? (please put 'x' next to the appropriate answer)
  - No
  - NACE
  - ISIC
  - Other (Please specify)
  
4. Within your records, can you identify those working specifically in the maritime industry? (please put 'x' next to the appropriate answer)
  - No
  - Yes
  
5. Are there different social security arrangements for those working in the maritime industry, than those in the general population? (please put 'x' next to the appropriate answer)
  - No
  - Yes

a. If yes, please specify what these are:

6. Do [COUNTRY] seafarers working on non-[COUNTRY] flagged vessels (i.e. vessels owned and registered in countries other than [COUNTRY]) contribute to the [COUNTRY]'s social security scheme? (please put 'x' next to the appropriate answer)
- Yes
- No
- a. If not, which social security scheme would they contribute to? (Please specify below)
7. Do non-[COUNTRY] seafarers working on [COUNTRY] flagged vessels (i.e. vessels owned and registered in the [COUNTRY]) contribute to [COUNTRY]'s social security scheme? (please put 'x' next to the appropriate answer)
- Yes
- No
8. If you are able to identify those working specifically in the maritime industry within your records, could you please answer the following questions about the nature of the data you keep on seafarers.
- a. Is **sex** recorded? (Please put 'x' next to the appropriate answer)
- No
- Yes
- b. Is **age** recorded, and if so, does this include Date of Birth (DOB)? (Please put 'x' next to the appropriate answer)
- Age is not recorded
- Grouped age is recorded (e.g. 20-30, 30-40)
- DOB is recorded
- c. Is **nationality** recorded, and if so, do you record individual nationalities? (Please put 'x' next to the appropriate answer)
- Nationality is not recorded
- Grouped nationality is recorded (e.g. Own country, Other countries)
- All individual nationalities are recorded

- d. Is **rank/capacity** recorded (i.e. their job title), and if so, is this grouped or do you record specific rank? (Please put 'x' next to the appropriate answer)
- Rank is not recorded
  - Grouped rank recorded (i.e. deck officer)
  - Specific rank recorded (i.e. Master, 2nd Engineer)
- g. Do you record any **other** information relating to them being a seafarer? (Please put 'x' next to the appropriate answer)
- No
  - Yes (please specify)

Figure A4: ETF/ECSA introductory letter accompanying the questionnaire survey



16<sup>th</sup> March 2020

Dear [INSERT NAME],

**Re: Mapping of Maritime Professionals: Towards a full-scale European data collection system**

The European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA) are leading a project which aims to map the availability of detailed and accurate data on those employed in the maritime industry across the European Union. From this mapping exercise, the project will develop a set of recommendations for a European level data collection system. As you are probably aware, currently no such system exists, and as a result there is no reliable basis from which to: assess and monitor trends and changes in this key labour market; and so put in place the strategic planning and development of EU-level policies necessary to support the sustainability of the maritime workforce.

The ETF and ECSA have contracted the Seafarers International Research Centre (SIRC), which is part of the Cardiff University School of Social Sciences in the UK, to carry out some of the work for this project. Professor Helen Sampson is leading the research team at SIRC and she is being supported by Mr Neil Ellis.

We are writing to you now to ask for your help with the project. One of the key first steps in the research is to identify examples of good practice in relation to data collection at the country level. Our desktop investigations have shown that **NAME OF ORGANISATION** holds data on **COUNTRY** seafarers. We would very much like to find out more about this, and so would be very grateful if you would consider completing the attached brief survey. It asks about the nature of the data **ORGANISATION** keeps on seafarers, what this includes and how it is obtained and recorded. To be clear, we are not asking for any actual data; rather, we want to understand, in as much detail as possible, the nature of the data **ORGANISATION** keeps. We have tried to make the survey as quick and simple to complete as possible. Your participation will make a very substantial contribution to our project.

The project has been scrutinised and approved by the Cardiff University School of Social Sciences Research Ethics Committee and is being carried out in accordance with its strict requirements on data confidentiality and security.

We very much hope that you will feel able to help us with this important research project. If you have any questions or would like to discuss anything further, please feel free to contact Neil directly ([EllisN@Cardiff.ac.uk](mailto:EllisN@Cardiff.ac.uk) or +44(0)29 20 874 740).

Best regards,

A handwritten signature in blue ink, appearing to read 'Livia Spera'.

Livia Spera  
ETF Acting General Secretary  
European Transport Workers' Federation

A handwritten signature in blue ink, appearing to read 'Martin Dorsman'.

Martin Dorsman  
Secretary General  
European Community Shipowners' Associations

Figure A5: ETF/ECSA introductory letter accompanying the social security questionnaire survey

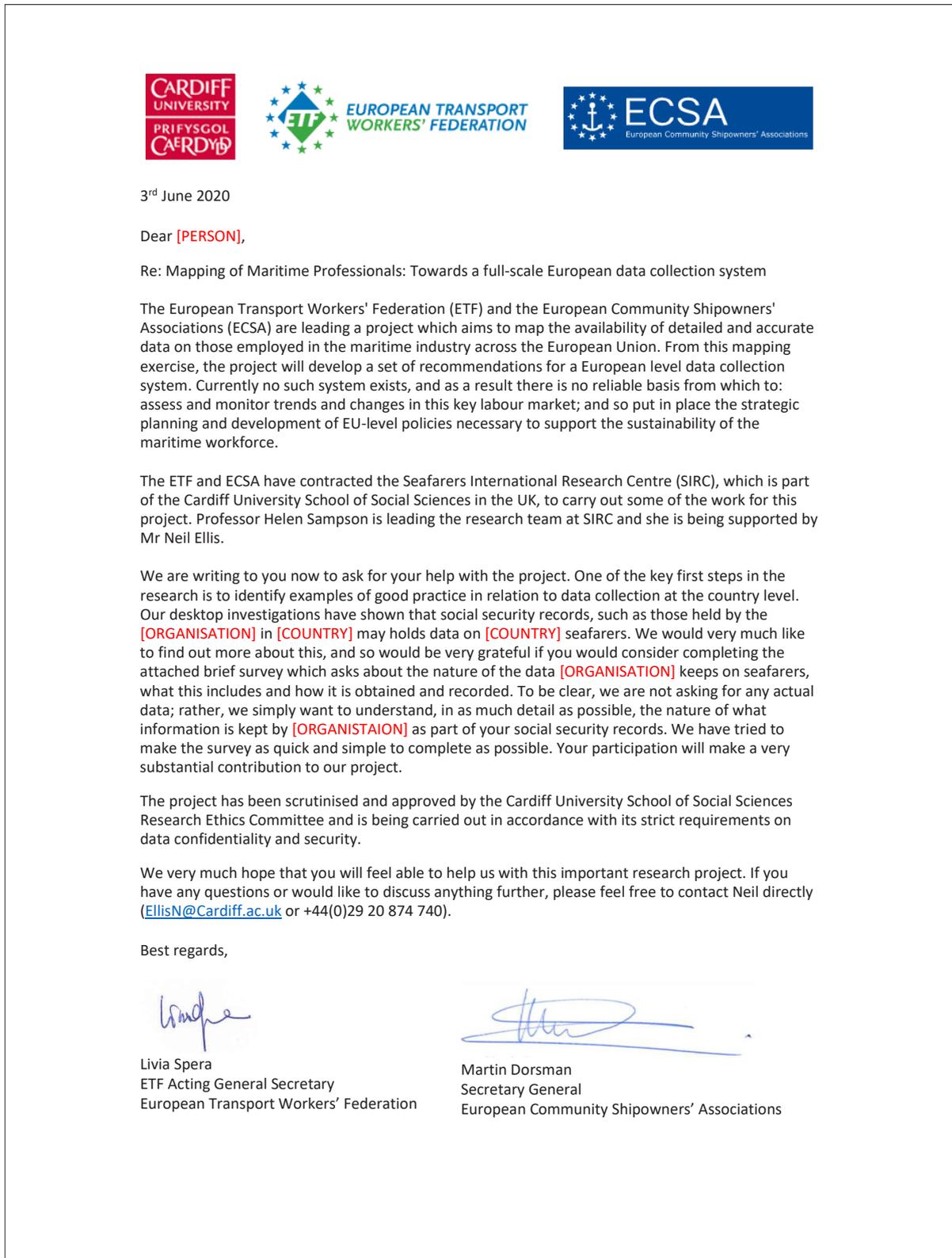


Table A3: Organisations approached during Phase 2 and interviews conducted

Country	Organisation	Notes	Length
Belgium (Social Security interview only)	National Social Security Office	Interview completed	42: 07
France (Social Security interview only)	l'URSSAF Alsace (Centre national des firmes étrangères – CNFE)	Contact made, but suggested we approach ENIM.	
	ENIM (Social Security of French sailors)	Contact made, but interview could not be arranged within project timeframe.	
Germany	The Federal Maritime and Hydrographic Agency (BSH)	Interview completed	54: 22
	Zentrale Heuerstelle Hamburg (the federal employment agency for seafarers)	Interview refused	
	Association of German Shipowners	No response	
	Headquarters of the Federal Employment Agency – Agency for Social Security	Interview refused	
	Knappschaft-Bahn-See (KBS) – Agency for Social Security	Interview completed (by email)	n/a
Greece	Ministry of Maritime Affairs and Insular Policy - Hellenic Coast Guard (HCG) - Seafarers Training Directorate	Interview completed (by email)	n/a
	Ministry of Maritime Affairs and Insular Policy - Hellenic Coast Guard (HCG) - Seafarers Labour Directorate	Interview completed	59:01
	The Hellenic Statistical Authority (ELSTAT)	No response	
The Netherlands	Kiwa Licensing	Interview completed	52: 01
	Ministry of Infrastructure and Water Management	Interview completed	43: 18
	The Human Environment and Transport Inspectorate	Interview refused	
	The Royal Association of Netherlands Shipowners (KVNR)	No response	
Spain	The General Directorate of the Merchant Marine (Ministry of Development)	Interview completed	39: 31
	The General Directorate of the Merchant Marine (Ministry of Development) - Social Security of the Social Institute of the Navy	Interview completed (by email)	n/a
	Spanish Shippers Association	Interview completed	41:18
Sweden	The Swedish Transport Agency (Transport Styrelsen)	Interview completed	40: 39
	Statistics Sweden	Interview completed	44:08
	Swedish Tax Agency (Skatteverket)	Contact made. Email interview requested, but no information returned	

Country	Organisation	Notes	Length
UK	Maritime & Coastguard Agency	Interview completed	44:31
	Office for National Statistics	Interview refused	
	Warsash School of Maritime Science & Engineering	Interview completed	41:09
Cross national organisations	European Maritime Safety Agency (EMSA)	Interview completed	1:17:30
	the European Foundation for the Improvement of Living and Working Conditions (Eurofound)	Interview completed	39:56
	European Centre for the Development of Vocational (CEDEFOP)	Interview not undertaken as no data on seafarers	n/a
	Eurostat (the statistical office of the European Union)	Contact made, but interview could not be arranged within project timeframe.	n/a

**Figure A6: Email to the holders of certificate data requesting a virtual interview**

Dear [Sir/ Madam],

I am writing to you with the support of the European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA) who are undertaking a European wide project to map the availability of data on those employed in the maritime industry. The research is not seeking to collect any data. It simply aims to assess what data are available, in as much detail as possible, and from this to develop recommendations for a European wide data collection system.

The ETF and ECSA have contracted Professor Helen Sampson and me from the Seafarers International Research Centre (SIRC), part of the School of Social Sciences at Cardiff University in the UK, to undertake part of the work for this project. Please see attached a letter of introduction and support from the ETF and ECSA.

During the first phase of our research we have identified organisations which keep reliable and accurate data on seafarers within each of the EU Member States, and our desktop research indicates that [ORGANISATION] may holds such data on [COUNTRY] seafarers. Therefore, I would like to invite you to take part in a Skype interview with me at your convenience.

Please let me reassure you, we do not wish to collect any data, but to simply asses the nature of the information that you recorded on seafarers. The interview will not take more than an hour, but it will make a very substantial contribution to our project.

I would be most grateful therefore if you could respond to this email or contact me by telephone so that we can arrange a convenient time and date for yourself.

If you have any questions or would like to discuss this research further, please feel free to contact me directly.

Best regards,

Neil Ellis

**Neil Ellis**

Research Associate

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**Figure A7: Email to the holders of employment / population data requesting a virtual Interview**

Dear [Sir/ Madam],

I am writing to you with the support of the European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA) who are undertaking a European wide project to map the availability of data on those employed in the maritime industry. The research is not seeking to collect any data. It simply aims to assess what data are available, in as much detail as possible, and from this to develop recommendations for a European wide data collection system.

The ETF and ECSA have contracted Professor Helen Sampson and me from the Seafarers International Research Centre (SIRC), part of the School of Social Sciences at Cardiff University in the UK, to undertake part of the work for this project. Please see attached a letter of introduction and support from the ETF and ECSA.

During the first phase of our research we have identified organisations which keep reliable and accurate data on seafarers within each of the EU Member States, and our desktop research indicates that [ORGANISATION] holds such data on [COUNTRY] seafarers. We would really like to find out more about the nature of the data you keep, and therefore I would like to invite you to take part in a Skype interview with me at your convenience.

Please let me reassure you, we do not wish to collect any data, but to simply assess the nature of the information that you recorded on seafarers. The interview will not take more than an hour, but it will make a very substantial contribution to our project.

I would be most grateful therefore if you could respond to this email or contact me by telephone so that we can arrange a convenient time and date for yourself.

If you have any questions or would like to discuss this research further, please feel free to contact me directly.

Best regards,

Neil Ellis

**Neil Ellis**

Research Associate

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**Figure A8: Email to the holders of social security data requesting a virtual Interview**

Dear [Sir/ Madam],

I am writing to you with the support of the European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA) who are undertaking a European wide project to map the availability of data on those employed in the maritime industry. Please let me stress, the research is not seeking to collect any data. It simply aims to assess what data is available, in as much detail as possible, and from this to develop recommendations for a European wide data collection system.

The ETF and ECSA have contracted Professor Helen Sampson and me from the Seafarers International Research Centre (SIRC), part of the School of Social Sciences at Cardiff University in the UK, to undertake the part of the work for this project. Please see attached a letter of introduction and support from the ETF and ECSA.

Our research during the first phase of the project has indicated that records of social security contributions within each of the EU countries, such as those maintained by the [ORGANISATION] in [COUNTRY], may be a reliable source of information about those employed in the maritime industry. Therefore, I would really like to find out more about the nature of the social security information that you keep, specifically on those working in the maritime industry, and would like to invite you to take part in a Skype interview with me at your convenience.

Please let me reassure you, this interview will not take more than an hour, but it will make a very substantial contribution to our project. I would be most grateful therefore if you could respond to this email or contact me by telephone so that we can arrange a convenient time and date to undertake the interview if you are able.

If you have any questions or would like to discuss this research further, please feel free to contact me directly.

Best regards,

Neil Ellis

**Neil Ellis**

Research Associate

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**Figure A9: Email to the holders of training establishment data requesting a virtual Interview**

Dear [Sir/ Madam],

I am writing to you with the support of the European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA) who are undertaking a European wide project to map the availability of data on those employed in the maritime industry. The research is not seeking to collect any data. It simply aims to assess what data are available, in as much detail as possible, and from this to develop recommendations for a European wide data collection system.

The ETF and ECSA have contracted Helen Sampson and me from the Seafarers International Research Centre (SIRC), part of the School of Social Sciences at Cardiff University, to undertake part of the work for this project. Please see attached a letter of introduction and support from the ETF and ECSA.

During the first phase of this research, I have been identifying organisations which keep reliable and accurate data on seafarers within each of the EU Member States, and this has suggested that training establishments, such as [ORGANISATION], may be a valuable source of information about UK seafarers.

I would, therefore, really like to find out more about the courses run at [ORGANISATION], the nature of the data kept on the qualifications the students have obtained, and the extent to which [COUNTRY] seafarers are known to [COUNTRY] training establishments. Therefore, I am writing to you now to invite you to take part in a Skype interview with me at your convenience. Please let me reassure you, this interview will not take more than an hour, but it will make a very substantial contribution to our project.

I would be most grateful therefore if you could respond to this email or contact me by telephone so that we can arrange a convenient time and date to undertake the interview if you are able.

If you have any questions or would like to discuss this research further, please feel free to contact me directly.

Best regards,

Neil Ellis

**Neil Ellis**

Research Associate

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**Figure A10: Email to the holders of Cross-National Data requesting a virtual Interview**

Dear [Sir/ Madam],

I am writing to you with the support of the European Transport Workers' Federation (ETF) and the European Community Shipowners' Associations (ECSA) who are undertaking a European wide project to map the availability of data on those employed in the maritime industry. The research is not seeking to collect any data. It simply aims to assess what data are available, in as much detail as possible, and from this to develop recommendations for a European wide data collection system.

The ETF and ECSA have contracted Professor Helen Sampson and me from the Seafarers International Research Centre (SIRC), part of the School of Social Sciences at Cardiff University in the UK, to undertake part of the work for this project (Please see attached a letter of introduction and support from the ETF and ECSA). As part of our research, our project partners in the ETF/ ECSA have suggested we contact [ORGANISATION] in order to ask if you maintain any information on seafarers within EU Members States, as she suggests your may be a valuable source of reliable and accurate data on seafarers

Therefore, we would like to invite you to take part in a Skype interview with me at your convenience. Please let me reassure you, we do not wish to collect any data, but to simply asses the nature of the information that you recorded on seafarers. The interview will not take more than an hour, but it will make a very substantial contribution to our project.

I would be most grateful therefore if you could respond to this email or contact me by telephone so that we can arrange a convenient time and date for yourself.

If you have any questions or would like to discuss this research further, please feel free to contact me directly.

Best regards,

Neil Ellis

**Neil Ellis**

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Figure A11: ETF/ECSA introductory letter accompanying requests for interviews

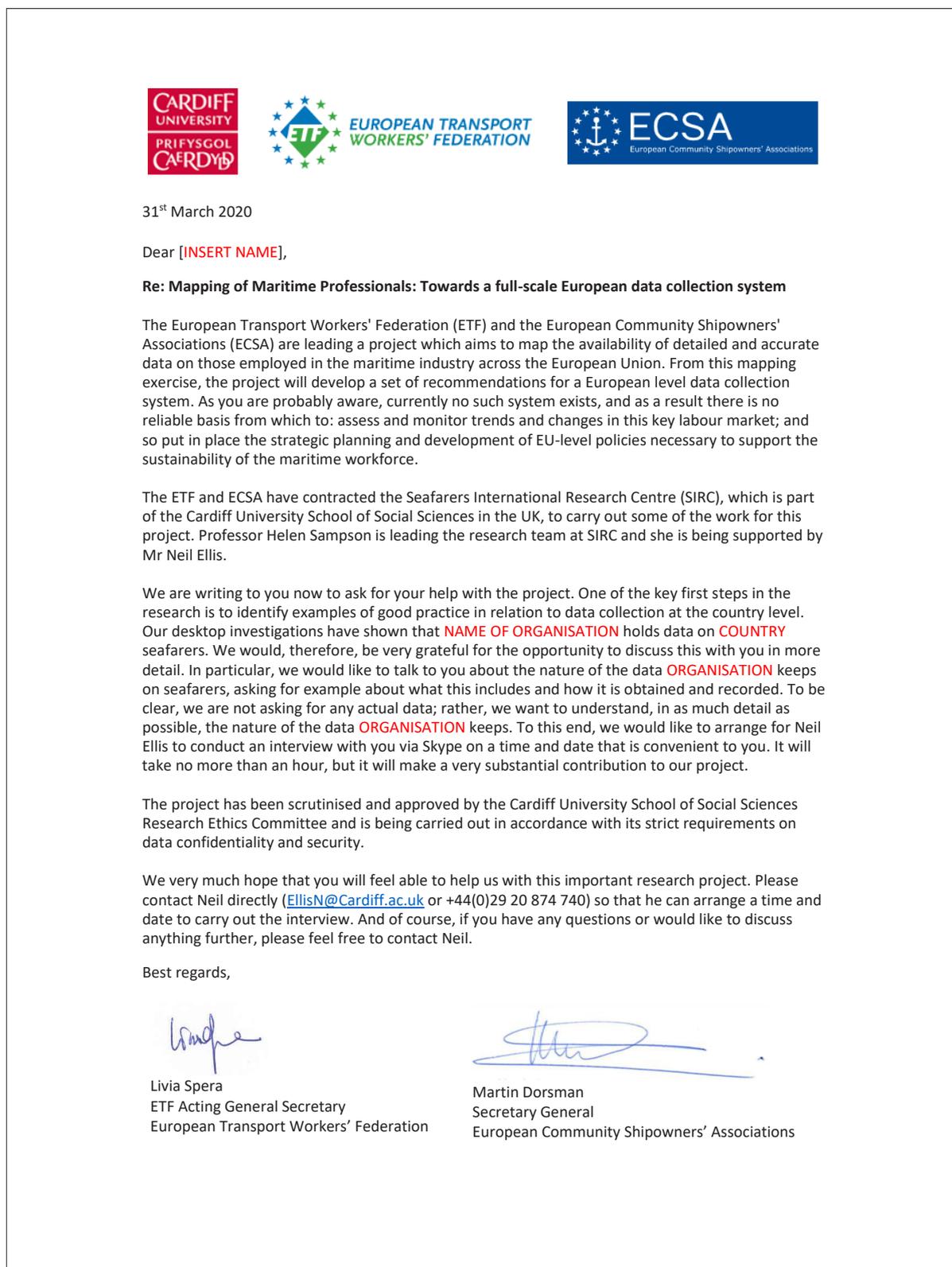


Figure A12: ETF/ECSA introductory letter accompanying requests for social security interviews

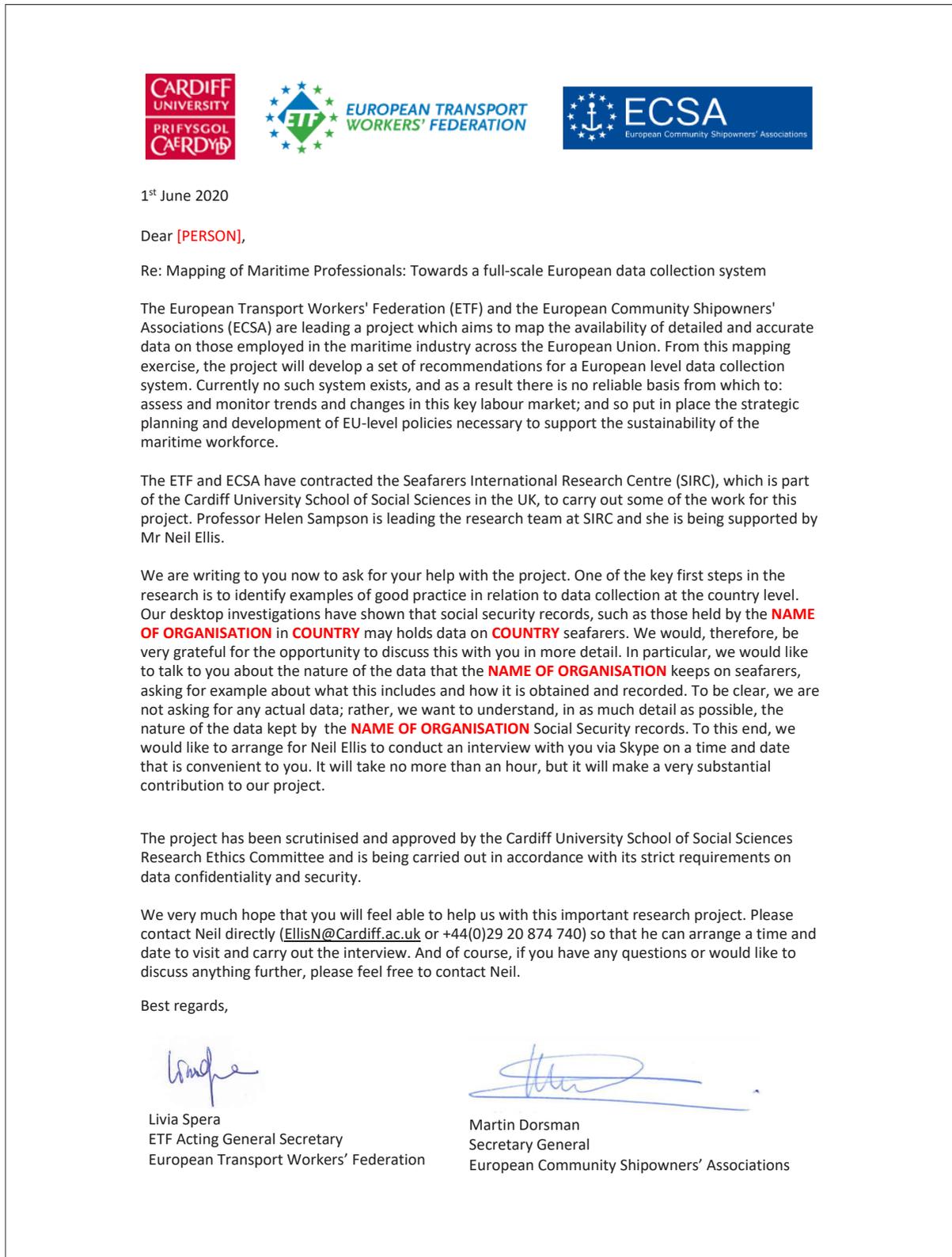


Figure A13: Project Information sheet



## Mapping of Maritime Professionals: Towards a full-scale European data collection system



---

**Information for Participants**

You are being invited to take part in a research study. To make a decision it is important for you to understand what the research will involve and why it is being done. Please read the following information carefully, and feel free to ask the researcher(s) any questions you may have.

**What is the purpose of the study?**

The study aims to map the availability and accuracy of data on those employed in the maritime industry within each country in the European Union (as well as Iceland and Norway), and from this to develop recommendations for a data collection system that can be used to provide reliable and accurate information on seafarers' employment across Europe.

**Who are the researchers and who is funding the research?**

Professor Helen Sampson, and Mr Neil Ellis are based at the Seafarers International Research Centre (SIRC), part of the Cardiff University School of Social Sciences. Dr Emma Wadsworth is based at Solent University, in Southampton.

The research is funded by the European Transport Workers' Federation (ETF) and the European Community Shipowners' Association (ECSA), and it has been approved by the Cardiff University School of Social Sciences Ethics Committee.

**Who can take part?**

We are interested in talking to those that have experience of, or are involved in, the collection and maintenance of data relating seafarer employment within the EU.









### **What do I have to do?**

If you agree to take part in the study we will ask you to participate in a recorded interview with the researcher(s) at a time and location that is convenient to yourself.

### **Will my contribution be confidential?**

Yes. Although the organisation you work for may be identified (as per the study aim to identify organisations keeping relevant data on seafarers), your contribution to the research will be confidential and you will not be identifiable in any way.

### **What will happen to the information that I give?**

Interview recordings will be kept securely, in strict accordance with the Data Protection Act and GDPR regulations. They will not be used for any other purpose than outlined in this research. An analysis of the information provided in the interview will form part of the report to be produced at the end of the study, which will be published by the funding bodies, as well as part of academic papers, journals or presentations, all of which will be publicly available.

### **Do I have to take part?**

Taking part in the study is entirely voluntary.

### **Contact information**

If you would like any further information about the study please do not hesitate to contact:

Prof Helen Sampson (SampsonH@cf.ac.uk)  
Neil Ellis (EllisN@cf.ac.uk)  
www.sirc.cf.ac.uk

Dr Emma Wadsworth (emma.wadsworth@solent.ac.uk)  
www.solent.ac.uk



Figure A14: Consent Form

**Consent Form**

**Mapping of Maritime Professionals: Towards a full-scale European data collection system**

Seafarers International Research Centre, Cardiff University



Name of Researcher(s) .....

	Please tick
1. I confirm that I have read and understood the information sheet about the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	<input type="checkbox"/>
2. I understand that my participation within this interview is voluntary and that I am free to withdraw at any time, without giving a reason.	<input type="checkbox"/>
3. I agree to take part in the interview, and am fully aware that this will be recorded.	<input type="checkbox"/>
3. I am aware that although the organisation that I work for may be identified in the write up of this research, this interview will be anonymised so that I cannot be identified.	<input type="checkbox"/>

Name of participant ..... (Print name)

Signature .....

Date .....

Figure A15: Interview schedule used with the holders of certificate data

## MapMar Project – Key Country Interview Schedule

### 1. Interviewee

- a. Please tell me a bit about yourself and your role here
  - i. What is your job title? What does your role involve?

### 2. The organisation and its data

- a. Please tell me a bit about this organisation
- b. As you know, our focus is on seafarers. Can you tell us about the information the organisation holds on seafarers please?
  - i. Where does the information come from? (i.e. does it come from another source) How is it collected? How often is it collected? Does it include all COUNTRY (e.g. German) seafarers?
  - ii. What information do you record?
    - A. Certificates – which types (CoC's and CeC's? Certificate of proficiency?)
      - i. Do you keep records of the documents underpinning endorsements and renewals?
    - B. Characteristics – rank, capacity, Coastal only/ or unrestricted? department, age, sex, nationality
  - iii. At what stage do you first become aware of a seafarer?
    - A. When? How?
  - iv. Are any accuracy checks carried out?
    - A. If so, what do these involve; if not, why not?
    - B. Transparency and reliability (Could anything be missed? Do you have any way of triangulating?)
  - v. Are you responsible for the verification of certificates?
  - vi. Within the data, is it possible to tell:
    - A. If an individual holds more than 1 certificate (or would each certificate count as a separate entry in the dataset)?
    - B. If an individual is working at the rank they are qualified for?

- C. If an individual is working in domestic waters only (as opposed to internationally)?
  - I. Can you tell if those somebody has an unrestricted certificates but has chosen to work in inland trades?
- D. If an individual is active (working at sea)?
- E. If not for any of these, why not?
- vii. How much of this data is publicly available? Why is this the case?
- viii. To what extent is the data you keep an accurate picture of the seafarers working in the COUNTRY?

### 3. National register (if not already covered)

- a. Is there a national register of seafarers in COUNTRY (e.g. Germany)?
  - i. If not, why not?
  - ii. Rather than a national register, are there regional registers of seafarers?
- b. If there is a national register:
  - i. Which organisation is responsible for maintaining it?
  - ii. How is the register compiled?
  - iii. How often is it updated?
  - iv. Are there any accuracy checks out?
    - A. If so, what are these? If not, why not?
  - v. What information does it include? (Certificates, characteristics, rank, capacity, department, age, sex, nationality)
  - vi. Does it only include national seafarers working on national flagged ships? If not, what else is included (foreign seafarers working on national flagged ships and national seafarers working on foreign flagged ships) and can national seafarers be distinguished from others?

### 4. EU level data collection

- a. Do you have any contact with any of your counterparts in equivalent organisations in other EU countries? (What does this involve? How did it come about?)
- b. Do you think an EU-level data collection system on seafarers is a good idea? (Why / why not? What should it try to do? What would be its benefits – to your organisation and to your country?)
- c. Do you think your organisation would be willing to participate in such a system? (Why / why not?)

- d. What do you think would support such a system? (If your organisation was to contribute data, what would make this easier?)
- e. What do you think would make the development of such a system difficult? (If your organisation was to contribute data, what would make this more difficult?)

## 5. Final Questions

- a. Within the COUNTRY, can you think of any other organisation which may maintain information on seafarers?
- b. In relation to the research we are doing, and to an EU level data collection system, is there anything we have not asked about that you think we maybe should have?

**Figure A16: Interview schedule used with the holders of employment/population data**

## MapMar Project – Key Country Interview Schedule

### 1. Interviewee

- a. Please tell me a bit about yourself and your role here
  - i. What is your job title? What does your role involve?

### 2. The organisation and its data

- a. Please tell me a bit about this organisation
- b. Can you tell me about the data the organisation collects please?
  - i. In relation to the coding of the data you collect (i.e. nature of employment) what system of classification do you use?
    - A. Is it a standardised European System? (i.e. NACE, or ISIC for coding Economic Activity)
  - ii. Where does the information come from? (i.e. does it come from another source) How is it collected? How often is it collected? What time period does each set of data cover?
  - iii. Is it a full dataset, or is it based on a sample of the population?
    - A. What percentage of the population is the sample based on?
  - iv. If the data is based on a sample, how are national level numbers calculated?
  - v. Are any accuracy checks carried out?
    - A. If so, what do these involve; if not, why not?
  - vi. How much of this data is publicly available? Why is this the case?
  - vii. On your website, you publish figures on 'Transport and storage' (CHECK WHAT PUBLISH BEFORE VISIT). As you know, our focus is on seafarers, so I'd like to ask if are you able to break this down further, say into Land transport, Rail transport, water transport?
  - viii. Can you break this down even further? For example, just looking at those working at sea? (i.e. excluding port workers)
    - A. If yes, can you distinguish COUNTRY (e.g. German) seafarers?
    - B. If yes, do you hold any more detailed data on seafarers? (age, sex, rank, department nationality etc.?)

C. How accurately do you think this data reflects those working at sea in COUNTRY?

D. GO ON TO ASK THE QUESTIONS IN THE SECTION BELOW IF APPROPRIATE

### 3. QUESTIONS IF THE COUNTRY HAS MORE DETAILED DATA ON SEAFARERS

(i.e. Statistics Sweden has seafaring ranks, ships deck officers, ships engineers, and ships deck crew and related workers).

- a. We are aware that you keep more detailed data on seafarers than many countries Labour Force Surveys (ADJUST AS NECESSARY). What extra details about seafarers does your data include? Rank? Sex? Age? Department? Nationality? Flag of vessel?
  - i. Why do you keep such a level of detail on those in the maritime industry? Why keep rank data?
  - ii. Does it only include national seafarers working on national flagged ships? If not, what else is included (foreign seafarers working on national flagged ships and national seafarers working on foreign flagged ships) and can national seafarers be distinguished from others?
  - iii. Within the data, is it possible to tell:
    - A. If an individual is working in domestic waters only (as opposed to internationally)?
    - B. If an individual is active (working at sea)?
    - C. If not for any of these, why not?
  - iv. To what extent is the data you keep an accurate picture of the seafarers working in the COUNTRY?

### 4. EU level data collection

- a. Do you have any contact with any of your counterparts in equivalent organisations in other EU countries? (What does this involve? How did it come about?)
- b. Do you think an EU-level system to collect data on seafarers is a good idea? (Why / why not? What should it try to do? What would be its benefits – to your organisation and to your country?)
- c. Do you think your organisation would be willing to participate in such a system? (Why / why not?)
- d. What do you think would support such a system? (If your organisation was to contribute data, what would make this easier?)
- e. What do you think would make the development of such a system difficult? (If your organisation was to contribute data, what would make this more difficult?)

## 5. Final Questions

- a. Within the COUNTRY, can you think of any other organisation which may maintain information on seafarers?
- b. In relation to the research we are doing, and to an EU level data collection system, is there anything we have not asked about that you think we maybe should have?

**Figure A17: Interview schedule used with the holders of social security data**

## MapMar Project – Key Country Interview Guide

### 1. Interviewee

- a. Please tell me a bit about yourself and your role here
  - i. What is your job title? What does your role involve?

### 2. The organisation

- a. Please tell me a bit about this organisation? What does it do and how?
- b. Is the organisation responsible for the collection of Social Security contributions?
  - i. If not, which agency is?
- c. Does the organisation maintain records of Social Security contributions?
  - i. If not, what organisation does?
  - ii. Does your organisation have access to records maintained by this other organisation?
- d. Who is required to make social security contributions? Which groups are excluded? Why?
- e. Do the records include employment details?
  - i. Is a standardised European System of classification of employment used? If so which one? (i.e. NACE, or ISIC for coding Economic Activity)

### 3. Data on seafarers

- a. Within your records, can you identify those working specifically in the maritime industry?
  - i. Are there different social security arrangements for those working in the maritime industry, than those working in other sectors? If so, please explain.
- b. If you can identify those working in the maritime industry:
  - i. Do you hold any more detailed data on seafarers? Sex? Age? Nationality? Rank? Department? Flag of vessel?
    - A. Why do you keep this level of detail? How long have you done so?
  - ii. Do the data only cover national seafarers working for national shipping companies? If not:
    - A. Who else is included (e.g. national seafarers working for non-national companies; foreign seafarers working for national shipping companies)?



Figure A18: Interview schedule used with the holders of training establishment data

## MapMar Project – Key Country Interview Schedule

### 1. Interviewee

- a. Please tell me a bit about yourself and your role here
  - i. What is your job title? What does your role involve?

### 2. The organisation and its data

- a. Please tell me a bit about the college/ training establishment?
  - i. What courses do you run? STCW courses? Certificates of Proficiency courses? Other courses?
    - A. Do your courses cover both Deck and Engine officers?
    - B. Do they cover **ALL** ranks? Officers? Ratings? Others?
    - C. How often do you run these courses?
  - ii. Are your students mostly COUNTRY citizens? Or is it a mixture of COUNTRY and foreign students? What is the percentage mix?
  - iii. Do COUNTRY seafarers generally train in one institution? Or are they likely to train in multiple institutes? Why is this the case?
    - A. Would COUNTRY seafarers ever train in foreign training institutions? If so, why is this?
    - B. Is there any other circumstance where a COUNTRY seafarer would not be included in training records of COUNTRY colleges/ training institutes?
  - iv. How frequently do COUNTRY seafarers undertake training in COUNTRY colleges/ training institutions?
    - A. How long are the certificates valid for?
    - B. Do all COUNTRY seafarers undertake at least 1 training course per year (i.e. to find out if annual snapshots would be appropriate to capture everyone?)? If not, what is the longest period a seafarer could be actively employed at sea without attending a training course?
  - v. In terms of the qualifications your students have obtained, how much detail do you keep about these? For example do you record:
    - A. Rank?

- B. Capacity/ limitations? (Coastal only, or unrestricted)
- C. Department?
- D. Age?
- E. Sex?
- F. Nationality?
- vi. Where a student is studying for an upgrade of a current licence (i.e. for his/her chief officers from his/her second officers), do you keep records of the underpinning documents?
- vii. Within the records you have of the courses that your students have undertaken, is it possible to tell:
  - A. An individual's highest qualification? (or would each qualification count as a separate entry in the dataset)?
  - B. If an individual is working at the rank they are qualified for?
  - C. If an individual is working in domestic waters only (as opposed to internationally)?
    - i. Can you tell if somebody has an unrestricted certificate but has chosen to work in inland trades?
  - D. If an individual is active (working at sea)?
  - E. If not for any of these, why not?
- viii. Do you publish figures annually on how many students you have trained? Does this include detail such as: rank, capacity, limitations? (i.e. coastal only/ or unrestricted?) department, age, sex, nationality?
  - A. Even if they were not obtained this year, are you able to produce figures showing the number of currently valid licences held by student you have trained?

### 3. National register (if not already covered)

- a. Is there a national register of seafarers in COUNTRY (e.g. Germany)?
  - i. If not, why not?
  - ii. Rather than a national register, are there regional registers of seafarers?
- b. If there is a national register:
  - i. Which organisation is responsible for maintaining it?
  - ii. How is the register compiled?
  - iii. How often is it updated?

- iv. Are there any accuracy checks out?
  - A. If so, what are these? If not, why not?
- v. What information does it include? (Certificates, characteristics, rank, capacity, department, age, sex, nationality)
- vi. Does it only include national seafarers working on national flagged ships? If not, what else is included (foreign seafarers working on national flagged ships and national seafarers working on foreign flagged ships) and can national seafarers be distinguished from others?

#### 4. EU level data collection

- a. Do you have any contact with any of the colleges/ training establishments in either the COUNTRY, other EU countries? (What does this involve? How did it come about?)
- b. Do you think an EU-level data collection system on seafarers is a good idea? (Why / why not? What should it try to do? What would be its benefits – to your organisation and to your country?)
- c. Do you think your organisation would be willing to participate in such a system? (Why / why not?)
- d. What do you think would support such a system? (If your organisation was to contribute data, what would make this easier?)
- e. What do you think would make the development of such a system difficult? (If your organisation was to contribute data, what would make this more difficult?)
- f. Do you think that, taken together, the records of all COUNTRY colleges/training establishments would give an accurate picture of the number of active COUNTRY seafarers? (Why / why not? Would these records count some seafarers more than once and/or miss some seafarers altogether? Can you give some examples?)

#### 5. Final questions

- a. Within the COUNTRY, can you think of any other organisation which may maintain information on seafarers?
- b. In relation to the research we are doing, and to an EU level data collection system, is there anything we have not asked about that you think we maybe should have?

**Table A4: Coverage of the project's key set of seafarer details within sources holding certification data as indicated through desktop review and subsequent direct follow-up (full version of Table 4)**

**KEY:** ✓ = data are available | ✗ = data are not available | [ ] = not known whether data are available | ✓(G) = data available, but in a grouped format | ♦ = Just said STCW Cert.  
 Black text = from desktop review | Red text = from questionnaire | Green text = from interview

Country	Source	Type	Range	Certificate verification	Records of STCW Cert (CoC)	Records of STCW Cert (CeC)	Records of STCW Cert (CoP)	Can you tell if seafarers have multiple certificates?	Can you count individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Belgium	Federal Public Service Mobility and Transport, Directorate General Maritime Transport <sup>90</sup>	Certificate	None	Online	✓♦	✓♦	✓♦	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓	✓
Bulgaria	Maritime Administration Executive Agency	Certificate	None	Offline	✓♦	✓♦	✓♦	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Croatia	Ministry of the Sea, Transport and Infrastructure	Certificate	Accessible custom tables: 1999-2020	Online	✓♦	✓♦	✓♦	✓	✓	✓	✓	✓	✓	✓	✓ (region)	✓	✓	✓
Cyprus	Department of Merchant Shipping (Part of the Ministry of Communications and Works) <sup>91</sup>	Certificate	None	Online	✓♦	✓♦	✓♦	✗	n/a	✗	✗	✗	✓	✓	✓	✓	✓	✓

90 Excludes Belgian seafarers trained outside Belgium.

91 Excludes Cypriot seafarers with non-Cypriot seafarers' books or on non-Cypriot flagged vessels.

Country	Source	Type	Range	Certificate verification	Records of STCW Cert (CoC)	Records of STCW Cert (CeC)	Records of STCW Cert (CoP)	Can you tell if seafarers have multiple certificates?	Can you count individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Czech Republic	Ministry of Transport of the Czech Republic <sup>92,93</sup>	Certificate	None	Online	✓♦	✓♦	✓♦	✗	n/a	✗	✗	✗	✓	✓	✓	✓	✓	✓
Denmark	Danish Maritime Authority <sup>94</sup>	Certificate	Accessible custom tables: 2017–2019	Online	✓♦	✓♦	✓♦	✓	✓	✗	✗	✗ <sup>95</sup>	✓ <sup>95</sup>	✓	✓(G)	✓	✓	✓
Estonia	Republic of Estonia Maritime Administration	Certificate	None	Online	✓♦	✓♦	✓♦	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
Finland	Traficom – Finnish Transport and Communications Agency <sup>96</sup>	Certificate	None	Online	✓♦	✓♦	✓♦	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓
France	Ministry of Ecological and Solidarity Transition	Certificate	None	Online	✓♦	✓♦	✓♦	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Germany	The Federal Maritime and Hydrographic Agency (BSH) <sup>97</sup>	Certificate	None	Online	✓♦	✓♦	✓♦	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓

92 Excludes those obtaining certificates outside Czech Republic (many Czech seafarers train in Poland) and those with a Seamen's Book from another flag.

93 Also records seamen's' books.

94 Excludes seafarers with certificates issued outside Denmark.

95 The questionnaire response indicated that sex is not directly recorded but can be obtained from the Danish CPR number (Social Security number)

96 Excludes seafarers with certificates issued outside Finland.

97 Includes non-nationals if studied in Germany and have a German certificate. Excludes seafarers who have studied and gained a certificate outside Germany (until they apply for a CeC).

Country	Source	Type	Range	Certificate verification	Records of STCW Cert (CoC)	Records of STCW Cert (CeC)	Records of STCW Cert (CoP)	Can you tell if seafarers have multiple certificates?	Can you count individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Greece	Ministry of Maritime Affairs and Insular Policy – Hellenic Coast Guard (HCG) – Seafarers Training Directorate	Certificate	None	Offline	✓♦	✓♦	✓♦						✓	✓	✓	✓	✓	✓
	Ministry of Maritime Affairs and Insular Policy – Hellenic Coast Guard (HCG) – Seafarers Labour Directorate <sup>98</sup>	Certificate (From register of Seamen books) Employment (From records of ships articles)	None															
Hungary	Ministry of National Development, Department for Shipping Authority	Certificate	None	Offline	✓♦	✓♦	✓♦						✓	✓	✓	✓	✓	✓
Iceland	Icelandic Transport Authority (ICETRA)	Certificate	None	Offline	✓♦	✓♦	✓♦						✓	✓	✓	✓	✓	✓
Ireland	Department of Transport, Tourism and Sport	Certificate	None	Online	✓♦	✓♦	✓♦						✓	✓	✓	✓	✓	✓
Italy	Ministry of Infrastructure and Transport	Certificate	None	Offline	✓♦	✓♦	✓♦	✗	n/a	✗	✗	✗	✓	✓	✓	✓	✓	✓

98 Hard copy register of those issued with a seaman's book. Hard copies of ships articles. Register of seamen's books issued do not include all sea service, and is not often updated. Figures on ships articles (based on sea service) are adjusted for leave/ sick leave, those working ashore, or on rotation.

Country	Source	Type	Range	Certificate verification	Records of STCW Cert (CoC)	Records of STCW Cert (CeC)	Records of STCW Cert (CoP)	Can you tell if seafarers have multiple certificates?	Can you count individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Latvia	Maritime Administration of Latvia <sup>99</sup> 100	Certificate	Accessible custom tables: 2011-2018	Online	✓♦	✓♦	✓♦	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	National maritime education and training (MET) institutions (as listed on STCW-IS webpage)	Certificates/diplomas	2015-2019													✓	✓	
	Two papers by Robert Galitis (2013 and 2015) on the structure of the Latvian Seamen's registry	Certificates/diplomas	1995-2012; 2015												✓ (G)	✓ (G)		
Lithuania	Lithuanian Transport Safety Administration	Certificate	None	Online	✓♦	✓♦	✓♦	✓	✓	✓	✗	✗	✓	✓		✓	✓	✓
Luxembourg	Luxembourg Maritime Administration	Certificate	None	Online	✓♦	✓♦	✓♦	✓	✓	✓	✗	✗		✓		✓	✓	✓
Malta	Merchant Shipping Directorate, Transport Malta <sup>101</sup>	Certificate	None	Online	✓♦	✓♦	✓♦	✓	✓	✗	✗	✗	✓	✓		✓	✓	✓

99 Would not have record of a Latvian seafarer if their certificates were issued by other countries.

100 Also records Seamen's Books.

101 Also records Seamen's Books

Country	Source	Type	Range	Certificate verification	Records of STCW Cert (CoC)	Records of STCW Cert (CeC)	Records of STCW Cert (CoP)	Can you tell if seafarers have multiple certificates?	Can you count individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Netherlands	Kiwa Licensing <sup>102</sup>	Certificate	None	Offline	✓♦	✓	✓♦		✓ (but technically difficult)	✗	✗	✗	✓	✓				
Norway	Norwegian Maritime Authority (NMA) National maritime education and training (MET) institutions (as listed on STCW-IS webpage)	Certificate/ diplomas	2015-2019	Online	✓♦	✓♦	✓♦	✓	✓	✗	✗	✗	✓	✓		✓	✓	
Poland	Polish Harbours Information and Control System Central Maritime Examination Board (CMKE) <sup>103</sup>	Certificate/ diplomas	None	Online	✓	✓	✓	✓	✗				✓	✓		✓	✓	
Portugal	The Directorate-General for Natural Resources, Safety and Maritime Service (DGRM), Maritime Administration	Certificate	None	Online	✓♦	✓♦	✓♦											
Romania	The Romanian Naval Authority	Certificate	None	Offline	✓♦	✓♦	✓♦	✓	✗	✓	✗	✗	✓	✓		✓	✓	

<sup>102</sup> Does not issue underlying certificates, but does keep record of underlying certification presented. Nationality is not recorded, but country of original CoC issue is when applying for a CEC.

<sup>103</sup> CMKE organises and conducts examinations for seafaring diplomas and certificates.

Country	Source	Type	Range	Certificate verification	Records of STCW Cert (CoC)	Records of STCW Cert (CeC)	Records of STCW Cert (CoP)	Can you tell if seafarers have multiple certificates?	Can you count individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Slovakia	Ministry of Transport, Construction, and Regional Development	Certificate	None	Offline	✓♦	✓♦	✓♦	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓
Slovenia	Maritime Administration of the Republic of Slovenia	Certificate	None	Online	✓♦	✓♦	✓♦	✓	✓	✗	✗	✗	✓	✓	✓	✓	✓	
Spain	The ministry of Transport, Mobility, and Urban Agenda (The General Directorate of the Merchant Marine) <sup>104</sup>	Certificate	None	Online Offline	✓♦	✓♦	✓♦	✓	✓	✗	✗	✗		✓		✓	✓	
Sweden	Swedish Transport Agency (Transport Styrelsen) <sup>105 106</sup>	Certificate	None	Online	✓♦	✓♦	✓♦			✓	✓	✗	✓	✓		✓	✓	✓

104 Data covers all Spanish seafarers. Excludes Spanish seafarers working on a non-Spanish flagged ship that trained outside of Spain.

105 Will have records of Swedish seafarers working on foreign vessels if certificate issued in Sweden, and foreign seafarers working on Swedish vessel if certificate is endorsed. Excludes seafarers who have certification from outside Sweden working on non-Swedish flagged vessels. Also would not have records of Swedish seafarers working abroad if certification endorsed abroad.

106 Suggest the figures published are adjusted for those working ashore.

Country	Source	Type	Range	Certificate verification	Records of STCW Cert (CoC)	Records of STCW Cert (CeC)	Records of STCW Cert (CoP)	Can you tell if seafarers have multiple certificates?	Can you count individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
UK	Maritime and Coastguard Agency	Certificate	None	Online	✓♦	✓♦	✓♦		✓ (Does for DFT report)		✗	✗	✓	✓	✓	✓	✓	✓
	Department of Transport <sup>107</sup>	Certificate	2011-2019										✓	✓(G)	✓ sometimes ✓(G)	✓		
	Warsash Maritime Academy <sup>108</sup>	Certificates (this MET only)	None							✗	✗	✗	✓					
Europe (EU28 plus Norway and Iceland)	European Maritime Safety Agency (EMSA)	Certificate	None		✓	✓	✓	✓	✓	✗	✗	✗	✓	✓	✓	✓	✓	✓ (only a small number supply)
Europe (EU28 plus Norway and Iceland)	EMSA Seafarers Statistics in the EU Report: Statistical Review Series	Certificate Data	2016-2020		✓	✓	✓					✗	✓	✓(G)	✓(G)	✓ and ✓(G)		
Europe (as well as some other countries)	EMSA STCW-IS Online information System	Certificate	Every 5 years (2015 latest)													✓		

107 Based on MCA data with figures often adjusted to account for those who are not active at sea or have retired.

108 Only has information on course undertaken there. Could only count certificates, not seafarers. No information on rank (only highest course undertaken).

Country	Source	Type	Range	Certificate verification	Records of STCW Cert (CoC)	Records of STCW Cert (CeC)	Records of STCW Cert (CoP)	Can you tell if seafarers have multiple certificates?	Can you count individual seafarers	Working below rank	Working inland	Not active	Sex	Age	Nationality	Rank	Limitations	Underpinning
Europe	European Commission Study Report <sup>109</sup>	Certificates?/ Employment? (unclear)	2010 (but comparisons to 2000)										✓	✓(G)		✓(G)		
Europe	European Commission Report <sup>110</sup>	Certificates?/ Employment? (unclear)	2004/2005															
Europe (France, Germany, Greece, Norway, UK and Poland)	European Transport Workers Federation Report <sup>111</sup>	Certificate/ Employment	Varying ranges of years from 1980-2007												✓(G)	✓(G)		
Global (covers 140 national administrations globally)	Bimco/ICS Manpower Report Series	Certificates (and some employment)	Every 5 years latest report 2015		✓	✗	✗					✗	✓	✓	✓(G)	✓(G)		
Global (China, Croatia, India, Latvia, Philippines, Poland, Romania, Russia, Ukraine, UK)	Drewery Manning Report Series	Certificate	2006-2020												✓(G)	✓(G)		

109 'EU Seafarers Employment: Final Report' (by Guy Sulpice 2011)

110 'An exhaustive analysis of employment trends in all sectors related to sea or using sea resources' (Weber and Nevala, 2006)

111 'How to enhance training and recruitment in the shipping industry in Europe: Final Report' (Kahvechi, Lillie and Chaumette, 2011)

Underpinning	
Limitations	
Rank	✓(G)
Nationality	
Age	
Sex	
Not active	
Working inland	
Working below rank	
Can you count individual seafarers	
Can you tell if seafarers have multiple certificates?	
Records of STCW Cert (CoP)	
Records of STCW Cert (CeC)	
Records of STCW Cert (CoC)	
Certificate verification	
Range	1990, 1995, and 2000
Type	Certificates (and some employment)
Source	Precious Associates Limited Report <sup>112</sup>
Country	Global

<sup>112</sup> 'Availability and Training of Seafarers' (Precious Associates Limited, 2003)



